INTRODUCTION TO BANKING

THIRD EDITION



BARBARA CASU
CLAUDIA GIRARDONE
PHILIP MOLYNEUX

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Introduction to Banking



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Third Edition

Introduction to Banking

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And to my mum and sister (BC)

To Marc, Matteo and Leonardo. To my parents Nieves and Sandro (CG)

To Delyth, Alun, Catrin, Gareth, Gethin, Lois and Rhiannnon (PM)

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Preface

It is well enough that people of the nation do not understand our banking and monetary system, for if they did, I believe there would be a revolution before tomorrow morning.
Henry Ford

The aim of this textbook is to provide a comprehensive introduction to theoretical and applied issues relating to the global banking industry. Despite the fears of Henry Ford, we do not think reading this book will cause a revolution but we do hope it will at least provide you with an enjoyable and interesting insight into the business of banking.

A major motivation for writing this text has been to fill a gap in the market. For a number of years we have all taught banking courses and we have become aware of students' frustration about the lack of a comprehensive yet accessible textbook that deals with a broad spectrum of introductory banking issues. Most introductory texts that cover banking issues tend to be broad-based, focusing on economics and finance, and these (in our view) do not provide sufficient detail or coverage of the theoretical and institutional detail that is essential for an accurate understanding of critical banking issues. While there are textbooks that provide such coverage targeted at advanced undergraduates and the postgraduate market, there is no text that has comprehensive coverage of such issues for those new to the study of banking. In addition, many textbooks that cover banking as part of broadly based money and banking courses tend to provide only limited attention to international experiences. As such, we have written this text to provide (we hope) an essential teaching and learning resource for anyone who has to lecture introductory undergraduates as well as professional banking courses.

The first edition of this book (2006) described a world where the banking industry experienced marked changes and deregulation allowed banking firms to diversify into broader financial services areas. Commercial banks became full-service financial firms, offering a range of non-traditional financial services including insurance, securities business, pensions and the like. Many banks dropped the word 'Bank' from their titles to emphasise their much broader role in the provision of financial services to households and corporations. In addition, various trends such as industry consolidation, securitisation and disintermediation were having a significant effect resulting in a smaller number of major players operating in credit, capital and money markets business that increasingly overlapped. As banking systems opened up, many institutions were pursuing international strategies thereby changing the traditional focus on banking as a mainly domestic business. This rapidly evolving environment posed both threats and opportunities to bank managers and owners. The former had to be increasingly aware of both domestic and international developments in the management process and in particular of the various risk–return trade-offs in all areas of a bank's activities. Capital needed to be managed effectively, so as to adhere to minimum regulatory requirements and also to generate returns in excess of the cost of capital to boost shareholders returns. The market pressure on banks to generate good returns for shareholders was a key element of bank strategy – bankers were forced to cut costs, boost revenues (mainly through fee and commission income sources) and to manage their capital resources much more efficiently.

This golden era of banking came to an abrupt end in the summer of 2007, when the demise of the US sub-prime mortgage lending market led to financial losses, government bailouts of banks (and other financial institutions), a credit crunch and a prolonged economic recession, mainly in developed countries, ensued. Since the onset of the crisis in 2007, there has been a large body of research investigating its causes and consequences. What had started as trouble in a small segment of the US financial markets became a fully-fledged global financial crisis, following the demise of the US investment bank Lehman Brothers in September 2008. The unfolding of the sub-prime crisis and how it became a financial crisis, and its impact on European countries in the form of a sovereign debt crisis, can be described in various phases or waves that include the: (i) US sub-prime crisis (August 2007 to September 2008); (ii) systemic or global crisis (September 2008 to March 2009); (iii) economic crisis (March 2009 to January 2010); and (iv) the sovereign debt crisis (January 2010 to June 2012). In this textbook, we will refer to the sub-prime crisis period as the 2007 crisis; to the global financial crisis period as the 2008–2009 crisis and to the sovereign debt crisis or eurozone crisis as the period 2010–2012. These crises years have had a tremendous impact on the world of banking and have brought about dramatic changes in the global financial architecture. Against this background of global changes, the second edition (2015) was published.

As the dust has begun to settle on the crises period and the new shape of the world's banking markets has started to take form, we have thoroughly revised this textbook to account for more recent changes. In the decade since the global financial crisis, the banking industry has faced renewed challenges. Increased competition from non-bank financial providers has intensified, as the FinTech industry boomed. The digitalisation of banking is transforming the provision of financial services. Big Tech's entry into financial services has also increased, focusing mostly on the customers' experience.

The coronavirus pandemic also poses challenges for banks, but also shows that they still play a key role in helping the real economy deal with the crisis. The industry has shown resilience and it is in a much better health than it was a decade ago. It has also benefited from extraordinary measures taken by governments to support their economies, including monetary, fiscal and regulatory actions. For example, in the Spring of 2020, the European Central Bank (ECB) introduced a €1,850 billion Pandemic Emergency Purchase Programme of public and private sector assets (PEPP), enhanced its long-term refinancing operations, and kept key interest rates at historically low levels. As countries move towards an exit from the global health crisis, national and international regulators and supervisors are working on potential strategies that will not result in increased systemic risk.

Banks are also grappling with other complex issues, from climate change to green finance opportunities. The attention to environmental, social and governance (ESG) concerns is likely to increase as the global economy recovers from the COVID-19 pandemic, and aspects of sustainability are crucial for banks' business models.

The new edition of this textbook introduces and discusses many of these emerging issues, offering a detailed insight into a fast-changing industry.

The text is organised into five main parts:

- Part 1: Introduction to banking
  - Chapter 1 What is special about banks?
  - Chapter 2 Bank activities and services
  - Chapter 3 Types of banking
  - Chapter 4 International banking
  - Chapter 5 Islamic banking

This part of the text provides an introduction to the nature of financial intermediation, covers the main reasons proposed as to why banks exist, focusing on key issues such as adverse selection, moral hazard and delegated monitoring. It also covers the information production, liquidity transformation and consumption smoothing role of banks as well as various other issues relating to the bank intermediation process. We then go on to provide a detailed account of the main activities and services provided by banks, changes in the payment systems and the growing importance of ethical investments and sustainable banking strategies. As the financial sector in many countries comprises a wide range of different types of banking firms, these are then explained covering commercial banks, mutual banks, investment banks, private banks as well as different forms of banking activity such as universal versus specialist banking. Given the increasing role of banks on the global scene, Chapter 4 looks at the main features of international banking highlighting the reasons as to why banks locate overseas or conduct international activity. We also outline the main services provided by international banks covering payments, credit, money and capital markets activity highlighting the role of the Euromarkets – Eurobonds and Eurocurrency activity – and also syndicated lending. Finally, Chapter 5 provides an introduction to Islamic banking, given the growing importance of Islamic banking and finance in many countries. This chapter is new in this edition of the textbook.

The main aim of Part 1 is to familiarise students with the reasons why banks exist, the main services they offer, recent trends impacting on business areas, types of banking firms and the differences between domestic and international banking business. This part provides the reader with the relevant knowledge of global banking business and should also heighten awareness of contemporary banking issues that put the following parts into context.

- Part 2: Central banking and bank regulation
  - Chapter 6 Central banking
  - Chapter 7 Bank regulation and supervision
  - Chapter 8 Bank failures and banking crises

As the banking system is the main conduit of monetary policy, it is important that students of banking are aware of the main roles of a central bank, its monetary policy role and its other functions. The first chapter of Part 2 deals with the theory of central banking outlining the roles and functions of central banks, as well as the rationale for their existence. We also discuss the conduct of monetary policy, distinguishing between instruments, targets and goals, as well as the benefits of central bank independence. We also cover how central banks conduct monetary policy and the role of banks in this process. Chapter 7 focuses on bank regulation and supervision. We discuss the pivotal role played by banks in the economy to understand the rationale for regulation, outline the aims and objectives of regulation and different types of regulation. We next discuss the elements of the financial safety next as well as the limitations of regulation and the possible reasons behind regulatory failure. In this chapter we also review the causes for regulatory reform and discuss key international policy initiatives, such as the Basel Capital Adequacy Accords. The final chapter of Part 2 focuses on bank failures and banking crises. The impact of the global financial and eurozone crises on the world's banking markets made it all the more relevant to include a detailed discussion of the determinants of bank failure. We then discuss the main strategies used to identify problem banks, with a focus on early warning systems (EWS) for bank soundness and the recently introduced stress tests. We also outline the key issues of

bank restructuring and the regulatory toolkits to intervene in the banking sector. Finally, we discuss the causes and consequences of banking and financial crises.

By the end of Part 2 students should be aware of the pivotal role played by monetary policy and supervisory regulation and their impact on the banking sector (and economy as a whole). The reader should be familiar with the rationale for central banking, the main tools and instruments of monetary policy and how various major central banks undertake their operations. Students should be able to identify the reasons as to why banks are so heavily regulated and why having adequate solvency and liquidity is critical to maintain a safe and sound banking system. In particular, readers should understand the important role played by capital in the banking sector as well as the relevance of the Basel Capital Accords. Readers should become aware of the determinants of bank failure as well as the toolkits at regulators' disposal to supervise bank risk-taking. Readers should also become familiar with the causes of banking and financial crises as well as effective crisis-management mechanisms.

- Part 3: Issues in bank management
  - Chapter 9 Banks' balance sheet and income structure
  - Chapter 10 Bank financial management
  - Chapter 11 Banking risks
  - Chapter 12 Bank risk management

Part 3 of the text provides a detailed insight into the financial features of banking firms. The first chapter focuses on the balance sheet and income features of both commercial and investment banks, highlighting the main differences between the two types of institutions. Substantial attention to detail is paid to the components of the financial statements of these types of banks. In addition, we outline the role of traditional ratio analysis for evaluating bank performance and asset quality as well as performance indicators relating to shareholder value creation. Chapter 10 provides a detailed introduction to bank financial management issues, covering asset and liability management, capital management, liquidity management and off-balance-sheet management. The important role played by derivative business is introduced, together with a discussion of loan sales and securitisation. We then go on to discuss the various forms of risks faced by banks (including credit, interest rate, foreign exchange, market, operational, sustainability and other risk types). The final chapter in the part introduces a number of key approaches to bank risk management. It also includes a discussion of the growing importance of banks' corporate governance frameworks in setting the standards of good practice and risk culture within banking organisations.

By the end of Part 3 students should be familiar with the main components of banks' balance sheet and income statements, be aware of off-balance-sheet activity and should be able to analyse bank performance and other issues using traditional ratio analysis. In addition, they should have an insight into how banks manage their on- and off-balance-sheet positions and be familiar with the main risks faced in banking operations. After reading this part, students should be familiar with the main risk management approaches undertaken in banking.

- Part 4: Comparative banking markets
  - Chapter 13 Banking in the UK
  - Chapter 14 Banking in Europe
  - Chapter 15 Banking in the US
  - Chapter 16 Banking in Japan
  - Chapter 17 Banking in emerging markets

Part 4 focuses on the features of various banking systems, highlighting the main institutional features of these systems (types of banks, non-bank deposit firms, role of other financial firms) as well as various structural trends (number of banks, branches, M&A activity, market concentration and such like). We have tried to cover systems that (we hope) will be of interest to as wide an audience as possible covering the UK, Europe, US, Japan and various emerging banking markets. We have paid particular attention to regulatory developments in the wake of the global financial and eurozone crises. The emerging regulatory financial architecture is discussed in detail for the UK, the European Union and the United States. It is interesting to note that similar trends are apparent in most of these systems, namely, a decline in the number of banks, consolidation and concentration, the increased role of foreign banks, the broadening of banks' business into other financial services areas, greater disintermediation and the ongoing and omnipresent role of regulatory change. The final chapter provides a discussion of the relationship between finance and growth, illustrating how a sound and efficient financial system can aid economic development. We also provide a detailed insight into various emerging banking systems which we hope will be of interest and also of practical use for anyone wishing to be aware of banking sector features and developments across the globe. These include a discussion of the main forces of change and how these have influenced the structure of the banking industries in emerging and transition economies in terms of deregulation and the liberalisation process, the role of the state, M&As and the entry of foreign banks.

By the end of Part 4 students should be familiar with the institutional features of the banking/financial systems of the UK, US, Europe, Japan and various emerging markets and transition economies. They should be aware of how the institutional features of the different banking systems are changing and the trends that are common to all systems. A full understanding of these characteristics will provide students with the relevant framework to analyse and discuss the structural and performance features of these (and other) banking systems.

- Part 5: Advanced topics in banking
  - Chapter 18 Banks and markets
  - Chapter 19 Mergers and acquisitions
  - Chapter 20 Bank competition and financial stability

Part 5 focuses on some key issues in banking markets. Specifically, in the first chapter of this part we focus on the bank intermediation process, on the increasing integration of banks and markets and discuss the growth of the 'shadow banking' system. The aim of this chapter is to outline the key linkages between banks and markets with a particular focus on the rise and fall of securitisation. We then move on to explain the main processes involved in issuing mortgage-backed securities (MBS) (and other asset-backed securities, ABS). We note the broad impact of securitisation on bank activities and highlight how it has come under increased regulatory scrutiny. The next chapter in this part focuses on mergers and acquisitions (M&As) in banking markets, providing a classification of the different types of bank mergers as well as a summary of the main reasons as to why banks merge. We outline the trends in bank M&A activity as well as the impact of M&As on bank performance. The final chapter focuses on the possible trade-off between banking sector competition and stability. We provide a comparative analysis of the different measures of competition in banking markets. Next we discuss different indicators of bank risk, including accounting indicators and market-based measures of risk. We then explore the link between competition and risk

in banking systems and outline the competition-fragility view (which posits that competition induces increased risk-taking and therefore is detrimental for stability) and the competition-stability view, which argues that competition promotes financial stability.

By the end of Part 5 students should be familiar with some of the current issues in banking and with the academic literature that has sought to investigate these issues empirically.

We have written this text to provide an introductory grounding to the theory and practice of banking which we hope will serve as a useful guide for anyone studying banking subjects at an introductory level and for those who are perhaps considering a career in the banking/financial services industry.

We hope you enjoy reading the text and we encourage correspondence regarding any omissions or any recommendations regarding improvement of the content.

Barbara Casu (Bayes Business School, City, University of London)
Claudia Girardone (Essex Business School, University of Essex)
Philip Molyneux (Bangor Business School, Bangor University)

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List of acronyms and abbreviations

$bn	billions of United States dollars
£bn	billions of Great Britain pounds
€bn	billions of euros
$mil	millions of United States dollars
£mil	millions of Great Britain pounds
€mil	millions of euros
2-BCD	EU Second Banking Co-ordination Directive
AAOIFI	Accounting and Auditing Organization for Islamic Financial Institutions
ABCP	asset-backed commercial paper
ABS	asset-backed securities
ACH	automated clearing house
ACP	Autorité de contrôle prudentiel
AES	advanced execution services
AGP	asset guarantee programme
AI	artificial intelligence
AIG	American International Group
AIM	Alternative Investment Market
ALCO	asset and liability committee
ALM	asset–liability management
AMA	advanced measurement approach
AML	anti-money laundering
ANZ	Australia and New Zealand Banking Group Ltd
APACS	Association for Payment Clearing Services
APF	asset purchase facility
API	application programming interface
APRA	Australian Prudential Regulation Authority
ARM	adjustable-rate mortgage
ASEAN	Association of Southeast Asian Nations
ASF	American Securitisation Forum
ATM	automated teller machine
B2B	business-to-business
Bacs	Banks Automated Clearing System
BBA	British Bankers' Association
BBAA	British Business Angels Association
BBVA	Banco Bilbao Vizcaya Argentaria
BCB	Banco Central do Brasil
BCBS	Basel Committee on Banking Supervision
BCCSs	bill and cheque clearing systems
BCRA	Banco Central de la Republica Argentina
BFP	Business Finance Partnership

BHC	bank holding company
BHCA	Bank Holding Company Act
BIP	Bank Insolvency Procedure
BIS	Bank for International Settlements
BNM	Bank Negara Malaysia
BoE	Bank of England
BOJ-NET	Bank of Japan Financial Network System
bps	basis points
BRRD	Bank Recovery and Resolution Directive
BSC	Banking Supervision Committee
BTS	Binding Technical Standards
BU	Banking Union
BU	bottom-up approach
BVCA	British Private Equity & Venture Capital Association
C&CC	cheque and clearing company
C/I	cost-to-income ratio
CAD	EU Capital Adequacy Directive
CAGR	compound annual growth rate
CAMELS	Capital, Asset, Management, Earnings, Liquidity, Sensitivity to Market Risk
CAP	Capital Assistance Programme
CAPM	capital asset pricing model
CBA	Commonwealth Bank of Australia
CBFA	Commission Bancaire, Financière et des Assurances
CBO	collateralised bond obligations
CBPP	covered bond purchase programme
CBR	Central Bank of the Russian Federation
CBRC	China Banking Regulatory Commission
CC	Competition Commission
CCAR	comprehensive capital analysis and review
CCB	China Construction Bank
CCBM	Correspondent Central Banking Model
CCBS	Centre for Central Banking Studies
CCCL	Cheque and Credit Clearing Company Limited
CD	certificate of deposit
CDCI	Community Development Capital Initiative
CDFIs	Community Development Financial Institutions
CDIC	Canada Deposit Insurance Corporation
CDO	collateralised debt obligations
CDS	credit default swaps
CEBS	Committee of European Banking Supervisors
CEE	Central and Eastern Europe
CEIOPS	Committee of European Insurance and Occupational Pensions Supervisors
CEO	chief executive officer
CESR	Committee of European Securities Regulators
CFO	chief financial officer
CFPB	Consumer Financial Protection Bureau
CGFS	Committee on the Global Financial System

CGS	credit guarantee scheme
CHAPS	Clearing House Automated Payments System
CHIPS	Clearing House Interbank Payments System
CI	credit institutions
CIBC	Canadian Imperial Bank of Commerce
CLO	collateralised loan obligations
CLS	Continuous Linked Settlement
CMA	Competition and Markets Authority
CME	Chicago Mercantile Exchange
CMGs	crisis management groups
CML	Council of Mortgage Lenders
CMU	Capital Markets Union
COAGs	cross-border co-operation agreements
CORF	corporate operational risk function
CP	commercial paper
CPP	Capital Purchase Programme
CPSS	Committee on Payment and Settlement Systems
CRA	credit-rating agencies
CRAM	country risk assessment model
CRD	Capital Requirements Directive
CRDs	cash ratio deposits
CRIS	control risks information services
CR-*n*	*n*-firms concentration ratio
CRR	Capital Requirements Regulation
CTF	counter-terrorism financing
CV	conjectural variations
CVF	competing values framework
DD	distance to default
DEFRA	Department for Environment, Food & Rural Affairs
DFAST	Dodd–Frank Act stress tests
DG	duration gap
DGS	deposit guarantee scheme
DIS	deposit insurance scheme
DLT	distributed ledger technology
DMO	debt management office
DNB	De Nederlandsche Bank
DTI	debt-to-income ratio
DTIs	deposit-taking institutions
DWF	discount window facility
EBA	European Banking Authority
EBC	European Banking Committee
ECB	European Central Bank
ECOFIN	Economic and Financial Affairs Council
ECSC	European Coal and Steel Community
ECTR	extended collateral term repo facilities
EDF	expected default frequency
EDI	electronic data interchange

EDP	excessive deficit procedure
EEA	European Economic Area
EEC	European Economic Community
EFDI	European Forum of Deposit Insurers
EFN	European Forecasting Network
EFSF	European Financial Stability Facility
EFTPOS	electronic funds transfer at point of sale
EGD	European Green Deal
EIOPA	European Insurance and Occupational Pensions Authority
EIOPC	European Insurance and Occupational Pensions Committee
EIRIS	Ethical Investing Research Service
EIU	Economist Intelligence Unit
EL	expected loss
ELs	eligible liabilities
ELA	emergency liquidity assistance
EM	equity multiplier
EMI	European Monetary Institute
EMS	European Monetary System
EMU	economic and monetary union
EPS	earnings per share
ERM	Exchange Rate Mechanism
ERM II	Exchange Rate Mechanism II
ES	expected shortfall
ESAs	European Supervisory Authorities
ESC	European Securities Committee
ESCB	European System of Central Banks
ESF	European Securitisation Forum
ESFS	European System of Financial Supervision
ESFS	European System of Financial Supervisors
ESG	environmental, social and governance
ESM	European Stability Mechanism
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
ESRC	European Systemic Risk Council
ESS	efficient scale hypothesis
ESX	efficient structure hypothesis (x-efficiency)
EU	European Union
euro area	EU member states that have adopted the euro
eurozone	EU member states that have adopted the euro
EVA	economic value added
EVCA	European Private Equity & Venture Capital Association
EVE	economic value of equity
EWS	early warning systems
F gap	financing gap
FAC	Federal Advisory Council
FCA	Financial Conduct Authority
FCC	Financial Conglomerates Committee

FDI	foreign direct investment
FDIC	Federal Deposit Insurance Corporation
Fed	Federal Reserve Bank
FEDNET	Federal Reserve's national communications network
FFIEC	Federal Financial Institutions Examination Council
FHFA	Federal Housing Finance Agency
FHLMC	Federal Home Loan Mortgage Corporation (Freddie Mac)
FICC	Fixed Income, Currencies and Commodities Department
FINMA	Swiss Financial Market Supervisory Authority
FLS	Funding for Lending Scheme
FMSA	Federal Agency for Financial Market Stabilisation
FNMA	Federal National Mortgage Association (Fannie Mae)
FOMC	Federal Open Market Committee
FPC	Financial Policy Committee
FPS	Faster Payments Service
FR	Federal Reserve
FRA	forward rate agreement
FRB	Federal Reserve Board
FRNs	floating rate notes
FROB	Fondo de Reestructuración Ordenada Bancaria
FRS	Federal Reserve System
FSA	Financial Services Agency (Japan)
FSA	Financial Services Authority (UK)
FSAP	Financial Services Action Plan
FSB	Financial Stability Board
FSCS	Financial Services Compensation Scheme
FSF	Financial Stability Forum
FSMA	Financial Services and Markets Act 2000
FSOC	Financial Stability Oversight Council
FSU	Former Soviet Union
FTP	fund transfer pricing
FXYCS	Foreign Exchange Yen Clearing System
G10	Group of Ten
GAFA	Google, Amazon, Facebook, Apple
GAFAA	Google, Amazon, Facebook, Apple, Alibaba
GAO	Government Accountability Office
GCC	Gulf Cooperation Council
GDP	gross domestic product
GNI	gross national income
GNMA	Government National Mortgage Association (Ginnie Mae)
GSE	government-sponsored enterprise
G-SIBs	global systemically important banks
G-SIFIs	global systemically important financial institutions
HHI	Herfindahl–Hirschman index
HICP	Harmonised Index of Consumer Prices
HKMA	Hong Kong Monetary Authority
HNWI	high net worth individual

HQLA	high-quality liquid assets
HTBEL	Help to Buy equity loan scheme
IADI	International Association of Deposit Insurers
IAIS	International Association of Insurance Supervisors
IASB	International Accounting Standards Board
IB	Islamic bank
IBFs	international banking facilities
ICAEW	Institute of Chartered Accountants in England and Wales
ICB	Independent Commission on Banking
ICBC	Industrial and Commercial Bank of China
ICICI	Industrial Credit and Investment Corporation of India
ICRG	International Country Risk Guide
IDB	Islamic Development Bank
IDIC	Indonesia Deposit Insurance Corporation
IFC	International Finance Corporation
IFI	Islamic financial institution
IFRS	International Financial Reporting Standards
IFSB	Islamic Financial Services Board
IIFM	International Islamic Financial Market
ILTROs	indexed long-term repo open market operations
IM	information memo
IMA	Investment Management Association
IMF	International Monetary Fund
IMM	International Money Market
IOSCO	International Accounting Standards Board
IoT	Internet of Things
IPAB	Instituto para la Protección al Ahorro Bancario
IPO	initial public offering
IRB	internal ratings based
IRR	investment risk reserve
IRS	interest rate swap
ISAs	individual savings accounts
ISD	Investment Services Directive
ISP	internet service provider
KA	key attributes
KDIC	Korea Deposit Insurance Corporation
KPIs	key performance indicators
KYC	know your customer
L gap	liquidity gap
LBO	leveraged buyouts
LBS RMS	London Business School Risk Measurement Service
LCBGs	large and complex banking groups
LCDS	loan credit default swaps
LCFIs	large and complex financial institutions
LCR	least-cost resolution
LCR	liquidity coverage ratio
LDA	loss distribution approach

LGD	loss given default
LGE	loss given event
LIBOR	London Interbank Offered Rate
LOC	letter of credit
LOLR	lender of last resort
LPFCs	limited-purpose finance companies
LRAC	long-run average cost
LRMC	long-run marginal cost
LSAPs	large-scale asset purchases
LTRO	longer-term refinancing operation
LTV	loan-to-value ratio
M gap	maturity gap
M&As	mergers and acquisitions
M1	narrow money
M2	intermediate money
M3	broad money
MAC	material adverse change
MAS	Monetary Authority of Singapore
MBBGs	Major British Banking Groups
MBS	mortgage-backed securities
MC	marginal cost
MCOB	mortgage conduct of business
MENA	Middle East and North Africa
MEW	mortgage equity withdrawal
MFIs	monetary financial institutions
MHFG	Mizuho Financial Group
MiFID	Markets in Financial Instruments Directive
MIP	macroeconomic imbalance procedure
ML	machine learning
MLA	mandated lead arranger
MMF	money market fund
MMOLR	market maker of last resort
MNC	multinational company
MPC	Monetary Policy Committee
MPs	Members of Parliament
MROs	main refinancing operations
MTFG	Mitsubishi Tokyo Financial Group
MUFJ	Mitsubishi UFJ Financial Group
MVE	market value of equity
NAB	National Australia Bank
NBB	National Bank of Belgium
NCAs	national competent authorities
NCB	national central bank
NCUA	National Credit Union Administration
NDTI	non-deposit taking institution
NEIO	new empirical industrial organisation
NIF	note issuance facilities

NII	net interest income
NIM	net interest margin
NIM-8	five Central and Eastern European countries and three Baltic States
NMSs	new member states
NOPAT	net operating profit after tax
NPLs	non-performing loans
NPLS	non-profit and loss sharing
NRAM	Northern Rock Asset Management
NSFR	net stable funding ratio
NYSE	New York Stock Exchange
OBA	open bank assistance
OBS	off-balance-sheet
OCC	Office of the Comptroller of the Currency
OECD	Organisation for Economic Co-operation and Development
OFHEO	Office of Federal Housing Enterprise Oversight
OFT	Office of Fair Trading
OIC	Organization of Islamic Cooperation
OIS	overnight index swap
OLA	Orderly Liquidation Authority
OMOs	open market operations
OMT	Outright Monetary Transactions
OSFs	operational standing facilities
OTC	over the counter
OTS	Office of Thrift Supervision
P&A	purchase and assumption
P&L	profit and loss
P2P	peer-to-peer
P/B	price to book value
PBC	People's Bank of China
PC	personal computer
PD	probability of default
PER	profit equalisation reserves
PIN	personal identification number
PISP	payment initiation services provider
PLL	provision for loan losses
PLS	profit and loss sharing
POP	persistence of profits
PPI	payment protection insurance
PPIP	public–private investment programme
PPT	partial property transfers
PRA	Prudential Regulation Authority
PSIA	profit-sharing investment accounts
PSPs	private sector purchasers
PwC	PricewaterhouseCoopers
QE	quantitative easing
QR	quick response
R&D	research and development

RAMSI	Risk Assessment Model of Systemic Institutions
RAP	resolvability assessment process
RAPM	risk-adjusted performance measurement
RAR	risk–asset ratio
RAROC	risk-adjusted return on capital
RBI	Reserve Bank of India
RBS	Royal Bank of Scotland
RBSG	Royal Bank of Scotland Group
REPO	repurchase agreement
RMBS	residential mortgage-backed securities
RMP	relative market power
ROA	return on assets
ROCHs	recognised overseas clearing houses
ROE	return on equity
ROIEs	recognised overseas investment exchanges
RPD	relative profit differences
RSA	rate-sensitive assets
RSL	rate-sensitive liabilities
RTGS	real-time gross settlement
S&LA	Savings and Loan Association
S&Ls	savings and loans
S&P	Standard & Poor's
SAMA	Saudi Arabian Monetary Agency
SBA	scenario-based approach
SCAP	Supervisory Capital Assessment Programme
SCDIS	*Shariah*-compliant deposit insurance schemes
SCP	structure-conduct-performance
SDG	sustainable development goals
SDGS	Single Deposit Guarantee Scheme
SDM	Single Deposit Guarantee Mechanism
SEE	South-Eastern Europe
SEPA	Single Euro Payments Area
SFT	securities financing transaction
SGP	Stability and Growth Pact
SHIBOR	Shanghai Interbank Offered Rate
SIFIs	systemically important financial institutions
SIFMA	Securities Industry and Financial Markets Association
SIVs	structured investment vehicles
SLS	special liquidity scheme
SMEs	small and medium enterprises
SMFG	Sumitomo Mitsui Financial Group
SMP	Securities Markets Programme
SMTB	Sumitomo Mitsui Trust Bank Ltd
SPV	special-purpose vehicle
SRB	Single Resolution Board
SRF	Single Bank Resolution Fund
SRM	Single Resolution Mechanism

SRR	special resolution regime
SRU	Special Resolution Unit
SSM	Single Supervisory Mechanism
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TAF	term auction facility
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer system
TARP	Troubled Asset Relief Program
T-bills	Treasury bills
T-bonds	Treasury bonds
TBTDA	too big to discipline adequately
TBTF	too big to fail
TD	top-down approach
TIP	targeted investment programme
TITF	too important to fail
TITF	too interconnected to fail
TLAC	Total Loss-Absorbing Capacity
TPO	temporary public ownership
TRS	total-return swaps
TSTF	too systemic to fail
UCITS	Directive Undertaking for Collective Investment in Transferable Securities
UKFI	UK Financial Investments Limited
UKPA	UK Payments Administration Ltd
URIA	unrestricted investment account
VaR	value at risk
WBC	Westpac Banking Corporation
WOCCU	World Council of Credit Unions
WSE	Warsaw Stock Exchange
WTO	World Trade Organization
YTD	year to date
YTM	yield to maturity

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GB	Great Britain (which consists of England, Wales and Scotland)
GR	Greece
HR	Croatia
HU	Hungary

IE	Ireland
IT	Italy
LT	Lithuania
LV	Latvia
MT	Malta
NL	the Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UAE	United Arab Emirates
UK	United Kingdom (which consists of Great Britain together with Northern Ireland)
US	United States (of America)

PART 1

Introduction to banking

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Chapter 1

What is special about banks?

Learning objectives

- To understand the role of financial intermediaries in the economy
- To understand lenders' and borrowers' different requirements and how banks can help to bridge such differences
- To understand how financial intermediaries reduce transaction, information and search costs
- To analyse the theories of financial intermediation

1.1 Introduction

The first question one may ask when reading this book is 'What is special about banks?' This chapter aims to offer some insights into the nature of the banking business and what makes banks 'special'. A bank is a financial intermediary that offers loans and deposits, and payment services. Nowadays banks also offer a wide range of additional services, but it is these functions that constitute banks' distinguishing features. Because banks play such an important role in channelling funds from savers to borrowers, in this chapter we use the concepts of 'bank' and 'financial intermediary' almost as synonyms as we review the role of banks and their main functions: size transformation, maturity transformation and risk transformation. The difference between banks and other financial intermediaries is introduced in Chapter 2. The second part of this chapter gives an overview of some important concepts in information economics as they apply to banking. The final sections present five theories to explain why banking exists and the benefits of financial intermediation.

1.2 The nature of financial intermediation

To understand how banks work, it is necessary to understand the role of financial intermediaries in an economy. This will help us to answer the question about why we need banks. Financial intermediaries' and financial markets' main role is to provide a mechanism by which funds are transferred and allocated to their most productive opportunities. A bank is

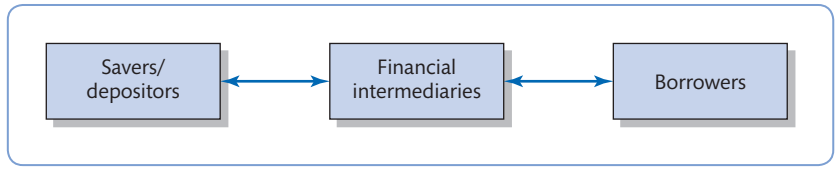


Figure 1.1 The intermediation function

a financial intermediary whose *core* activity is to provide loans to borrowers and to collect deposits from savers. In other words they act as *intermediaries* between borrowers and savers, as illustrated in Figure 1.1. By carrying out the intermediation function, banks collect surplus funds from savers and allocate them to those (both people and companies) with a deficit of funds (borrowers). In doing so, they channel funds from savers to borrowers thereby increasing economic efficiency by promoting a better allocation of resources. Arguably, savers and borrowers do not need banks to intermediate their funds: in **direct finance**, as shown in Figure 1.2, borrowers obtain funds directly from lenders in financial markets. A financial claim is a claim to the payment of a future sum of money and/or a periodic payment of money. More generally, a **financial claim** carries an obligation on the issuer to pay interest periodically and to redeem the claim at a stated value in one of three ways:

1 on demand;
2 after giving a stated period of notice;
3 on a definite date or within a range of dates.

Financial claims are generated whenever an act of borrowing takes place. Borrowing occurs whenever an economic unit's (individuals, households, companies, government bodies, etc.) total expenditure exceeds its total receipts. Therefore borrowers are generally referred to as **deficit units** and lenders are known as **surplus units**. Financial claims can take the form of any **financial asset**, such as money, bank deposit accounts, bonds, shares, loans, life insurance policies, etc. The lender of funds holds the borrower's financial claim and is said to hold a financial asset. The issuer of the claim (borrower) is said to have a **financial liability**. The borrowing–lending process illustrated in Figure 1.2 does not require the existence of financial intermediaries. However, two types of barriers can be identified to the direct financing process:

1 The difficulty and expense of matching the complex needs of individual borrowers and lenders.
2 The incompatibility of the financial needs of borrowers and lenders.

Lenders are looking for safety and liquidity. Borrowers may find it difficult to promise either.

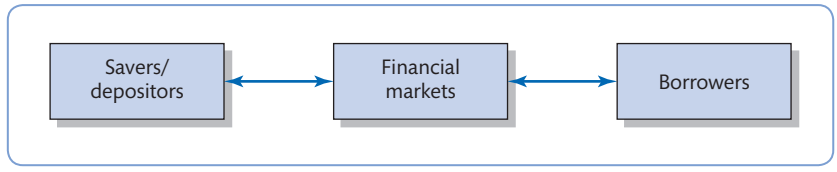


Figure 1.2 Direct finance

Lenders' requirements:

- The *minimisation of risk*. This includes the minimisation of the risk of default (the borrower not meeting repayment obligations) and the risk of assets dropping in value.
- The *minimisation of cost*. Lenders aim to minimise their costs.
- *Liquidity*. Lenders value the ease of converting a financial claim into cash without loss of capital value; therefore they prefer holding assets that are more easily converted into cash. One reason for this is the lack of knowledge of future events, which results in lenders preferring short-term to long-term lending.

Borrowers' requirements:

- Funds *at* a particular specified date.
- Funds *for* a specific period of time; preferably *long-term* (think of the case of a company borrowing to purchase capital equipment which will only achieve positive returns in the longer term or of an individual borrowing to purchase a house).
- Funds at the *lowest possible cost*.

In summary, the majority of lenders want to lend their assets for short periods of time and for the highest possible return. In contrast the majority of borrowers demand liabilities that are cheap and for long periods.

Financial intermediaries can bridge the gap between borrowers and lenders and reconcile their often-incompatible needs and objectives. They do so by offering suppliers of funds safety and liquidity by using funds deposited for loans and investments. Financial intermediaries help minimise the costs associated with direct lending – particularly **transaction costs** and those derived from **information asymmetries** (these concepts will be analysed in more detail in Section 1.4). Transaction costs relate to the costs of searching for a counterparty to a financial transaction;[1] the costs of obtaining information about them; the costs of negotiating the contract; the costs of monitoring the borrowers; and the eventual enforcements costs should the borrower not fulfil its commitments. In addition to transaction costs, lenders are also faced with the problems caused by asymmetric information. These problems arise because one party has better information than the counterparty. In this context, the borrower has better information about the investment (in terms of risk and returns of the project) than the lender. Information asymmetries create problems in all stages of the lending process. Transaction costs and information asymmetries are examples of market failures; that is, they act as obstacles to the efficient functioning of financial markets. One solution is the creation of organised financial markets. However, transaction costs and information asymmetries, though reduced, still remain. Another solution is the emergence of financial intermediaries. Organised financial markets and financial intermediaries co-exist in most economies; the flow of funds from units in surplus to units in deficit, in the context of direct and **indirect finance**, is illustrated in Figure 1.3.

Having discussed the advantages of financial intermediation over direct finance, it is necessary to point out that financial intermediaries create additional costs for borrowers and

[1] Transaction costs can be defined as the costs of running the economic system (Coase, 1937). In particular, it is common to distinguish between co-ordination costs (e.g. costs of search and negotiation) and motivation costs (e.g. costs due to asymmetric information and imperfect commitment). Transaction costs can be measured in time and money spent in carrying out a financial transaction.

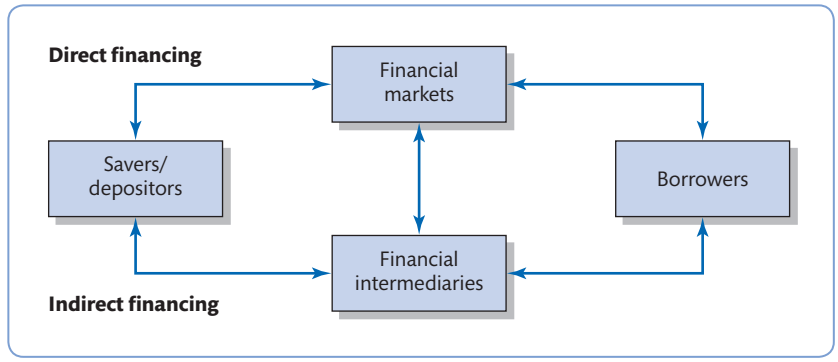


Figure 1.3 Direct and indirect finance

lenders who use their services. Therefore, in order to be able to state that intermediated finance is more advantageous than direct finance, it is necessary that the benefits of such activity outweigh the costs associated with intermediation.

The role of financial intermediation has now become more complex as financial intermediaries perform additional roles, such as brokerage services (i.e. buying and selling stocks and bonds for clients), leasing and factoring. Prior to the 2007–2009 financial turmoil, banks also engaged in a wide process of securitisation (i.e. the pooling and re-packaging of illiquid financial assets into marketable securities) thus creating an extra layer of intermediation, as illustrated in Figure 1.4. When financial intermediaries hold claims issued by other financial intermediaries, then an extra layer of financial intermediation is created. Nowadays, given the increased complexity of credit flows, it is not uncommon to have more than two layers of intermediation.

In the decade leading up to the 2007–2009 financial crisis, financial markets have also witnessed the rapid growth of a different form of financial intermediation, which has become known as **shadow banking**. The term 'shadow banking' was first used at the 2007 Jackson Hole Symposium, an annual symposium sponsored by the Federal Reserve Bank of Kansas City. The Financial Stability Board (2011c) defines shadow banking broadly as 'credit intermediation involving entities and activities outside the regular banking system'. This is, however, a very broad definition and both the scope and the economic relevance of shadow banking is still little understood. This has spurred an academic and policy debate on the role of banks in the financial system, and renewed the need to understand banks' operations, their

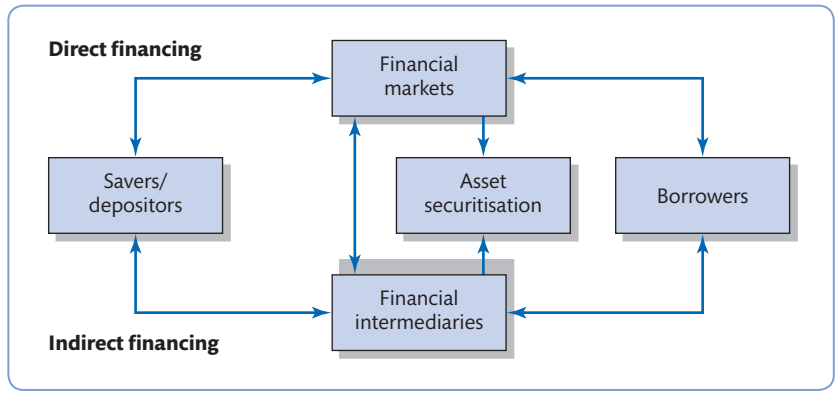


Figure 1.4 Modern financial intermediation

economic role, their risk management systems as well as the activities that are carried out outside the scope of the current regulatory framework. It is widely recognised that the two shadow banking activities that are most important economically and in terms of financial stability at present are securitisation and collateral intermediation (Claessens *et al.*, 2012). These issues will be discussed in more detail in Chapter 18.

1.3 The role of banks

To understand fully the advantages of the intermediation process, it is necessary to analyse what banks do and how they do it. We have seen that the main function of banks is to collect funds (deposits) from units in surplus and lend funds (loans) to units in deficit. Deposits typically have the characteristics of being small-size, low-risk and high-liquidity. Loans are of larger-size, higher-risk and illiquid. Banks bridge the gap between the needs of lenders and borrowers by performing a transformation function:

- size transformation;
- maturity transformation;
- risk transformation.

Size transformation

Generally, savers/depositors are willing to lend smaller amounts of money than the amounts required by borrowers. For example, think about the difference between your savings account and the money you would need to buy a house! Banks collect funds from savers in the form of small-size deposits and repackage them into larger size loans. Banks perform this size transformation function exploiting **economies of scale** associated with the lending/borrowing function, because they have access to a larger number of depositors than any individual borrower (see Section 1.4.2).

Maturity transformation

Banks transform funds lent for a short period of time into medium- and long-term loans. For example, they convert demand deposits (i.e. funds deposited that can be withdrawn on demand) into 25-year residential mortgages. Banks' liabilities (i.e. the funds collected from savers) are mainly repayable on demand or at relatively short notice. Meanwhile, banks' assets (funds lent to borrowers) are normally repayable in the medium to long term. Banks are said to be 'borrowing short and lending long' and in this process they are said to 'mismatch' their assets and liabilities. This mismatch can create problems in terms of **liquidity risk**, which is the risk of not having enough liquid funds to meet one's liabilities.

Risk transformation

Individual borrowers carry a risk of default (known as credit risk), which is the risk that they might not be able to repay the amount of money they borrowed. Savers, meanwhile, wish to minimise risk and prefer their money to be safe. Banks are able to minimise the risk of individual loans by diversifying their investments, pooling risks, screening and monitoring borrowers and holding capital and reserves as a buffer for unexpected losses. The tools and techniques used by banks to perform these transformations and to minimise the risks inherent with such transformations will be illustrated in Chapter 11.

1.4 Information economies

As discussed earlier, banks provide an important source of external funds used to finance business and other activities. One of the main features of banks is that they reduce transaction costs by exploiting scale and scope economies and often they owe their extra profits to superior information. Sections 1.4.1 and 1.4.2 look into information economies as they apply to the banking industry.

1.4.1 Transaction costs

Banks traditionally differ from other financial intermediaries for two main reasons: (1) bank liabilities (i.e. deposits) are accepted as a means of exchange and (2) banks are the only intermediaries that can vary the level of deposits and can create and destroy credit. Modern views on financial intermediation indicate as a crucial function of financial intermediaries the transformation of primary securities issued by firms (deficit units) into secondary securities that are more attractive to surplus units. In this context, financial intermediation can be explained in terms of reduction of transaction costs: secondary securities will be less risky, more convenient and more liquid than primary securities, because banks benefit from economies of scale in transaction technologies and are able to carry out a rational diversification of risks. This allows them to offer lower loan rates relative to direct financing. However, most bank assets are illiquid (non-negotiable) and this can be explained by issues relating to asymmetric information (see Section 1.4.3).

1.4.2 Economies of scale and economies of scope

Financial intermediaries reduce transaction, information and search costs mainly by exploiting economies of scale. By increasing the volume of transactions, the cost per unit of transaction decreases. Moreover, by focusing on growing in size, financial intermediaries are able to draw standardised contracts and monitor customers so that they enforce these contracts. They also train high-quality staff to assist in the process of finding and monitoring suitable deficit units (borrowers). It would be very difficult, time-consuming and costly for an individual to do so. Financial intermediaries can reduce risks by 'pooling', or aggregating, individual risks so that in normal circumstances, surplus units will be depositing money as deficit units make withdrawals. This enables banks, for instance, to collect relatively liquid deposits and invest most of them in long-term assets. Another way to look at this situation is that large groups of depositors are able to obtain liquidity from the banks while investing savings in illiquid but more profitable investments (Diamond and Dybvig, 1983).

Economies of scope refer to a situation where the joint costs of producing two complementary outputs are less than the combined costs of producing the two outputs separately. Let us consider two outputs, Q_1 and Q_2, and their separate costs, $C(Q_1)$ and $C(Q_2)$. If the joint cost of producing the two outputs is expressed by $C(Q_1)$, (Q_2), then economies of scope are said to exist if:

$$C(Q_1, Q_2) < C(Q_1) + C(Q_2) \tag{1.1}$$

This may arise when the production processes of both outputs share some common inputs, including both capital (for example, the actual building the bank occupies) and labour (such

as bank management). Consider, for example, the economies derived from the joint supply of both banking and insurance services. A bank might sell both mortgages and life insurance policies that go with them, therefore creating cross-selling opportunities for the bank. However, the literature indicates that economies of scope are difficult to identify and measure.

1.4.3 Asymmetric information

Information is at the heart of all financial transactions and contracts. Three problems are relevant:

- Not everyone has the same information.
- Everyone has less than perfect information.
- Some parties to a transaction have 'inside' information that is not made available to both sides of the transaction.

Such 'asymmetric' information can make it difficult for two parties to do business together, and this is why regulations are introduced to help reduce mismatches in information.

Transactions involving asymmetric (or private) information are everywhere. A government selling a bond does not know what buyers are prepared to pay; a bank does not know how likely a borrower is to repay; a firm that sells a life insurance policy does not know the precise health of the purchaser (even though they have a good idea); an investor that buys an equity in Apple does not know the full details about the company's operations and future prospects. These types of informational asymmetries can distort both firms' and users' incentives that result in significant inefficiencies.

Information is at the centre of all financial transactions and contracts. Decisions are made beforehand (*ex ante*) on the basis of less than complete information and sometimes with counterparties who have superior information with the potential for exploitation. In any financial system, information is not symmetrically distributed across all agents, which implies that different agents have different information sets. Put another way, full and complete information is not uniformly available to all interested parties. In addition, not all parties have the same ability to utilise the information that is available to them. In particular, parties have more information about themselves (including their intentions and abilities) than do others. The problem arises because information is not a free good and the acquisition of information is not a costless activity. If either were the case, there would never be a problem of asymmetric information.

Asymmetric information, and the problems this gives rise to, are central to financial arrangements and the way financial institutions behave to limit and manage risk. Information asymmetries, or the imperfect distribution of information among parties, can generate **adverse selection** and **moral hazard** problems as explained in Section 1.4.3.1. Another type of information asymmetry relates to the **agency costs** between the principal (e.g. bank) and agent (e.g. borrower). These issues are analysed in Section 1.4.3.2.

1.4.3.1 Adverse selection and moral hazard

One problem that often arises from asymmetric information is adverse selection. The better-informed economic agent has a natural incentive to exploit their informational advantage. Those who are uninformed should anticipate their informational handicap and behave accordingly. It is the interaction between the inclination of the informed to strategically manipulate and the anticipation of such manipulation by the uninformed that results in

distortion away from the 'first best' (the economic outcome in a setting where all are equally well informed). Adverse selection is a problem at the search/verification stage of the transaction (*ex ante*); it is sometimes referred to as the 'lemon' problem (Akerlof, 1970). In his famous study entitled 'Market for lemons', George Akerlof explains the consequences of asymmetric information in a situation where the buyer, and not the seller, does not know the quality of the commodity being exchanged. In this context, the vendor is aware that they are the only one knowing the true characteristics of the commodities and can exaggerate the quality. Conversely, the buyer can form an opinion on the quality of the commodities only after buying the commodity (i.e. *ex post*). Akerlof demonstrates that if there are a relatively high number of bad commodities in the market, the market will function poorly, if at all. A common example of this phenomenon is in the second-hand car market – here the sellers know whether or not their car is a lemon (a bad car) but the buyers cannot make that judgement without running the car. Given that buyers cannot tell the quality of any car, all cars of the same type will sell at the same price, regardless of whether they are lemons or not. The risk of purchasing a lemon will lower the price buyers are prepared to pay for a car, and because second-hand prices are low, people with non-lemon cars will have little incentive to put them on the market.

One possible solution to the adverse selection problem is to offer a warranty, as it would be viewed as a signal of quality. Hence '**signalling**' refers to actions of the 'informed party' in an adverse selection problem. The action undertaken by the less informed party to determine the information possessed by the informed party is called '**screening**' (for example, the action taken by an insurance company to gather information about the health history of potential customers).

Economic transactions often involve people with different information. In the context of financial markets, for example, those who buy insurance or take out bank loans are likely to have a better idea of the risks they face than the insurance company or bank. As such, it is often those who face the bigger risks who are more likely to want to buy insurance and those with the riskiest business proposals who are more likely to seek bank loans and therefore are more likely to be selected. Adverse selection in financial markets results in firms attracting the wrong type of clients; this in turn pushes up insurance premiums and loan rates to the detriment of lower-risk customers. Financial firms such as banks and insurers, therefore, seek to screen out/monitor such customers by assessing their risk profile and adjusting insurance premiums and loan rates to reflect the risks of individual clients.

In banking, adverse selection can occur typically as a result of loan pricing. As shown in Figure 1.5, the relationship between the return the bank can expect from a certain loan and the loan price is increasing and positive up to a certain point (for example, an interest rate of 6 per cent). Any prices above that level (shaded area in the figure) will decrease the expected return for the bank because of adverse selection: only the most risky borrowers (i.e. those with a low probability of repayment, such as speculators) will be ready to accept a loan at a very high price.

Another issue relating to information asymmetries is moral hazard (or hidden action). Superior information may enable one party to work against the interests of another. In general, moral hazard arises when a contract or financial arrangement creates incentives for parties to behave against the interest of others. For example, moral hazard is the risk that the borrower might engage in activities that are undesirable from the lender's point of view because they make it less likely that the loan will be repaid and thus harm the interest of the lender. A classic example is the use of funds originally borrowed for a 'safe' investment project

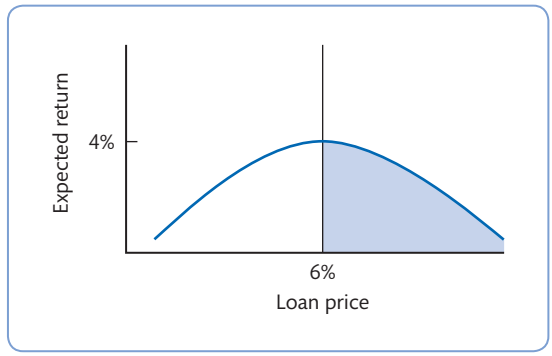


Figure 1.5 Adverse selection in loan pricing

(a car purchase, a home improvement), which are then gambled in a high-risk project (for example, invested in a 'get rich quick' scheme). Thus for a bank, moral hazard occurs after the loan has been granted (*ex post*) and is associated with the monitoring and enforcement stages. Those that obtain some form of insurance may take greater risks than they would do without it because they know they are protected, so the insurer may get larger claims than expected. Examples of moral hazard in banking relate to: deposit insurance and the lender of last resort function of the central bank (see Chapter 6).

Monitoring is required whenever there are the problems of moral hazard and adverse selection. A standard example often given is the case of bank loans where lenders screen out excessively high risks, and regularly monitor the performance of the borrowers by obtaining various types of financial information – for example, companies are often required to submit periodic reports detailing the performance of their business. In addition, for loans to large companies, there are credit rating agencies (like Standard & Poor's and Moody's) that provide information on firm performance and credit ratings, which is an estimate of the amount of credit that can be extended to a company or person without undue risk (See Table 4.4 Credit risk ratings: Moody's and Standard & Poor's). Banks also send inspectors to firms to monitor their progress. However, it is particularly difficult for consumers/investors to monitor financial firms to see how they are performing and what they are doing with their deposits or investments. This is one reason why we have regulators to monitor financial firm behaviour.

1.4.3.2 Principal–agent problems

Financial transactions often create **principal–agent problems** of one sort or another. This is also related to the problem of incentive structures in that the central issue is how a principal is able to rely on the agent acting in the interests of the principal employing them rather than their own selfish interest and against those of the principal. The problem arises because the agent often has superior information and expertise (which may be the reason the principal employs them). The agent can choose their behaviour after the contract has been established, and because of this the agent is often able to conceal the outcome of a contract. Agency problems also arise because the agent cannot be efficiently or costlessly monitored. Unless these problems can be solved, the agency costs involved can act as a serious deterrent to financial contracting with resultant losses. The challenge is to create financial contracts or arrangements that align the interests of the principal and the agent.

A typical example of principal–agent problem refers to a situation of separation of ownership and control in a firm. Managers in control (*the agents*) may act in their own interest rather than in the interest of shareholders (*the principals*) because the managers have less incentive to maximise profits than shareholders.[2] A firm acting in the interest of the shareholders has an incentive to undertake investments that benefit the shareholders at the expense of creditors. However, as observed by Jensen and Meckling (1976) the assumption that managers act in the best interest of the shareholders is questionable. As an agent of the shareholders, the manager can do many things that may not be in the best interest of the shareholders. For example, managers may select low-risk investment projects with a view toward protecting their positions and reputations. To summarise, the principal (the shareholder) is unable to completely control the agent's behaviour. If it were possible to costlessly observe the agent's action, there would be no moral hazard. It is obvious that the principal anticipates the agent's behaviour. Therefore, the principal attempts to design a contract that aligns the agent's incentives with their own.

The example above shows that principal–agency issues are inextricably linked to information asymmetry and moral hazard. The behaviour of contracting parties (counterparties) needs to be monitored after a contract has been agreed to ensure that information asymmetries are not exploited by one party against the interest of the other, and also because frequently a fiduciary relationship (a relationship of trust and confidence) is created by a financial contract. In both cases, parties need to be monitored to ensure that their behaviour is consistent with both their interests. A special characteristic of many financial contracts is that the value (for example, the future returns on an investment; the amount of loan repayments to a bank – some of which may suffer from default; returns on long-term savings products) cannot be observed or verified at the point of purchase, and that the post-contract behaviour of a counterparty determines the ultimate value of the contract. This also creates a need for monitoring. In addition, monitoring is needed because many financial contracts are long-term in nature and information acquired before a contract is agreed may become irrelevant during the course of the contract as circumstances and conditions change. Above all, the value of a contract or financial product cannot be ascertained with certainty at the point the contract is made or the product is purchased. This often distinguishes financial contracts from other economic contracts such as purchases of goods. While the need for monitoring is accepted, it is an expensive activity and parties involved need to balance the costs and benefits of such monitoring.

As the cost of monitoring principal–agent relationships can be expensive and difficult for the market to resolve, public regulatory agencies help perform this task – for instance, they monitor financial service firms to minimise conflicts between principals (financial firms) and agents (customers).

1.4.3.3 The free-rider problem

One general solution to information problems is for those involved in financial transactions to invest in information. However, this is not a costless activity and free-rider problems may emerge as, in some cases, no one party can appropriate the full value of the costly information acquired.

[2] Note that shareholders in the US are referred to as stockholders. Also it is useful to remember that equities or ordinary shares in the UK are referred to as common stock in the US.

Free-rider problems occur when people who do not pay for information take advantage of the information that other people have paid for. For example, you purchase information that tells you which firms are good and which are bad. You believe the purchase is worthwhile because you can buy securities of good firms that are undervalued so you will gain extra profits. But free-rider investors see that you are buying certain securities and will want to buy the same.

Governments could produce information to help investors distinguish good from bad firms and provide it to the public free of charge. The main drawback is that this action may be politically difficult. Moreover it never completely eliminates the problem. By encouraging bank lending, a bank can profit from the information it produces by making private loans (i.e. avoiding free-rider problems).

1.4.3.4 Relationship and transaction banking

In credit markets one way to overcome agency and adverse selection problems is for the parties to enter a *relational contract*. Relational contracts are informal agreements between the bank and the borrowers sustained by the value of future relationships. Modern financial intermediation theory has emphasised the role of banks as relationship lenders: this is when banks invest in developing close and long-term relationships with their customers. Such relations improve the information flow between the bank and the borrower and thus are beneficial to both parties. If the customer has a 'history' (e.g. they have borrowed previously from the bank over a long period of time), then the bank's screening and monitoring costs will be much lower compared with the cost associated with new customers. Meanwhile, borrowers will find it easier to get future loans at (relatively) low rates of interest.

The benefits of **relationship banking** over **transactional banking** arise from a reduction of agency problems by long-term loan contracts and the use of information reusability over time. Relationship banking improves upon information flow thus mitigating information asymmetries and allows for flexibility.

The literature (see Boot, 2000; Boot and Thakor, 2014) has indicated that relationship banking can be sustained under high competitive pressures. In other words, the informational savings derived from relationship lending can be considered as a primary source of competitive advantage for existing banks over new market participants; this is because by drawing relational contracts, banks can 'isolate' themselves from competition from other banks and/or non-bank financial intermediaries.

Our discussion above seems to suggest that the creation of strong links between banks and companies might be beneficial to both businesses. Indeed in bank-based systems such as Japan and Germany, banks hold equity stakes in companies they lend to and banks in turn have members on the Board of Directors of these companies. In Anglo-Saxon countries (such as the United States and the United Kingdom) such arrangements are typically not allowed. Intense disintermediation process that has characterised the financial and banking markets, coupled with the increasingly common *transaction banking*, has started to challenge the importance of banks as relationship lenders. Transaction banking involves a pure funding transaction where the bank essentially acts as a 'broker'; an example is that of a mortgage loan made by a bank and then sold on to an investor in the form of a security. This process is known as securitisation and it is explained in more detail in Chapter 18. It is obvious that in transaction banking there is no relationship between the parties and no flexibility in the contract terms.

1.5 Why do banks exist? Theories of financial intermediation

There are five theories that explain why financial intermediation (banking) exists. These theories relate to: delegated monitoring; information production; liquidity transformation; consumption smoothing; and the role of banks as a commitment mechanism.

1.5.1 Financial intermediation and delegated monitoring

One of the main theories put forward as an explanation for the existence of banking relates to the role of banks as 'monitors' of borrowers. Since monitoring credit risk (likelihood that borrowers default) is costly, it is efficient for surplus units (depositors) to delegate the task of monitoring to specialised agents such as banks. Banks have expertise and economies of scale in processing information on the risks of borrowers and, as depositors would find it costly to undertake this activity, they delegate responsibility to the banks. One of the most relevant studies explaining why banks exist on the basis of contract theory is by Diamond (1984), according to whom **delegated monitoring** on behalf of small lenders provides the *raison d'être* of banking:

> An intermediary (such as a bank) is delegated the task of costly monitoring of loan contracts written with firms who borrow from it. It has a gross cost advantage in collecting this information because the alternative is either duplication of effort if each lender monitors directly or a free-rider problem in which case no lender monitors. Financial intermediation theories are generally based on some cost advantage for the intermediary. Schumpeter assigned such a delegated monitoring role to banks.
>
> (Diamond, 1984, p. 393)

Diamond's study investigates the determinants of delegation costs and develops a theoretical model in which a financial intermediary (typically a bank or an insurance company) has net cost savings relative to direct lending and borrowing. Diamond's approach is essentially developed around two interconnected factors:

1. Diversification among different investment projects; this is crucial in explaining why there is a benefit from delegating monitoring to an intermediary that is not monitored by its depositors.
2. The size of the delegated intermediary that can finance a large number of borrowers.

Since usually diversification will increase with the number of bank loans, larger delegated intermediaries will generate higher economies of scale in monitoring and this will allow for greater portfolio diversification than any individual lender could achieve.

One issue that arises, however, relates to who is 'monitoring the monitor'. Surplus units (depositors) can reduce monitoring expense if the costs of monitoring the intermediary are lower than the costs of surplus units lending direct to borrowers and therefore directly incurring the monitoring costs. As a financial intermediary increases in size, it can commit to offer deposit facilities to surplus units only if the intermediary is undertaking the appropriate monitoring activity.

1.5.2 Information production

If information about possible investment opportunities is not free, then economic agents may find it worthwhile to produce such information. For instance, surplus units could incur substantial search costs if they were to seek out borrowers directly. If there were no banks, then there would be duplication of information production costs as surplus units would individually incur considerable expense in seeking out the relevant information before they committed funds to a borrower. An alternative is to have a smaller number of specialist agents (banks) that choose to produce the same information.

Banks have economies of scale and other expertise in processing information relating to deficit units – this information may be obtained upon first contact with borrowers but in reality is more likely to be learned over time through repeated dealings with the borrower. As banks build up this information (e.g. the knowledge of credit risk associated with different types of borrowers – 'customer relationships') they become experts in processing this information. As such they have an information advantage and depositors are willing to place funds with a bank knowing that these will be directed to the appropriate borrowers without the former having to incur information costs.

1.5.3 Liquidity transformation

Banks provide financial or secondary claims to surplus units (depositors) that often have superior liquidity features compared to direct claims (like equity or bonds). Banks' deposits can be viewed as contracts that offer high liquidity and low risk that are held on the liabilities side of a bank's balance sheets. These are financed by relatively illiquid and higher-risk assets (e.g. loans) on the assets side of the bank's balance sheet. It should be clear that banks can hold liabilities and assets of different liquidity features on both sides of their balance sheet through diversification of their portfolios. In contrast, surplus units (depositors) hold relatively undiversified portfolios (e.g. deposits typically have the same liquidity and risk features). The better banks are at diversifying their balance sheets, the less likely it is that they will default on meeting deposit obligations.

1.5.4 Consumption smoothing

The three aforementioned theories are usually cited as the main reasons why financial intermediaries (typically banks) exist. However, studies have suggested that banks perform a major function as consumption smoothers. Namely, banks are institutions that enable economic agents to smooth consumption by offering insurance against shocks to a consumer's consumption path. The argument goes that economic agents have uncertain preferences about their expenditure and this creates a demand for liquid assets. Financial intermediaries in general, and banks in particular, provide these assets via lending and this helps smooth consumption patterns for individuals.

1.5.5 Commitment mechanisms

Another theory that has developed aims to provide a reason as to why illiquid bank assets (loans) are financed by demand deposits that allow consumers to arrive and demand liquidation of those illiquid assets. It is argued that bank deposits (demand deposits) have evolved

as a necessary device to discipline bankers. To control the risk-taking propensity of banks, demand deposits have evolved because changes in the supply and demand of these instruments will be reflected in financing costs and this disciplines or commits banks to behave prudently (ensuring banks hold sufficient liquidity and capital resources).

1.6 The benefits of financial intermediation

Financial intermediation, as noted previously, is the process of channelling funds between those who wish to lend or invest and those who wish to borrow or require investment funds. Financial intermediaries act as principals, creating financial assets and liabilities.

A wide range of financial institutions are engaged in financial intermediation, including banks, insurance and pension firms, securities houses and others. Many of the services offered by financial institutions also include both intermediation and non-intermediation activities (e.g. payment services, fund management services and so on).

An important distinguishing characteristic of financial intermediation is that financial assets and liabilities are created. In the case of a bank deposit, the nature of the claims and liabilities created is usually straightforward. The depositor has a claim for a given amount of money, perhaps to be repaid on demand, while the bank has a matching liability to repay a given amount of money. If the bank on-lends deposits it has a claim against the borrower for a given amount of money, to be repaid (with interest) at a given point in time in the future. The borrower, naturally, has a liability to repay that sum of money with interest on the specified date.

The significance of financial intermediation within the financial system is best appreciated in terms of the benefits that it generates. These benefits accrue to *ultimate lenders (surplus units)*, to *ultimate borrowers (deficit units)* and to *society as a whole*.

1.6.1 The benefits to ultimate lenders (surplus units)

These may be summarised as follows:

- *Greater liquidity* is generally achieved by lending to a financial intermediary rather than directly to an ultimate borrower.
- *Less risk is involved*, due to the pooling of risk inherent with financial intermediation, the improved risk assessment that intermediaries are able to undertake and the portfolio diversification that can frequently be achieved. This reduction in risk may be reflected in guaranteed interest rates on deposits with a financial intermediary.
- *Marketable securities* may be issued as the counterpart to deposits with a financial intermediary. For example, a certificate of deposit (CD) is a type of time deposit where the bank issues a certificate that a deposit has been made (this is particularly common in the US). The certificate of deposit can then be sold in the market whenever an individual/firm needs cash. Hence depositors, instead of waiting until maturity of the securities, may sell them in the market to regain the cash. This clearly enhances the liquidity of the depositors' funds (in the broadest sense).
- *Transaction costs* associated with the lending process are likely to be reduced significantly, especially where straightforward deposit facilities are utilised.

- The *lending decision is simplified*, since there are fewer lending opportunities to financial intermediaries than there are ultimate borrowers. In addition, the assessment of the opportunities for lending to intermediaries is generally a simpler procedure than the assessment of the opportunities for lending to ultimate borrowers.

1.6.2 The benefits to ultimate borrowers (deficit units)

These may be summarised as follows:

- Loans will generally be available for *a longer time period* from financial intermediaries than from the ultimate lenders.
- Financial intermediaries will generally be prepared to grant loans of *larger amounts* than will ultimate lenders.
- Using financial intermediaries will generally involve *lower transaction costs* than would be incurred if borrowers had to approach ultimate lenders directly.
- The *interest rate* will generally be *lower* when borrowing from financial intermediaries, compared with borrowing directly from ultimate lenders. As we have seen, financial intermediaries, through the minimisation of information costs and the diversification of risk, can actually reduce the cost of intermediation.
- When borrowing from financial intermediaries, there is a greater likelihood that loans will be *available when required*.

1.6.3 The benefits to society as a whole

Financial intermediation is not only beneficial to borrowers and lenders, but it is considered likely to cause:

- A *more efficient utilisation of funds within an economy*, since the evaluation of lending opportunities will be improved.
- A *higher level of borrowing and lending to be undertaken*, due to the lower risks and costs associated with lending to financial intermediaries.
- An *improvement in the availability of funds to higher-risk ventures*, due to the capability of financial intermediaries to absorb such risk. High-risk ventures are widely considered to be important for creating the basis of future prosperity for an economy.

1.7 Conclusion

This chapter has analysed the key features of financial intermediation. Banks, as other financial intermediaries, play a pivotal role in the economy, channelling funds from units in surplus to units in deficit. They reconcile the different needs of borrowers and lenders by transforming small-size, low-risk and highly liquid deposits into loans which are of larger size, higher risk and illiquid (transformation function). We discussed the main reasons banks have advantages in the intermediation process relating to matching the needs of ultimate lenders (depositors) and borrowers. In particular, we explored the concepts of transaction costs, economies of scale and economies of scope.

The relevance of information costs and the notion of information asymmetries were also introduced. These are costs due to imperfect distribution of information among parties and can be defined as situations in which one or more of the parties to a transaction does not have all or part of the relevant information needed to tell whether the terms of the contract are mutually acceptable and/or are being met. Situations of this kind give rise to adverse selection and moral hazard problems; another type of information asymmetry relates to the agency costs between the principal (bank) and agent (borrower).

The reasons for the existence of banks are then related to five theories that concern: delegated monitoring; information production; liquidity transformation; consumption smoothing; and the role of banks as a commitment mechanism. The chapter concludes with an overview of the main benefits of financial intermediation.

Key terms

Adverse selection
Agency costs
Deficit unit
Delegated monitoring
Direct finance
Economies of scale
Economies of scope
Financial asset
Financial claim
Financial liability
Indirect finance
Information asymmetries
Liquidity risk
Moral hazard
Principal–agent problems
Relationship banking
Screening
Shadow banking
Signalling
Surplus unit
Transactional banking
Transaction costs

Key reading

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REVISION QUESTIONS AND PROBLEMS

1.1 What is the role of financial intermediaries in an economy?
1.2 What is special about banks?
1.3 How do lenders' and borrowers' requirements differ? How can financial intermediaries bridge the gap between them?
1.4 Explain how banks can lower transaction costs.
1.5 Explain the relevance of information asymmetries in the intermediation process.
1.6 How do adverse selection and moral hazard affect the bank lending function? How can banks minimise such problems?
1.7 How are banks affected by agency problems?
1.8 Describe the main theories put forward to explain the existence of financial intermediaries.
1.9 Explain the concept of delegated monitoring.
1.10 What are the costs and benefits of financial intermediation?

Chapter 2

Bank activities and services

Learning objectives

- To understand what modern banks do
- To describe the main services offered by banks
- To understand the importance of the payment system
- To understand the growing relevance of FinTech
- To identify the impact of FinTech on the banking industry

2.1 Introduction

This chapter offers some insights into the nature of the banking business. It reviews the main services offered by banks (loans and deposits, and payment services) as well as a wide range of additional services, such as insurance and investment services. In this context, special attention is given to the significant changes in payment systems with an extensive discussion on the major instruments and services that modern banks provide to their customers from plastic money to e-banking. The last section provides a brief introduction to FinTech and its growing importance for the banking industry.

2.2 What do banks do?

We have seen in Chapter 1 that financial intermediaries channel funds from units in surplus to units in deficit. In order to better understand how banks work, we need to examine their assets and liabilities. Table 2.1 summarises a typical retail bank balance sheet (details of banks' balance sheet and income structure are presented in Chapter 9).

For traditional retail banks, the main source of funding is customer deposits (reported on the liabilities side of the balance sheet); this funding is then invested in loans, other investments and fixed assets (such as buildings for the branch network), and it is reported on the

Table 2.1 A simplified bank balance sheet

Assets	Liabilities
Cash	Customer deposits
Liquid assets	Equity
Loans	
Other investments	
Fixed assets	
Total	**Total**

assets side of the balance sheet. The difference between total assets and total liabilities is the bank capital (equity). Put very simply, banks make profits by charging an interest rate on their loans that is higher than the one they pay to depositors. As with other companies, banks can raise funds by issuing bonds and equity (shares), and saving from past profits (retained earnings). However, the bulk of their money comes from deposits; it is this ability to collect deposits from the public that distinguishes banks from other financial institutions, as explained in Section 2.3.

2.3 Banks and other financial institutions

Banks are **deposit-taking institutions (DTIs)** and are also known as monetary financial institutions (MFIs). Monetary financial institutions play a major role in a country's economy as their deposit liabilities form a major part of a country's money supply and are therefore very relevant to governments and central banks for the transmission of monetary policy (see Chapter 5). Banks' deposits function as money; as a consequence, an expansion of bank deposits results in an increase in the stock of money circulating in an economy. All other things being equal, the money supply, that is the total amount of money in the economy, will increase.

The monetary function of bank deposits is often seen as one of the main reasons why DTIs are subjected to heavier regulation and supervision than their **non-deposit-taking institution (NDTI)** counterparts (such as insurance companies, pension funds, investment companies, finance houses and so on).

One further feature that distinguishes monetary financial institutions from other financial corporations lies in the nature of financial contracts: deposit holdings are said to be *discretionary*, in the sense that savers can make discretionary decisions concerning how much money to hold and for how long. Depositors are free to decide the frequency and amount of their transactions. Meanwhile, holding assets from other financial institutions requires a contract which specifies the amount and frequency of the flow of funds. For example, the monthly contributions to a pension fund or to an insurance provider are normally fixed and pre-determined. Therefore the flow of funds in and out of other financial intermediaries is described as *contractual*.

Figure 2.1 illustrates the classification of financial institutions in the UK. However, it is important to keep in mind that there is no unique, universally accepted classification of financial intermediaries. Furthermore, distinctions are becoming blurred as deregulation, financial conglomeration, advances in information technology and financial innovation, increased

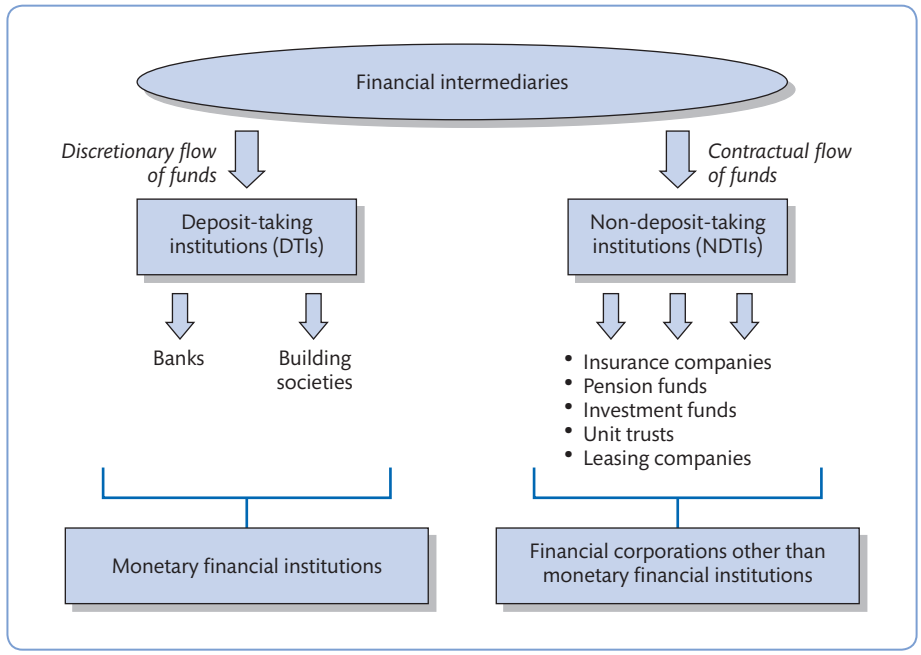


Figure 2.1 Classification of financial intermediaries in the UK

competition, globalisation and the fallout from the global financial crisis of 2007–2009, have all contributed to change the industry.

All countries have regulations that define what banking business is. For example, in all EU countries banks have been permitted to perform a broad array of financial services activity since the early 1990s, and since 1999 both US and Japanese banks are also allowed to operate as full-service financial firms. A good example of the breadth of financial activities that banks can undertake is given by the UK's Financial Services and Markets Act 2000, which defines the range of activities that banks can engage in, including:

- accepting deposits;
- issuing **e-money** (or digital money), i.e. electronic money used on the internet;
- implementing or carrying out contracts of insurance as principal;
- dealing in investments (as principal or agent);
- managing investments;
- advising on investments;
- safeguarding and administering investments;
- arranging deals in investments and arranging regulated mortgage activities;
- advising on regulated mortgage contracts;
- establishing and managing collective investment schemes (for example investment funds and mutual funds);
- establishing and managing pension schemes.

Conglomeration has become a major trend in financial markets, emerging as a leading strategy of banks. This process has been driven by technological progress, international

consolidation of markets and deregulation of geographical or product restrictions. In the EU, financial conglomeration was encouraged by the Second Banking Directive (1989), which allowed banks to operate as **universal banks**, enabling them to engage, directly or through subsidiaries, in other financial activities, such as financial instruments, factoring, leasing and investment banking. In the US, the passing of the Gramm–Leach–Bliley Act in 1999 removed the many restrictions imposed by the Glass–Steagall Act of 1933. Since 1999 US commercial banks can undertake a broad range of financial services, including investment banking and insurance activities. Similar reforms have taken place in Japan since 1999. As banks nowadays are diversified financial services firms, when we think about banks, we should now think more about the particular type of financial activity carried out by a specialist division of a large corporation rather than the activity of an individual firm.

In the immediate aftermath of the 2007–2009 financial crisis, a growing number of academics and policy makers debated on whether the size and permissible activities of financial institutions should be re-constricted due to increased systemic risk. Narrowing the scope of large financial institutions would require the re-introduction of firewalls like those imposed by the Glass–Steagall Act to limit the risks that depositors are exposed to. Post-crisis regulatory reforms in the UK, for example, have included the 'ring-fencing' of retail banking activities, following the recommendations of the Independent Commission on Banking (ICB), also known as the Vickers Commission (see Chapter 13).

BOX 2.1 UNIVERSAL BANKING: AN OPTIMAL MODEL OF BANKING?

A universal bank is an institution which combines its strictly commercial activities with operations in market segments traditionally covered by investment banks, securities houses and insurance firms, and this includes such business as portfolio management, brokerage of securities, underwriting, mergers and acquisitions. A universal bank undertakes the whole range of banking activities. Under the universal banking model, banking business is broadly defined to include all aspects of financial service activity – including securities operations, insurance, pensions, leasing and so on. Under this model, a bank will be able to serve the diverse needs of its customers and generate fee and commission income, which is not subject to the same kind of credit, maturity and other risks associated with income derived from lending and trading activities. Because of the easy access and convenience universal banks offer, they tend to attract customers along a very wide spectrum of financial sophistication and risk appetite. Some of these customers go to banks to conduct very basic banking transactions, such as cash withdrawal, remittances, applications for loans, credit cards, etc. However, as universal banks seek to expand fee and commission income in distributing investment products, there may be a risk that some banks or their frontline staff could become overly keen to market products to customers without sufficient regard to the customers' own circumstances.

One example of this type of behaviour is the PPI (payment protection insurance) mis-selling in the UK. PPI was designed to cover repayments in certain circumstances, for example when people were made redundant or couldn't work due to an accident, illness, disability or death. However, PPI was often mis-sold: the Financial Conduct Authority (FCA) reports that as many as 64 million PPI policies have been sold in the UK, mostly between 1990 and 2010, some as far back as the 1970s. Critics say the banking industry began aggressively selling PPI to customers after realising that the policies were highly profitable, and the sale of such policies

Box 2.1 Universal banking: an optimal model of banking? (*continued*)

was typically encouraged by large commissions. Several banks have now been fined by the Financial Conduct Authority for such practices and required to compensate customers.

A different but related issue with universal banking concerns a business model where banks are allowed to conduct their own proprietary trading and market making in addition to trading on behalf of their customers and offering other traditional banking services and products. The key concern here is that universal banks are able to leverage their cheaper sources of funds obtained from retail deposits and invest in risky projects to raise the return on equity and to meet ever-increasing shareholders' expectations. As banks expanded their risk-taking activities, both on balance sheet and on balance sheet, they became too large and complex. In addition, they exposed retail depositors to very high levels of risk-taking. This issue is particularly relevant in the US and UK, where commercial and investment banks were historically separated. It is less relevant in other European countries, where there is a long tradition of universal banking.

The global financial crisis and the subsequent international debate have prompted regulatory authorities to reflect on whether universal banking remains an optimal model of banking. Ten years on from the crisis, the answer to the universal banking debate seems to be in favour of the universal banking model. Its supporters argue that diversification can be beneficial for banks and financial stability. If one area of business underperforms, others can make up for it, making the whole business more resilient. It can also be argued that banks that are diversified in terms of businesses or geographical operations are better positioned to offer customers the depth and breadth of services these customers require, particularly as economic activities become ever more specialised and global.

In addition to economies of scale derived from size, universal banking also enables economies of scope. Broadening customer access to financial products enables increased flows of savings through the system, facilitating efficient investment and economic growth. These advantages are not to be dismissed lightly. Several European countries have a long tradition of universal banking and most banks did not turn into aggressive risk-takers, although the potential danger exists.

Regulators must ensure that banks offer their retail customers a high degree of protection. Banks must take extra care in marketing and distributing investment products to their customers.

2.4 Banking services

Modern banks offer a wide range of financial services (Figure 2.2), including:

- payment services;
- deposit and lending services;
- other financial services;
- trade finance and cross-border services.

The following sections offer an overview of payment services, deposit and lending services and other financial services. Trade finance and cross-border services will be discussed in Chapter 4.

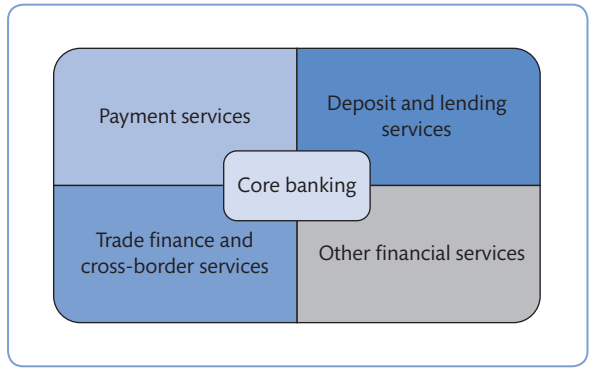


Figure 2.2 Banks' core activities

2.4.1 Payment services

An important service offered by banks is that they offer facilities that enable customers to make payments. A **payment system** can be defined as any organised arrangement for transferring value between its participants. Heffernan (2005) defines the payment systems as a by-product of the intermediation process, as it facilitates the transfer of ownership of claims in the financial sector. These payment flows reflect a variety of transactions: for goods and services as well as financial assets. Some of these transactions involve high-value transfers, typically between financial institutions. However, the highest number of transactions relates to transfers between individuals and/or companies. If any of these circulation systems failed, the functioning of large and important parts of the economy would be affected. Banks play a major role in the provision of payment services. Payments services can be either paper-based or electronic and an efficient payments system forms the basis of a well-functioning financial system. In most countries the retail payments systems are owned and run by the main banks (see also Section 3.6.1.1 on payment services).

For personal customers the main types of payments are made by writing cheques from their current accounts (known as 'checking accounts' in the US) or via debit or credit card payments. In addition, various other payment services are provided including giro (or credit transfers) and automated payments such as direct debits and standing orders. Payments services can be either paper-based or electronic and an efficient payments system forms the basis of a well-functioning financial system. In most countries the retail payments systems are owned and run by the main banks. Note that the importance of different types of cashless payments varies from country to country.

2.4.1.1 Cheques

Despite the rise of the 'cashless society' (see Box 2.2), **cheques** are still widely used as a means of payment for goods and services. If individual A buys goods and gives a cheque to individual B, it is up to B to pay the cheque into their own bank account. Individual B's bank then initiates the request to debit individual A's account. Individual A's bank authorises (clears) the cheque and a transfer of assets (settlement) then takes place. Cheque payments are known as debit transfers because they are written requests to debit the payee's account. Although not all accounts come with a cheque book, the vast majority do and in some countries (such as the UK) they are provided for free.

Nowadays cheques are primarily used to pay small businesses and bills although in this latter case discounts are frequently available if alternative methods are chosen, such as the direct debit. Cheques are often refused in shops, because of the risks that they may bounce back if not covered with enough liquidity in the payees' current account. Shops may ask for a cheque guarantee card that guarantees the cheque up to a certain amount; however the relative importance of these cards is fading and, for example, in the UK in June 2011 they were phased out. This move was part of a broader plan of the UK Payments Council (the organisation that sets strategy for UK payments) to close the central cheque clearing by the target date of 2018. This plan provoked reactions from various groups that would have been affected by the move, such as consumers' groups, organisations representing the elderly, charities (who receive a large proportion of their donations by cheque) and other bodies. After a Treasury enquiry in July 2011 the Payment Council abandoned the plan to phase out cheques and announced that cheques will continue for 'as long as customers need them'. Nonetheless, cheque usage has been steadily declining, both in value and in volume, as illustrated in Figure 2.3.

2.4.1.2 Cashless Payments

The choice of how to pay is nowadays wider than ever. In general terms, we can define a **cashless payment** as a payment made without need of physical money. Typically these payments are made by transferring money electronically, either via bank transfer or payment cards. In addition, recent developments include mobile wallets and QR codes (see Figure 2.4). The payment landscape is increasingly complex, due to the entry of new market participants and new technologies. New entrants include the large tech companies, such as Google, Amazon, Apple and Facebook, as well as smaller and innovative providers. Emerging technologies include artificial intelligence (AI), distributed ledger technology (DLT) and cloud computing. In what follows, we will briefly discuss the most commonly used methods of payment.

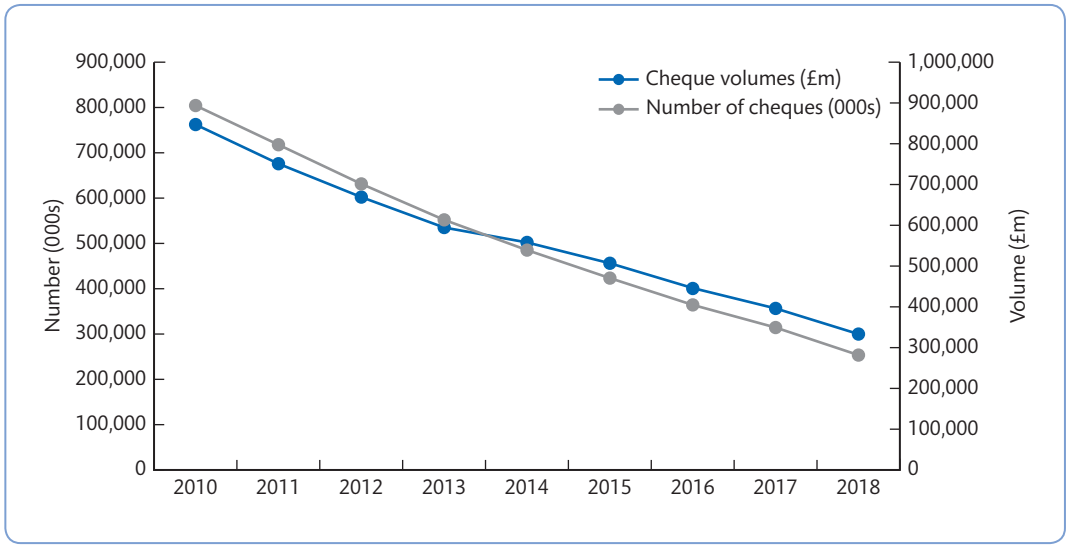


Figure 2.3 Cheque transactions in the UK

Source: Authors' elaborations, data from www.ukfinance.org.uk



Figure 2.4 The way we pay

Cashless payments via bank transfer

- **Credit transfers** are payments where the customer instructs their bank to transfer funds directly to the beneficiary's bank account. Consumers use bank transfer payments to pay invoices or to send payment in advance for products ordered.
- **Standing orders** are instructions from the customer (account holder) to the bank to pay a fixed amount at regular intervals into the account of another individual or company. The bank has the responsibility for remembering to make these payments. Only the account holder can change the standing order instructions. Some banks will accept instructions by telephone or internet banking.
- **Direct debits** are originated by the supplier that supplied the goods/service and the customer has to sign the direct debit. The direct debit instructions are usually of a variable amount and the times at which debiting takes place can also be either fixed or variable (although usually fixed). If a payment is missed, the supplier can request the missed payment on a number of occasions. If the payments are continually missed over a period of time, the customer's bank will cancel the direct debit. Many retail customers pay utility bills (electricity, gas, water bills) in this way.

Card payments

Card payments include credit cards, debit cards, cheque guarantee cards, travel and entertainment cards and shop cards. Technically, **plastic cards** do not act themselves as a payment mechanism – they help to identify the customers and assist in creating either a paper or electronic payment.

- *Credit cards* provide holders with a pre-arranged credit limit to use for purchases at retail stores and other outlets. The retailer pays the credit card company a commission on every sale made via credit cards and the consumer obtains free credit if the bill is paid off before a certain date. If the bill is not fully paid off then it attracts interest. Visa and MasterCard are the two most important bank-owned credit card organisations. Credit cards have become an increasingly important source of consumer lending particularly in the UK and US. For example, in 1971 there was only one type of credit card (Barclaycard) available in the UK and by the early 2000s there were around 1,300. The use of cashless instruments has continued growing in the first two decades of the new millennium, although the use of cash remains persistent in many countries (see Box 2.2).

- *Pre-paid cards* are a form of pay-as-you-go credit card onto which you need to first deposit your money, then use it to pay for goods or services. Unlike normal credit or debit cards, you only spend the amount that you put on the card. Pay as you go credit cards are becoming increasing popular for several reasons. The requirements for approval are very basic (in some cases it is as simple as being a UK resident) and are therefore available to people with poor credit history or to those who cannot legally obtain credit cards (for example, teenagers). They are also used by people who wish to be more in control of their finances, for example using as specified, pre-charged amount, as holiday money.
- *Pre-paid non-bank cards* are used to access certain services (for example, telephony services, including voice and data). Other examples are gift cards, a convenient way to offer money without delivering cash to the beneficiary. Popular gift cards include Amazon cards and App Store cards, among others.
- *Travel and entertainment cards (or charge cards)* provide payment facilities and allow repayment to be deferred until the end of the month, but they do not provide interest-free credit. Unlike credit cards, all bills have to be repaid at the end of the month and no rollover is allowed. Typically, unpaid balances are charged at a higher interest rate than for credit cards, to discourage late payment.
- *Debit cards* are issued directly by banks and allow customers to withdraw money from their accounts. They can also be used to obtain cash and other information when used through automated teller machines (ATMs).
- *Contactless payments* are increasingly available to consumers. Contactless card payments are debit or credit card payments that are processed without the need for the card to be placed in a reader or have a PIN (personal identification number) entered. Contactless payments are becoming increasingly common on a range of devices in addition to cards, including wearable devices (such as watches and wristbands) and mobile devices, such as smartphones and tablets. Contactless card payments are a faster option when paying, as there is nothing to sign and no numbers to enter. They are used for small transactions – currently up to £45 in the UK and are processed simply by holding a card or other device up to a card reader. The underlying technology for all of these devices is the same: the contactless device contains an antenna so that when it is touched against a contactless terminal, it securely transmits purchase information.
- **E-wallets** or digital wallets are electronic devices that store a user's payment details in one location. Money can be deposited in the digital wallet prior to any transactions or, in other cases, an individual's bank account can be linked to the digital wallet. Digital wallets can be used in conjunction with mobile payment systems, which allow customers to pay for purchases with their smartphones. Examples of e-wallets are Google Pay, Apple Pay and similar softwares.

Ever since the first general-purpose charge card was introduced in the early 1950s, commentators have been predicting the 'cashless society'. However, the use of cash has proven persistent in many countries. Therefore, understanding the demand for cash and non-cash payment methods is an important policy concern. The last decade has seen a fast technological innovation and the adoption of new generation technologies, as illustrated in Figure 2.5. Nevertheless, there are still important cross-country differences and different countries are adopting different technologies. In addition, in some countries, the use of cash remains predominant, due to a combination of cultural factors, an inadequate infrastructure and security concerns. While a cashless society has many benefits, in terms of faster and more

Table 2.2 A cashless society: advantages and disadvantages

	Advantages	Disadvantages
For customers	• Cheaper, faster and more secure transactions	• Can lead to bad spending habits
	• Easier to track payments	• Can make it harder to budget
	• Helps building a credit history and improve credit scores	• Privacy issues
		• More at the risk of financial fraud
	• Low environmental impact	• Might negatively affect those on low income or with financial difficulties
For society	• Reduction in tax avoidance	• Vulnerable to IT risks and cyber-attacks
	• Reduction in crime	• Reduces financial inclusion as older customers, less educated customers or those with physical and cognitive disabilities might feel more confident using cash
	• Supports economic activity and fosters growth	• Costs are often passed on to retailers and consumers
	• Supports online commerce	• Can negatively impact community spirit and high street shopping
	• Fosters financial inclusion, by enabling easy money transfers	• Insufficient coordination among providers, regulators and governments may lead to inefficiencies

secure transactions, it can also disadvantage certain individuals within a population, such as people with restricted or no access to financial services, older customers and customers with physical or cognitive disabilities. Table 2.2 summarises the pros and cons of a cashless society (see Box 2.2).

Figure 2.5 shows recent statistics and a forecast of the next-generation payment technology market worldwide, from 2015 to 2022. The next-generation payment technology market

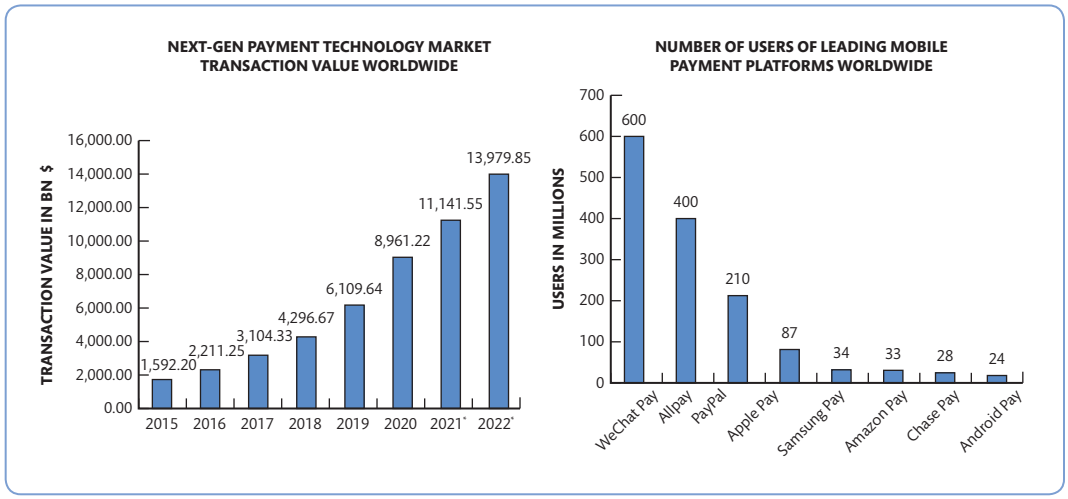


Figure 2.5 'Next gen' payment technologies

Source: Data available at **www.statista.com/statistics/788318/worldwide-payment-technology-transaction-value-market-size/**

* Estimates

BOX 2.2 CORONAVIRUS ACCELERATES SHIFT AWAY FROM CASH

Andrew Crook restarted his fish and chip shop in Chorley, Lancashire, earlier this month after a coronavirus-induced lockdown, but his till remained closed. "I have taken no cash since I opened — and I love it," he said. Mr Crook is one of many high street operators from corner shops and takeaways to launderettes and hairdressers that have long relied on hard cash to keep their businesses running. However, spurred by government guidance that recommends contactless card payments rather than cash as businesses reopen, this is changing fast. And the shift may outstay the virus. "It's much more hygienic and easier accounting wise without," he said, adding that card transactions had been steadily growing since he started taking them seven years ago. "I can't see how offering cash-only transactions can be viable for any business after this." The effects are being felt through the banking system. ATM transaction volumes fell as much as 62 per cent year on year at the start of the UK lockdown, according to data from Link, which runs the UK's cash machine network. Volumes have picked up slightly over the past week as more businesses began to reopen, but Link chief executive John Howells said there would not be much more of a bounce back.

"We will probably end down about 30 to 40 per cent," Mr Howells said. He added that many reluctant consumers were "learning how to use digital alternatives" and were happy with the change. There is a similar trend in many European countries, where cash use has declined significantly during the pandemic. The daily value of cash withdrawals from ATMs fell 40 per cent after the Irish government introduced lockdown measures. The decline in the UK was not as precipitous as some countries — cash volumes in Spain dropped as much as 90 per cent — although withdrawals in the US and Russia spiked amid signs of cash hoarding. Tellingly for the future, bankers said cash volumes have not bounced back to pre-Covid levels in countries such as Austria, which has been among the first to reopen consumer-facing sectors such as bars and restaurants.

"We all knew there was going to come a point where society was virtually cashless and we'd have to work really hard to include everyone," said Natalie Ceeney, a former civil servant and

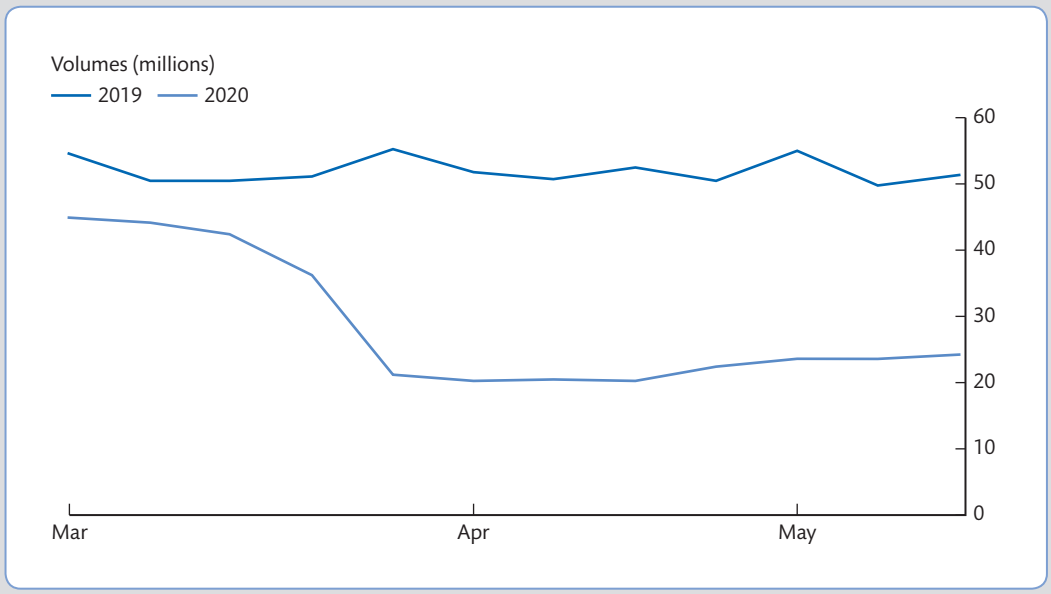


Figure 2.6 ATM transactions crash in the UK

Box 2.2 Coronavirus accelerates shift away from cash (*continued*)

banker who led an industry review into the future of cash last year. "When we finished our review a year ago we thought it would be in 10 to 15 years; Covid might have accelerated that to next year." A decade ago, more than 60 per cent of payments were made using notes and coins. But debit cards overtook cash in 2017. Before the pandemic, bank lobby group UKFinance predicted cash would make up less than 10 per cent of payments by 2028 — now such estimates are being revised. The virus has fuelled trends that already had momentum. Notably the shift to online retail, as people stayed at home, and relied on internet shopping to get them through the crisis. The lockdown in response to coronavirus hit areas of the economy that traditionally account for much of cash payments: retail, pubs and restaurants, and travel. Even as businesses in these sectors reopen following the easing of the lockdown, bank executives predict cash will remain scarce.

The UK government has told businesses to encourage people to pay by card rather than hand over notes and coins to help prevent the spread of the virus. Some retailers said the move would be a necessity anyway: while early concerns about the risk of spreading coronavirus through handling notes has been played down, retailers report that there is still a reluctance among customers to use cash. Some village stores have even reintroduced a 'tick' system, where people pay for their goods at the end of a month based on an electronic ledger — methods that have not been used for decades since shopkeepers kept large thick bound ledgers of what was owed and by who.

"The pandemic has accelerated already detailed discussions about maintaining the role of cash for those that need it," said Stephen Jones, chief executive of UK Finance, pointing to how this would shape the infrastructure around wholesale cash distribution and cash access. Cash machines do not need to be refilled as frequently, he said. Vans that had been booked to transport cash around the country have instead been offered to help deliver resources for the pandemic response. "Banks and financial institutions have worked hard to keep cash stocks at the right level to meet demand during this period," said Mr Jones. "It's too early to understand what the full impact of Covid-19 and lockdown will be on the use of cash. But there will always be a role for this method of payment — it will continue to be needed."

The shortfall in cash volumes also poses problems. Mr Howells said the sudden drop in usage could make it unsustainable to continue providing

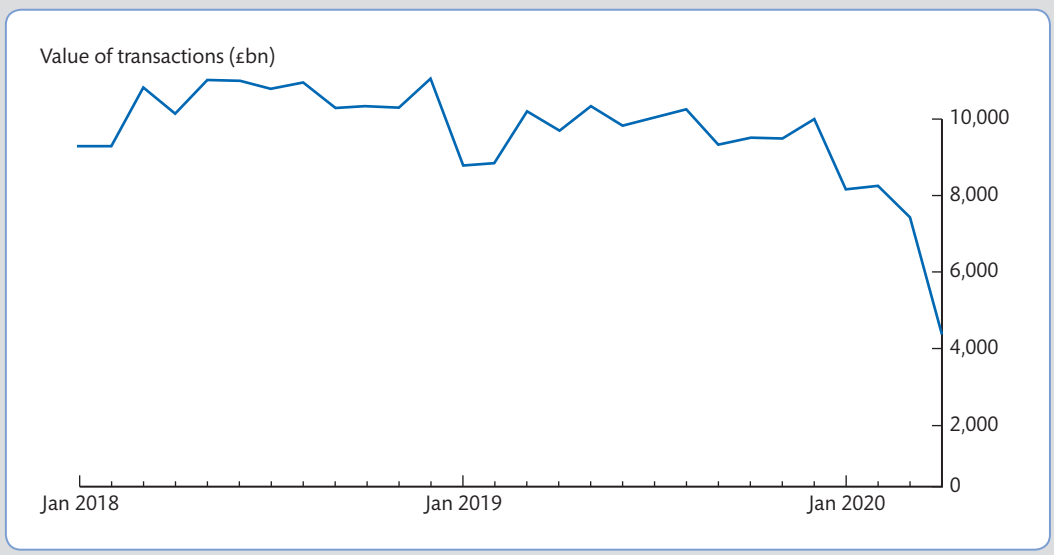


Figure 2.7 UK goes cashless during lockdown

Box 2.2 Coronavirus accelerates shift away from cash (*continued*)

access to cash for the millions of consumers who still depend on it. "When you suddenly halve the volumes, that means the business models of 40 or 50 companies can't possibly stay the same — it's just economically not possible," said Mr Howells. "We are going to have changes; Link's concern is if there isn't some degree of co-ordination then what will happen is the quieter and more remote places will lose access."

The UK's cash infrastructure costs about £5bn a year to run, according to a 2019 review of the sector, with high fixed costs such as dozens of warehouses used to store and distribute coins and notes. Ms Ceeney said the government guidance over contactless payments also risked excluding some of the most vulnerable members of society. "Cash acceptance has been a minor part of the debate up to now but will increasingly be a focus, there is no reliable data in the UK on cash acceptance but anecdotally we can all see around us an awful lot of shops saying 'contactless only'."

Banks and ATM providers have been locked in a dispute over how to fund the cash machine network since before the pandemic hit. Marc Terry, managing director at Cardtronics, the world's largest ATM operator, said: "It's a bit of a self-fulfilling prophecy that we're moving towards cashless when in fact what's happening is we're creating it by depriving people of the ability to make a choice."

Customers will ultimately have their say about whether the likes of Mr Crook and the fish and chip industry can limit options on cash payments. Older people in particular will typically want to feel notes and coins in their pockets, bankers said. Mr Terry said some small businesses that initially reopened from lockdown without accepting cash were already changing course after finding some customers refuse to use cards. "As the lockdown has eased they realised they're leaving money on the table, shops rely on every single pound that comes through the door."

FT

Source: Megaw, N. and Thomas, D. (2020) 'Coronavirus accelerates shift away from cash', *Financial Times*, 27 May.
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includes EMV (Europay, Mastercard and Visa) chip, QR (quick response) code, and near-field communication (NFC)/contactless payment systems. The NFC segment is currently growing at the highest rate due to its adoption in mobile handsets and wearables; however, EMV (named after its developers, Europay, MasterCard and Visa) chips are expected to dominate the market by 2022.

2.4.2 Deposits and lending services

In addition to payment services, personal banking includes the offer of a broad range of **deposit and lending services**. These are summarised as follows:

- *Current or checking accounts*, which typically pay no (or low) rates of interest and are used mainly for payments. Banks offer a broad range of current accounts tailored to various market segments and with various other services attached. As an example, Figure 2.8 illustrates how a typical current account can be used in the UK.
- *Time or savings deposits*, which involve depositing funds for a set period of time for a predetermined or variable rate of interest. Banks offer an extensive range of such savings products, from standard fixed term and fixed deposit rate to variable term with variable rates. All banks offer deposit facilities that have features that are a combination of time and current accounts whereby customers can withdraw their funds instantly or at short

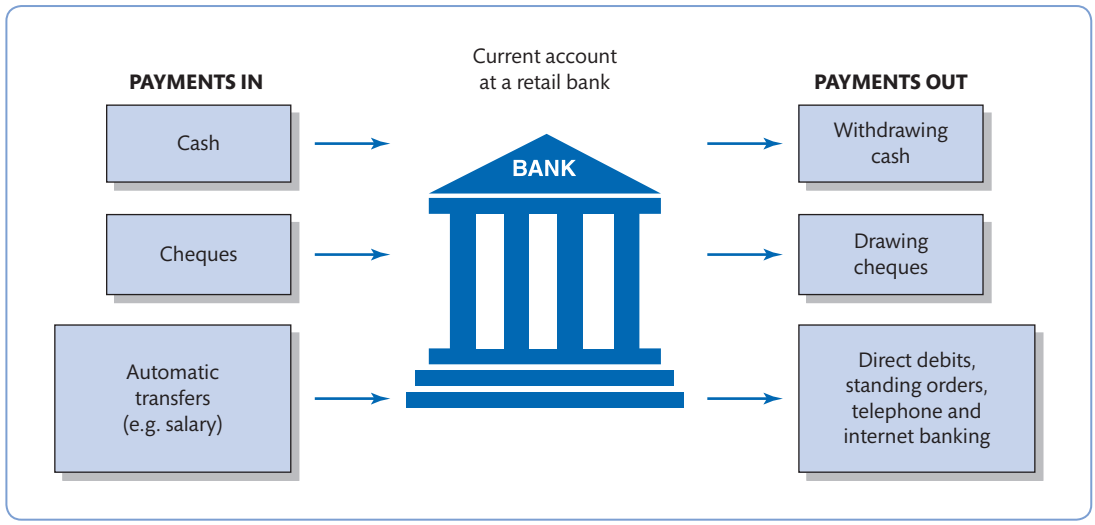


Figure 2.8 Typical current account usage

notice. Typically deposits that can be withdrawn on demand pay lower rates than those deposited in the bank for a set period.

- *Consumer loans and mortgages* are commonly offered by banks to their retail customers. Consumer loans can be unsecured (i.e. no collateral is requested; such loans are usually up to a certain amount of money and for a short to medium time period: for example, in the UK unsecured loans are up to £25,000 and repaid over five years) or secured on property (typically from £20,000 to £100,000 and repaid over ten years) and interest rates are mainly variable (but can be fixed). In addition banks of course offer an extensive array of mortgage products for the purchase of property. The main types of UK mortgages (which typically extend for 20–25 years) include: *variable rate* (interest payments vary relative to a benchmark rate such as the bank's standard lending rate or those determined by outside bodies such as the Bank of England's base rate); *fixed rate* (rates are fixed for a set period, usually 2–5 years, and then revert to variable rate); *capped* (rates vary but a cap is placed on the maximum rate paid over a specified period); *discount mortgages* (where rates vary but are discounted at a few percentages below a benchmark rate over a period – e.g. 1 per cent discount to the base rate over the first two years); and *cashback mortgages* (where those taking out the mortgage receive a single lump sum or cashback generally based on the value of the loan). Mortgages can also be obtained in foreign currency, for the purchase of overseas properties, and also for 'buy-to-let' property.

  Alternative mortgage products, that is mortgages that are different from the traditional principle and interest repayment schedule, have been identified as some of the culprits of the 2007 sub-prime crisis (mainly the adjustable rate mortgages – ARM – which earned the nickname of 'toxic mortgages'). However, research by Cocco (2013) argues that because of their lower initial mortgage payments relative to loan amount, they may be a valuable tool for households that expect higher and more certain future labour income, and that wish to smooth consumption over the life-cycle. The size and shape of the mortgage market has changed considerably over the last decade since the global financial crisis, as new prudential rules designed to protect both borrowers and banks came into force. At the

same time, the UK residential mortgage market has seen significant government intervention to stimulate new home building and support first-time buyers, particularly through the Help to Buy equity loan scheme (HTBEL), which was launched in 2013 to help those with small deposits buy new homes. However, the scheme is due to end in 2023, with a potentially negative impact upon new house building and ownership.

Although the full effect of the Covid-19 health crisis on the housing market is yet to be seen, the first six months of 2020 have seen a decrease in both mortgage applications and mortgage approvals, as both lenders and borrowers are still dealing with the economic impact of the lockdown.

2.4.3 Investment, pensions and insurance services

- **Investment products** offered to retail customers include various securities-related products: mutual funds (known as unit trusts in the UK), investment in company stocks and various other securities-related products (such as savings bonds). In reality, there is a strong overlap between savings and investment products and many banks advertise these services together.
- **Pensions and insurance services** are nowadays widely offered by many banks. Pension services provide retirement income (in the form of annuities) to those contributing to pension plans. Contributions paid into the pension fund are invested in long-term investments with the individual making contributions receiving a pension on retirement. The pension services offered via banks are known as private pensions to distinguish them from public pensions offered by the state. Usually there are tax advantages associated with pensions contributions as most governments wish to encourage individuals to save for their retirement. Insurance products protect individuals (policyholders) from various adverse events. Policyholders pay regular premiums and the insurer promises compensation if the specific insured event occurs. There are two main types of insurance – life insurance and general (or property and casualty) insurance. The latter is insurance that does not involve death as the main risk. It includes home, travel, medical, auto and various other types of insurance. Banks offer both life and non-life insurance products with the latter mainly being travel, property, mortgage repayment and other types of protection. In the UK, there has also been substantial growth in income protection insurance (insurance that replaces earnings if individuals are unable to work) and critical illness insurance (which covers medical costs and/or income).
- *Payment protection insurance* (also known as PPI) is a type of insurance sold with loans, credit cards, mortgages and other types of credit. It was designed to meet the cost of repayments should customers become unemployed or ill. On some loans, the whole cost of the PPI premium was added upfront to the amount borrowed. On others, including mortgages, borrowers mostly paid for PPI by monthly instalments. Most customers were pressurised into taking out the policy, which was presented as a necessary condition to obtain credit (House of Commons, 2016). This resulted in the UK's largest consumer mis-selling scandal, which resulted in lenders collectively settling claims amounting to almost £50bn (see also Box 2.3). While the financial industry insists a scandal of the proportion of the PPI mis-selling could not happen again, regulators and consumers groups worry that the progress achieved could reverse during an economic recession. Retail banks' basic

profitability is low, and regulators fear an increased drive to generate income from new products, particularly investment products.

Where could the next PPI scandal arise? It might not be the big banks; other financial intermediaries are currently under the regulators' close watch. For example, payday lending (a type of short-term high-interest borrowing) grew substantially since the global financial crisis, as large banks became increasingly reluctant to lend to high-risk borrowers. In 2018, Wonga, the UK largest payday lender, collapsed as it was inundated with complaints from former customers. Another sector that might be susceptible to mis-selling is the insurance sector, particularly pension policies. UK regulators fear a major mis-selling scandal as customers who have transferred out of final-salary pension schemes might have received poor advice.

BOX 2.3 AFTER PPI, WHAT COULD BE THE NEXT BANKING MIS-SELLING SCANDAL?

When Matthew started working for one of the UK's biggest banks in the late 1990s, he didn't think there was anything wrong with selling payment protection insurance. Soon, the pressure to sell policies to people who didn't need, want or understand the cover they were signing up for made him feel ill. "There were often times I would go down the back lane behind the branch and be physically sick because I was so frightened about going into work," says Matthew, who asked the FT not to use his real name as he still works with Lloyds Banking Group. The short-term result was a cut-throat sales culture that saw stories like Matthew's repeated in thousands of bank branches across the country. The most successful account managers were rewarded with bonuses, booze and all expenses paid holidays. The long-term result was the UK's largest consumer mis-selling scandal. In those two decades, Lloyds has put aside £20bn to settle potential mis-selling

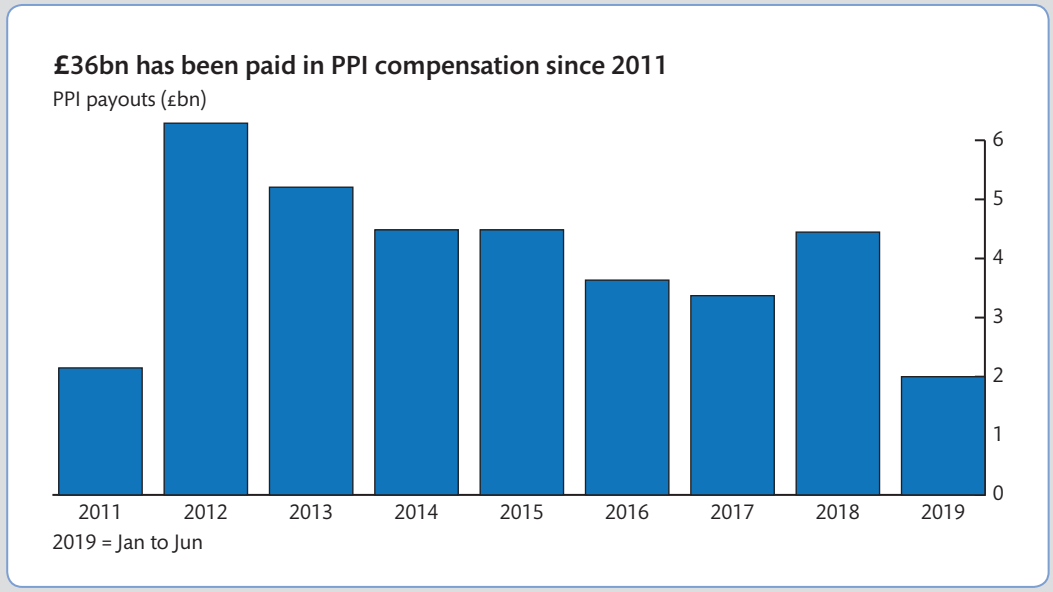


Figure 2.9 PPI payouts

Source: FCA

Box 2.3 After PPI, what could be the next banking mis-selling scandal? (*continued*)

claims, topping a list of UK lenders who collectively expect the PPI scandal to cost them close to £50bn. With the passing of a final deadline for compensation claims on Thursday evening, the finance world hopes to draw a line under the scandal. Bankers are privately keen to say they have learnt their lessons and cleaned up their act. Yet this week, one of the UK's most senior financial regulators shared concerns that banks needed "a generation" to fix the cultural issues that led to such rampant mis-selling.

Jonathan Davidson, director of supervision for retail and authorisations at the Financial Conduct Authority, told the FT that while lenders had made genuine efforts to reform, he was concerned that progress could be reversed if a recession increased pressure on their main sources of income. Today's competitive banking landscape has parallels with the 1990s and early 2000s when prices for many basic products and services were falling to unsustainably low levels. Unwilling to lose market share by raising prices, lenders instead pushed staff to cross-sell more profitable products like PPI at any cost. Some insist a problem on the scale of PPI could never happen again. Nevertheless, regulators, consumer groups, and the claims management companies that sprang up in the wake of PPI are already eyeing several new areas that could prove to be the next consumer mis-selling scandal.

Payday loans

PPI set a precedent — much maligned by executives and investors — that firms could be retroactively punished for historic practices judged to be unfair, even if they weren't against any rules at the time. Rob James, a portfolio manager and financial services analyst at Merian Global Investors, says: "It is a bit of a known unknown — we know that things could happen but we don't know when or where. My worry spreads a little wider than the banking system now." That precedent of retroactive punishment is already wreaking havoc on the UK's high-cost short-term lending sector, which has provided a lucrative — but temporary — alternative source of income for claims management companies as PPI compensation tails off. Payday lending grew rapidly in the aftermath of the financial crisis as mainstream banks became reluctant to lend to riskier borrowers, but firms such as Wonga were criticised for extending loans with interest rates as high as 5,800 per cent. The FCA introduced a cap on charges in 2015. At the time, regulators assumed the cap would force some particularly exploitative or inefficient firms out of business, but expected more mature lenders to be able to ride out the disruption. However, the sector has since been inundated with complaints about unaffordable loans issued under the previous regulatory regime.

The Financial Ombudsman Service has been sympathetic to historic complaints, prompting a 130 per cent increase in the past financial year. Furthermore, the FOS charges companies a £550 processing fee for every complaint it handles beyond the first 25 each year, regardless of the outcome. The cost of dealing with the influx of claims from CMCs has been a major factor in the collapse of Wonga and others — showing the huge drain of their consumer redress operations. Revenues in the financial services claims management sector increased almost sixfold between 2009/10 and 2017/18, from £104m to £600m. Now the PPI deadline has passed, claims managers are seeking a new target. Several hundred claims management firms closed ahead of the PPI deadline, discouraged by more stringent regulations that came into force this year, but there are still 750 companies seeking authorisation from the FCA.

Banking and investment

They may no longer be sending endless text messages about PPI compensation, but the claims managers are still seeking to profit from mis-sold financial products, including investments. Their aggressive tactics have provoked anger from many within the banking industry. John McFarlane, former chairperson of Barclays, was criticised last year for claiming that the companies had "turned portions of Britain into fraudsters" by encouraging spurious claims. He says his earlier comments had been "sensationalised", but maintained that the PPI process had encouraged too many illegitimate claims. "There is no doubt that banks were at fault for the way they exploited this additional source of income and for not putting in place adequate procedures to ensure people weren't exploited," Mr McFarlane says,

Box 2.3 After PPI, what could be the next banking mis-selling scandal? (*continued*)

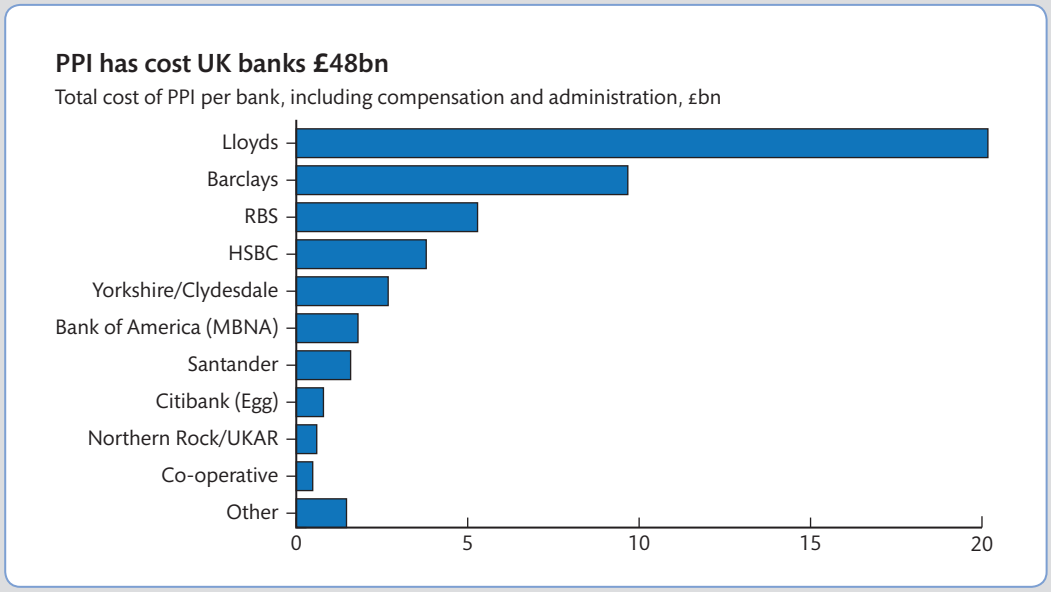


Figure 2.10 Total cost of PPI per bank, including compensation and administration (£bn)

Source: New City Agenda

but "we've moved on now". Consumers may be sceptical of such promises, but the threat posed by claims managers means financial companies now face a major economic deterrent against bad behaviour. The history of PPI is littered with opportunities for banks to have limited the eventual size of the scandal. The first legal judgment against mis-selling came as early as 1993, but the case was kept from the public under a 10-year confidentiality clause that allowed lenders to keep on profiting. When complaints picked up pace after 2005, the banks resisted at every stage until they were defeated in a high court battle in 2011. Natalie Ceeney, former head of the Financial Ombudsman Service, was involved in this battle. "Crudely, the economics were that a bank could do a lot of harm — and make a lot of profit — but only a tiny percentage of customers would complain," she says. To satisfy those customers, "all you'd need to do [was] give them their money back. But that's all changed. If something happens now, there is a huge claims industry ready to pounce and a regulator willing to fine. Banks can't take that risk any more." Ms Ceeney says the change in approach can be seen in the way banks responded to more recent criticism over products such as packaged current accounts. Complaints from customers who were sold needless add-ons such as travel insurance alongside their current accounts began to spike in 2015, but rather than resist as they did with PPI, banks were quick to clamp down before it could become a major problem. A partner at one financial litigation specialist acknowledges that packaged accounts had not proven as lucrative for complainants as initially hoped, but says claims managers will continue to target banks in several other areas.

"The problem with retail banking is they don't make enough cash from the basics, so they will always feel pressured to come up with new products," the partner says. Radio adverts that previously exhorted listeners to check if they had PPI are increasingly focusing on mis-sold investment products and Isas. Customers could be eligible for compensation if they lost money on an investment if their bank or financial adviser did not properly explain the risks. Recent investment scandals, such as the £236m collapse of London Capital & Finance, have also raised important regulatory questions about how well retail investors understand the risks of products such as mini-bonds

Box 2.3 After PPI, what could be the next banking mis-selling scandal? (*continued*)

Table 2.3 Top ten financial scandals in UK retail banking

Type of misconduct	Provisions by UK banks (£bn)	Years provisions were incurred
PPI mis-selling	48.5	2010-19
Interest rate hedging products mis-selling	4.9	2012-15
Endowment mortgages mis-selling	1.9	2002-06
Mortgages	1.6	2002-19
Packaged bank account mis-selling	1.6	2014-18
Consumer Credit Act breaches	1.0	2013-15
Investment products and advice mis-selling	0.9	2003-15
Pensions mis-selling	0.6	2000-02
Unfair unauthorised overdraft charges	0.6	2006-07
ID theft and card protection insurance mis-selling	0.5	2014-15
Other issues / miscellaneous	5.4	2000-16
Total	**67.4**	**2000-17**

Source: New City Agenda

and Innovative Finance Isas. Many LCF investors wrongly assumed their mini-bond investments carried some degree of regulatory protection. While LCF was regulated by the FCA, mini-bonds are not, meaning they are not typically covered by the Financial Services Compensation Scheme (FSCS) unless people have invested through official advice. However, correspondence previously seen by the FT showed that even the FSCS did not spell out this nuance correctly to some bondholders, who are trying to claim compensation after being told they were protected by the guarantee scheme to the tune of £50,000. The FCA has also been highly critical of the ways Innovative Finance Isas, backed by peer-to-peer investments, have been marketed to those with cash Isas. It is now considering placing restrictions on which products unadvised retail investors can buy over the internet. The litigation partner says he also has concerns that many banking customers had paid high fees for the promise of actively managed stocks and shares Isas which carried on charging high fees when they moved to more passive investment strategies. "I think a lot of the future claims will have different characteristics to PPI," he adds. "With products like investments, the volumes will be less, but the quantum of each claim could be much higher."

Pensions and business banking

Some of the most valuable mis-selling claims of all are likely to come from the largest investments — namely, pensions. The pension freedoms of 2015 were designed to give those approaching retirement more choice, but the changes have opened up a number of mis-selling opportunities. "If you have a really good defined benefit pension, it's incredibly valuable. Consumers often don't understand just how valuable it is to have guaranteed income for the rest of their life," says the FCA's Mr Davidson. In July, the FCA warned that much pension advice was "not of an acceptable standard", and outlined plans to ban a type of "contingent charging" that incentivises advisers to encourage as many customers as possible to transfer their pensions, and then charge them a high premium for doing so. The regulator is also in the early stages of probing banks' treatment of small business customers. Some companies are already fighting high-profile complaints from individual customers; CYBG, Lloyds and Danske Bank were all targeted by hunger strikers this

Box 2.3 After PPI, what could be the next banking mis-selling scandal? (*continued*)

week complaining about issues including mis-sold loans. However, a probe by the FCA could raise more fundamental questions about the area of small business lending. The regulator has so far committed only to "exploratory work" on the sector, but has raised concerns about trends such as high transaction charges on business current accounts and other services such as foreign exchange. Ranked in order of size, the mis-selling of interest rate swaps to business banking customers is the second-biggest scandal after PPI, albeit a fraction of the size at just under £5bn. Other scandals in business banking to have emerged since the financial crisis include a major fraud at HBOS's Reading branch, and the exploitation of struggling businesses placed in Royal Bank of Scotland's disgraced Global Restructuring Group.

A new kind of mis-selling: customer data

While the FCA's Mr Davidson mentions both SMEs and pensions as key areas of concern, he predicts the biggest problem could come from a new type of mis-selling. "The next big question is about data. It is incredibly valuable, and it is our intent that customers benefit from the value," he says. Established banks and technology specialists from start-ups to giants such as Amazon have spoken about their desire to use advanced data analysis to create new, more personalised types of financial products at lower costs. But a recent report from the Bank for International Settlements — the central bank for central banks — warned that firms could use the same information to exploit customers. For example, studying customer data could allow lenders to overcharge by working out the maximum rate a borrower would be willing to pay for a loan, rather than competing to give them the cheapest available deal. Data-driven banking is in its early stages, but regulators are not alone in keeping a close eye on developments. The litigation partner adds: "This is very much a space that we are keeping an eye on." He says that previous breaches of data rules had generally been dealt with through firm-level fines rather than by compensating individual customers, but predicts that in time "this will probably change". The idea that the regulator could retroactively "move the goalposts" to allow customers to complain about old products was the biggest source of criticism from banks during the PPI scandal. A former executive who worked at several banks that sold large volumes of PPI argues: "At that time, when customers bought something they were thought to be responsible for knowing what they were doing. That responsibility has dramatically shifted now, but by the standards of the time, no one was deliberately ripping people off." The FCA, however, is unmoved by such criticism. AI-influenced products and services are a new area, meaning that many boundaries on acceptable practice have yet to be agreed, and questions over how banks can use customer data are part of a broader debate on the ethics of new technology. But Mr Davidson warns companies against looking to take advantage of this ambiguity and make a quick buck before formal rules are agreed. "If your purpose or your intent is to use that data to give [customers] a better deal, then you'll hear nothing but praise for your innovation from me," he says. "If you use that data to make more money out of [them], then it's not going to be a healthy relationship. And you might not be breaching some rules [right now], but that will only be [the case] for a while."

FT *Source*: Megaw, N. (2019) 'After PPI, what could be the next banking mis-selling scandal?', *Financial Times*, 30 August.
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2.5 Banks and the FinTech revolution

Financial technology (**FinTech**) has been one of the leading forces of changes affecting the financial industry in the past decade, and it holds great promise for the provision of financial services, from lower transaction costs to increased access to financial services.

Nevertheless, FinTech might affect market structure, competition and financial stability. For these reasons, technology-driven innovation in financial services is attracting increased supervisory scrutiny (BIS, 2018). The challenge for policy makers is to maximise the benefits of FinTech while minimising potential risks for the financial system (BIS, 2020). Achieving this balance is crucial to ensure that innovation can benefit society and foster economic growth without compromising systemic stability.

Generally speaking, FinTech can be defined as the use of innovative technology in financial services. The Financial Stability Board (FSB) defines FinTech as '*technologically enabled financial innovation that could result in new business models, applications, processes or products with* an *associated material effect on financial markets and institutions and the provision of financial services*'.[1] This is a broad definition, but it is useful in that it takes into account the fast-paced changes in the sector. The key drivers of change of FinTech innovations are technology, regulation and evolving customer preferences.

Several factors affect both the supply and the demand side of financial services (FSB, 2019). On the supply side, technology and regulatory changes are the key drivers of changes. On the demand side, a generation of digital natives is changing consumer behaviours and expectations at a faster than ever pace.

The Bank for international settlements (BIS, 2020a) offers an attempt to classify these innovations. Building on the works of global standard-setting bodies, the BIS proposed a conceptual framework to analyse policy responses to FinTech, referred to as the FinTech tree (see Figure 2.11). The FinTech tree distinguishes three categories: FinTech activities, enabling technologies and policy enablers. FinTech activities (for example, **digital banking** or robo-advice) can take various forms and may be performed in different sectors of the financial industry. Enabling technologies (for example, cloud computing or artificial intelligence) are those that make innovation possible in the provision of financial services and, as such, form the backbone of FinTech activities. Policy enablers refer to public policy measures and initiatives (e.g. digital ID systems) that support the development of FinTech activities and the use of enabling technologies.

The main innovations in different market sectors are summarised in Figure 2.12. The highest number of new FinTech service providers are in the payment space, followed by credit, deposits and capital-raising services.

Technology is also helping the unbundling of financial services, and the use of data will become increasingly important. Up to now, FinTech firms have specialised in specific markets, and their relationship with banks has been mostly complementary. FinTech start-ups have so far lacked the capital and the scale to compete with large financial institutions. They have therefore tended to co-operate in niche market segments (for example, in the peer-to-peer lending platform space). This dynamic might change with the entry of larger and established technology companies, the so-called Big Tech (Google, Apple, Amazon, Facebook, but also Alibaba, Baidu, and Tencent). These companies can leverage their access to client data to acquire market share and are becoming increasingly active in several areas, particularly in mobile payments. For example, AliPay is the largest mobile payment platform in China, and M-Pesa in Kenya provides a considerable part of local banking services.

[1] See **www.fsb.org/what-we-do/policy-development/additional-policy-areas/monitoring-of-fintech/**

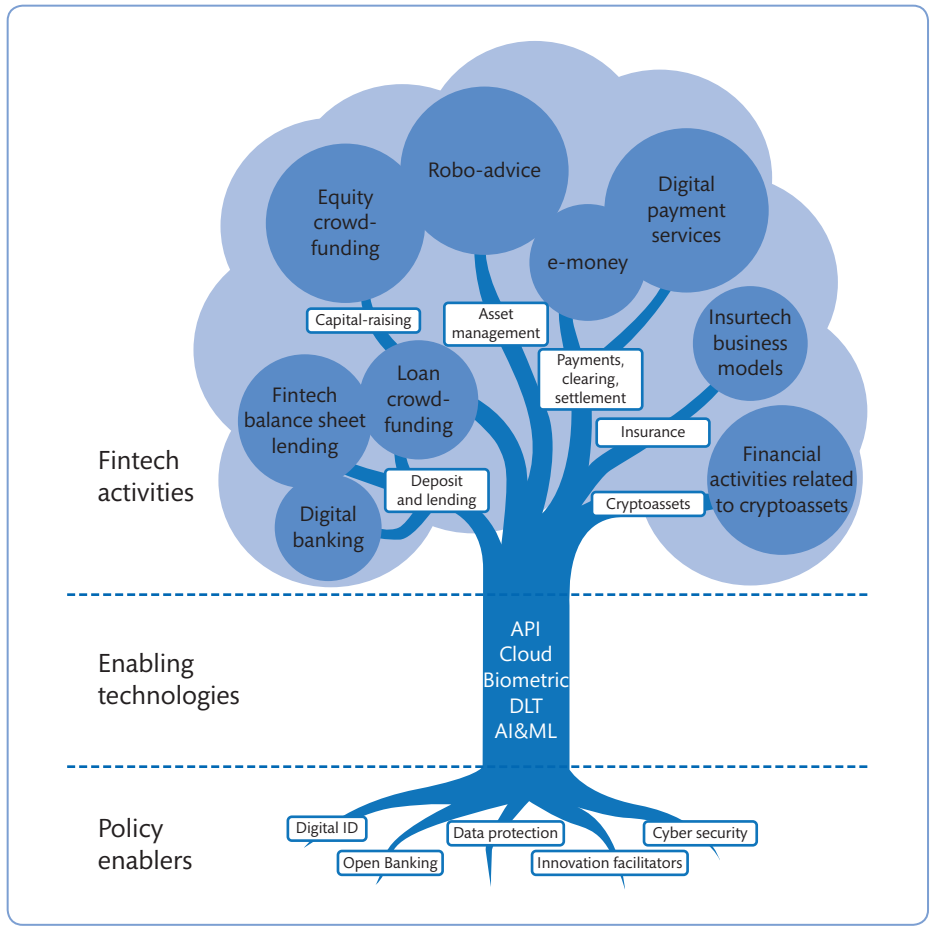


Figure 2.11 The FinTech tree

Source: Adapted from Bank for International Settlements (2020a).

Credit, deposit and capital raising services	Payments, clearing and settlement services	Asset management services	Insurance	Crypto assets

• Crowdfunding
• Equity crowdfunding
• Lending marketplaces
• Mobile banks
• Digital banks
• Credit scoring
	• **RETAIL**
	  • Mobile wallets
	  • P2P transfers
	  • Digital currencies
	  • E-money services
	• **WHOLESALE**
	  • Value transfer networks
	  • FX wholesale
	  • Digital exchange platforms
		• High frequency trading
		• Copy trading
		• E-trading
		• Robo advice
			• Insurtech business models refer to technology-driven innovative models emerging in: (i) distribution (comparison portals and digital brokers); and (ii) underwriting (mobile, on demand, usage-based or technology-enabled P2P and parametric insurance)	• A type of private assets that depends on cryptography and DLT technology

Figure 2.12 FinTech innovations by sector

Source: Adapted from Bank for International Settlements (2020a).

2.5.1 What will be the impact of the FinTech revolution on the banking industry?

A recent Basel Committee on Banking Supervision survey considered five different scenarios, ranging from a better banking industry, where incumbent institutions overcome their legacy infrastructure to disintermediation, with FinTech and Big Tech offering all financial services (BCBS, 2018a). We'll revise these five scenarios below.

- *Better bank* – under this scenario, incumbent banks modernise their infrastructure, digitise their provision, and retain customer relationships. Banks continue offering core financial services and adopt new technologies (from AI to DLT) to change their business models and achieve cost reductions. There are early signs that incumbent banks are investing heavily in technology, and some are increasingly innovative. There are, however, legacy issues for many banks and whether most institutions will manage to leverage technology to remain competitive remains to be seen.
- *New bank (or neo bank)* – the emergence of a new type of digital bank (also known as challenger banks) may point to a scenario whereby incumbents do not survive the technological disruption, and neo banks, built on digital platforms, emerge as key players. Examples of new banks include Monzo and Revolut in the UK, N26 in Germany, WeBank in China and similar institutions in many countries. While we have seen a large number of neo banks emerging in recent years, many still lack the scale to pose a serious threat to incumbents.
- *Distributed bank* – under this scenario, financial services become increasingly specialised and modularised, with a large number of new businesses emerging to provide 'plug and play' services on digital interfaces. In this scenario, banks and FinTechs compete for customers but also co-operate, in niche markets. Elements of this scenario are currently playing out, for example, in the payment space. Innovative payment services are emerging as a result of joint ventures, fostered by the use of APIs. For example, Apple Pay, Samsung Pay and Android Pay are examples of this distributed scenario as Bigtech payments solutions layer existing card networks.
- *Relegated bank* – in this scenario, incumbent banks will leverage their banking licence to provide deposit and lending services and other regulated financial services, but tech companies manage the customer relationship. In this scenario, cloud computing and AI are fully exploited by front-end platforms that make innovative and extensive use of connectivity and data to improve the customer experience. Banks are relegated to being providers of services to the platforms, and the latter manage customer relationships. Although this scenario might appear unlikely, there are already examples of modularised financial services, particularly in the payment industry. Other examples include online lending platforms. Social media platforms can leverage customer data to offer its customers tailored financial products and services from third parties, including banks. An example is the instant messaging application WeChat in China.
- *Disintermediated bank* – in this final scenario, banks are no longer significant players because the need for balance sheet intermediation or a trusted third party is removed. Banks are displaced from customer financial transactions by more agile platforms and technologies, which ensure a direct matching of final consumers depending on their financial needs. Some elements of this scenario can be seen, for example, in P2P lending platforms and cryptocurrencies (for example, Bitcoin).

In sum, the future of the banking industry may depend on incumbent banks' ability to adapt and innovate. It is also important to note that while the emergence of new technologies offers many benefits to consumers, there are also potential risks, from cyber risk to data security, that might warrant an expansion of the regulatory perimeter. Thakor (2020) provides a good discussion of these issues, together with a review of the academic literature in this area.

2.6 Conclusions

The nature of the banking business has changed dramatically. From traditional lending institutions, thanks to deregulation nowadays banks can offer a wide variety of financial services and products. This means that they now compete with non-bank financial institutions and operate as universal banks offering non-banking products such as insurance and asset management. Similarly, there has been a considerable evolution in financial technology (FinTech), which promises to revolutionise the banking sector. In recent years we have seen important changes in the payment systems, mainly as a result of technological advancements and innovations and a change in demand of consumers. Not surprisingly, cheques usage has dropped sharply in most countries while the relative importance of mobile banking services has increased. In this chapter, we have discussed banks' core activities and the key products and services they offer, with a focus on the impact of technological innovation. We have reviewed different future scenarios, ranging from a positive one where banks will leverage the technological advances to innovate and offer better customer experiences, to a negative one where banks become irrelevant as the need for balance sheet intermediation is removed. The likelihood of each of these scenarios will depend on the interplay of many factors, including banks themselves, but also regulators, customers and key players in other industries.

Key terms

Cashless payments
Cheques
Credit transfers
Deposit and lending services
Deposit-taking institution
Digital banking
Direct debit
E-money
E-wallet/mobile wallet
FinTech
Insurance services
Investment products
Non-deposit-taking institution
Payment system
Pension services
Plastic cards
Standing order
Universal bank

Key readings

Basel Committee on Banking Supervision (2018) 'Sound practices: Implications of FinTech developments for banks and bank supervisors', February.

Financial Stability Board (2019), 'FinTech and market structure in financial services: Market developments and potential financial stability implications', February.

Thakor, A. (2020) 'FinTech and banking: What do we know', *Journal of Financial Intermediation*, 41, in press.

REVISION QUESTIONS AND PROBLEMS

2.1 What is a deposit-taking institution?

2.2 Why is the ability to collect retail deposits such an important feature?

2.3 Define universal banking. Discuss the advantages and disadvantages of a universal banking system. Has the 2007–2009 financial crisis exposed the weaknesses of the universal bank business model?

2.4 Discuss the main services offered by banks.

2.5 How has the use of technology changed the retail banking industry?

2.6 Discuss the key innovations in retail payments and how these have changed the way we pay.

2.7 Discuss the pros and cons of a cashless society.

2.8 What will be the impact of FinTech on the future of the banking industry?

2.9 P2P lending platforms clearly cut out the 'middle man' by effectively disintermediating the banks. Discuss the following questions:

(a) What are the benefits and risks of the P2P lending process?

(b) In what way(s) is it different from traditional banking?

(c) Could this system potentially produce a better outcome for all parties involved?

2.10 Should FinTech activities be regulated?

Appendix 2.1
FinTech: a selected glossary

Term	Explanation
Application programming interface (API)	A set of rules and specifications followed by software programmes to communicate with each other, and an interface between different software programmes that facilitates their interaction.
Artificial intelligence (AI)	IT systems that perform functions requiring human capabilities. AI can ask questions, discover and test hypotheses, and make decisions automatically based on advanced analytics operating on extensive data sets. Machine learning (see below) is one subcategory of AI.
Big data	Designates the large volume of data that can be generated, analysed and increasingly used by digital tools and information systems. This capability is driven by the increased availability of structured data, the ability to process unstructured data, increased data storage capabilities and advances in computing power.
Bigtech	Large, globally active technology firms with a relative advantage in digital technology. The GAFA acronym refers specifically to a set of the largest technology companies, namely Google, Amazon, Facebook and Apple (the GAFAA acronym is also used to include Alibaba, the largest Chinese technology company).
Cloud computing	The use of an online network ('cloud') of hosting processors to increase the scale and flexibility of computing capacity. This model enables convenient on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage facilities, applications and services) that can be rapidly released with minimal management effort or service provider interaction.
Crowdfunding	The practice of funding a project or venture by raising monetary contributions from a large number of people. It is often performed today via internet-mediated registries that facilitate money collection for the borrower (lending) or issuer (equity).
Cryptoassets	A type of private asset that depends primarily on cryptography and distributed ledger or similar technology as part of its perceived or inherent value.
Cyber-crime	When a computer system or component is the object of the crime (hacking, phishing, spamming) or is the facilitator of a crime (such as theft of information or money).
Cyber resilience	A financial market infrastructure's ability to anticipate, withstand, contain and rapidly recover from a cyber attack.
Cyber-risk	The combination of the probability of an event occurring within the realm of an organisation's information assets, computer and communication resources and the consequences of that event for the given organisation.
Digital banks	Deposit-taking institutions that are members of a deposit insurance scheme and deliver banking services primarily through electronic channels instead of physical branches.
Digital ID system	A system that covers the process of identity proofing/enrolment and authentication. Identity proofing and enrolment can be either digital or physical (documentary), or a combination, but binding, credentialing, authentication, and portability/federation must be digital.
Digital payment services	Digital payment service providers make use of technology to facilitate payment transactions by transferring money, clearing or settling balances digitally, without the use of physical money.
Digital currency	An asset that only exists electronically and that can be used as a currency (means of payment, store of value, unit of account) although it is not legal tender. Digital currencies are often underpinned by distributed ledger technology (DLT) to record and verify transactions made using the digital currency. These can include private currencies and digital versions of national bank currencies. Because of the use of cryptography techniques, a (large) subset of digital currencies are referred to as 'cryptocurrencies'.

Appendix 2.1 continued

Term	Explanation
Distributed ledger technology (DLT)	Technologies, such as blockchain, that are a means of recording information through a distributed ledger, i.e. a repeated digital copy of data at multiple locations. These technologies enable nodes in a network to securely propose, validate and record state changes (or updates) to a synchronised ledger that is distributed across the network's nodes.
E-money	Money issued or stored electronically, for example, on a device such as a chip card (e.g. payment cards), a hard drive in a personal computer or a server – with the purpose of replacing physical money in payment transactions.
E-money services	Issuance of debt-like instruments for the purpose of facilitating payment transactions.
Equity crowdfunding	An activity where investors provide funding to private companies in the form of equity. The FinTech platform matches investors with companies they want to invest in, enabling them to participate in the early capital-raising activities of startups and other companies.
FinTech	Technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.
Innovation accelerator	A partnership arrangement between FinTech providers and central banks/supervisory agencies to develop cases that may involve funding support and/or authorities' endorsement/approval for future use in central banking operations or in the conduct of supervisory tasks.
Insurtech business models	Technology-driven innovative business models that are emerging in two major areas of insurance: (i) distribution, such as comparison portals and digital brokers; and (ii) underwriting, such as mobile, on-demand, usage-based or technology-enabled peer-to-peer and parametric insurance.
Internet of Things (IoT)	The networking of physical devices, vehicles, buildings, and other items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to (a) collect and exchange data and (b) send, receive and execute commands.
Machine learning (ML)	A method of designing problem-solving rules that improve automatically through experience. Machine-learning algorithms give computers the ability to learn without specifying all the knowledge a computer would need to perform the desired task, as well as study and build algorithms that can learn from and make predictions based on data and experience.
Mobile wallets	Replicate a physical wallet in a digital interface on a mobile phone. Customers can add credit and debit cards, as well as prepaid cards, gift cards and rewards cards to be stored and carried. This use case not only replaces physical plastic cards, but also allows those cards to be enhanced by additional services.
Neo-banks	New entrants that make extensive use of technology (e.g. API, big data, artificial intelligence, blockchain) in order to offer retail banking services predominantly through smartphone apps and internet-based platforms. Neo-banks target individuals, entrepreneurs and small to medium-sized enterprises.
Online lending platforms	Platforms that intermediate loans online, and may be operated by banks or non-banks. Some online lenders keep all or some of the loans they originate, while others sell or securitise them. Funding for loans may come from traditional sources, such as deposits, if the lender is a bank, securitisations, private investors and capital raisings, and loans from banks. Additionally, funding may come from 'peer-to-peer' arrangements that directly match lenders with borrowers via online platforms. Together with non-loan forms of finance such as invoice trading, these models make up the 'FinTech credit' category.
Open banking	The sharing and leveraging of customer-permissioned data from banks with third-party developers and firms to build applications and services that provide real-time payments, greater financial transparency options for account holders, marketing, etc.
Regtech (regulatory technology)	Any range of FinTech applications for regulatory reporting and compliance purposes by regulated financial institutions. This can also refer to firms that offer such applications.

Appendix 2.1 continued

Term	Explanation
Regulatory sandbox	A controlled testing environment, sometimes featuring regulatory forbearance and alleviation through the use of legally provided discretions by the supervisory agency. The testing environment may involve limits or parameters within which the firms must operate (e.g. restrictions on the time a firm may operate in the sandbox).
Robo-advisors	Applications that combine digital interfaces and algorithms, and can also include machine learning, in order to provide services ranging from automated financial recommendations to contract brokering to portfolio management to their clients, with limited human intervention or none. Such advisors may be standalone firms and platforms, or can be the in-house applications of incumbent financial institutions.
Security biometric services	A security mechanism used to identify, authenticate and provide access to a facility or system based on the automatic and instant verification of an individual's physical characteristics, such as fingerprints, retina patterns etc.
Smart contracts	Programmable applications that, in financial transactions, can trigger financial flows or changes of ownership if specific events occur. Some smart contracts are able to self-verify their own conditions and self-execute by releasing payments and/or carrying out others' instructions.
SupTech (supervisory technology)	The use of technologically enabled innovation by supervisory authorities.

Source: Adapted from Basel Committee on Banking Supervision (2018) and Ehrentraud *et al*. (2020).

Chapter 3

Types of banking

Learning objectives

- To distinguish between traditional and modern banking
- To understand the differences between commercial and investment banking
- To describe the main features of mutuality
- To understand the differences between private and corporate banking

3.1 Introduction

This chapter outlines the main types of firms that undertake **modern banking** business and describes the key features of commercial and investment banking. The first part of the chapter describes the trend towards the development of financial service conglomerates and the widespread acceptance of the **universal banking** model (as opposed to **specialist banking**) during the 1990s and early to mid-2000s. We then go on to outline the main types of banks and also focus on the products and services offered to personal (including private banking) and corporate banking customers. Discussion on corporate banking services is split between services offered to small companies and corporate and investment banking products offered to mid-sized and large companies.

A major theme throughout the chapter is the blurring of distinctions between particular areas of banking and financial services provision, the focus on customer relationships and meeting the increasingly complex and diverse needs of clients. Post crisis, however, financial reforms (for example, the Dodd–Frank Act in the US and the UK Independent Commission on Banking, chaired by Sir John Vickers) recommended once again the separation – to some extent – of investment and retail banking activities (the so-called **ring-fencing** of retail banking).

3.2 Traditional versus modern banking

The banking business has experienced substantial change over the last 30 years or so as banks have transformed their operations from relatively narrow activities to full service financial firms. **Traditional banking** business consisted of taking deposits and making loans and the majority of their income was derived from lending business. **Net interest margins** (the difference between interest revenues from lending minus the interest cost on deposits) was the main driver of bank profitability. In such an environment banks sought to maximise interest margins and control operating costs (staff and other costs) in order to boost profits. Banks strategically focused on lending and deposit gathering as their main objectives.

Up until the 1990s many banking markets were highly regulated, and competition was restricted. In the UK banks were restricted from carrying out various securities and investment banking business up until 1986, when various reforms allowed **commercial banks** to acquire stockbroking firms. In continental Europe, branching restrictions were in place in Spain and Italy until 1992 and banks were also limited in terms of the types of business they could conduct. The implementation of the EU's Second Banking Directive in 1992 established a formal definition of what constituted banking business throughout Europe and this introduced the so-called universal banking model. Under the universal banking model, the banking business is broadly defined to include all aspects of financial service activity – including securities operations, insurance, pensions, leasing and so on. This meant that from 1992 onwards banks throughout the European Union could undertake a broad range of financial services activity.

A similar trend has also occurred in the United States. For example, there were nationwide branching restrictions in place until the passing of the Riegle–Neal Interstate Banking and Branching Efficiency Act in 1994, which allowed national banks to operate branches across state lines after 1 June 1997. Also, the Gramm–Leach–Bliley Act in November 1999 allowed commercial banks to undertake securities and insurance business, thus establishing the possibility of universal banking activity for US banks. Similar legislation was also enacted in Japan in 1999.

The type of business banks can undertake, therefore, has expanded dramatically. As detailed in Chapter 2, in addition to deregulation various other factors have also had an impact on banking business globally. Capital restrictions that limited the free flow of funds across national boundaries gradually disappeared throughout the 1980s facilitating the growth of international operations. The role of state-owned banks in Europe and elsewhere declined as a result of privatisation and various balance sheet restrictions (known as portfolio restrictions) were lowered or abolished, allowing banks greater freedom in the financial management of their activities. These global trends have also been complemented by advances in technology that have revolutionised back-office processing and front-office delivery of financial services to customers. The general improvements in communication technology and the subsequent decline in costs allowed dissemination of information throughout a widespread organisation, making it practical to operate in geographically diversified markets. Lower communication costs also increased the role of competitive forces, as physically distant financial service providers became increasingly relevant as competitors.

Technology has also continued to blur the lines of specialisation among financial intermediaries. Advances in computing power also allowed investment banks and other financial service firms to offer accounts with characteristics similar to bank accounts. Technological

Table 3.1 Traditional versus modern banking

Traditional banking	Modern banking
Products and services: LIMITED • Loans • Deposits	Products and services: UNIVERSAL • Loans • Deposits • Insurance • Securities/investment banking • Pensions • Other financial services
Income sources: • Net interest income	Income sources: • Net interest income • Fee and commission income
Competitive environment: • Restricted	Competitive environment: • High competition
Strategic focus: • Assets size and growth	Strategic focus: • Returns to shareholders • Creating shareholder value (generating return-on-equity (ROE) greater than the cost of capital)
Customer focus: • Supply led	Customer focus: • Demand led • Creating value for customers

developments, therefore, have generally facilitated growth in the range of financial services available and heightened the competitive environment. It can be seen that banking business has changed dramatically from an activity characterised by limited competition and a relatively restricted product offering to a much more competitive and diverse activity. These differences are highlighted in Table 3.1.

Table 3.1 shows that the nature of the banking business has changed from being relatively restricted and uncompetitive to a much more dynamic activity. Banks are now regarded as full service financial firms – and many banks have even dropped the word 'bank' from their name in their promotional material, such as 'Barclays' in Britain and JPMorgan Chase in the United States. The transformation of banks into full service financial institutions has been motivated by the strategic objective of banks to be able to meet as broad a range of customer financial service demands as possible. The increase in products and services that can be sold to customers helps strengthen client relationships and (as long as customers value the services being provided) should boost returns to the bank over the longer term.

In an increasingly competitive environment banks have sought to diversify their earnings – complementing interest revenues from lending activity with fee and commission income from selling non-traditional banking products such as insurance. The greater emphasis on building client relationships means that banks have had to become much more demand-oriented, focusing on meeting the needs of a more diverse and financially sophisticated client base.

Banks have also had to pay much greater attention to the performance of their operations and in particular to rewarding their owners (shareholders). Traditionally, when banking markets were relatively restricted and uncompetitive there was less pressure on banks to generate

high profits in order to boost their stock prices and keep shareholders happy. Typically, banks focused on strategies based on asset growth – in other words they sought to become larger as this was viewed as the main indicator of commercial success. Banks have strategically focused on creating value for shareholders (the bank's owners) and strategies based solely on asset growth were no longer deemed appropriate. The main reason for this shift in emphasis was because demands from shareholders increased as had banks' demand for capital. In banking, capital is a resource available to the bank to protect itself against potential losses and to finance acquisition or expansion. Regulators set minimum capital requirements (e.g. Basel ratios) so banks should have sufficient resources to bear losses incurred from bad loans or from other activities. As such, banks need to generate sufficient performance for their equity to increase in value in order to attract new shareholders as well as keeping established shareholders. Senior managers therefore prioritised strategies that seek to increase the overall value of the bank (reflected in the share value of the bank and its overall market capitalisation). Prior to the 2007–2009 crisis, strategies expected to boost banks stock prices were therefore prioritised. Post crisis, banks' approach has had to be realigned with the demand for tighter regulation in financial services and greater focus on the risks associated with banks' business has increased sharply.

Following the 2007–2009 financial crisis, there have also been calls to narrow the scope of large financial institutions, which would require the reintroduction of firewalls such as those imposed by the Glass–Steagall Act, to limit the risks that deposits are exposed to. In a similar vein, the notion of increased systemic risk – arising from the broadened scope of banking activities – has been gaining ground in both theoretical debates and empirical contributions. However, constraining the degree of product diversification of financial institutions does not eliminate the risk of future systemic crises. An important issue for policy makers is to understand the distinction between types of bank diversification that add value for shareholders without adding to systemic risk, and those that might pose a threat to financial stability irrespective of the possible benefit to the individual firms' shareholders.

In sum, the banking business has evolved from a narrow activity to full financial services firms. There are several drivers for this transformation:

- deregulation (and re-regulation);
- technological change;
- internationalisation and globalisation;
- increased competition.

In the post-crisis period, the banking business has undergone another transformation, mainly driven by increased regulatory constraints and fast-paced technological advances. In addition, banks have increasingly faced competition from new entrants and from non-bank financial institutions offering some type of banking services. Finally, banks' also have to regain customers' trust.

3.3 Types of banking

We can distinguish between different types of banking services provided to households and firms, as illustrated in Figure 3.1. While these classifications are not set in stone and the boundaries between different types of banking services can vary among different providers, it is helpful to discuss these to paint a fuller picture of the banking industry.

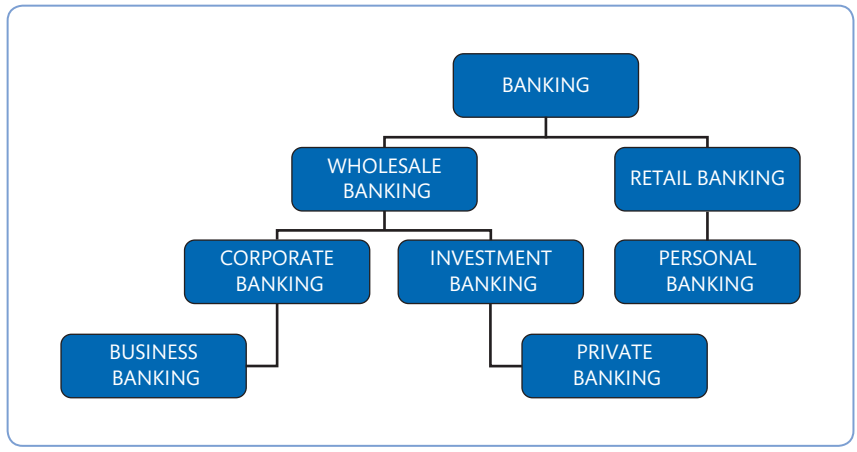


Figure 3.1 Types of banking

Retail or personal banking relates to financial services provided to consumers and is usually small-scale in nature. Typically, transactions are large volume, low value and customers are individuals, households and small and medium-size enterprises (SMEs). The focus of retail banking is mostly domestic. Meanwhile, **wholesale or corporate banking** relates to banking services provided to companies, although typically the term refers to services provided to relatively large firms with an international focus. **Private banking** concerns the high-quality provision of a range of financial and related services to wealthy clients, principally individuals and their families. Typically, the services on offer combine retail banking products such as payment and account facilities plus a wide range of up-market investment-related services. Investment banks (or merchant banks in the UK) were historically precluded from engaging in commercial activities. They mainly deal with companies and other large institutions and they typically do not deal with retail customers – apart from the provision of upmarket private banking services. Typically, their activities cover the following areas:

- financial advisory (M&A advice);
- underwriting of securities issues;
- trading and investing in securities on behalf of the bank or for clients;
- asset management and securities services.

In the remainder of this chapter we are going to discuss the different types of banking as well as the products and services offered.

3.4 Retail or personal banking

Typically, all large banks offer a broad range of personal banking services including payments services (current account with cheque facilities, credit transfers, standing orders, direct debits and plastic cards), savings, loans, mortgages, insurance, pensions and other services (these services have been reviewed in Section 2.4).

A variety of different types of banks offer personal banking services, including:

- commercial banks;
- savings banks;
- co-operative banks;
- building societies;
- credit unions;
- finance houses.

There are various, often country-specific, ways of classifying different types of banks depending on their ownership, the type of business, their functions and the competent regulatory authority. We'll review some of these types of financial institutions in Section 3.8.

3.5 Private banking

So far we have discussed personal banking business, outlining the various services on offer and the main types of financial institutions undertaking such activity. Another area of banking closely related to personal banking that has grown substantially over the last decade or so is known as private banking.

Private banking concerns the high-quality provision of a range of financial and related services to wealthy clients, principally individuals and their families. Typically, the services on offer combine retail banking products such as payment and account facilities plus a wide range of up-market investment-related services. Market segmentation and the offering of high-quality service provision form the essence of private banking. Key components include:

- tailoring services to individual client requirements;
- anticipation of client needs;
- long-term relationship orientation;
- personal contact;
- discretion.

High net worth individuals (HNWIs) are defined as those with $1 million or more in investable assets (that is, assets at their disposal for investing, excluding primary residence, collectibles, consumables and consumer durables).[1] An important feature of the private banking market relates to client segmentation. The bottom end of the market is referred to as the 'mass affluent' segment – typically individuals with $100,000 to $1,000,000 in investable assets. The top end of the market are often referred to as 'ultra HNWIs', with over $30 million in investable assets, and in between lie HNWIs (investable assets of $1 million or more) and mid-tier millionaires, who are HNWIs having $5 million to $30 million. Figure 3.2 illustrates this classification. The level of service and the range of products on offer increase with the wealth of the respective client. Looking at the HNWI population by country, the highest percentage of wealthy individuals can be found in the US, followed by Japan,

[1]Capgemini (2020).

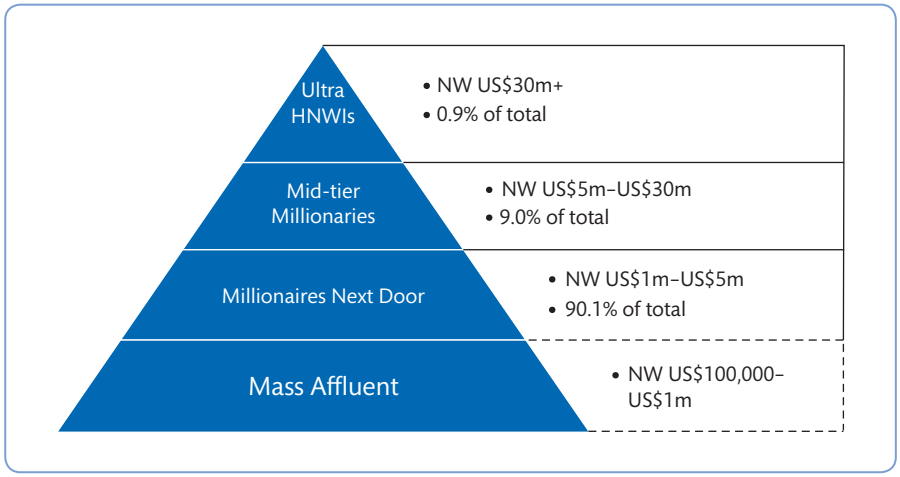


Figure 3.2 High net worth individuals by wealth band

Source: World Wealth Report (2019) © Capgemini. Used with permission. retrieved from: https://worldwealthreport.com/wp-content/uploads/sites/7/2021/06/World-Wealth-Report-2019.pdf.

Germany and China (these four countries represent 61 per cent of the total global HNWI population).

The market for private banking services has been targeted by many large banks because of the growing wealth of individuals and the relative profitability of private banking business. The wealth management industry is performing relatively well in spite of growing regulatory pressure and economic instability. However, the costs associated with assets under management are increasing, reflecting the changing global regulatory framework. Trends related to shifting client demographics, evolving client expectations, technology and increased competition are posing new challenges for wealth managers and private bankers – but also creating new opportunities. Wealth managers and private bankers offer a variety of services to private clients, tailor-made to individual needs, typically aiming to protect and maintain their assets. These services include traditional banking as well as investment management, trust and estate planning, and tax management. High net worth clients tend to have more complex financial needs than most retail consumers and are therefore typically assigned a dedicated private banker, who manages most of the interactions with the bank. In terms of asset allocation, equities and cash and cash equivalents are the largest asset classes, followed by fixed income, real estate and alternative investments. Table 3.2 shows a listing of the major private banks ranking and how the league table changed in the period 2012–2018. It is worth noting that six of the top ten firms in the private banking industry are from the US – with Goldman Sachs saying in 2012 that it planned to expand in private banking and reach the top ten by 2018. However, the costs associated with assets under management are increasing, reflecting the changing global regulatory framework. The industry is also facing new challenges, including increased geo-political uncertainty, both in the US and in Europe, as well as fast-paced technological change (see Box 3.1).

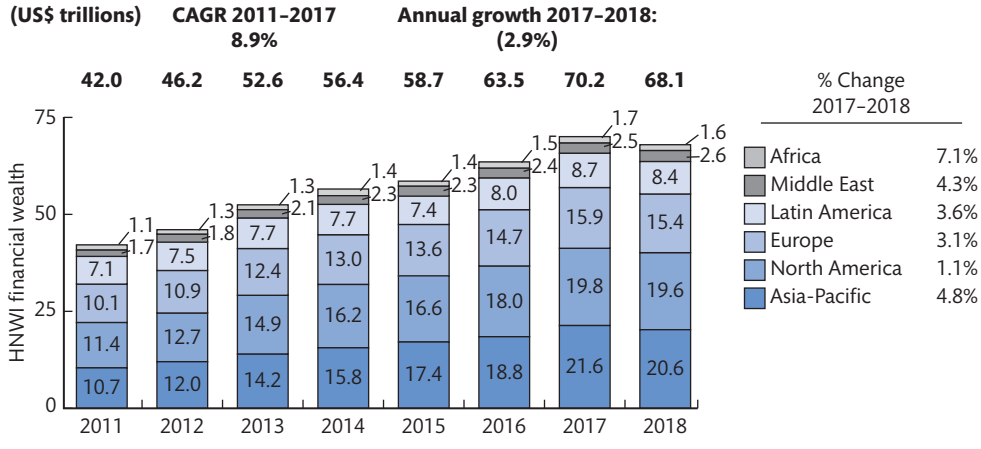
Table 3.2 Top ten global private banks by assets under management

Rank	Institution	AuM ($bn, 2012)	Institution	AuM ($bn, 2018)
1	Bank of America	1,671.00	UBS	2,403.75
2	UBS	1,554.53	Morgan Stanley	2,223.10
3	Wells Fargo	1,300.00	Bank of America	2,203.06
4	Morgan Stanley	1,219.00	Wells Fargo	1,899.30
5	Credit Suisse	843.32	Royal Bank of Canada	987.88
6	Royal Bank of Canada	573.32	Credit Suisse	792.02
7	HSBC	377.00	Citi	529.90
8	Deutsche Bank	348.60	JPMorgan	526.00
9	BNP Paribas	316.20	Goldman Sachs	458.00
10	JPMorgan	291.00	BNP Paribas	436.75

Source: Scorpio (2012, 2018).

BOX 3.1 RECENT TRENDS IN WEALTH MANAGEMENT AND PRIVATE BANKING

After several years of continuous growth, HNWIs' wealth declined by 3 per cent in 2018, mostly due to a decrease of 0.3 per cent in wealth in the Asia-Pacific region (see Figure 3.3). This region, and China in particular has been largely driving previous growth. Capgemini (2019) reports that this decline has resulted in a loss of 2 trillion USD worldwide. China alone was responsible for more than half (53 per cent) of Asia-Pacific and more than 25 per cent of global HNWI wealth loss. Ultra-HNWIs were the most affected and accounted for 75 per cent of the overall HNWI wealth decline. The ultra-HNWI population declined by 4 per cent, and their wealth declined by around 6 per cent. This accounted for 75 per cent of the total global wealth decrease. In 2018 HNWIs wealth declined in most other regions, with

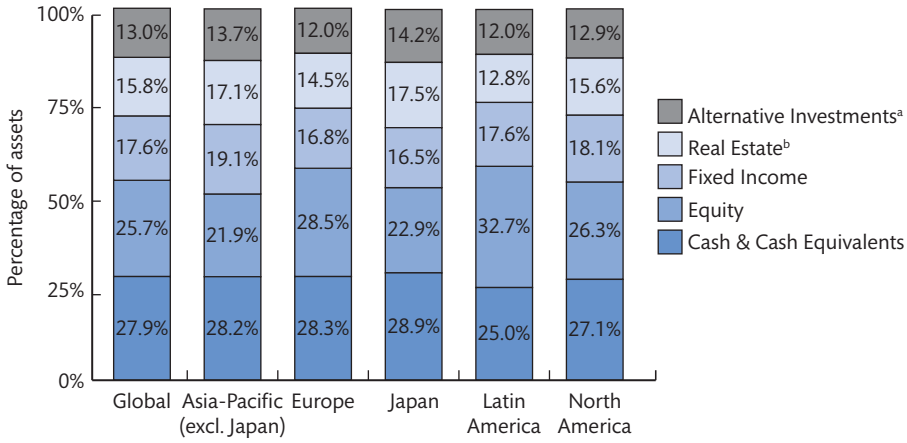


Note: Chart numbers and quoted percentages may not add up due to rounding.

Figure 3.3 HNWI financial wealth by region (US$tn), 2011–2018

Source: World Wealth Report (2019) © Capgemini. Used with permission. retrieved from: https://worldwealthreport.com/wp-content/uploads/sites/7/2021/06/World-Wealth-Report-2019.pdf.

Box 3.1 Recent trends in wealth management and private banking (*continued*)



a. Includes structured products, hedge funds, derivatives, foreign currency, commodities, and private equity.
b. Excludes primary residence.
Note: Question asked: "What percentage does each of these asset classes approximately represent in your CURRENT financial portfolio?"; Chart numbers may not add up to 100% due to rounding.

Figure 3.4 Breakdown of HNWI financial assets, Q1 2019 (global and regions)

Source: World Wealth Report (2019) © Capgemini. Used with permission. retrieved from: https://worldwealthreport.com/wp-content/uploads/sites/7/2021/06/World-Wealth-Report-2019.pdf.

only the Middle East bucking the trend and generating 4 per cent growth in HNWI wealth. Asset allocations shifted significantly in 2018, as cash replaced equities to become the most held asset class in Q1 2019, representing 28 per cent of HNWI financial wealth, while equities slipped to the second position at nearly 26 per cent (a decline of 5 percentage points) (see Figure 3.4). Volatile equity market conditions spurred a slight increase in allocation towards alternative investments to 13 per cent, a 4 percentage point increase from the previous year.

As the wealth industry evolves and HNWI expectations shift, key opportunities exist for wealth management firms to better meet rising client expectations regarding personalised offerings, service quality and fee transparency. According to Capgemini (2019), investment in next-generation technologies will be critical in order to enhance the client experience. While there is consensus among firm executives and wealth managers that artificial intelligence (AI) is a key game-changer, and emerging technologies are critical, preparation for the upcoming transformative and completely open financial services environment may require firms to realign their overall strategy and service-delivery models. Wealth management firms and wealth managers are expected to face disruptive challenges, such as increased acceptance of new technologies, the entry of BigTechs, and pressure of fee structures over the next few years.

Source: Adapted from Capgemini (2019).

3.6 Corporate banking

Corporate banking relates to banking services provided to companies, although typically the term refers to services provided to relatively large firms. For example, HSBC refers to its activities with firms as 'business banking' and distinguishes between three size categories – firms with turnover up to £2 million (Business Banking), £2 million to £30 million (Commercial Banking) and greater than £30 million (Corporate Banking). Services offered to the latter,

namely the largest firms, are referred to as corporate and structured banking services. Note that this distinction is not clear-cut and some banks do not explicitly distinguish between 'business banking' and 'corporate banking' although one should be aware that the term 'corporate banking' is used mainly to refer to services provided to relatively large firms whereas business banking may relate to a wide range of activity ranging from financial services offered to small start-up firms as well as larger companies.

Banking services provided to small and medium-sized firms are in many respects similar to personal banking services and the range of financial products and services on offer increases and grows in complexity the larger the company. Below we highlight the main banking services used by different sizes of firms.

3.6.1 Banking services used by small firms

There are four main types of banking service on offer to small firms:

1. Payment services.
2. Debt finance.
3. Equity finance.
4. Special financing.

3.6.1.1 Payment services

As noted in Chapter 2, banks play a pivotal role in the payments system. They provide clearing services to businesses and individuals making sure that current account transactions are processed smoothly, issue credit and debit cards that enable customers to make payments, and offer instant access to cash through their automated teller machines (ATMs) and branch networks. In many respects the payments services on offer to small firms are similar to retail customers'. The former are provided with business current accounts that give firms access to current accounts that provide a broad range of payment services. In the United Kingdom these include the following:

- Cash and cheque deposit facilities.
- Cheque writing facilities.
- Access to the CCCL (Cheque and Credit Clearing Company Limited), which is used for cheques, bank drafts, warrants, travellers' cheques, government payable orders and postal orders. Since October 2017, cheques now clear through an *image-based cheque clearing system*, which speeds up cheque processing significantly for customers across the UK. This has replaced the paper-based clearing system.
- Access to the UK's retail payments operations, Pay.UK, which includes Bacs, Faster Payments, Paym and cheques.[2] Pay.UK enables £19.2 billion in payments every single day. Bacs is the bulk system for high-volume, regular retail payments. Faster Payments is the UK's 24/7 real-time system. Paym is the UK's mobile payments service.
- Access to CHAPS, the UK's Real Time Gross Settlement scheme and one of the largest high-value payment systems in the world, providing efficient, settlement risk-free and

[2] On 1 May 2018, Bacs Payment Schemes Limited became a wholly owned subsidiary of the new home for UK retail payments, Pay.UK.

irrevocable payments. Responsibility for the CHAPS system transferred to the Bank of England in November 2017. Direct participants in CHAPS include the traditional high street banks and a number of international and custody banks. Many more financial institutions access the system indirectly and make their payments via direct participants. This is known as agency or correspondent banking. CHAPS payments have several main uses:

- financial institutions and some of the largest businesses use CHAPS to settle money market and foreign exchange transactions;
- corporates use CHAPS for high-value and time-sensitive payments such as to suppliers or for payment of taxes;
- CHAPS is commonly used by solicitors and conveyancers to complete housing and other property transactions;
- individuals may use CHAPS to buy high-value items such as a car or pay a deposit for a house.

Figure 3.5 illustrates the six payment schemes in use in the UK. It is worth noting that the payment industry has undergone remarkable changes and innovation in recent years. One of the critical features of the payment schemes relates to small firm access to cash and the ability to make payments in cash and cheque form. Like retail customers, small firms use their business current accounts via the branch network to make cash and cheque payments into their current accounts. They also use the ATM network to obtain cash. In terms of the types of payments made by small firms in the UK, cheques and automated transactions such as direct debits and standing orders still predominate.

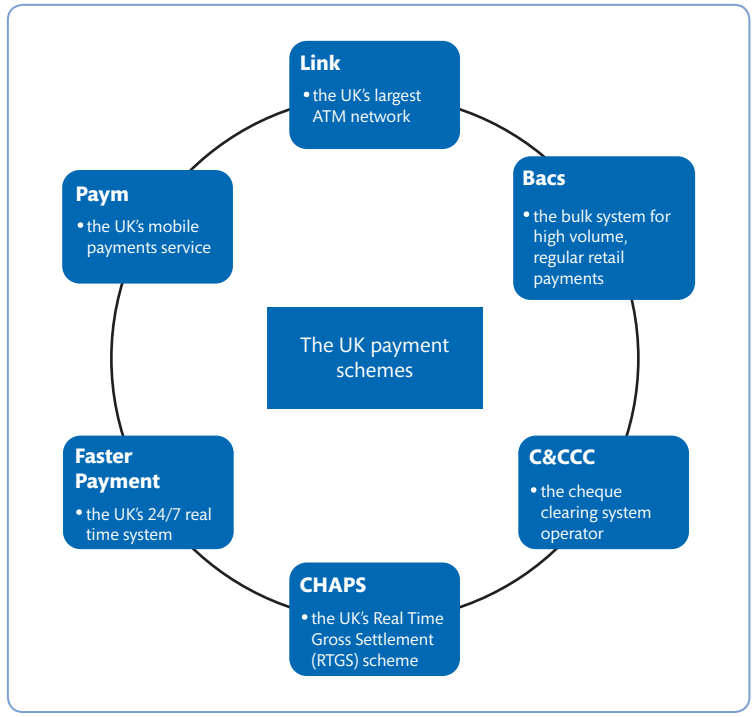


Figure 3.5 The UK payment schemes

Source: Adapted from Bank of England (2017), 'An introduction to the UK's interbank payment schemes'.

3.6.1.2 Debt finance for small firms

The access to external finance is a critical success ingredient in the development of any business and to this extent small firms are no different from their larger counterparts. Traditional bank loans and overdraft finance are the main sources of external finance for small firms, although one should bear in mind that many small firms rely on internal funding to finance their operations. With regards to lending to small firms, features can obviously vary from country to country – in the United Kingdom, for instance, bank loans still account for the biggest single share of the total supply. In 2017 gross new bank loans averaged at around £58 billion a year – or about 71 per cent of total supply (Finance UK). Interestingly, even though overall bank lending increased between 2011 and 2017, the market share of banks fell (from 77 per cent in 2008–2010 to 71 per cent in 2015–2017 according to Finance UK). In addition, high street banks no longer account for the bulk of this gross new lending and a much wider group of banks – including new entrants and challenger banks – also contributed to SME lending. In addition, in recent years, other sources of funding have also increased compared to bank funding. Nonetheless, a 2019 survey carried out by the British Business Bank found that just 36 per cent of smaller businesses now use external finance compared to 44 per cent in 2012 and more than 7 in 10 firms say they would rather forgo growth than take on external finance (British Business Bank, 2019).

The other main sources of external finance include:

- **Asset-based finance** – this includes both **hire purchase** and **leasing**. These two types of financial services are generally grouped together but they are two distinct types of product. Hire purchase agreements result in the purchaser of the goods building up ownership over a pre-determined period. On final payment, the goods belong to the individual or firm making the payments. Leasing products are similar, but the legal ownership of the good remains with the lessor. For example, a lease is an agreement where the owner (lessor) conveys to the user (lessee) the right to use equipment (e.g. vehicles) in return for a number of specified payments over an agreed period of time. Unlike a bank loan, a lease is an asset-based financing product with the equipment leased usually the only collateral for the transaction. Typically, a firm will be offered a leasing agreement that covers not only the equipment costs but also the delivery, installation, servicing and insurance.
- **Factoring and invoice discounting** – factoring is the purchase by the factor and sale by the company of its book debts on a continuing basis, usually for immediate cash. The factor then manages the sales ledger and the collection of accounts under terms agreed by the seller. The factor may assume the credit risk for accounts (the likelihood that sales invoices will not be paid) within agreed limits (this is known as non-recourse factoring), or this risk may remain with the seller (factoring with recourse). (It is best to think of a factoring firm as a company's debt collector. The factor takes on responsibility for recovering payments on sales made). Invoice discounting services are similar to factoring but here the sales accounting functions are retained by the seller.
- *Shareholders and partners* – these are individuals who provide their own personal finance to the firm and this confers ownership rights.
- *Trade credit* – credit given to firms by trading partners, allowing the former to delay payment.

- **Venture capital** – long-term external equity provided by venture capital firms. The venture capitalist is an equity partner who places greater emphasis on the final capital gain (dependent on the market value of the company). According to the British Private Equity & Venture Capital Association (BVCA) investments typically last for three to seven years.[3] In addition to finance, the venture capital firm (or individual) will provide expertise, experience and contacts to help develop the business.
- *Other sources* – this category includes a broad variety of alternative finance sources that ranges from credit card borrowing, loans from private individuals conferring no ownership (e.g. a loan from a member of a family), various government grants for small business and so on.

3.6.1.3 Equity finance for small firms

Most small firms rely on bank- and asset-based financing for their external financing and few access either public or private equity finance. Nonetheless, equity finance is an important source of funding for businesses that have the potential for rapid growth (high growth firms – HGFs), and for new businesses and start-ups that are unable to secure debt finance (for example, due to their risk profile, lack of collateral or unstable cash flows). Established businesses looking to scale up by expanding or entering new markets may also consider equity finance. Nevertheless, only a small proportion of SMEs are currently using equity finance (around 2 per cent) (British Business Bank, 2019).

Equity finance for SMEs can come from a variety of different types of equity investor including: **business angels**, **venture capitalists**, **crowdfunding platforms**, private investors and government-backed funds.

Private equity finance can be distinguished according to two main types: formal and informal. Formal equity finance is available from various sources including banks, special investment schemes, private equity and venture capital firms. The informal market refers to private financing by so-called 'business angels' – wealthy individuals who invest in small unquoted companies. As pointed out by the British Private Equity & Venture Capital Association, the terms 'private equity' and 'venture capital' can be used to refer to different stages in the investments. For example, in Europe the term 'venture capital' is often used to cover the private equity industry as a whole, i.e. encompassing both venture capital and management buy-outs and buy-ins. In the US venture capital refers only to investments in early stage and expanding companies.

All the main UK banks offer a range of equity products to small firms although there are differences in their willingness to undertake direct equity investments. In addition to bank equity finance and that provided by business angels, Britain has the largest formal venture capital market in the world outside the United States. According to Invest Europe[4] (the association representing Europe's private equity, venture capital and infrastructure sectors, as well as their investors), since 2007, private equity and venture capital firms have invested €350 billion in around 28,000 European companies, which employ up to 8 million people.[5]

[3] See **www.bvca.co.uk**

[4] Previously known as the European Venture Capital Association (EVCA).

[5] See **www.investeurope.eu**

However, one should not forget that there are a number of *public equity markets* that provide funding for small firms with strong growth potential. In the United Kingdom, the main public equity market is the Official List of the London Stock Exchange. Smaller firms are categorised in the FTSE Small Cap (consisting of companies outside of the FTSE 350 Index) or FTSE Fledgling (UK companies listed on the main market of the London Stock Exchange that are too small to be included in the FTSE All-Share) indices. While access to the Official List is (in most cases) limited to medium-sized firms, fast-growth firms seeking a UK stock market listing are most likely to access the Alternative Investment Market (AIM). This is the second tier of the stock market and it has less onerous admission and trading requirements than the Official List.

In addition to all the above-mentioned means of finance available to small firms, many countries have a range of government initiatives that seek to promote entrepreneurship and the development of the small firm sector. Britain is no exception, and there are a plethora of various initiatives aimed at promoting the development of the small firm sector.

Such schemes in the UK include initiatives geared to:

- financing small businesses in economically deprived areas;
- financing technology-based small firms; and
- financing ethnic minority firms.

In addition to these the government also offers a wide range of fiscal advantages aimed at stimulating small firm growth, and especially start-ups.

3.6.1.4 Crowdfunding platforms

Crowdfunding is a relatively new way of raising funds. Essentially, it is the process of raising funding online, via a platform which brings together various individuals who commit money to projects and companies they want to support. There are several hundred crowdfunding platforms around the world, with fundraising reaching billions of dollars every year. It is a growing market and is transforming how businesses raise capital.

There are several different categories of crowdfunding:

- *Reward-based crowdfunding* – where donations are sought in return for special rewards, for example a free product or even a chance to be involved in designing the product or service. An example is Kickstarter, a global crowdfunding platform that helps creative projects, such as films, music, stage shows, etc.
- *Donation-based crowdfunding* – this model funds a project by asking a large number of contributors to individually donate a small amount to it. It is typically used by social causes, not-for-profit organisations and arts projects to raise money. An example is GoFundMe.
- *Peer-to-peer lending (P2P)* – crowdfunding platforms like Lending Club in the US enable borrowers to get access to funds outside of traditional banking channels. Zopa was the first peer-to-peer lending company in the UK and was set up in 2005.
- *Equity crowdfunding* – the online offering of private company securities to a group of people and enables real investments in private companies. It is still a very small market, but with a high growth potential. An example of equity crowdfunding is OurCrowd.
- *Real estate crowdfunding* – there are several different models, with some platforms crowdfunding loans to buy properties and others funding, for example, solar energy projects. An example of real estate crowdfunding is CrowdStreet.

3.6.2 Banking services for mid-market and large (multinational) corporate clients

The mid-market and multinational corporate sectors are served by a variety of financial service firms including mainly commercial banks, investment banks and asset finance firms. These firms offer a broad range of services at varying levels of sophistication. The core banking products and services typically focus on the following range of needs:

1. Cash management and transaction services.
2. Credit and other debt financing facilities – loans, overdrafts, syndicated loans, commercial paper, bonds and other facilities.
3. Commitments and guarantees.
4. Foreign exchange and interest rate-related transactions.
5. Securities underwriting and fund management services.

At the bottom end of the middle-market sector, companies generally require the services provided to the small firm sector but as they become larger they increasingly require a broader array of more sophisticated products.

3.6.2.1 Cash management and transaction services

An important area where larger companies banking services differ from small firms is in the provision of **cash management and transaction services**. Cash management services have grown mainly as a result of: (a) corporate recognition that excess cash balances result in a significant opportunity cost due to lost or foregone interest, and (b) firms needing to know their cash or working capital position on a real-time basis. These services include the following:

- Controlled disbursement accounts. These current accounts are debited early each day so that firms get an up-to-date insight into their net cash positions.
- Account reconciliation services. A current account feature that provides a record of the firm's cheques that have been paid by the bank.
- Wholesale lockbox facilities whereby a centralised collection service for corporate payments is used to reduce the delay in cheque payment and receipt (i.e. clearing).
- Funds concentration. Redirects funds from accounts in a large number of different banks or branches to a few centralised accounts at one bank.
- Electronic funds transfer. Includes overnight wholesale payments via a variety of different mechanisms depending on the country in which the bank is based.
- Cheque deposit services. Encoding, endorsing, microfilming and handling cheques for customers.
- Electronic sending of letters of credit. Allows corporate clients to access bank computers to initiate letters of credit.
- Computerised pension fund services.
- Online corporate advisory and risk management services.
- Electronic data interchange (EDI). An advanced application of electronic messaging that allows businesses to transfer and transact invoices, purchase orders, shipping notices and so on automatically, using banks as clearing-houses.

3.6.2.2 Credit and other debt financing facilities

Large companies often have to decide whether they are going to raise funds in the domestic or foreign currency. For instance, they may raise finance in a foreign currency in order to offset a net receivable position in that foreign currency. Consider a UK company that has net receivables in euros. If it requires short-term finance, it can borrow euros and convert them into pounds for which it needs funds. The net receivables in euros will then be used to pay off the loan. In this particular example, foreign currency financing reduces the company's exposure to exchange rate fluctuations. This strategy, of course, is attractive if the interest rate of the foreign currency loan is low. The main point to emphasise is that both short- and longer-term borrowings, whether they relate to standard loan facilities or the issue of short- or longer-term debt instruments, can be denominated in either local or foreign currency.

Short-term financing

All companies have to raise short-term finance (for under one year) periodically and, in most cases, this is usually provided by banks. Typically, small firms will arrange extended overdraft facilities or negotiate term loans to meet short-term financing needs. In contrast larger firms can negotiate credit lines with a number of banks so they are not dependent on one sole supplier of funds. Bank credit, of one form or another, may be denominated in the domestic currency of the firm or in a foreign currency. Large firms can also raise short-term funds in the capital markets by issuing various types of short-term paper. The arrangement of bank credit lines, overdraft facilities and the issue of short-term funding instruments are the responsibilities of the Treasury function.

The prevailing form of commercial lending is via **credit lines** that are arrangements through which customers may borrow and repay at will, subject to a maximum amount granted. Firms pay a fee in exchange for the right to draw on funds when needed.

Commercial paper

Large firms have access to various markets for short-term finance through the issuance of tradable instruments, for example the issuance of **commercial paper** (CP). Dealers issue this paper without the backing of an underwriting syndicate, so a selling price is not guaranteed to the issuers. Maturities can be tailored to the investor's preferences. Dealers make a secondary market in commercial paper by offering to buy the paper before maturity. The US commercial paper market is the largest in the world and is the main way (outside bank credit) that large US firms raise short-term finance. Commercial paper issues denominated in currency outside the country of issuance (such as a yen or dollar commercial paper issues made in London) are known as Eurocommercial paper. (Note that this is not to be confused with the European currency – a euro CP issue can be denominated in any currency as long as the issue of the paper is made outside of the country or area of issue of the currency.) Commercial paper issues are often preferred to bank credit especially when large firms have better credit ratings than banks and this means that the former can borrow on cheaper terms. As only a handful of international banks have the highest credit rating (for example, AAA given by Standard & Poor's credit rating agency) this means that many large firms – such as General Motors and Coca-Cola – are perceived as being more creditworthy than the banks with which they do business. As such these firms can issue short-term financial instruments at finer terms than their relationship banks.

Euronotes

Euronotes are another type of instrument that large firms can issue to raise short-term funds. They are unsecured debt securities with interest rates based on interbank rates (mainly LIBOR – the London Inter-bank Offered Rate – which is the rate banks charge for lending wholesale funds to one another). These instruments typically have one-, three- or six-month maturities, although they are often rolled-over as a form of medium-term financing. In the case of Euronotes, commercial banks usually underwrite the issue of these instruments guaranteeing an issue price. Banks and other companies purchase these as part of their investment portfolios.

Repurchase agreements (repos)

In addition to the aforementioned types of short-term financing there are numerous other types of techniques that companies can use to raise short-term finance. Many large firms have developed their repo (repurchase agreement) activities. A **repo** deal involves pledging collateral (usually government bonds or some low-risk instrument) in return for short-term wholesale funds. At a set date, the funds will be re-paid and the collateral 'released'. There are various types of repurchase agreements that involve varying agreements concerning the sale and buy-back of wholesale funds backed by various types of collateral agreements. A main attraction of this type of business is that it allows companies to raise short-term funds at wholesale rates by pledging longer-term financial assets. (It is a technique widely used by banks to facilitate liquidity in the money market.)

Long-term financing

Companies also have to raise long-term finance (for over one year) in order to finance long-term investments. Large companies have access to a broad array of credit facilities including overdraft and both secured and unsecured lending facilities. For large lending requirements companies can borrow via the syndicated lending market. In addition, the largest companies can also issue bonds – either domestic or Eurobonds.

Debt finance via bond issuance

In addition to the credit facilities mentioned above, large companies can also raise funds in the capital markets by issuing debt instruments known as bonds.[6] Bonds are simply contracts between a lender and borrower by which the borrower promises to repay a loan with interest. Typically, bonds are traded in the market after issue so their price and yields vary. Bonds can take on various features and a classification of bond types depends on the issuer, priority, coupon rate and redemption features as shown in Figure 3.6.

Large companies as well as governments and international organisations all issue bonds to raise medium- to long-term finance. The most important feature relating to a bond is the credit quality of the issuer – typically governments (especially in the developed world) are believed to be lower risk than firms and so their bonds pay lower interest than that of commercial concerns. Of course, some of the world's largest companies have better credit ratings than some fragile economies so this means that the former can raise bond finance cheaper than the latter. Nearly all bond issuers have to be credit rated so as to assess their ability to

[6] For an introduction to bonds and bond markets, see Appendix A1.

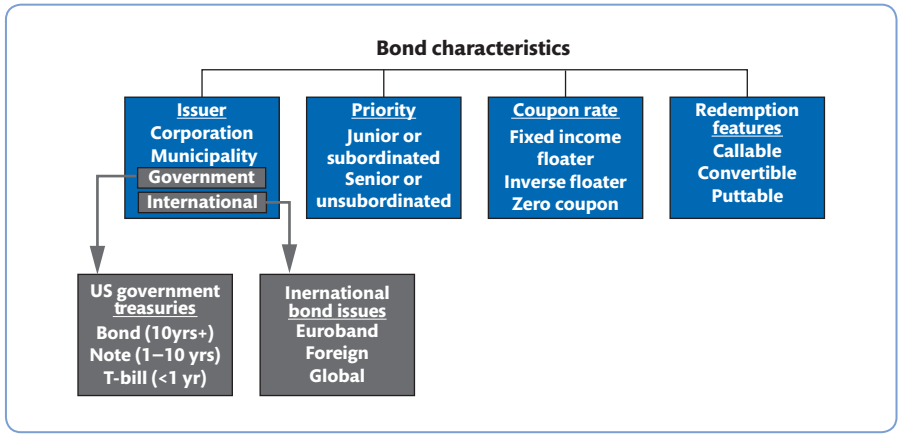


Figure 3.6 Bond features

make interest (and ultimately principal) payments for their bond financing. The credit rating process is the same as that outlined for syndicated credits and shown in Table 4.4. There are many types of corporate bonds that a firm can issue; bond finance can be used to raise funds in the home market (and currency) by issuing domestic bonds, or a company may wish to issue an international bond.

Eurobonds are defined as securities that are issued, and largely sold, outside the domestic market of the currency in which they are denominated. Eurobonds are similar in many respects to domestic corporate bonds consisting of largely fixed-rate, floating-rate and equity-related debt (convertibles) with maturities usually around 10–15 years. Unlike domestic corporate bonds (that are denominated in the home currency and issued in the home market), the Eurobond market is subject to lower regulation and is instead effectively self-regulated by the Association of International Bond Dealers. The 'Euro' prefix in the term Eurobond simply indicates that the bonds are sold outside the countries in whose currencies they are denominated. Eurobonds are issued by multinational firms, large domestic companies, sovereign governments, state firms and other international institutions. These are not to be confused with the proposals to create eurobonds (also called e-bonds or European sovereign bonds), that is for all eurozone governments to jointly guarantee each others' debts, in the form of common bonds.

Syndicated lending

Syndicated loans are a special category of loans in which an arranger, or group of arrangers, forms a group of creditors on the basis of a mandate to finance the company (or government) borrower. The main corporate borrowers in the syndicated loan market tend to be the largest multinational firms. Large firms typically chose this type of loan primarily because the required loan size is too great to be obtained from one bank (see also Section 4.7.3).

3.6.2.3 Commitments and guarantees

Commitments relate to services where a bank commits to provide funds to a company at a later date for which it receives a fee. Such services include unused overdraft facilities and the provision of credit lines. Banks also provide facilities that enable companies to raise funds by issuing marketable short-term instruments such as commercial paper, Euronotes and

(for longer maturities) medium-term notes. In the United States many large companies issue commercial paper to raise short-term funds and these facilities are almost always backed-up by a line of credit from a bank. In other words, the bank has a commitment to provide credit in case the issuance of commercial paper is not successful.

Guarantees relate to a bank underwriting the obligations of a third party and thereby assuming the risk of the transaction. Default by a counterparty on whose behalf a guarantee has been written may cause an immediate loss to the bank. Examples include such things as a standby letter of credit. This is an obligation on behalf of the bank to provide credit if needed under certain legally pre-arranged circumstances. Commercial letters of credit are widely used in financing international trade. This is a letter of credit guaranteeing payment by a bank in favour of an exporter against presentation of shipping and other trade documents (see also Section 4.7.2.1). In other words, it is a guarantee from the importers' bank ensuring that payment for the goods can be made.

3.6.2.4 Foreign exchange and interest rate-related transactions

Banks can offer their corporate clients a variety of tools to manage their foreign exchange and interest rate risk. These instruments, broadly referred to as derivatives, involve transactions such as the following:

- *Forward foreign exchange transactions* – these are contracts to pay and receive specified amounts of one currency for another at a future date at a pre-determined exchange rate. Default by one party before maturity exposes the other to an exchange risk.
- *Currency futures* – these are contracts traded on exchanges for the delivery of a standardised amount of foreign currency at some future date. The price for the contract is agreed on the purchase or selling date. As with forward contracts, gains or losses are incurred as a result of subsequent currency fluctuations.
- *Currency options* – these allow the holder of the contract to exchange (or equally to choose not to exchange) a specific amount of one currency for another at a predetermined rate during some period in the future. For a company buying an option, the risk lies in the ability of the counterparty not to default on the agreement (credit risk). For the bank writing the option the risk lies in its exposure to movements in the exchange rate between the two currencies (a market risk).
- *Interest rate options* – these are similar to currency options. The buyer has the right (but not the obligation) to lock into a pre-determined interest rate during some period in the future. The writer of the option (typically a bank) is exposed to interest rate movements, the buyer to counterparty default.
- *Interest rate caps and collars* – a bank (or other lender) guarantees the maximum rate (cap) or maximum and minimum rate (collar) on variable rate loans.
- *Interest rate and currency swaps* – in a currency swap two parties contract to exchange cash flows (of equal net present value) of specific assets or liabilities that are expressed in different currencies. In the so-called 'plain vanilla' interest rate swap two parties contract to exchange interest service payments (and sometimes principal service payments) on the same amount of indebtedness of the same maturity and with the same payment dates. One party provides fixed interest rate payments in return for variable rate payments from the other, and vice versa.

Note that many companies engage in **risk management** with the use of such financial instruments provided via their banks. Companies can also go direct to the market to hedge various interest rate and exchange rate positions. Companies engaged in substantial international trade have greater need to hedge their foreign currency positions and therefore make wider use of currency-related options, futures and forward transactions.

3.6.2.5 Securities underwriting and fund management services

As companies become larger they increasingly seek funding direct from the capital market and as such they require banks to arrange and underwrite equity and bond issues. **Securities underwriting** had traditionally been the preserve of investment banks (or so-called merchant banks in the United Kingdom) but during the 1990s universal banking became the 'norm' and now nearly all large commercial banks have an investment banking operation that underwrites issues.

In the case of securities underwriting, the underwriter undertakes to take up the whole or a pre-agreed part of a capital market issue (equity or bonds) at a pre-determined price. The main risk is that the underwriter will be unable to place the paper at the issue price.

Banks also can provide their corporate clients with **asset management** services, not only to manage a company's own investments but also to manage the pension funds of the firm's employees. The main investment banks are leaders in institutional fund management – this refers to the management of pension, insurance, corporate and other large-scale investments.

A major attraction for banks to provide services like commitments, guarantees, foreign exchange and interest rate-related transactions, securities underwriting and fund management services is that they are all fee-based and off balance sheet. All the services listed above earn banks commissions and fees. In addition, they do not relate to any asset (e.g. a loan or investment) that has to be booked on the bank's balance sheet – hence the term 'off balance sheet'.

As the above suggests, the range of products and services offered has grown rapidly over the last 20 years or so. This increase in products can partially be explained by the growing overlap of commercial and investment banking services on offer to medium-sized and larger companies.

3.7 Investment banking

The previous sections provide an overview of the main banking services offered to companies – some of which are similar to those provided to retail customers but on a larger scale. However, we have also briefly discussed a range of services – such as securities underwriting (including the issue of commercial paper, Eurobonds and other securities) – that may be less familiar. These activities have traditionally been undertaken by investment banks (or the investment bank subsidiaries of commercial banks) and relate generally to large-scale or wholesale financing activities. Investment banks mainly deal with companies and other large institutions and traditionally they did not use to deal with retail customers – apart from the provision of upmarket private banking services as noted earlier.

While we have already briefly outlined various **investment banking** products and services available to the corporate sector, it is best at this stage to explain the main features of

investment banking activity to show how it differs from commercial banking, and to highlight the changes resulting from the 2007–2009 financial crisis.

The main role of investment banks is to help companies and governments raise funds in the capital market either through the issue of stock (otherwise referred to as equity or shares) or debt (bonds). Their primary business relates to issuing new debt and equity that they arrange on behalf of clients as well as providing corporate advisory services on **mergers and acquisitions** (M&As) and other types of corporate restructuring. Typically, their activities cover the following areas:

- *Provision of financial advisory services* – advice on M&As and other financial transactions.
- *Asset management* – managing wholesale investments (such as pension funds for corporate clients) as well as providing investment advisory services to wealthy individuals (private banking) and institutions.
- *Other securities services* – brokerage, financing services and securities lending.

Investment banks represent important trading intermediaries for clients as they help raise funds on the capital markets, manage investment portfolios and carry out strategic planning. They are involved in virtually all large financial transactions and produces research and develop opinions on markets and securities. The investment banking business includes trading and investing in securities (i.e. issue, buy, sell) with their own capital (this is known as **proprietary trading**) or for their clients. This activity consists of trading and investments in a wide range of financial instruments including bonds, equities and derivatives products. Note that sometimes financial advisory and underwriting is referred to as investment banking to distinguish this from trading and other securities-related business. It is also important to remember that investment banks did not use to hold retail deposits and their liabilities were mainly securities and short-term wholesale financing. The situation has changed, particularly after the US financial giants (and so-called 'pure play' investment banks) Bear Sterns, Lehman Brothers and Merrill Lynch either filed for bankruptcy protection or were rescued through large government bailouts. In September 2008 the US Federal Reserve accepted the request of the two largest free-standing investment banks, Goldman Sachs and Morgan Stanley, to change their status into bank holding companies to qualify for government assistance, as described in Box 3.2. This has been defined as the 'end of an era' for Wall Street investment banks (see Table 3.3). Since September 2008, the similarities with commercial banks have increased as US investment firms are now allowed to expand their funding through deposits and are subject to higher capital reserves, more disclosure and less risk-taking.

Table 3.3 The end of an era for US investment banks

Investment banks	Outcome	Date
Bear Sterns	Sold to JPMorgan	Mar-08
Lehman Brothers	Filed for bankruptcy	Sep-08
Merrill Lynch	Sold to Bank of America	Sep-08
Goldman Sachs	Converted to BHC	Sep-08
Morgan Stanley	Converted to BHC	Sep-08

BOX 3.2 THE END OF AN ERA: US INVESTMENT BANKS AND THE CONVERSION INTO BHCS

In the past, investment banking used to be in sharp contrast to commercial banking that was licensed only for the traditional banking business i.e. accepting retail deposits and granting loans. The deregulation carried out over the 1990s reduced the differences across these two types of banks, by allowing commercial banks to offer investment banking services. Large banking conglomerates took advantage of this opportunity as they were aiming to transform in 'one-stop shops'. Similarly, investment banks developed as large full-service institutions and enjoyed at least three decades of prosperity, until the financial crisis began in the summer 2007, and intensified in September 2008, as described by John Gapper in the *Financial Times* (2008):

> [...] Investment banks went on to enjoy 30 years of prosperity. They grew rapidly, taking on thousands of employees and expanding around the world. The big Wall Street firms swept through the City of London in the 1990s, picking up smaller merchant banks, such as Warburg and Schroders, on their way. Under the surface, however, they were ratcheting up their risk-taking. It was increasingly hard to sustain themselves by selling securities – the traditional core of their business – because commissions had shrunk to fractions of a percentage point per trade. So they were forced to look elsewhere for their profits. They started to gamble more with their own (and later others') capital. Salomon Brothers pioneered the idea of having a proprietary trading desk that bet its own money on movements in markets at the same time as the bank bought and sold securities on behalf of its customers. Banks insisted that their safeguards to stop inside information from their customers leaking to their proprietary traders were strong. But there was no doubt that being 'in the flow' gave investment banks' trading desks an edge. Goldman Sachs' trading profits came to be envied by rivals. Investment banks also expanded into the underwriting and selling of complex financial securities, such as Collateralised Debt Obligations (CDOs). They were aided by the Federal Reserve's decision to cut US interest rates sharply after September 11, 2001. That set off a boom in housing and in mortgage-related securities. The catch was that investment banks were taking what turned out to be life-threatening gambles. They did not have sufficient capital to cope with a severe setback in the housing market or markets generally. When it occurred, three (so far) of the five biggest banks ended up short of capital and confidence [...]
>
> (Gapper, 2008)

The US financial turmoil has resulted in what many have described as 'the end of Wall Street investment banks' as regulatory consent was given in autumn 2008 to investment houses (as well as credit card companies) to convert their status into bank holding companies (BHCs).[a] Goldman Sachs and Morgan Stanley were the first two large investment banks to announce that they would become BHCs. This is how the Chairperson and CEO of Goldman Sachs, Lloyd C. Blankfein, commented on the move in September 2008:

> When Goldman Sachs was a private partnership, we made the decision to become a public company, recognizing the need for permanent capital to meet the demands of scale. While accelerated by market sentiment, our decision to be regulated by the Federal Reserve is based on the recognition that such regulation provides its members with full prudential supervision and access to permanent liquidity and funding. We believe that Goldman Sachs, under Federal Reserve supervision, will be regarded as an even more secure institution with an exceptionally clean balance sheet and a greater diversity of funding sources.
>
> (Goldman Sachs, 2008)

Box 3.2 The end of an era: US investment banks and the conversion into BHCs (*continued*)

There is no doubt that by converting to BHCs the investment banks wanted to give a strong signal to investors and to the financial community in general about their commitment to a safer and sounder banking business. These banks have had to accept increased regulation, supervision and monitoring, including strict limits in the level of risk that they can take, as well as capital and management requirements. In exchange they obtained several advantages, including the access to protection and funding from the Fed (i.e. the federal deposit insurance scheme, discount window and TARP – the Troubled Assets Relief Program. Besides, by converting into BHCs the investment banks can better diversify their sources of financing by strengthening the retail business and thus making money from borrowing from depositors.

FT *Note*: [a] Under the Bank Holding Company Act of 1956 (BHCA) these are defined as companies owning 25% or more of the voting stock in a bank or controlling a majority of its directors.
Source: Gapper, J. (2008) 'After 73 years: the last gasp of the broker dealer', *Financial Times*, 15 September. © The Financial Times Limited 2008. All Rights Reserved; Goldman Sachs (2008).

Figure 3.7 shows the top global investment banks based on revenue for 2021. US investment banks dominate although one should be aware that traditionally the main US investment banks (who tended to dominate global investment banking) were the so-called 'bulge bracket' firms including – Goldman Sachs, Merrill Lynch and Morgan Stanley. Because legislation

Top 10 Banks	Fees ($m)	Changes in Fees vs. Prev Period*	% of fees collected by product First Quarter 2021 M&A	Equity	Bonds	Loans
Goldman Sachs & Co	3,021.03	+100.09%	26	52	15	7
JP Morgan	3,019.46	+59.92%	19	33	26	22
Morgan Stanley	2,385.57	+100.52%	21	53	19	7
Citi	2,250.54	+68.82%	11	55	24	10
Bofa Securities Inc	2,096.91	+42.85%	13	39	29	20
Credit Suisse	1,621.62	+113.54%	13	46	23	17
Barclays	1,280.38	+50.76%	12	37	32	19
Deutsche Bank	1,030.66	+94.88%	12	37	37	14
Jefferies LLC	953.58	--	15	65	8	11
UBS	707.00	--	14	54	23	9
Total	**37,942.33**	**+44.48%**	19	39	28	14

Data from Jan 1 2021-Mar 30 2021 and Jan 1 2020 - Mar 30 2020 — Data as of Mar 30 2021

Figure 3.7 Largest investment banks by revenue, 2021

Source: League Tables, Investment Banking, *Financial Times*, **https://markets.ft.com/data/league-tables/tables-and-trends**

(Glass–Steagall Act of 1933) prohibited commercial banks from doing investment banking business the market was dominated by the specialist investment banks. However, since 1999 and the abandonment of Glass–Steagall, US commercial banks acquired investment banks. This means that banks such as Citi, JPMorgan Chase and Bank of America Merrill Lynch, offer both commercial and investment banking services, as do Goldman Sachs and Morgan Stanley now that they have converted into BHCs. As explained earlier, intermediaries that undertake a wide range of financial services business (such as commercial and investment banking, insurance, pensions and so on) are referred to as universal banks. Universal banking is common practice in Europe and one can also see from Figure 3.7 that a variety of European commercial banks do substantial investment banking business. Structural differences among investment banks are apparent, with Goldman Sachs and Morgan Stanley barely competing in the loans market and earning the majority of their fees from traditional investment banking activities such as M&As and advisory services.

Banks such as Barclays or Deutsche Bank are commonly referred to as commercial banks because their main business is deposit- and lending-related – although they both have substantial investment banking operations. In terms of services offered to large companies, commercial banks typically provide cash management, payments and credit facilities whereas investment banks arrange other types of financing through the issue of equity and debt to finance company expansion. They also offer an extensive array of other securities-related services including risk management products (such as interest rate and foreign exchange derivatives) and also advice on company M&A activity as well as other company restructuring. These distinctions have become blurred as large commercial banks have either acquired or expanded their investment banking services to meet the increasing demands of corporate clients. In addition, the growth in global stock market activity has encouraged many commercial banks to develop asset management and private banking operations to deal with the growing demand for securities-related services from both institutional investors and wealthy private clients. In the years after the 2007–2009 financial crisis, the investment banking industry has changed substantially, with most institutions' market value shrinking considerably and some banks withdrawing from some business segments.

Ten years on from the financial crisis, investment banking is facing turbulent times: low interest rates, weak trading volumes and automation have led to an exceptionally difficult mix for global investment banks, which have shed tens of thousands of jobs, particularly on trading desks (see Box 3.3). A decade of cost cutting and restructuring did not yield the expected results and the industry overall is facing diminishing returns.

BOX 3.3 FOR TODAY'S INVESTMENT BANKERS, JOB CUTS ARE A ONE-WAY STREET

Adair Turner, the former City regulator, once intimated that investment bankers were "socially useless" (he actually applied the phrase to activities in "fixed income securities, derivatives and share trading" but given that, for many, that is basically a job description, he clearly did not rate the profession too highly, either). News that 30,000 are now being involuntarily released back into society — through a spate of job cuts — therefore poses the question: what might they usefully do? Apart from going into politics? For the younger bankers let go by HSBC, Barclays, Société Générale, Citigroup and Deutsche Bank since April 2019, the answer may simply be: wait. According to one vice-president of a US investment bank, writing anonymously for the website eFinancialCareers: "I've seen richer juniors travel the world, come back and do a Masters and

Box 3.3 For today's investment bankers, job cuts are a one-way street (*continued*)

then go back into banking once some of their idealism has disappeared." Society might not have a use for an older and more cynical investment banker with an MBA and a suntan, but evidently the City or Wall Street might. Cyclical hiring patterns certainly suggest this was an option in the past. A BBC analysis of the Deutsche job cuts noted they marked the latest of regular 10-year troughs: 1987–89; 1999–2000; 2009; 2019. And a Federal Reserve Bank of St Louis analysis of US labour statistics has shown how the peaks are typically regained: in 2008, 55,000 people worked in investment banking and securities dealing in New York, and while it fell post-crisis to 44,000, it was back to 52,000 by spring 2019. For some of the 30,000 caught in this round of cuts, the good news is that one reason for them does look cyclical. But the bad news is, two others do not.

Low interest rates, which could yet fall further in the US and UK, make it hard for investment banks to make a profit without cutting costs. However, this cycle must eventually turn, and low rates are not solely an investment bank problem – many of Deutsche's headline-grabbing job losses will be in retail and commercial operations, too. Regulation is only heading in one direction, though. Under Europe's Mifid II rules, investment bank research must be paid for separately, cutting clients' spending by 20–30 per cent, according to the current City regulator. Trading profits will also be hit by a need to hold more capital under new Basel IV rules. Automated trading is also a significant structural change that is unlikely to be reversed. Algorithms can now trade faster and more efficiently than human investment bankers and do not charge fees to cover big bonuses. Little wonder banks' fixed income, currency and commodities trading revenues have fallen to 2006 levels, according to research firm Coalition. If they do not come back, nor will many of the 30,000 jobs. What will their former incumbents do? "I've seen people open restaurants" wrote that anonymous bank VP. Socially useful, perhaps, but hardly something London or New York needs more of.

Source: Vincent, M. (2019) 'For today's investment bankers, job cuts are a one-way street' *Financial Times*, 12 August.
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3.8 Types of banks

3.8.1 Commercial banks

Commercial banks are the major financial intermediary in any economy. They are the main providers of credit to the household and corporate sector and operate the payments mechanism. Commercial banks are typically joint stock companies and may be either publicly listed on the stock exchange or privately owned. Commercial banks deal with both retail and corporate customers, have well-diversified deposit and lending books and generally offer a full range of financial services. The largest banks in most countries are commercial banks and they include household names such as Citibank, HSBC, Deutsche Bank and Barclays. Table 3.4 illustrates the ranking of the top 15 commercial banks in the world, as per December 2018, ranked by Tier 1 Capital and Total Assets. In recent years, Chinese commercial banks have expanded substantially, often capitalising on the problems of European banks. Indeed, with the exception of HSBC, no European bank is ranked in the top ten. Figure 3.8 illustrates the increase in total assets of Chinese banks over the past five years, contrasted with the position of their main competitors.

Table 3.4 Top 15 commercial banks (by Tier 1 capital)

Rank (2018)	Company	Country	Tier 1 capital ($mil)	Total assets ($mil)
1	ICBC	China	337,539.12	4,043,728.47
2	China Construction Bank	China	287,461.31	3,390,174.16
3	Agricultural Bank of China	China	242,895.33	3,300,652.70
4	Bank of China	China	229,969.78	3,104,711.68
5	JPMorgan Chase & Co	US	209,093.00	2,622,532.00
6	Bank of America	US	189,038.00	2,354,980.00
7	Wells Fargo & Co	US	167,866.00	1,895,883.00
8	Citigroup	US	158,122.00	1,917,383.00
9	HSBC Holdings	UK	147,142.00	2,558,124.00
10	Mitsubishi UFJ Financial Group	Japan	146,739.09	2,805,074.86
11	Bank of Communications	China	101,435.33	1,391,411.82
12	Credit Agricole	France	100,887.36	2,131,911.49
13	BNP Paribas	France	97,604.60	2,345,788.51
14	Sumitomo Mitsui Financial Group	Japan	96,712.04	1,836,090.39
15	Banco Santander	Spain	89,328.39	1,677,322.90

Source: Adapted from: The Banker Database, available at **www.thebankerdatabase.com/**

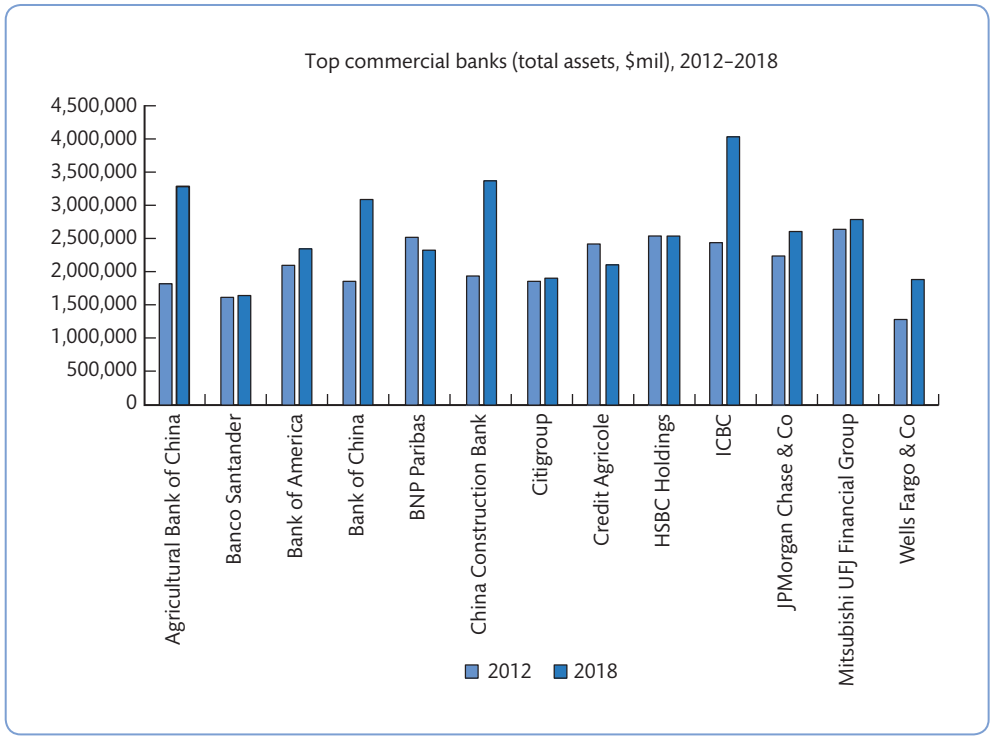


Figure 3.8 Top commercial banks (total assets, $mil), 2012–2018

Source: Adapted from: The Banker Database, available at **www.thebankerdatabase.com/**

While commercial banking refers to institutions whose main business is deposit-taking and lending, it should always be remembered that the largest commercial banks also engage in investment banking, insurance and other financial services areas. They are also the key operators in most countries' retail banking markets.

3.8.2 Savings banks

Savings banks are similar in many respects to commercial banks although their main difference (typically) relates to their ownership features – savings banks have traditionally had mutual ownership, being owned by their 'members' or 'shareholders', who are the depositors or borrowers. The main types of savings banks in the United States are the so-called Savings and Loans Association (S&Ls or thrifts), which traditionally were mainly financed by household deposits and lent retail mortgages. Their business is more diversified nowadays as they offer a wider range of small firm corporate loans, credit cards and other facilities. Originally the US S&Ls were mainly mutual in ownership but now many have become listed. They represent the second largest deposit-taking group of financial institutions in the United States, although numbers have been steadily decreasing since the early 1990s (see Figure 3.9): there were 681 saving institutions in March 2019 with assets of over $1,183 million.[7]

Savings banks are also important in various other countries, particularly in Europe. In Germany, for instance, they form an important feature of the country's banking assets. Unlike in other European countries, German Sparkassen also hold direct links with local political communities. Sparkassen are non-commercial public-sector entities, whose controlling 'owners' (Träger) are municipalities and/or counties, even though these local governments hold

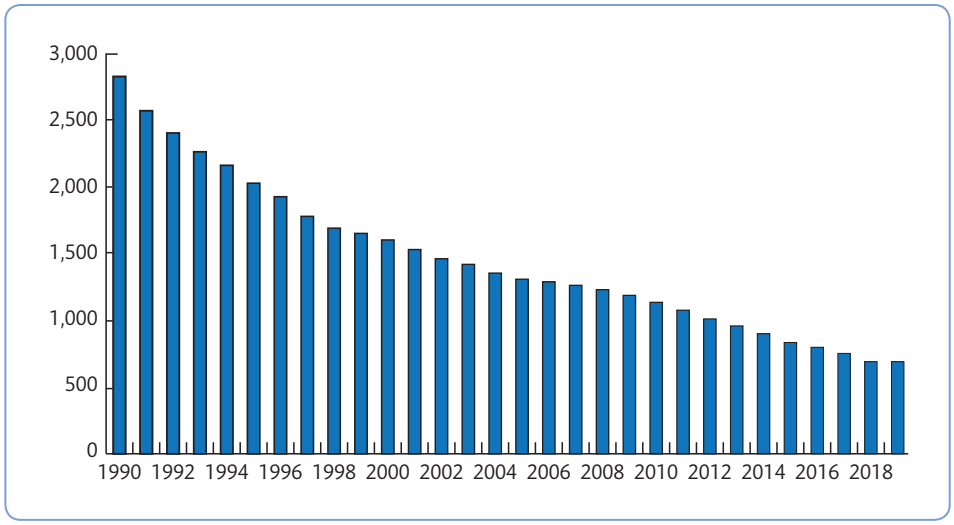


Figure 3.9 The decline of US savings banks, 1990–2019

Source: Authors' elaborations. Data from **www.fdic.gov/bank/statistical/stats/**

[7] **www.fdic.gov/bank/statistical/stats/**

no liability for Sparkassen losses as has been established by EU competition policy jurisprudence. All Sparkassen, however, are members of elaborate formal risk-sharing frameworks at the state and federal level, including a shared deposit insurance scheme and an institutional protection scheme. As per 2018, there were around 400 Sparkassen, forming a network that represents about 15 per cent of the country's domestic banking assets for a total of around €1.2 trillion, not counting other public-sector banks (such as the regional banks or Landesbanken), with which the Sparkassen also have structural links. Markgraf and Veron (2018) focused on the Sparkassen's structural links and relationships with elected politicians, and found that: (i) most Sparkassen are chaired by elected politicians; (ii) most county heads are involved in Sparkassen; and (iii) many politicians derive a tenth or more of their personal income from a Sparkasse position. They conclude that this is a peculiar feature of the German banking system and not found – to the same extent – anywhere else in Europe. It should be noted that savings banks (in Europe and elsewhere) adhere to the principle of mutuality and pursue objectives relating to the social and economic development of the region or locality in which they operate. Unlike commercial banks they may pursue strategic objectives other than maximising shareholder wealth or profits. Typically, their business focuses on retail customers and small businesses, but as some have become very large (especially in Germany and Spain) they closely resemble commercial banks in their service and product offering.

3.8.3 Co-operative banks

Another type of institution similar in many respects to savings banks are the **co-operative banks**. These originally had mutual ownership and typically offered retail and small business banking services. Co-operative banks are an important part of the financial sector in Germany, Austria, Italy, France, The Netherlands, Spain and Finland. A trend has been for large numbers of small co-operative banks to group (or consolidate) to form a much larger institution – examples of which include Rabobank in the Netherlands and Credit Agricole in France – both of these are now listed and have publicly traded stock. However, after the 2007–2009 crisis, the virtues of banking consolidation are undergoing a drastic reassessment and the emphasis on demutualisation seems to have been contributing to the instability in the financial sector. Various commentators are now calling for more diversity in types of banks, with different banking models suiting different types of customers, and therefore supporting the real economy, contributing to systemic stability and promoting inclusion (see Ayadi *et al*., 2009, 2010).

3.8.4 Building societies

Another type of financial institution offering personal banking services prevalent in the United Kingdom and various other countries (such as Australia and South Africa) are known as **building societies**. These are very similar to savings and co-operative banks as they have mutual ownership and focus primarily on retail deposit-taking and mortgage lending.

There are around 43 building societies in the UK at the time of writing (2021) with total assets of £415 million. Building societies employ approximately 42,500 full- and part-time staff and operate through approximately 1,470 branches. Statistics show that the number of these institutions fell substantially during the 1990s as the largest converted from mutual to

publicly listed companies and therefore became banks. More detail on the UK building society sector can be found in Chapter 13.

3.8.5 Credit unions

Credit unions are another type of mutual deposit institution that is growing in importance in a number of countries. These are non-profit co-operative institutions that are owned by their members who pool their savings and lend to each other. Many staff are part-time and they are usually regulated differently from banks. As illustrated in Table 3.5, the number of credit unions worldwide varies remarkably across regions.

The total number of credit unions worldwide in 2018 was approximately 89,000 (see Table 3.5) serving over 260 million members. In the United States there were 5,684 as of December 2018, with over 112 million members with deposits exceeding $1.7 trillion in total assets and loans of over $850 billion.[8]

3.8.6 Finance houses

Finance companies provide finance to individuals (and also companies) by making consumer, commercial and other types of loans. They differ from banks because they typically do not take deposits and raise funds by issuing money market (such as commercial paper) and capital market instruments (stocks and bonds). In the UK these are sometimes referred to as hire purchase firms, although their main types of business are retail lending and (in the UK and continental Europe) leasing activity. All major retail firms and motor companies have their own **finance house** subsidiaries – for example, General Motors' finance house used to fund car purchase is known as GMAC Financial Services. A distinction is usually made between sales finance institutions (loans made by a retailer or car firm to fund purchases); personal credit institutions (that make loans to 'non-prime' or high-risk customers

Table 3.5 Credit unions in the world, 2018

Regions	No. of credit unions	No. of members	Total assets (US$ mil)	Penetration rate (%)
Africa	37,607	29,610,773	91,689	9.25
Asia	37,246	50,843,858	170,408	3.15
Caribbean	377	3,440,345	17,321	30.06
Europe	3,553	9,287,644	35,311	3.11
Latin America	2,987	39,291,611	87,565	11.03
North America	6,251	122,911,564	1,706,250	51.74
Oceania	1,005	4,778,947	88,994	18.41
World	**89,026**	**260,164,742**	**2,115,016**	**9.09**

Notes: Penetration rate is calculated by dividing the total number of reported credit union members by the economically active population age 15–64 years old.
Source: WOCCU (World Council of Credit Unions) Statistical Reports and authors calculations. Data available at Data available at **www.woccu.org/publications/statreport**

[8] Credit Unions Worldwide, Statistical Reports, available at **www.woccu.org/publications/statreport**

who usually cannot obtain bank credit) and business credit finance houses that use factoring (purchasing accounts receivables) and leasing to finance business activity.

The largest finance houses in the UK are subsidiaries of the major banks and they are significant operators in the unsecured consumer loan business. For instance, in 2018, finance and leasing association (FLA) members provided £104 billion of consumer credit to support purchases ranging from cars to household goods, accounting for over a third of total new consumer credit written in the UK.[9]

BOX 3.4 DIVERSITY IN THE BANKING ECOSYSTEM

Ten years on from the financial crisis, the global banking system is still addressing a set of legacy issues, as well as facing new and diverse challenges. Legacy issues play an important role in the European banking landscape, with many large players still grappling with non-performing loans, low capitalisation and stagnant profitability. Despite some positive trends, weak economic growth has compounded banks' problems in many countries. The average European bank has generated a return on equity of only 6 per cent in 2018, with banks in some Southern European countries posting significant losses. The cost of capital has remained high, which hampers banks' ability to raise new equity. Some of Europe's largest banks are facing a litany of problems, from failing IT infrastructure to regulatory fines and sanctions. Significantly, European banks are no longer among the top global players and have lost customers and market segment to US competitors, but also to emerging players from Asia. On the regulatory side, European banks have been faced with additional challenges compared with their international counterparties, including the creation of the Banking Union and of the SSM as a single supervisor. The new regulatory framework, however, is far from complete and it is likely to impose further costs on banks going forward. The next challenge for European banks comes from technology: obsolete IT infrastructure and the need to invest heavily in new systems is also weighting heavily on banks' balance sheets. To survive the digital transformation, European banks will need to rethink strategies and business models. The 2018 Bank Business Models Monitor presents an insightful analysis of the European banking landscape. The detailed analysis provides updated identification of bank business models for a very large and representative sample of banks and banking groups in the European Economic Area (EEA) and Switzerland. The evaluation includes the analysis of changes in business models and how different business models respond to the new regulation and resolution regimes. The findings provide new evidence about the role of different business models, in terms of performance, efficiency and contribution to the real economy.

On the basis of a cluster analysis, the 2018 Bank Business Models Monitor substantiates the co-existence of different business models, which they identify as follows (see Figure 3.10): (i) focused retail, i.e. banks that use customer deposits as the primary means for funding loans and maintain relatively high levels of loss-absorbing capital; these institutions follow the traditional financial intermediation model; (ii) diversified-retail, i.e. banks that are still retail-oriented, and yet more diversified with respect to focused retail banks, either on the asset side (type 1) or on the liability side (type 2). More specifically, type 1 groups retail-oriented banks, whose asset side, along with loans, also presents more trading assets than focused retail banks; type 2 includes banks that have significantly more trading assets

[9] See the consumer finance section of the UK's Finance and Leasing Association website at **www.fla.org.uk** for more details.

Box 3.4 Diversity in the banking ecosystem (*continued*)

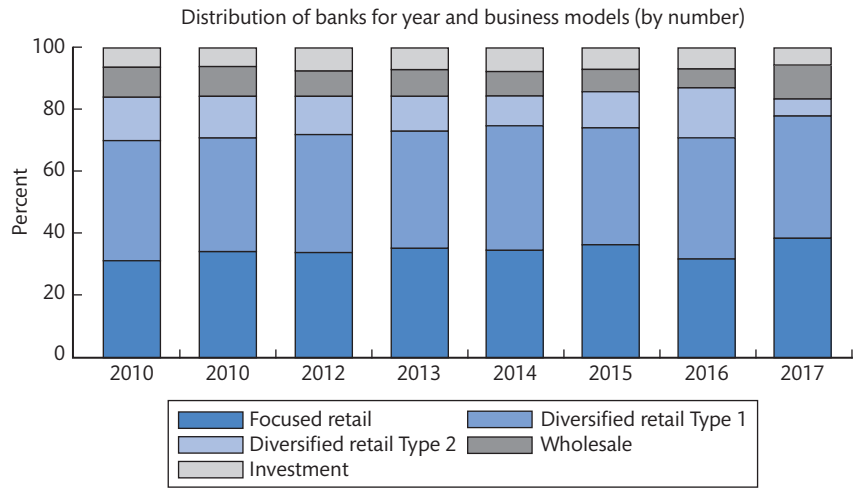


Figure 3.10 Bank business models in Europe

Source: Adapted from Ayadi *et al*. (2021).

than focused retail banks, also are more reliant on debt and short-term market funding; (iii) wholesale, which groups together banks that are heavily wholesale oriented and largely active in the interbank markets; and (iv) investment, banks that have substantial trading activities – this includes large universal banks with a significant investment banking division as well as pure investment banks.

Most European banks adopt a retail-oriented business model, with various degrees of diversification. Specialised wholesale and investment banking models are instead less popular in terms of numbers, but large in terms of size. The analysis also reveals that different business models co-exist among banks with different ownership structures. While business models are relatively stable over time, the report illustrates that a number of banks change business model, which is in line with the profound changes in the banking industry. A concern relates to the concentration of banks in a particular business model, as the diversity of the financial ecosystem is one of the key drivers of financial stability. The authors report a shift towards a diversified retail banking model and away from wholesale and investment banking models. These latter are on average more profitable but also riskier in terms of their individual contribution to systemic risk. In addition, wholesale and investment banks seem also less resilient to shocks. In this context, the migrations towards more retailed oriented business models seem to be a positive development in the European banking industry: retail-oriented banks are less risky from a systemic point of view; are better capitalised and have a more stable financial performance. In addition, they provide a positive contribution to the real economy. While these changes are welcome news for policy makers, attention should be paid to long-standing issues, such as the culture (of risk), the governance and in particular the diversity not only among business models but among banks' senior managers and board of directors. The ability to manage change is extremely positive in the context of the current macro-economic scenarios and the emerging geo-political shifts in Europe will require banks to remain agile.

Source: Adapted from Ayadi *et al*. (2019, 2021)

3.9 Conclusions

This chapter outlines the main types of banking business undertaken globally. The focus has been on commercial, private and investment banking activities. Prior to the 2007–2009 crisis the trend towards the development of financial service conglomerates and the universal banking model had been encouraged by favourable regulation (and mostly by deregulation). A major feature has been the blurring distinction between different types of banking business and the emergence of full financial service conglomerates that offer an extensive array of retail, corporate and investment banking products. Many banks also offer insurance, pensions and other non-banking financial services.

Over the 1990s and early 2000s this change in the features of the banking business simply reflected the desire of banks to meet the ever increasing and divergent needs of their customers – both personal and corporate. It also reflected the trend to diversify earnings supplementing traditional commercial banking interest income with fee- and commission-based revenues from other sources. The ultimate aim was to offer clients a spectrum of products and services that strengthen customer relationships and provide services that clients value. Nowadays the trend towards universal banking is under question as large banks are 'deleveraging' and selling 'non-core' activities.

Key terms

Asset-based finance
Asset management
Bacs system
Building societies
Business angels
Cash management and transaction services
Commercial banks
Commercial paper
Commitments
Co-operative banks
Corporate banking
Credit lines
Credit unions
Crowdfunding platforms
Eurobond
Euronote
Factoring
Finance houses
Guarantees
High net worth individuals (HNWIs)
Hire purchase
Investment banking
Invoice discounting services
Leasing
Mergers and acquisitions
Modern banking
Net interest margins
Pay.UK
Private banking
Private equity finance
Proprietary trading
Repos
Retail or personal banking
Ring-fencing
Risk management
Savings banks
Securities underwriting
Specialist banking
Syndicated loans
Traditional banking
Universal banking
Venture capitalists
Wholesale banking

Key readings

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REVISION QUESTIONS AND PROBLEMS

3.1 In what ways does traditional banking differ from modern banking?

3.2 What are the benefits of universal banking compared to specialist banking?

3.3 Explain the main characteristics of the different types of banks that offer personal (retail) banking services.

3.4 Discuss the emergence of crowdfunding platforms.

3.5 What are the primary features of private banking?

3.6 What are the main features of corporate banking?

3.7 What are the typical services offered by banks to the large (multinational) corporate sector? Distinguish between short- and long-term financing.

3.8 What services do investment banks typically offer to customers?

3.9 Discuss the outlook for the investment banking industry.

3.10 What are venture capitalists? To what extent are they similar to private equity finance?

Chapter 4

International banking

Learning objectives

- To outline the main features of international banking
- To describe the history of international banking
- To understand the reasons for the growth of international banking
- To understand the main theories on the rationale for international banking
- To describe the most common international banking products and services
- To introduce the loan syndication market
- To understand the impact of the global financial crisis on international banking activity

4.1 Introduction

The growth in foreign bank activity and international banking in general has been a major factor of financial system development. This chapter provides an insight into the main characteristics of international banking and highlights its diverse and dynamic features. The first part of the chapter defines international banking, provides a brief history and then discusses the range of products and services offered by international banks. Here the focus is on banking services provided to large corporations – namely treasury management services, credit, debt and equity financing as well as trade finance and various risk management products. More detailed attention will be given to the loan syndication market. The chapter concludes by discussing the growing presence of foreign bank activity and the impact of the global financial crisis on international bank activity.

4.2 What is international banking?

International banking refers to business undertaken by banks across national borders and/or activities that involve the use of different currencies. A more precise definition of international banking is provided by Lewis and Davis (1987), who classify international banking

into two main types of activity – traditional foreign banking and Eurocurrency banking. **Traditional foreign banking** involves transactions with non-residents in domestic currency that facilitates trade finance and other international transactions. **Eurocurrency banking** involves banks undertaking wholesale (large-scale) foreign exchange transactions (loans and deposits) with both residents and non-residents. The definition above suggests that international banks are involved with financing trade, transacting foreign exchange business and making wholesale (large) short-term Eurocurrency loans and deposits.

While banks engaged in international banking are typically involved in these types of activities, the definition is rather broad and does not really take account of the fact that many banks have operations in various countries. Traditional foreign banking and Eurocurrency banking, for instance, do not require that banks have a physical presence in a foreign country – such activity can be conducted within a single country. For example, UK banks can undertake domestic currency transactions with customers in Hong Kong without any physical presence in the latter. Similarly, wholesale Eurodollar loans (wholesale loans denominated in US dollars) can be made between banks based in London without any of these banks needing a physical presence in the US.

In order to account for the fact that many banks have physical operations in various countries a distinction is made between **multinational banking** and international banking. Multinational banking refers to banks having some element of ownership and control of banking operations outside their home market. The main feature of multinational banking is that it requires some form of **foreign direct investment (FDI)** by banks in overseas markets reflecting a physical presence (this definition comes from the literature on multinational enterprises and FDI).

If a bank were to follow a multinational banking model, it would operate sizeable foreign branches and subsidiaries in multiple jurisdictions and, in its extreme form, funds those positions locally in the host countries. In contrast, the international bank model refers to banks which operate out of the home country or in a (major) financial centre and conduct mostly cross-border business. The 2008 crisis put these two models to the test, as summarised in Box 4.1.

BOX 4.1 FROM INTERNATIONAL TO MULTINATIONAL BANKING?

After the 1980s' Latin American debt crisis inflicted losses on cross-border loans, banks shifted towards the multinational model. Establishing or acquiring a local bank in order to borrow and lend locally avoided transfer risk, if not country risk. As a result, the share of local currency claims in foreign claims on emerging market economies rose from 7 per cent in 1983 to 25–30 per cent in the 1990s. After the Asian financial crisis of 1997–1998, the local currency share of claims globally was even higher. The shift to local banking slowed in the 2000s. In emerging markets, bank flows across borders resumed in the mid-2000s in response to higher yields and US dollar depreciation. Elsewhere, the introduction of the euro, spurring an area-wide interbank market, and European banks' heavy investment in US asset-backed securities had a similar effect. However, if factors promoting cross-border lending are transitory, then local claims as a share of foreign claims may rise. This may occur even in the absence of any regulatory changes that might favour multinational over international banking.

The global financial crisis of 2007–2009 reinforced the previous trend towards local and multinational banking, especially in emerging markets. With the drying-up of the international interbank market, claims on unaffiliated banks shrank. Cross-border claims and locally booked foreign currency claims (often funded cross-border) dropped more abruptly than local currency claims. The same pattern on the liabilities side suggests that local funding proved more resilient during the crisis. Developments by currency differed slightly, reflecting the greater dislocation in dollar funding markets and the high cost of dollars in foreign exchange swap markets.

Box 4.1 From international to multinational banking? (*continued*)

According to the BIS banking statistics, cross-border interbank lending fell from $22.7 trillion in 2008 to $17.0 trillion in 2013. However, what appears to be a global shrinkage of international banking is actually confined to European banks, which uniquely responded to credit losses after 2007 by shedding assets abroad – in particular, reducing lending – to restore capital ratios. The relative importance of cross-border bank assets has declined from a peak near 60 per cent of global GDP in 2007 to less than 40 per cent by 2017.

Other banking systems' global footprint, notably those of Japanese, Canadian and even US banks, has expanded since 2007. Overall global cross-border banking claims are expanding, but at a slower pace compared to the pre-crisis years. By the end of 2018 they rose to $29 trillion. This expansion was driven mainly by cross-border claims on non-banks, especially non-bank financial institutions (NBFIs), which grew by 8 per cent per year.

Source: McCauley *et al*. (2010, 2017); Bank for International Settlements (2014, 2017a, 2019a).

We should note that 'international banking' and 'multinational banking' are terms that are used interchangeably to refer to banks that have global activities. For the purpose of this chapter we will use international banking as it is a more commonly used term, although one needs to be aware that the following sections discuss international activities of banks in their broadest sense. Box 4.2 provides some additional definitions.

BOX 4.2 SOME DEFINITIONS

Multinational banking

A multinational corporation is a corporation that manages production or offers products and services in more than one country. By extension, a *multinational bank* is a bank with a physical presence in more than one country. Generally, it refers to banks having some element of ownership and control of banking operations outside their home market.

International banking

Global banks are institutions with the widest reach – either through subsidiaries or branches they provide services in several world countries and have a presence in all continents.

International banks are institutions that provide cross-border services, but operate in too few countries, or are relatively too small, to be defined global.

Local banks are institutions providing services only in the country where they are headquartered (also called domestic banks).

A bank is international if:

- it has branches and/or subsidiaries overseas;
- it conducts business in a foreign currency irrespective of its location;
- it has international customers.

Cross-border banking

Cross-border banking is defined as the level of inward banking at the country level.

Cross-border penetration is defined as the percentage of a country's banking system assets coming from other countries.

Cross-border lending is defined as direct lending to non-affiliated entities abroad.

4.3 Brief history of international banking

The origins of international banking date back over 4,000 years when various civilisations used letters of credit and bills of exchange issued across sovereign boundaries to finance trade. The history of banks having a physical presence outside their home country is more recent, widely acknowledged as starting in the 15th century when Florentine bankers (notably the Medici family) established subsidiaries or foreign branches in other jurisdictions to help finance trade, scientific, military, artistic and other endeavours. From the 14th to 16th century, Florence was regarded as the scientific and cultural capital of the Western world and the city gave birth to the Renaissance and modern European art. It has been argued that commercial and artistic developments were inextricably linked by a change in social attitudes that emphasised the creation of wealth and conspicuous consumption. This not only prompted the development of regional banking business but also encouraged international activity because financing requirements could not be met locally.[1]

The modern era of international banking can be viewed as occurring in two distinct phases. The first phase commenced with the rise of colonialism during the 19th century, which continued into the 20th century. The second phase of international bank expansion was linked to the growth of US multinational firms and the changing financial regulatory landscape from the late 1950s and early 1960s onward:

- **Colonial banking** – British banks opened branches in their Australian, Caribbean and North American colonies in the 1830s. Further expansion took place starting from the 1850s onward and by the end of the century British banks had operations in South Africa, Latin America, India and parts of Asia as well as in the Middle East and some European countries. Other colonial powers also expanded their banking activities in the latter part of the 19th century, particularly Belgian, French and German banks that set up operations in Latin America, Africa and China as well as in London. One noticeable difference between the British banks and their European counterparts was that the former established 'colonial banks', otherwise known as 'British overseas banks' or 'Anglo foreign banks', that only provided services outside the UK. In contrast, the European banks undertook both domestic and foreign activity, often via the acquisition of banks or through the establishment of subsidiaries. In other words, European bank expansion overseas was more similar to the type of activity conducted nowadays – domestic banks acquiring foreign operations or setting up subsidiaries through which business could be undertaken, whereas British banks were specifically set up to do banking only in the colonies. Various Japanese and Canadian banks also developed international activities in the latter part of the 19th and early 20th century.
- **Modern international banking** – the expansion of banks overseas during the first half of the 20th century was somewhat limited due to the decline of the British and other colonial empires, economic uncertainty brought about by the World Wars, and the changing political landscape in many countries that sought to establish their own banking systems

[1] Banca Monte dei Paschi di Siena, the oldest bank in the world, was founded in 1472. Also see Parks (2005) for an excellent insight into the role of the Medici family in banking, art and other matters in 15th century Florence.

by restricting (even nationalising) foreign banks. It was not until the emergence of the US as a major economic power and the growth of their multinational companies that the second wave of international banking activity took place. This occurred from the late 1950s and early 1960s onward, when US banks began to expand overseas to meet the financial requirements of multinational firms but also to take advantage of cheaper financing outside the home market. US banks were subject to limits on how much interest they could pay on deposits (known as Regulation Q) and also had to maintain onerous reserve requirements. They found that by establishing subsidiaries outside the US (typically in London) these operations were not subject to home regulations – so US banks could pay more interest on dollar deposits and could do more dollar lending at finer terms via their overseas subsidiaries as these were not subject to the home regulations. US banks were attracted to London because substantial dollar deposits were located there – some say that this was because the anti-communist sentiment in the US (characterised by the so-called 'McCarthy witch hunts' from 1947 to 1954) encouraged the Russian, Chinese and other governments to move large-scale dollar funds out of New York to London as they thought these may be frozen. In any event, US banks flocked to London and, to a lesser extent, other major financial centres (e.g. Paris) during the 1960s. This was the birth of the **Eurocurrency markets** – markets where wholesale foreign currency deposits and lending takes place. US banks continued to dominate international banking during the 1970s, although from the late 1970s and throughout the 1980s Japanese banks replaced them as the major international lenders (reflecting the growth of Japanese multinational companies over the period). The 1990s witnessed a decline in the relative importance of Japanese banks on the international scene due to problems in their home market, and their position was replaced by European banks that expanded their international operations as a result of various factors (including the creation of the European Union's single market).

Next, we look at some fundamental issues for the understanding of the international banking business. First, we focus on the main theories and strategic motives that make banks expand abroad. We then present the different types of entry in foreign markets and we discuss the advantages and disadvantages of international banking. Finally, we present the products and services offered by international banks.

4.4 Why do banks go overseas?

An extensive body of literature has examined the rationale for the expansion of companies overseas. This literature spans the economic literature on the determinants of foreign direct investment (FDI), studies on the strategic behaviour of firms as well as empirical evidence on the performance and efficiency advantages of international companies. Many of the theories applicable to the overseas expansion of non-financial firms can be applied to banks.

The main theories describing the motives for overseas expansion relate to:

- factor price differentials and trade barriers;
- arbitrage and the cost of capital;
- ownership advantages;

- diversification of earnings;
- excess managerial capacity;
- location and the cycle.

These theories are briefly discussed below.

4.4.1 Factor prices and trade barrier theories

The theoretical and empirical literature on the determinants of foreign direct investment (FDI) focuses on two main motives for overseas expansion – factor price differentials and trade barriers that inhibit exports. The former, known as **vertical FDI**, suggests that overseas activity occurs so that firms can take advantage of international factor price differences. Headquarter services require substantial physical and human capital inputs whereas production is mainly manual labour intensive. Companies become multinational when they establish production in lower manual labour cost countries and headquarters where skilled labour costs are low. The alternative motivation for the existence of multinationals relates to trade barriers that make exporting costly. Where trade costs are high the firm establishes in countries to access markets and this is referred to as **horizontal FDI**.

One can see that these two main motives for FDI derive from study of the real sector. In the case of banking, evidence would seem to suggest that horizontal FDI is likely to be a much more important motive for cross-border activity than vertical FDI. For instance, the strategic reasons for banks to establish multinational operations are most likely to be based on advantages associated with 'internalising' informational advantages as opposed to trading at arm's length. Because it is difficult to find efficient markets for long-distance transactions in some areas of banking (such as retail banking, lending to small firms, specific credits to companies operating in different regulatory and economic environments) investment overseas is likely to be an important feature of the industry.

Regulations governing many areas of business are also country-specific and act as substantial trade barriers. This means that in many areas of business (and particularly in banking) it may be difficult to undertake cross-border activity without a physical presence within a country. For example, differences in tax treatments, consumer protection legislation, marketing rules, definition of products and so on, mean that the cross-border selling of many financial services products and services is problematic unless the bank has a physical presence in the market where it wishes to sell its products. Box 4.3 highlights how trade barriers impact on banks' decisions to locate overseas.

4.4.2 Arbitrage and the cost of capital

One of the main theories explaining the overseas investment decision of firms relates to the **arbitrage** activities of firms in that companies that raise their finance in strong currency markets can borrow relatively cheaply and they can invest their proceeds in markets where currencies are weak and firms can be acquired relatively cheaply. For a simple example, the substantial 20–30 per cent depreciation of the US dollar against the euro and British sterling during 2003 meant that European investors could acquire US banks for 20–30 per cent cheaper than they could do previously. All other things being equal, this means that overseas banks can be purchased cheaper due to currency depreciation and the overall returns from

BOX 4.3 TRADE BARRIERS AND BANKING

Many jurisdictions prohibit the sale of financial services without establishment – a bank must have a physical presence before it can enter the market. These barriers may be less onerous when banks operate in areas that have a more international dimension such as investment and international banking, although it is noticeable that even the world's largest investment banks typically have extensive physical market presence in many countries.

In general, domestic regulations dictate that banks must have a physical presence in the country before they can access various markets – this, therefore, acts as a substantial trade barrier facilitating both cross-border establishment as well as M&A activity. Bringing together informational advantages associated with having a market presence plus the barriers brought about by domestic financial services regulation means that cross-border activity in banking can mainly be characterised by horizontal FDI.

the acquired firm will be boosted – as return on capital will obviously be higher. (The theoretical argument is the same as the reason why European holidaymakers flock to destinations with relatively weak currencies and may be deterred from visiting destinations with strong currencies.)

More formally, the **cost of capital** argument focuses on the cost of raising finance. At any one time, some currencies are relatively strong whereas others are weak. Investors require a lower return or interest rate for securities issued in the stronger currency. As such, firms that issue securities in strong currencies require a lower cost of capital (it is cheaper for them to borrow via the issue of equity or debt instruments). Subsequently, these firms can acquire overseas assets at higher prices than local firms who issue securities in local currencies, and still appear to be buying foreign firm relatively cheaply. So if the euro is strong compared with the dollar, European firms can raise funds for acquisition more cheaply than their US counterparts, and therefore can acquire stakes or outbid them to make purchases, say in the US market.

While cost of capital arguments have been put forward as the main reason for the acquisition of US banks by their UK and European counterparts from the late 1990s to the mid-2000s, this theory cannot really explain the following:

- why some firms invest overseas in markets which have the same currency (for example, within the eurozone);
- why there is cross-investment, for instance, why UK firms invest in the US and why US firms invest in the UK;
- why firms incur substantial costs in setting up operations overseas instead of just making an acquisition.

As a consequence, various other theories have been proposed to explain overseas expansion of banks (and other firms).

4.4.3 Ownership advantages

Given the limitations of the cost of capital argument, attention has been placed on identifying why foreign banks seek to operate overseas when they seem to have various disadvantages

compared to domestic/indigenous banks. Typically, the main disadvantages for foreign banks entering overseas markets can be identified as follows:

- Indigenous banks are likely to be better informed regarding the demand features of the local markets as well as the legal and institutional framework under which business is conducted. Foreign banks, therefore, can only acquire this expertise at a cost.
- Foreign banks have to incur costs associated with operating at a distance and these include such things as management, regulatory and other costs.

Given that these disadvantages are likely to be evident, the argument goes that banks that locate overseas must have some type of compensating advantages that enable them to compete with indigenous firms on equal terms – these are in general referred to as '**ownership advantages**'.

These so-called 'ownership advantages', which may be related to technological expertise, marketing know-how, production efficiency, managerial expertise, innovative product capability and so on, must be easily transferable within the bank and the skills and other 'ownership advantages' diffused effectively throughout the organisation.

The concept of 'ownership advantages' is a rather broad concept. It is by no means clear how long it takes banks to build such advantages, whether such advantages relate mainly to innovative products and services, or whether they emanate mainly through the operation of more efficient organisational or production processes. There is also little evidence on the costs associated with developing such advantages. However, the fact that banks do expand into markets where they at first appear to have an inherent disadvantage compared with incumbent firms, means that they must have some form of advantage compared with domestic operators.

4.4.4 Diversification of earnings

An obvious motive for foreign expansion relates to the aim of management to diversify business activity. This theory states that the investment decisions of banks stem from a conscious effort by managers to diversify earnings and therefore reduce risk. By expanding into different markets, banks expose their operations to the risk and return profile of specific business areas. If a German bank believes the prospects for retail banking in the US are more attractive than retail banking in its home market then it makes sense to consider expansion in the US. This will diversify earnings and make the German bank less exposed to its home market.

Diversification of bank earnings and risk reduction can be brought about by expansion into foreign markets and risk will be reduced the less correlated earnings in the foreign country are to those in the home market. You should be aware that finance theory tells us that investors wish to construct diversified portfolios of shares so that all their investments are not exposed to the same adverse shocks – hence they construct portfolios by choosing an array of investments looking for low correlations between the price movements of the stock so as to maximise diversification benefits to yield a given expected return and risk. This principle is the same for banks (and other firms) when they consider expanding overseas. Also remember that banks can diversify by doing similar business activity in different countries (**geographical diversification**) and also by expanding into new areas (such as insurance, mutual funds, investment management, investment banking and so on) both at home and abroad (**product diversification**).

4.4.5 Theory of excess managerial capacity

Another theory of foreign investment relates to the desire of companies to use up **excess managerial capacity**. A bank may require the use of certain managerial and other resources that can be only fully utilised when they achieve a certain size. For instance, if a firm has a highly specialised management team it may not get the best use of this team if it only focuses on business in one particular geographical market. Companies can extend their scale of operations by expanding overseas and into new markets and these managerial resources will be more efficiently utilised.

4.4.6 Location and the product life cycle

In addition to the theories mentioned above, another school of thought focuses on location theories that are linked to the **product life cycle**. Here the focus is on the nature of the product (or services) produced and the changing demand and production cost features of the product in different markets.

The product life cycle has three main stages (see Figure 4.1):

1. Innovative or new product.
2. Maturing product.
3. Standardised product.

The **innovative (or new product) stage** is when a good or service is produced to meet a new consumer demand or when a new technology enables the creation of innovative goods. Typically, these new demands are first met by banks located in mature and well established markets – also generally those with higher GDP per capita income. In the first instance, the product may not be standardised and communication between the production process and selling arm of the company needs to be close and frequent as the product establishes a market presence. As the communication costs increase with distance the new product is likely to be produced and sold in the home market before any international expansion is considered.

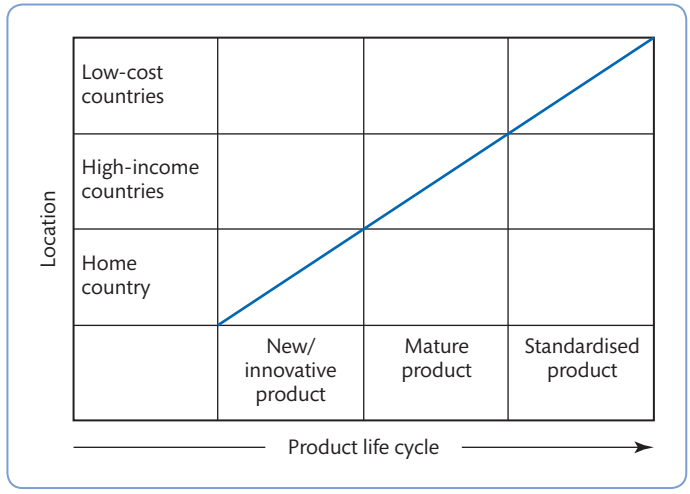


Figure 4.1 The product life cycle

As the bank gains from '*learning by doing*' and the most efficient forms of production, distribution and selling are identified, the product becomes more standardised. This is known as the **mature product stage**. Customers are more aware of the products features and also are likely to become more price-sensitive (demand for the product in the home market becomes more elastic). As the market expands, the producer is likely to benefit from scale economies so production costs fall. When the product or service reaches maturity and foreign customers become aware of the new good then demand is likely to grow (especially from those in relatively more prosperous overseas markets). Usually, investment is first likely to take place in high income countries that have demand features similar to the home market although where the costs of producing and operating locally exceed those of exporting. This pattern of **production diffusion**, whereby innovative products are first produced and sold in prosperous economies then trickled down to (relatively) less wealthy markets, characterises overseas expansion in the mature product stage. This feature is common to many retail financial services, such as credit cards, that originated in the US in the 1960s, spread to Europe in the 1970s and 1980s and in the 1990s became commonplace in many developing countries.

The final stage of the product life cycle is that of the **standardised product** where the product is uniform and undifferentiated and competition between producers is based solely on price. In this case knowledge about foreign markets is not important and the main issue for the producer is to find the lowest cost of production. In this stage of the product life cycle production is transferred to the lowest cost country so the firm can maintain competitive advantage.

4.4.7 Other theories on the rationale for international banking

While there are a host of theories explaining why international banking exists, no one theory seems to adequately explain all types of foreign expansion. Banks may wish to simultaneously diversify their income streams and also find the lowest cost production base. Many banks and other financial firms have developed services with strong brand images through effective differentiation strategies but they still may wish to charge relatively high prices and also produce at the lowest cost.

In fact, if one reviews the literature on the motives for foreign expansion, it can be seen that all the theories come up with some form of explanation that tries to determine why banks seek to produce and sell their own products and services through foreign operations rather than exporting from the home market. Other theories concerning the rationale for international banking relate to the following:

- **Firm-specific advantages** – some banks have advantages (whether financial, based on distribution and production expertise, selling experience etc.) that make foreign expansion more amenable. Size often confers such advantages as large banks typically have a wide array of financing sources, may benefit from scale and scope economies and have more expert management and systems that make foreign expansion easier. They also are more likely to have the relevant financial resources to undertake large-scale overseas activity.
- **Location advantages** – there may be a variety of attractions associated with overseas location that the aforementioned theories do not cover. We mentioned a couple of location advantages when we talked about the product life cycle above, but other location benefits relate to a variety of production, distribution and selling attributes of the product or service in question. For instance, banks like to group together in financial centres (as in

London, New York and Tokyo) to benefit from the close proximity of the foreign exchange market and other Eurocurrency activities. The liquidity of London's foreign exchange market (the largest in the world) attracts foreign banks and other service firms (such as accountants, lawyers, consulting firms and so on) because of the business available.

Overall, one has a broad range of theories to choose from in explaining the rationale for foreign bank expansion. In reality one can probably pick a variety of different theories to explain the motives for foreign expansion and the choice of explanations are likely to vary on a case-by-case basis.

4.4.8 Practice of bank expansion in foreign markets

Complementing the theories noted above one can identify a host of strategic reasons why banks may wish to establish foreign operations. These are outlined as follows:

- *Customer-seeking strategies* – banks seek to undertake overseas expansion in order to obtain new customers or to follow established clients. The reason why banks are more likely to seek new customers through foreign establishment (either through M&A activity or establishing new operations themselves) relates to the barriers associated with the cross-border selling of products and services without a physical presence. Typically, this view suggests that the decision to invest overseas is associated with the higher costs associated with meeting clients' needs from a distance as opposed to investment in the foreign market. The rush of banks into the Chinese market (with a customer base equivalent to 18.5 per cent of the world's population in 2018) is a good example of how the world's largest firms have been motivated by the commercial opportunities afforded by an underdeveloped retail and commercial banking market.
- *Obtaining a foothold strategy* – foreign expansion can be motivated by the desire to establish a presence so as to test the market. Information can be obtained by making experimental foreign investment and over time banks can decide on whether to expand or contract their activities. For instance, various US and European investment banks have made relatively modest acquisitions of securities firms in the Japanese market in order to see if they can develop their private banking business.
- *Follow-the-leader strategy* – when a large bank undertakes investment in a foreign market it may well encourage others to follow. There is anecdotal evidence that various multinational firms (including large banks) emulate their competitors' cross-border strategies regarding investment decisions in major markets. Some form of herd instinct seems apparent vis-à-vis the rush of many banks and other large firms into the Chinese and other Asian economies. The move of commercial and investment banks acquiring asset management firms across Europe and the US, as well as Spanish bank expansion in Latin America, are two examples of the herd instinct in international banking activity.
- *Customer-following strategies* – it has been argued that banks in their home markets have information advantages associated with their ongoing client relationships. The nature of these relationships puts these firms in a privileged position to follow their customers abroad. If a bank's major corporate customer enters a new market, it may wish to obtain its banking services locally and this is likely to encourage foreign expansion. Customer-follower strategies are common in banking – big firms need big banks so they can meet their growing financing needs. The capital markets, of course, can meet certain financing requirements of large firms – especially when markets are buoyant. When capital markets

become less accommodating then companies turn to their banks. In other words, when companies become larger and industries more concentrated, the banking industry will follow suit.

- *Performance and efficiency advantages* – the most obvious reason justifying foreign expansion is that it adds to overall firm performance and shareholder value. That is, returns generated from cross-border operations will add to group returns, boosting profits and ultimately increasing the bank stock price for its shareholders. Given that a major strategic objective of banks is to generate sufficient risk-adjusted returns to their owners, one would expect that there is evidence to suggest that foreign operations add value in some way. Cross-border expansion can therefore be expected to add value to the bank by improving operating costs and/or increasing market power in setting prices.
- *Managerial motives* – international banking activity may, of course, be motivated by managerial motives rather than the objective of maximising profits and shareholder value. Entrenched managers may make international investment decisions based on their own preferences for pay, power, job security, risk aversion and so on. In general, international expansion may either strengthen or weaken the hands of entrenched managers directly by affecting the market for corporate control or governance, or indirectly by changing the market power of the firm. Put simply, managers may seek to expand internationally so they control larger firms – salaries and benefits being higher in bigger firms/banks. Managers may wish to expand in order to make their companies less prone to hostile takeovers, or they may believe that geographical diversification helps improve their own managerial prospects but this may not necessarily be the same as increasing the share price or profits of the bank.
- *Government motives* – it could be argued that a major factor that has motivated the growth of international banking activity has been deregulation aimed at fostering a more competitive, innovative and open markets. The deregulation of many over-protected banking markets has had the effect of encouraging foreign bank entry and this, in theory at least, should boost competition and encourage domestic banks to become more efficient. For example, one of the main objectives of the EU's Single Market Programme has been to reduce barriers to trade in banking and financial services across all member countries in order to encourage foreign bank expansion.

To summarise, an extensive body of literature has examined the rationale for the expansion of companies overseas. Theories consider the determinants of FDIs, the strategic behaviour of firms, as well as evidence on the performance and efficiency advantages of international companies. We have also identified a host of strategic reasons why banks may want to establish foreign operations. The next question we need to address is how banks enter foreign markets.

4.5 Types of bank entry into foreign markets

When undertaking business in foreign markets banks have a number of choices with regards to the structure of their activities. The choice of structure depends on a broad range of considerations including the amount of investment the bank wishes to undertake, the level of market experience, the volume of international business, tax and other factors and the bank's

overall strategic plans. There are five main types of structure that banks can choose when they undertake business in foreign markets:

- correspondent banking;
- representative office;
- agency;
- branch;
- subsidiary.

4.5.1 Correspondent banking

The lowest level of exposure to the foreign market can be achieved through a **correspondent banking** relationship. This simply involves using a bank located in the overseas market to provide services to a foreign bank. Typically, banks will use correspondent banks to do business in markets where they have no physical presence and as such these types of services are widely used by smaller banks.

There are various definitions of correspondent banking. In general terms, correspondent banking can be defined as 'an arrangement under which one bank (correspondent) holds deposits owned by other banks (respondents) and provides payment and other services to those respondent banks' (Bank for International Settlements).[2] Correspondent banking is an essential component of the global payment system, especially for cross-border transactions. Through correspondent banking relationships, banks can access financial services in different jurisdictions and provide cross-border payment services to their customers, supporting international trade. Until recently, banks have maintained a broad network of correspondent relationships, but there are growing indications that this situation might be changing. In particular, some banks providing these services are cutting back the number of relationships they maintain due to the rising costs of regulatory compliance, specifically in light of the **anti-money laundering (AML)**; **counter-terrorism financing (CTF)** and **know your customers (KYC)** rules, and possible reputational damage deriving from regulatory sanctions and fines (see Box 4.4).

4.5.2 Representative office

Banks can obtain slightly greater exposure to a foreign market via a **representative office**. Representative offices are usually small and they cannot provide banking business – that is, they cannot take deposits or make loans. Representative offices are used to prospect for new business and they usually only act as marketing offices for parent banks. Typically a bank will set up a representative office in risky markets as the cost of running such small offices is negligible and they can easily be closed if commercial prospects are not good.

4.5.3 Agency

The term **agency** mainly refers to a separately incorporated branch of a foreign bank inside the United States. Agencies are similar to branches in that they form an integral part of the parent bank. They lie somewhere between branches and representative offices as they can

[2] BIS, 'Glossary of terms used in payments and settlement systems', **www.bis.org/cpmi/publ/d00b.htm**

BOX 4.4 CORRESPONDENT BANKING AND CROSS-BORDER PAYMENTS

The correspondent banking model operates via an international network of financial institutions, which have bilateral account relationships with each other. A bank that obtains correspondent banking services from another bank holds a so-called *Nostro* (Italian: 'ours') account with the provider bank, i.e. 'our account with you' – where the account is denominated in a foreign currency. From the provider bank's side this same account is called *Vostro* (Italian: 'yours') account, i.e. 'your account with us'. Furthermore, there is a third account called *Loro* (Italian: 'theirs'), which refers to 'their account with them', or in other words an account held by a third-party bank. In the absence of the sending bank holding a direct account relationship with the receiving bank, the sending bank can transact via its correspondent bank, where that latter holds an account with the beneficiary bank. This tightly woven network of financial institutions, in which trust plays a central role, has developed to global dimensions over the last centuries. Despite the distributed nature of correspondent banking, the fact that banks are holding balances with each other and extend credit lines to each other exposes them to each other's vulnerabilities and operational failures. This can potentially create systemic risk. In addition to the systemic risk dimension, the correspondent banking cross-border payments business is also exposed to the following risks:

- market risk;
- foreign exchange (FX) risk;
- credit and counterparty risk;
- technology and operational risk;
- regulatory risk.

An important challenge for the industry, as well as for regulators, is the continued decrease in correspondent banking relationships which results in lengthening of payment chains and increasing reliance on fewer correspondent banks (Financial Stability Board, 2017). In addition, it may affect a country's or jurisdiction's ability to send and receive international payments. This, in turn could drive some payment flows into the unregulated sector, with potential negative consequences for international trade, growth, financial inclusion, as well as for financial stability.

This process, often described as '**de-risking**', has many causes, but regulatory compliance is certainly playing a role. Because of increasingly tightening regulatory requirements (AML and CTF, as well as regulatory sanctions requirements that bring with them the risk of regulatory fines) by key jurisdictions, such as the US and Europe, 75 per cent of global bank providers have reduced their correspondent banking relationships (International Monetary Fund, 2017c) or withdrawn from this business altogether. As a consequence, the market has seen an increasing concentration trend, where almost half of the banks that took part in the Financial Stability Board (FSB) survey in 2017 reported reliance on no more than two correspondents for the majority of their cross-border wire payments traffic (Financial Stability Board, 2017).

Source: Adapted from Wandhöfer and Casu (2018).

do less than the former and more than the latter. Agency banks cannot make loans or take deposits in their own name; rather, they do so on behalf of the parent bank in the foreign country.

Just as a clarification, an **agent bank** is a bank that acts in some capacity on behalf of another bank.

It can refer to:

- the bank in a loan syndicate that advises other participating banks of advances taken and changes in interest rates for a foreign or domestic borrower;
- a bank that participates in the credit card program of another bank by issuing credit cards;
- as explained above, a foreign bank doing business in the US on behalf of its parent bank.

4.5.4 Branch office

Establishing a **branch** usually indicates a higher level of commitment to the foreign market compared with the representative office. A branch is a key part of the parent bank and acts as a legal and functional part of the parent's head office. In many respects a foreign branch is similar to a domestic branch although the former is likely to have more autonomy in making commercial decisions tailored to the specific features of the foreign market. Branches can perform all the functions that are allowed by the banking authorities of the host country, namely taking loans and making deposits, as well as selling other types of products and services.

Branches are the most common form of foreign bank expansion as the costs are less than establishing a wholly owned subsidiary and they enable banks to conduct a full range of business activity.

4.5.5 Subsidiary

A **subsidiary** is a separate legal entity from the parent bank, has its own capital and is organised and regulated according to the laws of the host country. Where branches and agencies expose the whole capital of the parent bank to risk from overseas activity, the risk exposure of a subsidiary is limited by its own capital exposure. (Of course, if a foreign bank subsidiary faced difficulties the regulators would expect the parent bank to provide support – although legally they do not have to do this given that subsidiaries have separate corporate identities).

Subsidiaries may be the result of acquisition or organic start-ups (greenfield) – they also tend to be costly as the business has to be capitalised separately from the parent. One main advantage of having a subsidiary is that it generally signals a stronger commitment to do business in a country compared with other forms of entry and reflects the foreign companies more positive assessment of future prospects for the market. In addition, subsidiaries are usually allowed to undertake a broad range of banking business subject to the rules and regulations of the host country. For example, prior to 1999 US commercial banks were prohibited from undertaking full scale investment banking business in their home market so many of the largest banks established subsidiaries overseas where they could undertake this type of business.

Table 4.1 summarises the main advantages and disadvantages of the different types of entry in foreign markets.

Despite a clear legal distinction between branches and subsidiaries, however, they may in practice sometimes be operated and managed in a similar fashion. In some countries,

Table 4.1 Type of entry in foreign markets

Type of entry	Advantages	Disadvantages
Correspondent banking	• Low cost market entry • Minimal staff expense • Local banking opportunities • Network of local contracts	• Customers might be given low priority • Some forms of credit not allowed
Representative office	• Low cost • Attracts additional business and maintains existing business	• Difficult to recruit and train qualified staff • Limited ability to expand foreign markets operations
Branch	• Greater control over foreign operations • Better customer relationship • Greater ability to offer products and services	• Expensive • Difficult to recruit and train qualified staff
Subsidiary	• Separate legal entity • No legal obligation to support if in distress	• Expensive • Decentralised management functions with possible duplication of roles

branches work effectively as independent entities. In others, subsidiaries may function similarly to branches, subject to centralised risk management and funding decisions. Practices such as group-wide guarantees and supervisory ring-fencing often blur the distinctions between branches and subsidiaries.

4.5.6 Branches vs. subsidiaries

Both branch and subsidiary structures have certain features that make them attractive for cross-border banks, regardless of their business model (see Fiechter *et al.*, 2011, p. 14):

- For the banking group as a whole, costs of doing business may be lower under the branch structure than under the subsidiary structure.
- The subsidiary structure may, in principle, be better for containing losses in the event of distress (or failure) of an affiliate.
- All else equal, one could expect global retail banks to have a preference for subsidiarisation, while global universal banks for branching.
- In practice, when choosing a legal form of incorporation in foreign jurisdictions, banking groups also take into account a range of home/host country characteristics that may outweigh the business model considerations.

Actual practice is often complex, with cross-border banking groups choosing to branch into some jurisdictions and incorporate as subsidiaries in others. For example, a banking group might prefer branching when local financial markets are less developed and less able to support a subsidiary; the entry to local markets targets credit extension and provision of risk management services to existing clients; political risks are high; and tax and regulatory treatments of branches are more favourable. In the case of advanced host countries, banking groups may prefer branching into countries that host major money centres (e.g. US or UK markets) or into markets for wholesale deposit sourcing (e.g. Germany).

Integrated cross-border banking groups may achieve efficiency gains arising from the scale and diversification of their operations, but their failure can also generate spillovers that threaten financial stability in countries in which they operate. Cross-border expansion by banking groups through integrated branch networks appears be less costly and, in some cases, more efficient than establishing a series of legally independent subsidiaries. In the event of failure of a banking group, however, it appears that a subsidiary structure would generally be less costly to resolve. A key consideration for policy makers, then, is whether the trade-off between efficiency and financial stability argues for policies that reflect a preference for certain cross-border banking structures.

4.6 Advantages and disadvantages of international and cross-border banking

The international banking landscape has been transformed in the past decades, as increasing globalisation and technological innovations have driven changes in the way banks operate. There are many reasons to welcome this transformation, as international banks can promote economic development as they bring capital, liquidity, expertise and new technologies to the host countries. Foreign banks may also be more efficient and have more advanced risk-management systems, which might benefit domestic banks as they learn best practice. Foreign banks might be able to offer products and services to corporates that are not available domestically, thereby increasing funding and growth opportunism of domestic companies. Foreign bank entry can also increase competition in domestic banking markets and promote a better allocation of resources.

As previously discussed, one key benefit of cross-border banking relates to risk diversification as the assets of cross-border banks will be less exposed to country-specific shocks. In addition, the presence of foreign banks in a country can be a stabilising force in times of trouble. As foreign banks are less exposed to domestic shocks, they can substitute domestic banks in the lending market and therefore minimise the impact of the shock. In this context, cross-border banking can have a stabilising effect.

Despite the benefits, there are also some concerns and potential sources of risk. In a crisis situation foreign banks might simply decide to cut their losses and leave the host country. Foreign banks might also be destabilising for host countries as they might act as a transmitter of shocks from their home country. As banks expand cross-border, they also increase in size, complexity and interconnectedness. Cross-border banks are therefore more likely to be systemically important compared to domestic banks and their failure may thus impose significantly higher costs on economies than the failure of a purely domestic bank.

In sum, cross-border banking brings both challenges and opportunities for banks. It allows banks to diversify, both geographically and in terms of products. Through cross-border expansion, banks can exploit new market and arbitrage opportunities, either seek new customers or retain their existing customers. Cross-border asset growth also enables banks to benefit from economies of scale and scope. However, this asset growth might lead to a number of challenges. For example, banks' regulatory burden will increase, as they will have to deal with different and sometimes conflicting regulation. Expansion in some markets might not be profitable and might expose banks to losses which will require the parent's support. In addition, as banks expand in new markets, they might also be exposed to reputational risk deriving from breaches of international regulation regarding AML and CTF.

Table 4.2 Opportunities and challenges of cross-border banking

	Opportunities	Challenges
For banks	• Diversification	• Increased regulatory burden
	• Economies of scale and scope	• Risk of marginal portfolios
	• Market opportunities	• Over-expansion
	• Customer retention	• Need for parental support
	• Arbitrage	• Reputational risk
For supervisors	• Financial deepening	• Increased demand on supervisors
	• Increased competition	• Increased market volatility
	• Innovation	• Regulatory arbitrage
	• Knowledge spillovers	• Risk spillovers and contagion
	• Increased products/services availability	• Capital flights

Cross-border banking also poses additional challenges for supervisors and regulators. Some of the key issues in supervising banks with cross-border operations relate to the location of the home supervisor, the establishment of affiliates abroad and their licensing, and the cross-border compliance with prudential standards. More generally, the key challenge is to ensure that no activity of cross-border banks escapes effective supervision, and this entails coordinated action by regulators in different jurisdictions. In addition, a high level of cross-border banking might limit the capacity of national authorities to manage the stability of their domestic financial system because of risk spillovers and contagion. Finally, foreign banks might impact on the effectiveness of monetary policy. Table 4.2 summarises these challenges and opportunities.

4.7 International banking services

Banks can offer a wide range of different types of banking and financial services via their international operations. One of the difficulties in describing types of international banking activity relates to its diversity. Traditionally the role of banks in providing services to multinational companies has been emphasised as the main feature of international banking, but as many banks have expanded overseas their customers now span the full spectrum of services ranging from niche retail banking products to wholesale investment and commercial banking activity. Bearing this in mind, the following sections focus on banking products and services provided to international business.

4.7.1 Products and services to international business

All international businesses are served by a variety of financial service firms including mainly commercial banks, investment banks and asset finance firms. The core banking products and services are similar (but not exclusively) to those offered to large corporate clients (See Section 3.6.2). These typically focus on the following range of needs:

(A) *Trade finance*

- Letters of credit
- Forfaiting
- Countertrade

(B) *Commercial banking services*

- Money transmission and cash management
- Credit facilities – loans, overdrafts, standby lines of credit and other facilities
- Commitments and guarantees
- Foreign exchange and interest rate services
- Risk management and information management services
- Debt finance, including asset-backed financing
- Syndicated loans

(C) *Investment banking services*

- Debt finance via bond issuance (only available to large companies and multinational firms)
- Other debt finance including asset-backed financing
- Domestic and international equity (the latter typically only available to large companies and multinational firms)
- Securities underwriting and fund management services
- Risk management and information management services
- Syndicated loans

4.7.2 Trade finance

Trade finance relates to financial activities designed to support and facilitate commerce and international trade. In essence, trade finance works by reconciling the divergent needs of exporters and importers. An exporter would prefer the importer to pay upfront for an export shipment to avoid the risk that the importer takes the shipment but refuses to pay for the goods. However, if the importer pays the exporter upfront, the exporter may accept the payment but refuse to ship the goods. Trade finance is of vital importance to the global economy; the World Trade Organization (WTO) estimates that 80 per cent to 90 per cent of global trade relies on this financing method. The key role of banks in trade finance is that of trusted intermediaries between importers and exporters (see Figure 4.2).

Firms involved in international trading activity, either as importers or exporters, can rely on the banking system to provide various forms of trade finance that help facilitate the import and export of goods. Examples of trade finance are discussed below.

4.7.2.1 Letters of credit

A **letter of credit (LOC)** is a legal banking agreement that allows importers to offer secure terms to exporters. Letters of credit have been used for centuries in international trading transactions. A letter of credit from a bank guarantees the seller that, if various documents are presented, the bank will pay the seller the amount due. It is simply an undertaking given by the issuing bank on behalf of the buyer to pay the seller a specific amount of money on presentation of specified documents representing the supply of goods within certain time

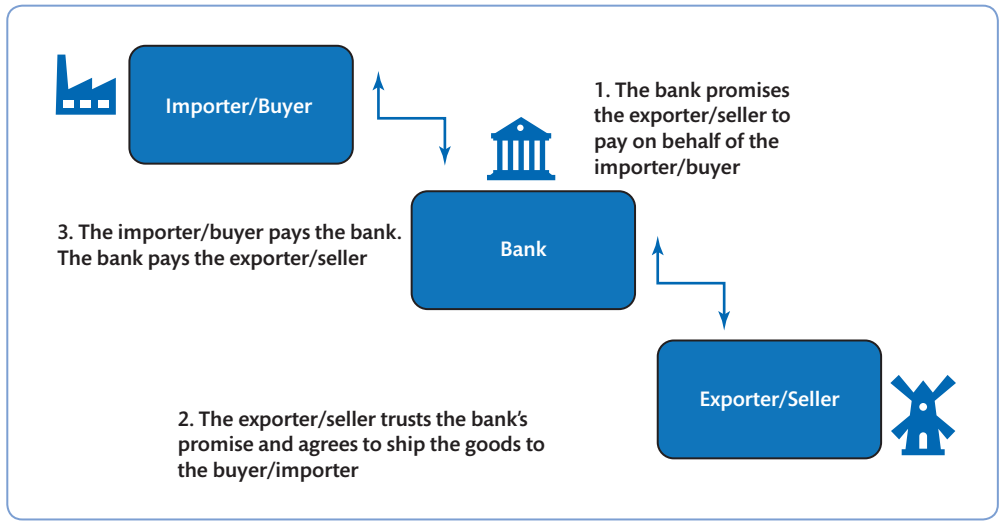


Figure 4.2 The role of banks in international trade

limits. These documents must conform to terms and conditions set out in the letter of credit and documents must be presented at a specified place.

Such an agreement offers security to the seller, as it is an assurance of payment from an international bank, on the condition that the terms of the letter of credit are complied with. In addition, the seller can also raise extra finance using the letter of credit as collateral if need be. The attraction from the buyer's perspective is that they do not have to pay cash up front to a foreign country before receiving the documents of title to the goods purchased. This, of course, is helpful when the buyer is unfamiliar with suppliers overseas. In addition, a letter of credit protects the buyer's interest as the bank will only pay the supplier if specific documents are presented. Payment will be given if these documents comply with the terms and conditions set out in the letter of credit. The buyer can also include safeguards into the letter of credit such as inspection of the goods, quality control and set production and delivery times. Table 4.3 sets out the main features of a standard letter of credit agreement.

An **irrevocable letter of credit** provides a guarantee by the issuing bank in the event that all terms and conditions are met by the buyer. A **revocable letter of credit**, in contrast, can be cancelled or altered by the issuing bank. A bank might decide to revoke a letter of credit under specific circumstances, for example, political tension, war, natural disasters, etc., because of which the bank is incapable of honouring the terms of the letter of credit. These are, however, rare circumstances.

4.7.2.2 Forfaiting

In a **forfaiting** transaction, the exporter agrees to surrender the rights to claim for payment of goods or services delivered to an importer under a contract of sale, in return for a cash payment from a forfaiting bank. The forfaiting bank takes over the exporter's debt and assumes the full risk of payment by the importer. The exporter is thereby freed from any financial risk in the transaction and is liable only for the quality and reliability of the goods

Table 4.3 Letters of credit

Step 1	Buyer and seller agree terms, including means of transport, period of credit offered, latest date of shipment and other relevant terms to be used.
Step 2	Then the buyer applies to the bank for a letter of credit to be issued.
Step 3	After evaluating the buyer's credit rating, the bank will issue a letter of credit. The bank may require a cash cover and/or a reduction of other lending limits. The LOC will be sent to the seller's bank.
Step 4	The issuing bank will issue a letter of credit. This will be sent to the advising bank.
Step 5	The advising bank will establish authenticity of the letter of credit using signature books or test codes, then inform the (beneficiary).
Step 6	The advising bank may confirm the letter of credit, i.e. add its own payment undertaking.
Step 7	The seller should check that the letter of credit matches the commercial agreement, and that the terms and conditions can be satisfied in good time.
Step 8	If there is anything that may cause a problem, an amendment should be requested.
Step 9	The seller ships the goods and gathers together all the documents asked for in the letter of credit such as the invoice, transport document.
Step 10	Before presenting the documents to the bank, the seller should check them for discrepancies against the letter of credit, and correct the documents where necessary.
Step 11	The documents are presented to a bank, often the advising bank.
Step 12	The advising bank checks the documents against the letter of credit. If the documents are compliant, the bank pays the seller and forwards the documents to the issuing bank.
Step 13	The issuing bank will also check the documents. If they are in order the issuing bank will reimburse the seller's bank immediately.
Step 14	The issuing bank debits the buyer and releases the documents (including transport document), so that the buyer can claim the goods from the carrier.

Notes: (1) The letter of credit refers to documents representing the goods – not the goods themselves. (2) Banks are not in the business of examining goods on behalf of their customers. (3) Typically the documents requested will include a commercial invoice, a transport document such as a bill of lading or airway bill, an insurance document and many others.

and services provided. The buyer's obligation is usually supported by a local bank guarantee and can in certain cases be guaranteed by the government. As in the case of letters of credit, the documentation requirements are relatively straightforward. This requires evidence of the underlying transaction, copies of shipping documents and confirmations from the bank guaranteeing the transaction. Forfaiting transactions can be on a fixed or floating interest rate basis. The exporter will receive the funds upon presentation of all the relevant documents, shortly after shipment of goods, and payment will usually be made in the form of a letter of credit.

4.7.2.3 Countertrade

Countertrade is a general term used to cover a variety of commercial mechanisms for reciprocal trade. Simple barter is probably the oldest and best-known example; however, other techniques such as switch-trading, buy-back, counter-purchase and offset have developed

to meet the requirements of a more integrated global world economy. The main types of countertrade include the following:

- *Simple barter* – direct exchange of physical goods between two parties.
- *Switch-trading* – involves transferring use of bilateral balances from one country to another. For instance, an export from the US to Libya will be paid for with a dollar amount paid into an account at a bank in Libya. This in turn can only be used to buy goods from Libya. The original US exporter may buy unrelated goods from Libya or may sell the dollars at a discount to a 'switch trader' who buys Libyan goods for sale elsewhere.
- *Buy-back* – this is an agreement where the exporter of plant or equipment agrees to take payment in the form of future production from the plant.
- *Counter-purchase* – involves an initial export whereby the exporter receives 'payment' in goods unrelated to what the exporter manufactures.
- *Offset* – refers to the requirement of importing countries that their purchase price be offset in some way by the seller; this can include requirements to source production locally, to transfer technology or to increase imports from the importing country.

There is a wide range of countertrade mechanisms that aim to facilitate trade in goods. This type of activity is usually more prevalent in countries that limit FDI and are subject to greater political risk.

4.7.3 Syndicated lending

Syndicated lending is when a lead bank persuades a number of other banks to contribute to a loan. Normally a syndicate of banks will provide very large loans to finance projects such as infrastructure or sovereign loans to developing/emerging countries. While syndicates have many variations, the basic structure involves a lead manager (the agent bank) that will represent, and operate on behalf of, the lending group (the participating banks) as illustrated in Figure 4.3. Although there is only a single loan agreement contract, every syndicate member has a separate claim on the borrower. Typically, access to the syndicated loans market is restricted to only the largest firms as the smallest loans on average exceed $50 million.

At the most basic level, arrangers serve the role of raising finance for a borrower in need of capital. The borrower pays the arranger a fee for this service, and this fee increases with

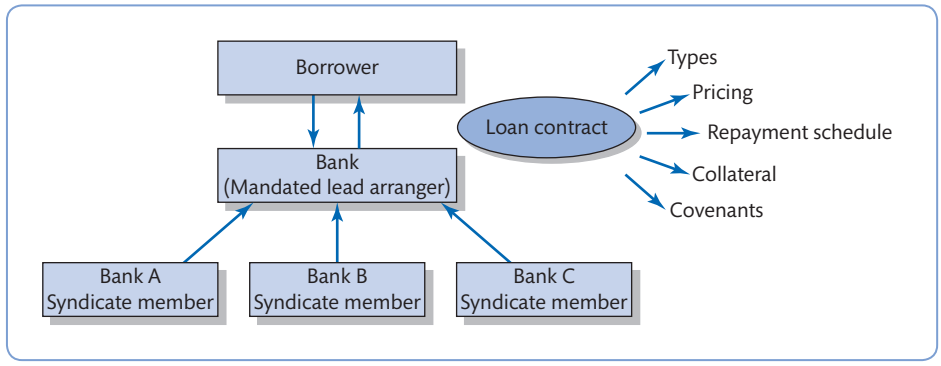


Figure 4.3 Syndicated lending – basic structure

the complexity and riskiness of the loan. Usually each participant funds the loan at identical conditions and is responsible for its particular share of the loan. Overall, syndicated loans lie somewhere between relationship loans and public debt, where the lead bank may have some form of relationship with the borrower – although this is less likely to be the case for banks participating in the syndicate at a more junior level.

Developments in the syndicated loan market have made a clearer distinction between syndicated loans and bilateral bank loans. One significant change is the growth in the regulated and standardised secondary market during the 1990s, which has supplied significant amounts of liquidity to the syndicated loan market. Another major factor has been the rising number of syndicated loans rated by independent rating agencies. As a result of stronger secondary market activity, combined with independently rated syndicated loans, there has been a greater recognition of these assets by institutional investors as an alternative investment to bonds (Altunbas *et al*., 2010). Changes in the syndicated loan market – including its volume, its capacity to provide sizable medium and long-term funding and increased transparency – have shifted it closer to the corporate bond market and further away from bilateral bank lending.

These developments have, in turn, led the market to grow exponentially. Currently, syndicated loans are the only alternative to bond financing for large firms on account of the size and maturity of the funds that can be provided. The syndicated loan market is, therefore, a hybrid of the commercial banking and investment banking worlds. It is globally one of the largest and most flexible sources of capital. The syndicated lending market has become one of dominant ways for large corporate and sovereign borrowers to raise funds.

Syndicated loans have become an important source of corporate funds as they represent an alternative form of debt financing to traditional bilateral lending or corporate bonds. Access to the syndicated loan market provides benefits to borrowers and lenders. Lenders' incentives for engaging in syndicated lending include the ability to earn fees and the ability to gain exposure to certain markets and borrowers that might not be possible on a bilateral basis, while at the same time limiting their risk exposure. Borrowers benefit from increased access to capital and lower financial transaction costs than would be achievable through bilateral loans with the individual lenders.

The main advantages of this form of borrowing are:

- arranging a syndicated loan is less costly, in terms of set-up fees, compared with a bond issuance;
- borrowers can achieve lower spreads than they might have to pay to individual banks if they intended to borrow through a series of bilateral bank borrowing;
- syndication can also provide a more flexible funding structure which guarantees the availability of funds in the currency of their choice;
- it widens a company's circle of lenders through syndicates that include foreign banks;
- a syndication provides the borrower with a stable source of funds which is of particular value in the event that other capital markets (like the bond market) are subject to disruption;
- syndication allows borrowers to raise larger sums than they would be able to obtain through either the bond or equity markets under a time constraint;
- the facilities can be arranged quickly and discreetly which may be of value for certain transactions such as takeovers; and

- commitments to lend can be cancelled relatively easily compared to borrowing via securities markets where such actions could have an adverse impact on investor confidence.

The syndicated loan market has developed also its own lexicon: Appendix 4.1 presents a selected glossary to explain the participants and functions and their sometimes odd names.

4.7.3.1 Types of syndication

Standard & Poor's (2011) *A Guide to the Loan Market* identifies three main types of syndication:

- **Underwritten deal**: this is one for which the arrangers guarantee the entire commitment, and then syndicate the loan to other banks and institutional investors. If they cannot fully subscribe the loan, they absorb the difference and may later try again to sell to investors.
- **Best-efforts syndication**: this is one for which the arranger group commits to underwrite less than the entire amount of the loan, leaving the credit to the market. Traditionally, best-effort syndications have been used for risky borrowers or for complex transactions.
- **Club deal**: this is a loan syndicated by a small number of participating banks, which are not entitled to transfer their portion of the loan to a third party. Smaller syndicates result in lower restructuring and monitoring costs, and are thus preferred by lead arrangers when default is more likely.

The relative reliance on these underwriting techniques can vary, depending on the current market developments. For example, the underwriting approach is used more often in an active deal-making environment, where there are frequent mergers and acquisitions. Corporations are willing to pay the higher fees for the assurance of knowing that the entire financing for such a transaction is committed. In a less active or nervous market environment, the best-efforts approach tends to be the primary-distribution technique of choice: borrowers may feel no need to pay the higher fees or lead banks may be more reluctant to assume the higher risks of the firm-commitment underwriting. There are also regional differences. For example, the European leveraged syndicated loan market almost exclusively consists of underwritten deals, whereas the US market is mostly best-efforts. Club deals gained importance, indicating both growing bank risk aversion and higher credit risk at a time of economic uncertainty. During the post 2007–2009 crisis period, club deals of more than €150 million became common.

4.7.3.2 The syndication process

The syndication process[3] can be broken down into (1) before, (2) during and (3) after the syndication (see Figure 4.4):

1. Before awarding a mandate, a borrower (also known as the issuer) might solicit bids from arrangers. The banks will outline their syndication strategy and qualifications, as well as their view on the way the loan will price in market. This is also known as the *underwriting phase*.
2. Once the mandate is awarded, the syndication process starts. The arranger will prepare an **information memo (IM)** describing the terms of the transactions. This is also known as the sub-underwriting phase.

[3] A more in-depth description of the syndication process, as summarised in this section, can be found in Standard & Poor's *A Guide to the Loan Market* (2011). Also, Standard & Poor's *A Guide To The European Loan Market* (2010).

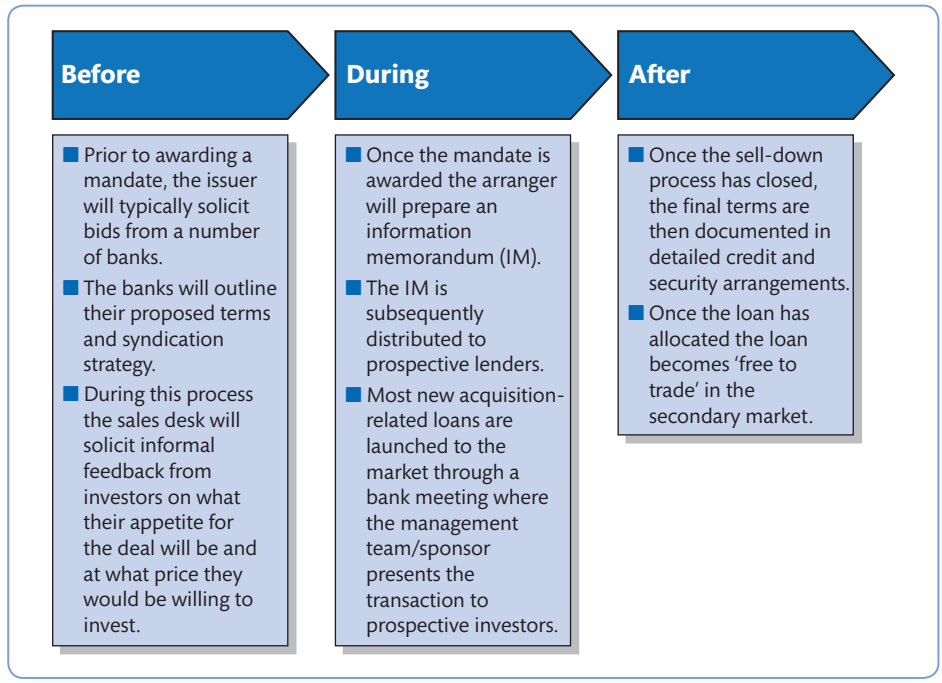


Figure 4.4 The syndication process

The IM or *bank-book* typically will include:

- an executive summary;
- investment considerations;
- a list of terms and conditions;
- an industry overview;
- a financial model.

The *executive summary* will include a description of the issuer, an overview of the transaction and rationale, sources and uses, and key statistics on the financials. *Investment considerations* will be the management's sales 'pitch' for the deal. The *list of terms and conditions* will be a preliminary term sheet describing the pricing, structure, collateral, covenants and other terms of the credit (covenants are usually negotiated in detail after the arranger receives investor feedback). The *industry overview* will be a description of the company's industry and competitive position relative to its industry peers. The *financial model* will be a detailed model of the issuer's historical, pro-forma and projected financials including management's high, low and base case for the issuer.

Because loans are not securities, this will be a confidential offering made only to qualified banks and accredited investors. As the IM (or 'bank book') is being prepared, the syndicate desk will solicit informal feedback from potential investors on what their appetite for the deal will be and at what price they are willing to invest. Once this intelligence has been gathered, the agent will formally market the deal to potential investors.

Most new loans are kicked off at a bank meeting at which potential lenders hear bank management and the sponsor group (if there is one) describe what the terms of the loan

are and what transaction it backs. Bank management will provide its vision for the transaction and, most importantly, tell why and how the lenders will be repaid on or ahead of schedule. In addition, investors will be briefed regarding the multiple exit strategies, including second ways out via asset sales. Once the loan is closed, the final terms are then documented in detailed credit and security agreements. It is important to note that loans, by their very nature, are flexible documents that can be revised and amended from time to time (subject to different levels of approval). One or several lenders will typically act as the lead **arranger** or lead manager, instructed by the borrower to bring together the consortium of banks prepared to lend money at a given set of terms.

3 Once the mandate is awarded, the arranger is ready to start the syndication process. This is called the primary-distribution phase of the loan. The syndication unfolds as a multi-step process that is similar, in many ways, to the underwriting of a corporate bond or stock issue.

4.7.3.3 Investors in the syndicated loans market

There are three primary investors in the syndicated loan market: (i) banks, (ii) finance companies and (iii) institutional investors.

A *bank investor* can be a commercial bank, a savings bank or a securities firm which provides investment-grade loans. Additionally, private equity funds, hedge funds, high-yield bond funds, pension funds, insurance companies and other proprietary investors do participate opportunistically in loans. *Finance companies* tend to participate in smaller deals ($25 million to $200 million) and often seek asset-based loans that carry wide spreads.

Institutional investors in the loan market are principally structured vehicles known as **collateralised loan obligations (CLOs)** that are a type of **collateralised debt obligations (CDOs)**. CLOs are special-purpose vehicles (SPV) set up to hold and manage pools of leveraged loans. The special-purpose vehicle is financed with several tranches of debt (typically an AAA-rated tranche, a AA tranche, a BBB tranche and a mezzanine tranche) that have rights to the collateral and payment stream in descending order. CLOs are usually rated by two of the three ratings agencies. Table 4.4 reports the credit risk ratings of Moody's and Standard & Poor's.

Table 4.4 Credit risk ratings – Moody's and Standard & Poor's

Moody's	S&P	Quality of issue
Aaa	AAA	Highest quality. Very small risk of default.
Aa	AA	High quality. Small risk of default.
A	A	High–medium quality. Strong attributes, but potentially vulnerable.
Baa	BBB	Medium quality. Currently adequate, but potentially unreliable.
Ba	BB	Some speculative element. Long-run prospects questionable.
B	B	Able to pay currently, but at risk of default in the future.
Caa	CCC	Poor quality. Clear danger of default.
Ca	CC	High speculative quality. May be in default.
C	C	Lowest rated. Poor prospects of repayment.
D	–	In default.

4.7.3.4 Syndicated loans facilities

There are various types of syndicated loan facilities:

- A **term loan** – where the loan amount is specified for a set time. A term loan is simply an instalment loan, similar to a personal loan one would use to buy a car or a mortgage. The borrower may draw on the loan during a short commitment period and repays it based on either a scheduled series of repayments or a one-time lump-sum payment at maturity (**bullet payment**).
- A **revolving credit facility** – where part of the loan can be drawn down, repaid and then redrawn depending on the borrower's discretion.
- *Letters of credit (LOC)* – guarantees provided by the syndicate group to pay off debt or obligations if the borrower cannot. There are several different types of LOC. The most common – a fee for standby or financial LOCs – guarantees that lenders will support various corporate activities (see Section 4.7.2.1 for more details on LOCs).
- **Acquisitions (or equipment) lines** – (a delayed-draw term loan) are credits that may be drawn down for a given period to purchase specified assets or equipment or to make acquisitions.
- **Bridge loans** – loans provided to offer short-term financing to 'bridge' financial needs (for example before bond/equity issuances).

4.7.3.5 Pricing of a syndicate loan

Pricing a loan requires arrangers to evaluate the risk inherent in the loan and to gauge investor appetite for that risk. There are various factors driving the pricing of a syndicated loan, including: market liquidity, relative yield of other loans and other asset classes, creditor quality, sector, size of the deal, etc.

The market is divided, roughly, into two segments: **investment grade** (loans rated BBB or higher) and **leveraged** (borrowers rated BB+ or lower) as discussed in Box 4.5. Pricing of the loan is set at a margin above the interbank rate (usually LIBOR or Euribor, depending on the currency) according to the perceived credit risk of the borrower and fees are also paid by the borrower to the syndicate for arranging the loan. The fees increase in line with the complexity and riskiness of a loan. While large investment-grade borrowers would typically pay little or no fees, a leveraged borrower would normally pay somewhere in the region of 1–5 per cent of the total loan commitment depending on: the complexity of the transaction; market conditions and whether the loan is underwritten.

Higher credit risk (i.e. customers with high probability of default) pay larger margins above LIBOR (or Euribor) for their syndicated loans. Pricing also varies according to the type of borrower, purpose of loan, whether the loan is secured or not and other factors. Pricing on many loans is tied to *performance grids*, which adjust pricing by one or more financial criteria.

The pricing mechanism of a syndicated loan differs between the US and Europe. In the US, the pricing of a syndicated loan is a complex capital market negotiation that balances the needs and interests of the different players in the market at the given time. Pricing loans in Europe is a simpler (but less efficient) process because pricing is not as flexible and market-driven as it is in the US. However, Europe has moved closer to the US practice of using **market flex language** to adapt pricing during general syndication to market conditions.

BOX 4.5 LEVERAGED LOANS

A leveraged loan is a commercial loan provided by a group of lenders. It is first structured, arranged, and administered by one or several commercial or investment banks, known as arrangers. It is then sold (or syndicated) to other banks or institutional investors. Leveraged loans can also be referred to as senior secured credits.

How to defined "leveraged"?

There is little agreement in the industry of what qualifies as a leveraged loan. Some people use a spread cut-off. For example, any loan with a spread of at least LIBOR +125, or maybe LIBOR +150, would qualify as leveraged. Others use rating criteria. In this instance, any loan rated BB+ or lower would be considered leveraged. However, not all loans are rated. The Standard & Poor (2019) LDC Loan primer uses the following definition. A loan is leveraged if:

- it is rated BB+ or lower, or
- it is not rated or rated BBB− or higher but has:
  1. a spread of LIBOR +125 or higher, and
  2. is secured by a first or second lien.

The leveraged loan market has been booming in recent years and has recovered from the post-financial crisis low of 2010. For riskier borrowers, raising funds on the leveraged loans market is less expensive and more efficient to administer than traditional bilateral credit lines. For lenders, leveraged loans can be very lucrative: a new loan can carry an arranger fee of 1% to 5% of the total loan commitment, depending on the complexity of the transaction; on how strong market conditions are at the time and on whether the loan is underwritten.

The global leveraged loan market has grown dramatically in the last two decades and reached $1.6 trillion mark at year end 2020 (see Figure 4.5). To put these figures into context, the US residential mortgage market has around $10.6 trillion in loans outstanding and the broader fixed income markets have $50.9 trillion in securities outstanding, at the end of 2020.

The European leveraged loan market also grew to record size at the end of 2020, totalling €240 billion (see Figure 4.6), driven largely by CLO issuance. This is comparable in scale to issuances on primary corporate bond market: Euro area non-financial

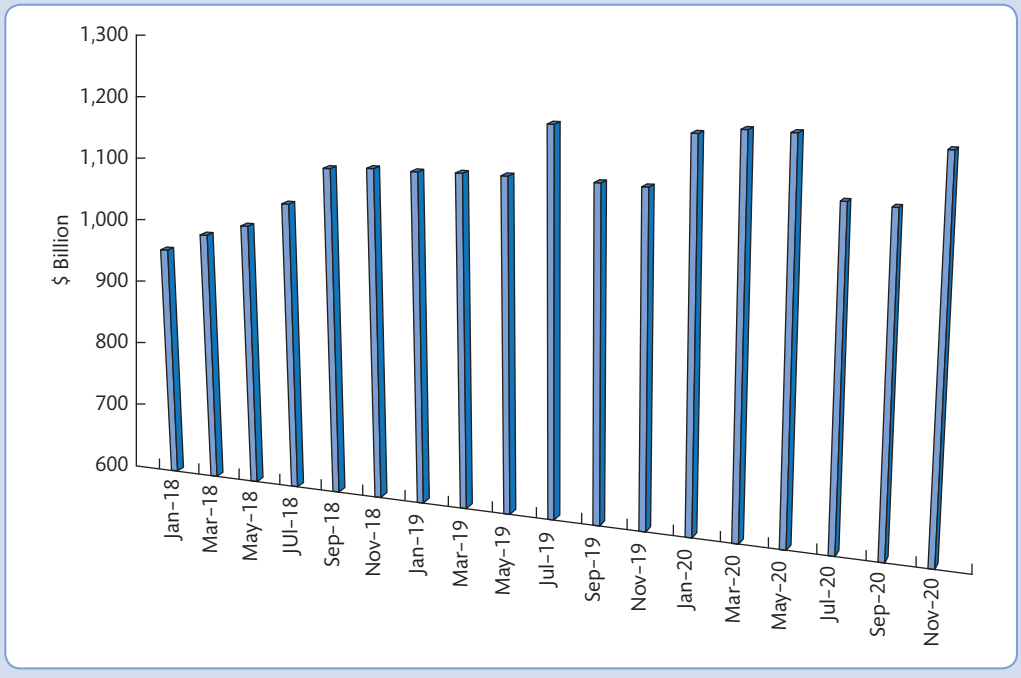


Figure 4.5 US leveraged loans outstanding

Source: Authors' elaboration, data from S&P Global Market Intelligence.

BOX 4.5 Leveraged loans (*continued*)

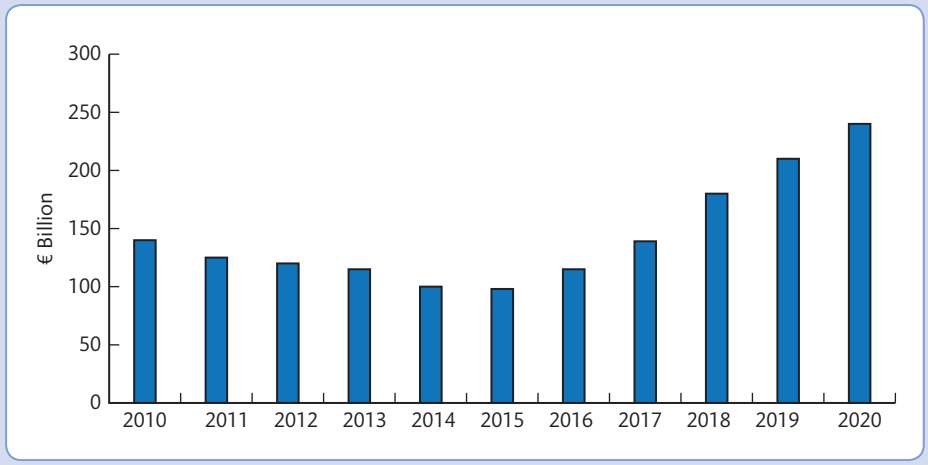


Figure 4.6 European leveraged loans outstanding

Source: Authors' elaboration, data from www.afme.eu

corporations had gross corporate bond issuance of €650 billion in 2017 (EuropeanCommission, 2019).

After a volatile start in 2020 due to the COVID-19 pandemic, leveraged finance markets in the US and Europe saw leveraged loan issuance return to relatively healthy levels by year end.

Source: Standard & Poor's Global Market Intelligence; sifma.org and afme.eu

For many years, the European market had a well-established pricing 'standard' where most deals started out. The pro-rata tranches usually began general syndication at Euribor + 225 bps. During the credit crunch of 2008–2009, opening spreads increased to between Euribor + 400–500 bps across the different terms, in response to the higher return requirements of investors.

In addition to the spread over LIBOR, the borrower also has to pay a variety of fees. The arranger and other members of the lead management team generally earn some upfront fee for putting the deal together – this is known as a *praecipium* or **arrangement fee**. The underwriters similarly earn an underwriting fee for guaranteeing the availability of funds. Other participants (those on at least the manager or co-manager level) may also expect to receive a participation fee for agreeing to join the facility. The actual size of the fee generally varies with the size of the commitment. The most junior syndicate members typically only earn the spread over LIBOR or over a comparable market reference rate.

Once the credit is established, and as long as it is not drawn, the syndicate members often receive a **commitment fee (or *facility fee*)** (to compensate for the cost of regulatory capital that needs to be set aside against the commitment) again proportional to the size of the commitments. As soon as the facility is drawn, the borrower may have to pay an utilisation fee. This is paid, for instance, if the company draws more than a pre-agreed proportion of the facility – for example, it may be agreed that if the borrower draws more than 50 per cent of a facility it will have to pay its lenders an additional five basis points utilisation fee on top of

the margin. The agent bank typically earns an **agency fee**, usually payable annually to cover the costs of administering the loan. Loans sometimes also include penalty clauses whereby the borrower agrees to pay a prepayment fee or otherwise compensate lenders in the event that it reimburses its debt prior to the specified term.

Finally, market flex language is included in legal document as additional protection for the bank. Market flex language may include price flex (which allows for a change in pricing of a loan) or a structural flex (which allows for a shift of amounts between various tranches of a loan). In addition, loan documentation normally incorporates a number of clauses that are in place to protect lenders against a deterioration in a borrower's financial/operational performance, changing market conditions and various other occurrences and take the form of covenants, mandatory prepayments and collateral.

4.7.3.6 Recent trends in the syndicated loan market

Like many other credit markets, syndicated loan markets grew rapidly in the run-up to the 2007–2009 financial crisis. Nonetheless, following the Lehman bankruptcy, syndicated loan markets collapsed. The crisis of 2007–2009 was also associated with a substantial widening of syndicated loan spreads. Following a period of low spreads in the mid-2000s, average primary market spreads of both investment-grade and leveraged syndicated loans rose sharply in late 2008, although by less than those on similarly rated corporate bonds. Towards the end of 2008, BBB-rated syndicated loan spreads reached 400 bps, compared with about 750 bps on corporate bonds with the same rating. However, while corporate bond spreads have fallen significantly since early 2009, syndicated loan spreads have remained above the pre-crisis levels for longer.

In terms of size, the US remains the largest syndicated loans market (it accounts for almost 50 per cent of loan issuance volume), followed by Japan. In Europe, the largest and most international syndicated loan market is the UK. The UK has the highest exposure to foreign borrowers, lenders and currencies among the top five syndicated markets. However, Berg *et al.* (2021) document a 23 per cent decline in loan issuances in the UK syndicated loan market after the Brexit vote relative to a set of comparable loan markets both globally and in the EU.

The growing corporate emphasis on capital market financing is also driving the development of a wider range of 'new' credit products. For instance, corporate debt is widely traded in the US, either as bonds, syndicated loans or securitised assets – loans that are bundled together and sold as a security in the market. In the US a broad array of loans are being securitised, including corporate loans, mortgages, credit card receivables, computer leases and so on. The growth in credit derivatives business has also helped boost the market for tradable corporate credit products. Credit derivatives are tradable instruments that can be used to manage credit risk – the likelihood of default. The growth of such business means that nowadays around 50–60 per cent of all credits to US firms are tradable. This contrasts with the situation in Europe, where around 20 per cent of credits are tradable. More recently, market growth has been driven by the growth in leveraged loans, causing regulators and industry commentators to worry about the levels of debts (see Figure 4.7 and Box 4.6).

The market has also witnessed a flurry of innovation and applications of the latest technology (see Box 4.7) in a drive to make transactions faster and less costly.

BOX 4.6 DESIGNERS OF CLOs SAY THAT STRUCTURES ARE MUCH SAFER THAN CRISIS-ERA COUSINS

Wall Street's debt machine is being powered by a familiar engine: securitisation.

As scrutiny of the $1.2tn leveraged loan market has increased, focus has turned to the market's main source of support: collateralised loan obligations.

CLOs are vehicles which take a group of risky loans and then use them to back a series of bonds of varying degrees of safety. Investors in the most perilous, lowest-rated "tranches", as they are known, are rewarded with higher returns but are hit first if the underlying loans — issued to low-rated or heavily indebted companies across the US — begin to default.

As such, CLOs resemble other structures that rocked the financial system a decade ago, such as CDOs, which issued debt backed by bundles of (what turned out to be) junk mortgage bonds. But both investors and CLO managers say this time is different.

"[CLOs] begin with a 'C' and end with an 'O'," says one investor, adding that parallels should end there. "Overall, the asset class has proved resilient across several market cycles."

The record is certainly encouraging. Of the 4,322 CLO tranches that were rated by S&P Global Ratings before 2008, only 38 tranches across 22 CLOs have defaulted, notes LCD, a division of S&P Global Market Intelligence. And there has never been a default of a triple A-rated tranche.

But the market has grown a lot since then (see Figure 4.7). The value of outstanding CLOs has doubled since 2007 to more than $600bn at the end of 2018, consistently representing around 50 per cent of the investor base for leveraged loans, according to data from Citi.

Some protections have increased, too. On average, a CLO would have to experience losses in excess of 35 per cent before triple A investors would lose money, according to Fitch Ratings. That is up from an average of around 25 per cent before the financial crisis – the result of rating agencies changing their recovery assumptions for the underlying loans, while setting a higher bar for CLO managers to reach that triple A rating.

"We wanted to make sure that the triple-A rated notes are protected," says Kevin Kendra, head of US structured credit at Fitch.

Those structural changes mean that CLOs concentrate the risk of losses in the hands of a small group of hedge funds and other investors with a high tolerance for big swings in performance. In

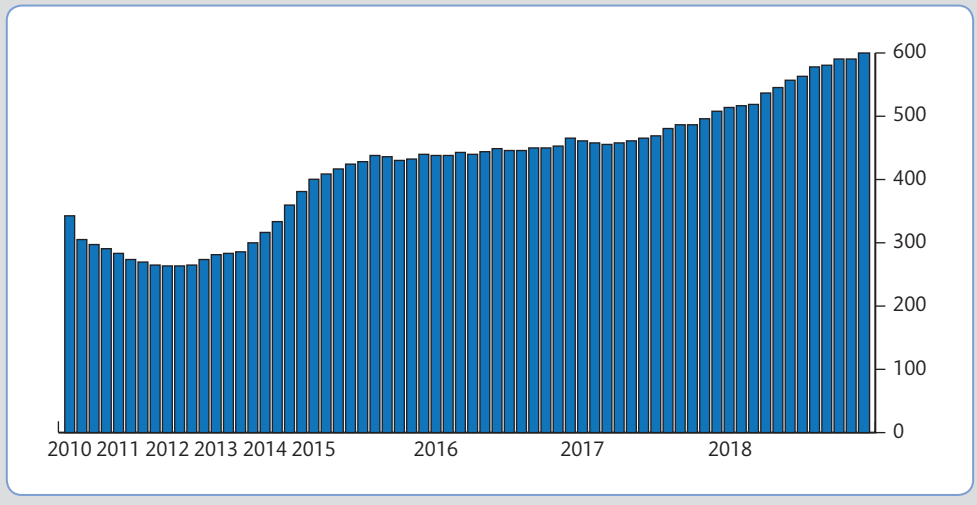


Figure 4.7 Collateralised loan obligations outstanding ($bn)

Box 4.6 Designers of CLOs say that structures are much safer than crisis-era cousins (*continued*)

the fourth quarter last year, for example, leveraged loan prices tumbled but most CLO tranches still ended the year with positive returns for debt investors. Triple A tranches returned an average of 2.7 per cent for 2018, according to Citi.

The investors who lost out were investors in the riskiest "equity" tranches, who ended the year with losses of 11.4 per cent.

"When the market falls and you have to mark down your portfolio 10 per cent that hurts but it doesn't create forced sellers," says Chris Acito, chief executive of Gapstow Capital Partners, which invests in CLO equity. "This market is not held by weak hands."

But that does not mean the product carries no dangers.

Already, strong demand from CLOs has helped to shred many of the investor protections that were once routinely embedded in loan documents. Financial maintenance covenants — contractual agreements that would limit the amount of leverage a company could take on, or mandate thresholds for the amount of cash they needed on hand to pay interest on their loans — have been eroded.

That means that when a downturn comes and borrowers start to hit trouble, losses for loan holders could be greater than they had imagined. That filters through to CLOs, as managers have less cash to pass through to investors. "I do think credit quality has deteriorated," says Jeanne Manischewitz, a partner at hedge fund York Capital Management. "Part of that was fuelled by CLO formation."

Another unsettling development for investors: CLO managers have given themselves more flexibility over what they can invest in, such as the ability to fill their vehicles with more second-lien loans, which sit lower down in the capital structure of a company than more senior, first-lien loans.

"We do see some weaker CLO docs in 2018," says Maggie Wang, a CLO analyst at Citi. "It mirrors the weaker documents in the leveraged loan market."

Regulatory standards have weakened, too. At the end of 2016, CLO managers became bound by a requirement that they must hold 5 per cent of the economic interest in each new deal they sell, in a bid to align their interests with those of investors.

But after less than two years, the Loan Syndications and Trading Association, the main industry group, managed to get the rule repealed.

Still, there is little danger of a big blow-up, says Stephen Ketchum, founder of hedge fund and CLO manager Sound Point Capital. "I think the presence of CLOs in the loan market is overwhelmingly a good thing," he says.

FT *Source*: Rennison, J. (2019) 'CLOs: the specialist loan vehicles luring yield-hungry investors', *Financial Times*, 28 January.
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BOX 4.7 BANKS COMPLETE FIRST SYNDICATED LOAN ON BLOCKCHAIN

The technology can slash transaction times in the $4.6tn-a-year market

Spain's BBVA and two partner banks have completed the first syndicated loan on the blockchain, providing a working example of how transactions in the $4.6tn-a-year market can be simplified and made faster using technology that underpins cryptocurrencies.

Syndicated loans were identified early on as a key use for blockchain in financial services, since banks rely on outdated and inefficient processes including faxes to share information between different parties who are structuring complex agreements.

Box 4.7 Banks complete first syndicated loan on blockchain (*continued*)

Combining shared databases and cryptography, blockchain technology is the basis for cryptocurrencies such as bitcoin. Banks have seized on the technology, which allows multiple parties to have simultaneous access to a constantly updated digital ledger that cannot be altered, as a way to cut costs and speed up many activities.

On Tuesday, BBVA used a private blockchain network to arrange a $150m syndicated loan for Red Electrica, the Spanish grid operator, with co-lenders MUFG of Japan and BNP Paribas of France. Legal advisers Linklaters and Herbert Smith Freehills also had access to the system which allowed all parties to exchange information instantly.

The information was time-stamped, to show exactly when each event occurred, and the network was secured with user codes. Once the contract was signed, it was given a unique identifier that was recorded on the Ethereum blockchain, preserving its authenticity.

BBVA says the blockchain technology, which is being rolled out on a pilot basis, simplifies and speeds up the process of completing syndicated loans from about two weeks to a day or two. Loan signing and documentation processing, which traditionally takes a few hours, can be done in minutes.

As well as the saving time, moving syndicated loans to the blockchain will also deliver a "huge reduction in internal costs" for clients, Ricardo Laiseca, BBVA's head of global finance, told the FT. He said: "Everything is automatically recorded by the system, in terms of back office and operational costs."

Mr Laiseca said that BBVA had a pipeline of "five or six" other syndicated loans that would be done over the blockchain in the coming months as the pilot continues.

"We are offering these technologies for collaboration with any other banks…This is not just for BBVA, we feel that as a second stage (we are) working on a new markets infrastructure which will be good for everyone."

Another platform built by fintech group Finastra and pioneered by the UK's NatWest is offering syndicated loan servicing over blockchain, using the Corda distributed ledger technology which is due to go live on November 17. In the broader lending space, BBVA earlier this year issued the world's first corporate loan by blockchain.

The banking industry's single largest blockchain project remains the Interbank Information Network, where more than 75 banks led by JPMorgan, Royal Bank of Canada and ANZ are using distributed ledger technology for some interbank payments.

Source: Noonan, L. (2018) 'Banks complete first syndicated loan on blockchain', *Financial Times*, 6 November.
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4.8 Conclusions

This chapter provides an insight to the reasons as to why banks undertake international business and highlights the evolution of foreign bank activity. It can be seen that a major feature of international banking is to provide commercial and investment banking and other services to global companies as well as to undertake a range of commercial banking and other activities in overseas markets. In terms of the products and services offered to large international companies, banks provide payments and treasury management services and also facilitate access to international financing either short-term via the Eurocurrency markets or longer term via bond, equity and syndicated lending markets.

International banks and corporations have benefited substantially from the growth in securitisation activity and structured credit products that have enabled them to raise funds and restructure their credit books. Access to credit ballooned up until the onset of the credit crisis in mid-2007. The securitisation of credits, international lending, syndicated lending and bond financing has dramatically fallen since then and has yet to reach the previous heady heights. We have also noted that foreign bank presence has grown markedly and can take various forms. The range of services on offer can vary substantially from bank to bank. It is important to remember that international banking activity nowadays spans the full spectrum of the financial services industry and incorporates a wide range of players. Foreign banks are present in nearly every country and their importance has generally increased up to the start of the credit crisis.

Since 2008, many major banks have sought to boost their capital positions and therefore have been looking at ways to raise large amounts of cash quickly. As a consequence they have considered divesting some of their 'non-essential' international activities. This is a common feature of banking crises in general – when the Japanese banking industry suffered losses in the 1990s they divested foreign assets to concentrate on domestic business (as did US banks in the mid-1980s savings and loans crisis). It is highly likely that many international banks will seek to raise capital via this route and it is likely to stem the foreign expansion of US and European institutions in the near future.

Key terms

Agency
Agency fee
Agent bank
Anti-money laundering (AML)
Aquisitions (or equipment) lines
Arbitrage
Arrangement fee
Arranger
Best efforts syndication
Branch
Bridge loans
Bullet payment
Club deal
Collateralised debt obligations (CDOs)
Collateralised loan obligations (CLOs)
Colonial banking
Commitment fee
Correspondent banking
Cost of capital
Counter terrorism financing (CFT)
Countertrade
Credit facilities
De-risking
Eurocurrency banking
Eurocurrency market
Excess managerial capacity
Firm-specific advantages
Foreign direct investment (FDI)
Forfaiting
Geographical diversification
Horizontal FDI
Information memo
Innovative (or new product) stage
Institutional investor
International banking
Investment grade
Irrevocable letter of credit
Know your customer (KYC)
Letters of credit
Leveraged
Location advantages
Market flex language
Mature product stage
Modern international banking
Multinational banking
Ownership advantage
Product diversification
Product life cycle
Production diffusion
Revocable letter of credit
Revolving credit facility
Representative office
Standardised product
Subsidiary
Term loan
Traditional foreign banking
Underwritten deal
Vertical FDI

Key reading

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REVISION QUESTIONS AND PROBLEMS

4.1 In what ways does traditional foreign banking differ from Eurocurrency banking?

4.2 Why do banks go overseas? What are the main theories on the rationale for international banking?

4.3 Explain the main strategic reasons why banks may wish to establish foreign operations.

4.4 Discuss the key developments in international banking since the global financial crisis.

4.5 What do correspondent banking relationships involve?

4.6 In what way(s) can the banking sector provide trade finance that helps facilitate the import and export of goods for firms involved in international trading?

4.7 Explain why banks engage in syndicated lending.

4.8 Discuss the different stages of a syndicated lending process.

4.9 How do borrowers benefit from accessing the syndicated loans market?

4.10 Discuss the growth of the CLOs market and its potential implications for financial stability.

Appendix 4.1
Syndicated lending: a selected glossary

Term	Explanation
Administrative fee	The annual fee paid to administer the loan (including to distribute interest payments to the syndication group, to update lender lists, and to manage borrowings).
Agency fee	An annual fee, calculated as a lump sum or per bank per annum, payable by the borrower to compensate the agent for the mechanical and operational work performed by that bank under the loan agreement.
Agent	The agent (or agent bank) acts as a conduit between the borrower and the lenders and it is traditionally the main point of contact for the borrower. Investment banks often act as agent banks in syndicated transactions. The agent bank will facilitate the terms of the loan and it is paid a fee for its deal management services.
Arranging bank	A bank or other financial institution responsible for originating and syndicating a transaction. The arranger always has a senior role. Often the arranger is also the agent and, if required, usually underwrites all or part of the facility as well as participating, although not always at the most senior level.
Availability period	The period of time between the signing of a loan agreement and the expiry of the lender's commitment to lend, during which the borrower is permitted to draw down advances, provided all conditions are satisfied.
AXE sheet	An axe sheet is a list of secondary bids and offers for loans that dealers send to accounts. It includes key details of a syndicated transaction, covering name of borrower, type of facility, term of facility and pricing details.
Bank book	A document describing the terms of the transactions. The IM typically will include an executive summary, investment considerations, a list of terms and conditions, an industry overview, and a financial model.
Basis point (bp)	It refers to a common unit of measure for interest rates and other percentages in finance. One basis point is equal to 1/100 of one percent (0.01%) or 0.0001. The relationship between percentage changes and basis points can be summarized as follows: 1% change = 100 basis points. It is the unit of measurement used to describe fees or spreads in most loan transactions.
Best effort	The arranger group commits to underwrite less than the entire amount of the loan, leaving the rest to investors demand. If the loan is undersubscribed, the deal may not close, or it might need major restructuring to clear the market. Traditionally, best-efforts syndications were used for riskier borrowers or for complex transactions.
Bracket	A level of commitment and related title offered to banks and other investors invited into a syndicated loan agreement.
Break price	The price at which loans or bonds are initially traded into the secondary market after they close and allocate. It is called the break price because that is where the facility breaks into the secondary market.
Bookrunner	The bank(s) appointed to run the books during the execution phase of syndication with responsibility for issuing invitations, disseminating information to interested banks and informing both the borrower and the management group of underwriters of daily progress. It is a high-profile role, and it is generally considered the most desirable syndication task.
Bullet	A facility where the repayment is in one amount on the final maturity date of the syndicated agreement.
Clear market	An agreement by a borrower at the mandate stage of a syndicated loan not to engage in other public financings which could compete with the syndicated loan being arranged.
Club Deal	A loan where a group of lenders agree to take and hold an asset at the outset of the transaction with no intention of reducing their commitments through subsequent syndication. It is traditionally a smaller loan that is pre-marketed to a group of lenders.
Collateral	The particular assets of a borrower which are pledged to secure a loan(s) provided to it.
Collateralised Loan Obligations (CLOs)	CLOs are special-purpose vehicles set up to hold and manage pools of leveraged loans.

Appendix 4.1 continued

Term	Explanation
Commitment fee	A commitment fee is a fee paid to lenders on undrawn amounts under a revolving credit or a term loan prior to draw-down. On term loans, this fee is usually referred to as a "ticking" fee.
Covenants	A series of restrictions that dictate, to varying degrees, how borrowers can operate and carry themselves financially.
Extension fee	The fee charged when an existing committed facility is extended beyond the original maturity date.
Facility fee	An annual percentage fee, payable by the borrower, pro-rata to banks providing a credit facility to that borrower. It is calculated on the full amount of the facility, whether or not the facility is utilised.
Front end fee	A fee, calculated as a percentage of the principal amount, which is payable once, generally at signing of the loan agreement or shortly thereafter.
General syndication	The syndication stage following the underwriting of a facility leading to the final distribution of amounts among the lenders participating in the primary stage of a syndicated loan.
Grace period	The period between signing the loan agreement and the first repayment of principal. Also, the period during which a borrower may be allowed to remedy an event of default.
Haircut	A situation where a borrower has fallen into financial difficulties and lenders have agreed to accept a reduction in interest and or fees, or, on occasions, principal itself, to help prevent the borrower falling into bankruptcy. Also a situation where a borrower has fallen into financial difficulty and a lender has decided to sell its exposure in the secondary market at a significant discount to its par value.
Information Memo (IM)	Also known as the "bank book".
Intercreditor agreement	A document which sets out the agreement between various financiers providing loans or credits to a borrower and reconciles their different interests. It deals with the commercial behaviour of the parties and also the ranking of their debt and security, particularly on insolvency, by subordinating junior lenders and regulating the rights of lenders.
Investment grade	A borrower, or the specific debt instrument or class of debt of a borrower, given a rating from one of the major rating agencies of Baa3 / BBB- or higher
Jumbo	A very large syndicated loan, usually defined as a loan in excess of €5 billion or US$ 5 billion or equivalent.
Know Your Customer (KYC)	A standard in the investment industry that ensures investment advisors know detailed information about their clients' risk tolerance, investment knowledge, and financial position. Various checks and investigations required of your customers as part of the procedures to prevent money laundering.
Loan Credit Default Swaps (LCDS)	A product which is similar to CDS but referenced against loans. This is a relatively new product and steps to standardise processes are being considered by market players. Note: there are differing contracts for European and US LCDS.
Lead Manager	A bank committing to a senior level of participation.
Leveraged Loan	Various institutions may define a leveraged loan in different ways, although it is reasonably common to be determined against a bank loan rating (i.e. Ba1 / BB+ or lower from one or more of the major rating agencies), or, for non-rated borrowers, a margin of around 125 to 150 bp pa or more.
Loss Given Default (LGD)	A measure of how much creditors lose when an issuer defaults. The loss will vary depending on creditor class, the value of the collateral and the franchise value of the business when it defaults.
Mandated Lead Arranger (MLA)	A mandated bank at the highest level. The MLA, or at least one MLA in cases when there is more than one MLA, will act as the bookrunner.
Margin	The extra percentage rate of interest charged by lenders over the relevant basis rate reflecting the credit quality of the borrower.
Market flex	Underwriters' right to revise the structure and conditions of a mandate if the syndication of a loan fails to raise the required level of commitment from participants.
Material Adverse Change (MAC)	A reference to a clause sometimes included in loan agreements seeking to provide lenders with a degree of protection against adverse change in a borrower's circumstances.
Middle market	The loan market can be roughly divided into two segments: large corporate and middle market. There are many ways to define middle market. For the leveraged loan market, Standard & Poor's uses the $50 million threshold in its reports and statistics.
On the break	The point in time when a syndicated loan becomes free to trade.

Appendix 4.1 continued

Term	Explanation
Out of the box	The pricing on a facility as notified to the market at the start of primary syndication.
Participation	A single lender's share of the overall loan facility.
Participation fee	A credit-related fee; normally paid on or within 30 days of signing, calculated on each bank's final allocated commitment. Also commonly known as a front-end fee.
Pricing grid	A grid used to determine the applicable margin of a loan as determined by a performance measurement such as the credit rating of the borrower (or the loans) or the borrower's leverage ratio at a given point in time. Pricing grids may also be used to determine commitment fees for revolving loans.
Private placement	A group of lenders who agree to take and hold an asset at the outset of the transaction. There is no intention of reducing the amount of the commitment to lend through subsequent syndication. In a loan market context this is often referred to as a "take-and hold" strategy or a "club loan".
Spread	The margin above the base rate paid by borrowers under the loan arrangements. The spread is typically expressed in basis points.
Syndicated Loan	A syndicated loan is financing offered by a group of lenders (typically large international banks known as a syndicate) who to provide funds for a single borrower.
Ratchet	The movement from one pricing level to another on the pricing grid.
Recovery	Recovery is the opposite of loss-given-default—it is the amount a creditor recovers, rather than loses, in a given default.
Revolving credit facilities	A revolving credit line allows borrowers to draw down, repay, and reborrow.
Snooze you lose	A borrower-friendly clause in a syndicated facility agreement which gives the borrower protection against lenders failing to respond in a reasonable time frame to a request for an amendment, consent or waiver under that facility agreement.
Tranches	Tranche is a French word meaning *slice*. In structured finance, it refers to segments created from a pool of assets (for example loans or mortgages) that are divided to produces securities with different risk, maturity and other characteristics.
Transfer fee	The fee charged by an agent bank for transferring a portion of a loan from one lender of record to another lender of record
Underwriter	A lender which commits in advance of drawdown to take on a portion of the overall facility.
Underwriting fee	The fee charged by an underwriter. It is calculated on the basis of the amount committed.
Underwriting syndicate	A temporary group of investment banks and broker-dealers who come together to sell new offerings of equity or debt securities to investors. The underwriter syndicate is formed and led by the lead underwriter.
Underwritten deal	In an underwritten deal the arrangers guarantee the entire amount committed, then syndicate the loan. If the arrangers cannot get investors to fully subscribe the loan, they are forced to absorb the difference, which they may later try to sell if market conditions improve.
Usage fee	A usage fee is a fee paid when the utilization of a revolving credit is above, or more often, falls below a certain minimum.
Yank the Bank	A clause in a loan agreement that gives the borrower the right to replace a single member of the lending syndicate with a new lender in limited circumstances.
YTD	Year to date.

Source: Compiled by the authors from several sources, including S&P Global Market Intelligence, Leveraged Loan Primer (**https://www.spglobal.com/marketintelligence/en/pages/toc-primer/lcd-primer#sec1**) and Loan Market Association (**https://www.lma.eu.com**).

Chapter 5

Islamic banking

Learning objectives

- To understand the main differences between Islamic and conventional banking
- To understand the role of profit sharing and agency agreements
- To understand the performance features of Islamic banks
- To be aware of the industry structure and main players
- To be familiar with the range of services offered to clients

5.1 Introduction

Islamic banking and finance is financial activity undertaken that is consistent with Islamic law (Sharia). It is carried out in accordance with the rules of Sharia, known as fiqh muamalat (Islamic rules on transactions). A key feature of Islamic banking is that it does not allow for the payment or receipt of interest (riba) and also aims to promote a greater degree of fairness and equity in the conduct of financial business. To reward depositors an Islamic bank will pay investment account holders a return based on the performance of the bank. Previous years' returns are given as an indication of future returns, but the return on an investment account can never be guaranteed (because then it is the same as interest). In order to earn income an Islamic bank structures its loan repayments on a **profit and loss sharing (PLS)** or cost-plus **non-profit and loss sharing (NPLS)** basis.

Islamic banks are not allowed to undertake business activity in areas prohibited (**haram**) under Islamic law and this includes dealing with firms linked to alcohol, gambling and gaming activities, conventional financial services (because they pay and receive interest), pork and pork products, and pornography. What started as a small rural banking experiment in the remote villages of Egypt has now reached a level where many international banks are offering Islamic banking products via subsidiaries – such as Citibank Islamic Investment Bank and HSBC Amanah – or through Islamic windows (branches that just undertake Islamic business). The practice of Islamic banking during the last 30 years has spread to all corners of the

globe. An industry that amounted to a few hundred thousand dollars in 1975 reached $2.8 trillion by the end of 2019.[1]

We should also mention that there are Islamic bonds (sukuk), where returns are paid based on the financial performance of a specific project (real estate development, energy production and so on) for which the sukuk have been issued (in fact they financed part of the London 'Shard' and Olympic Stadium development). After banks, sukuk are the next most important Islamic financial area (amounting to $318 billion in assets) followed by the mutual fund business ($56 billion) and *takaful* (Islamic insurance). These will be discussed in detail in the remainder of this chapter.

5.2 A brief history

Although various credit societies and co-operatives operated on an interest-free basis in several Muslim countries during colonial times, the birth of modern-day Islamic banking started in 1963 with the emergence of Mit-Ghamr savings bank in Egypt. Deriving inspiration from the idea of German savings banks, Mit-Ghamr mobilised small savings from the rural sector largely through savings accounts. No interest was paid to account holders. However, as an incentive they were eligible for small short-term interest-free loans for productive purposes. They were allowed to withdraw their deposits on demand. In addition, investment accounts on the basis of profit sharing were also introduced. The funds so mobilised were invested on the basis of profit-sharing with entrepreneurs.

According to Hassan and Aliyu (2018), at about the same time an Islamic investment company, Lembaga Tabung Hajj (Pilgrim Fund Board), started operations in Malaysia. The fund obtained deposits and provided services to those engaged in Islamic pilgrimages. The first interest-free institution with 'bank' in its name, Nasser Social Bank, was also established in Egypt in 1971. This was the first time that a government in a Muslim country had showed an interest in incorporating an interest-free institution.

Even though the objectives of the Nasser Social Bank were mainly social, such as providing interest-free loans to the poor and needy, scholarships to students, and micro-credits to small projects on a profit-sharing basis, the involvement of a public authority in interest-free banking sent important signals to Muslim businessmen having surplus funds. A group of such businessmen established the Dubai Islamic Bank in 1975 in Dubai, United Arab Emirates (UAE), which was the first Islamic bank established on private initiative. However, official support was crucial, with the governments of UAE and Kuwait contributing respectively 20 per cent and 10 per cent of the initial capital.

Another important development in the history of Islamic banking took place with the establishment of the Islamic Development Bank (IDB) in 1975. Iqbal and Molyneux (2005) note that the IDB was established as an international financial institution following a declaration made by a conference of finance ministers of Islamic countries held in Jeddah, Saudi

[1] The size of the Islamic banking sector at $1.8 trillion is under 3 per cent of global banking sector assets. To put this into perspective, the world's largest bank in 2018 was the Industrial and Commercial Bank of China with assets of over $4 trillion, and the seventh biggest bank (HSBC) had assets of $2.6 trillion (see Table 3.4).

Arabia in December 1973. The declaration was signed by representatives of member countries of the Organization of Islamic Cooperation (OIC).[2] A second conference of finance ministers held in Jeddah in August 1974 adopted the Articles of Agreement establishing the Islamic Development Bank. The inaugural meeting of the Board of Governors of the IDB took place in Riyadh, Saudi Arabia, in July 1975 and the bank started fully functioning in October 1975.

The main aim of the IDB is to foster sustainable development (economic growth and social well-being) in its 57 member countries by financing a wide range of projects through Islamic means – the IDB is the world's largest issuer of sukuk and it has the highest AAA credit rating, making it one of the safest debt issuers. Funds raised via sukuk issuance are used to fund a wide array of areas – spanning infrastructure development to financing clean water and property developments.

During the 1980s a number of governments (Iran, Sudan and Pakistan) declared that they would move their banking and financial systems to an Islamic model and Islamic banks emerged in a variety of countries including Bangladesh, Luxembourg, Malaysia, Mauritania and Saudi Arabia. The first Islamic standards setter, the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), was established in Bahrain in 1991, followed by the Islamic Financial Services Board (IFSB) (based in Kuala Lumpur, Malaysia) and the International Islamic Financial Market (IIFM) in 2002 (Bahrain). These bodies seek to set standards for Islamic banking and finance practices and operations, making sure they are consistent with Sharia principles. The period between 1990 and 2000 saw the development of Islamic capital markets products (such as the growth of Islamic funds and sukuk issuance) as well as the development of more advanced treasury services, money market instruments and other product innovations (such as Islamic credit cards).

According to Hassan and Aliyu (2018) the current development of Islamic banking has the following features:

- early Islamic commercial banks were more socially oriented than profit motivated – now the industry has moved much more towards the latter;
- the penetration and acceptance of Islamic banking goes beyond Muslim majority countries;
- fostering economic growth and social well-being is the aim of multinational Islamic financial institutions (such as the IDB);
- the internationalisation of Islamic banking and financial standards have been recognised by the International Monetary Fund (IMF);
- Islamic financial standards are still undergoing modifications, such as development and harmonisation with other international standards;
- the practice of Islamic banks is skewed towards cost-plus sales and lease-based finance (NPLS) rather than towards rewards and risk-sharing contracts (PLS).

[2] The Organization of Islamic Cooperation (OIC) is the second largest inter-governmental organisation after the United Nations. At the signing of the declaration in 1973 the OIC had 23 member states – by mid-2018 it had 57 member states across four continents. 'The Organization is the collective voice of the Muslim world. It endeavors to safeguard and protect the interests of the Muslim world in the spirit of promoting international peace and harmony among various people of the world'. (**www.oic-oci.org**).

BOX 5.1 TIMELINE OF THE DEVELOPMENT OF ISLAMIC BANKING AND FINANCE

Figure 5.1 illustrates a timeline of the development of Islamic banking since its early days in the 1940s to today's industry, worth almost $3 trillion in assets.

Early Developments (1940–1960)

Starting from the 1940s, a critique of interest from an Islamic began. Muslim economists began offering ideas of interest-free banking possibilities and non-bank applications of interest-free finance started.

Profit sharing and interest-free banking defined (1960–1970)

During this period, the first profit-sharing models of interest-free banking were defined. The first experiments of bank-like institutions, such as the Mit Ghamr experience in Egypt, were undertaken. The first trade-based modes of Islamic finance were developed.

First Islamic commercial bank established (1970–1980)

In 1975, the first Islamic commercial bank (Dubai Islamic Bank) was established. In addition, the first Islamic international multilateral development finance institution (IDB) was established in Jeddah. During this time, new modes of Islamic finance were developed.

On the 1st of January 1980, Pakistan declared its resolve to Islamise entire financial system.

Rapid growth of Islamic banking (1980–1990)

The 1980s and 1990s saw a rapid growth of Islamic banking, which passes $100 billion mark for the first time. Two more countries (Iran and Sudan) declare Islamising their entire financial systems and Islamic banks are launched in countries such as Malaysia, Bangladesh, Qatar, Mauritania, Saudi Arabia, and Luxembourg. In addition, conventional banks start including major international banks start Islamic products and windows.

During this time, the development of Islamic finance continued, and the first Islamic investment funds was launched. These developments attracted the interest of the IMF and the World Bank, who started getting involved. Similarly, academic institutions around the world start Islamic finance teaching.

Accounting standards for Islamic banks introduced (1990–2000)

The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) was founded in 1991 (the first Islamic finance standards-setter) based in Bahrain and the accounting standards for Islamic banks start.

During this periods, the Islamic investment funds show phenomenal growth, and the Dow Jones announces Islamic indices. New Islamic banks are

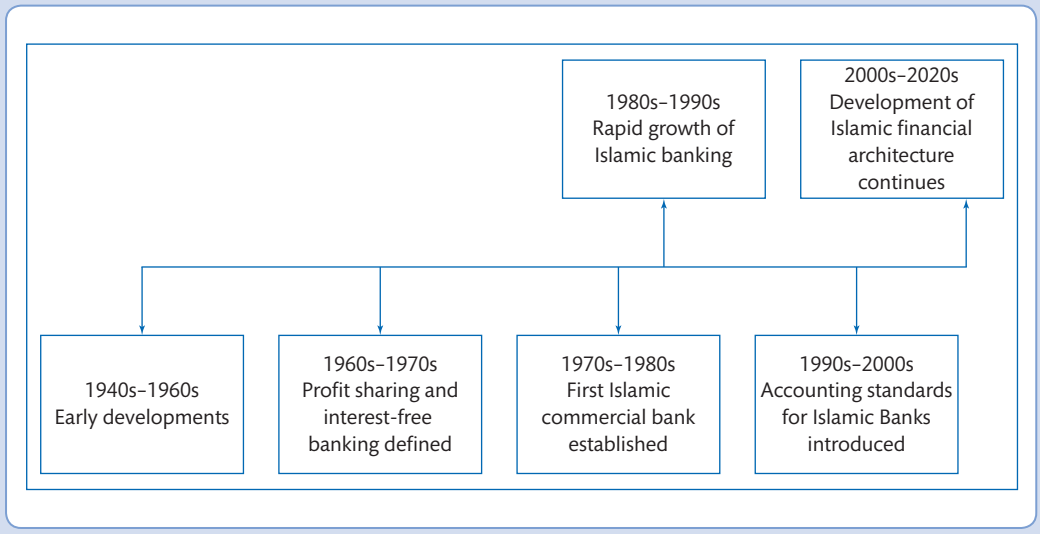


Figure 5.1 A timeline of Islamic banking

Box 5.1 Timeline of the Development of the Islamic Banking and Finance (*continued*)

established, and new asset-based Islamic financial products are developed. The Islamic secondary markets start, and several support institutions established.

Development of the Islamic financial architecture continues (2000–2020)

In 2002, the Islamic Financial Services Board (IFSB) and the International Islamic Finance Market (IIFM) were established. The IFSB is a standard setter for Islamic banking and finance regulatory and supervisory agencies. It is headquartered in Kuala Lumpur, Malaysia. The IIFM is also a standard setting body that focuses on the standardization of Islamic financial contracts and products linked to both capital and money market instruments as well as other corporate finance and trade finance areas. IIFM is based in Bahrain.

During the early 2000s, accounting, regulatory and control issues gather steam, and the first Islamic Rating Agency was established.

Public sector resource mobilisation through Islamic modes gained momentum, predominantly via the issue of sukuk (Islamic bonds).

During more recent years, Islamic banks have expanded globally – London hosts more than any other Western country – these include Bank of London and the Middle East, Al Rayan Bank, Gatehouse, QIB (UK) and ADIB (UK).

More recently, the rise in Islamic FinTech's popularity is also prompting a surge in FinTech-focused investment funds.

Nowadays, the Islamic banking industry has grown to $2 trillion in assets (end of 2019).

5.3 How an Islamic bank operates

As mentioned in Section 5.1, Islamic banking and finance is financial activity undertaken that is consistent with Islamic law (Sharia), where transactions are carried out in accordance with the rules of Sharia, known as **fiqh muamalat** (Islamic rules on transactions). It does not allow the paying and receiving of **riba** (interest) and aims to promote a greater degree of fairness and equity in the conduct of financial business. As noted earlier, Islamic banking has existed for over 50 years. Islamic finance has evolved on the basis of Islamic rules on transactions and can mainly be categorised as follows:

- **Debt-based financing** – the bank purchases or has the underlying assets constructed or purchased and then this is sold to the client. The sale would be on a deferred-payment basis with one or several instalments and the bank earns a return based on mark-up over the asset purchase price.
- **Lease-based financing** – the bank purchases or has the underlying assets constructed or purchased and then rents it to the client. At the end of the rental period (or proportionate to the rentals) ownership would be transferred wholly or partially to the client.
- *Profit and loss-sharing financing* – the bank is the partner of the client and the return to the bank from a loan is based on a profit-sharing agreement. Realised profits or losses made by the borrower would be shared according to pre-agreed proportions.

The first two Islamic finance methods are collectively known as non-profit and loss sharing (NPLS) services. Besides restrictions on the payment of interest, Sharia has various other prohibitions that should be taken into account. For instance, according to the Sharia all contracts should be free from excessive uncertainty (**Gharar**), hence Islamic financial institutions face some restrictions on the application of financial derivatives and other types of contracts (including various forms of insurance policies). Box 5.2 highlights the main features of how an Islamic bank works.

The most commonly used method of lending is known as a *Murabahah* (mark-up financing) contract. Here the buyer of a product (say a car) approaches the bank to acquire the vehicle. In turn, the bank purchases the car from a third party (a supplier) and then resells the car to the borrower at an agreed mark-up for immediate or deferred payment. The seller informs the buyer of the cost of acquiring the specified product and the profit margin is negotiated between them. The total cost is usually paid in instalments. This is the most common form of NPLS contract.

For PLS-type arrangements the two most widely used contracts are known as Mudarabah and Musharakah. In the case of Mudarabah the lender supplies the funds needed to finance a project while the entrepreneur offers labour and expertise. Profits are shared between them at a certain fixed ratio, whereas financial losses are exclusively borne by the lender. The liability of the entrepreneur is limited only to their time and effort. Musharakah is where a bank enters into an equity partnership agreement (joint venture) with one or more partners to jointly finance an investment project. Profits are distributed according to predetermined ratios, and losses are shared strictly in relation to the respective capital contributions.

Table 5.1 shows the main products, services and key concepts used in Islamic banking and finance.

BOX 5.2 HOW AN ISLAMIC BANK WORKS

An Islamic bank is a deposit-taking banking institution whose scope of activities includes all currently known banking activities, excluding borrowing and lending on the basis of interest. On the liabilities side, it mobilises funds on the basis of a Mudarabah or Wakalah (agency) contract. It can also accept demand deposits, which are treated as interest-free loans from the clients to the bank and which are guaranteed. On the assets side, it advances funds on a profit and loss sharing or a debt-creating basis, in accordance with the principles of the Sharia.

The Islamic bank plays the role of an investment manager for the owners of time deposits, usually called investment deposits. In addition, equity holding as well as commodity and asset trading constitute an integral part of Islamic banking operations. An Islamic bank shares its net earnings with its depositors in a way that depends on the size and date-to-maturity of each deposit. Depositors must be informed beforehand of the formula used for sharing the net earnings with the bank.

The return to depositors is never guaranteed as this would then be just like paying interest – which is not allowed. Usually the bank will note the returns investment deposits have earned in the past as an indication of potential future returns.

Table 5.1 Key instruments and concepts in Islamic banking and finance

Key Instruments	Key Concepts
Commodity ***Murabahah***	A *Murabahah* or *Tawarruq* transaction is based on the purchase of a commodity from a seller or a broker and its resale to the customer on the basis of deferred *Murabahah*, followed by the sale of the commodity by the customer for a spot price to a third party for the purpose of obtaining liquidity, provided that there are no links between the two contracts.
Ijarah	A party leases a particular product for a specific sum and a specific time period. In the case of a lease purchase, each payment includes a portion that goes toward the final purchase and transfer of ownership of the producer.
Islamic window	The part of a conventional financial institution (which may be a branch or a dedicated unit) that provides both fund management (investment accounts) and financing and investments that are Sharia-compliant, with separate funds. It could also provide *takaful* (insurance) or retakaful (reinsurance) services.
Istisna (deferred payment or delivery)	A manufacturer (contractor) agrees to produce (build) and to deliver a certain good (or premise) at a given price on a given date in the future. The price does not have to be paid in advance (in contrast to Salam). It may be paid in instalments or part may be paid in advance with the balance to be paid later on, based on the preferences of the parties.
Mudarabah	An investment which represents the ownership of units of equal value in the equity of the Mudarabah. The provider of capital supplies the funds needed to finance a project while the entrepreneur offers labour and expertise. Profits are shared between them at a certain fixed ratio, whereas financial losses are exclusively borne by the capital's owner. The liability of the entrepreneur is limited only to their time and effort.
Murabahah (mark-up financing)	A widely used sale transaction between customers and banks. The buyer approaches the bank to acquire goods. In turn, the bank purchases them from a third party (a supplier) and then resells them to the borrower at an agreed mark-up for immediate or deferred payment. The seller informs the buyer of the cost of acquiring the specified product and the profit margin is negotiated between them. The total cost is usually paid in instalments.
Musharakah (equity participation)	Musharakah (Sharikat al-'Aqd) is an investment that represents ownership of partnership equity. The bank enters into an equity partnership agreement (joint venture) with one or more partners to jointly finance an investment project. Profits are distributed according to predetermined ratios, and losses are shared strictly in relation to the respective capital contributions.
Qard (benevolent loan)	These are zero-return loans that the Quran encourages Muslims to make to the needy. Banks are allowed to charge borrowers a service fee to cover the administrative expenses of handling the loan. The fee should not be related to the loan amount or maturity.
Salam (prepayment, deferred delivery)	The sale of a specified commodity that is of a known type, quantity and attributes for a known price paid at the time of signing the contract for its delivery in the future in one or several batches.
Sharia	The practical divine law deduced from its legitimate sources: the Quran, Sunnah, consensus (ijma), analogy (qiyas) and other approved sources of the Sharia.
Sharia non-compliance risk	An operational risk resulting from non-compliance of the institution with the rules and principles of Sharia in its products and services.
Sukuk (Islamic bond)	Certificates that represent a proportional undivided ownership right in tangible assets, or a pool of tangible assets and other types of assets. These assets could be in a specific project or specific investment activity that is Sharia-compliant.
Takaful (Islamic insurance)	A mutual guarantee in return for the commitment to donate an amount in the form of a specified contribution to the participants' risk fund, whereby a group of participants agree among themselves to support one another jointly for the losses arising from specified risks.
Tawarruq	A multi-step transaction heavily used for interbank financing and liquidity management, often based on commodities traded on the London Metal Exchange (LME). The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) (2006, p. 525) defines Tawarruq as 'the process of purchasing a commodity for a deferred price determined through Musawama (bargaining) or *Murabahah* (mark-up sale) and selling it to a third party for a spot price so as to obtain cash'. Tawarruq is often not accepted by Sharia scholars when the borrower sells the commodity back to the original seller.

Table 5.1 continued

Key Instruments	Key Concepts
Wakalah	One party (either the bank or client) acts as an agent to the other party to undertake transactions on their behalf. For example, the bank invests funds on behalf of a client or the bank appoints the client as an agent to buy the needed merchandise in a Murabahah transaction.
Waqf	A property that produces income and that may have been deeded to benefit a community.
Wadiah (demand deposits)	Deposits held at the bank as a trustee for safekeeping purposes. They are guaranteed in capital value and earn no return.
Zakah (Zakat)	A financial obligation that shall be disbursed through specific channels imposed on those whose wealth has reached a certain threshold (*nisab*) one year after it has been acquired.

Source: Adapted from International Monetary Fund (2017a,b), Table 1, pp. 5–6; Islamic Financial Stability Board (2017), Glossary.

5.3.1 The role of the Sharia committee

Islamic banks need to ensure that their operations comply with the principles of Sharia law. Each bank (or other type of Islamic financial institution) is required to establish a Sharia committee to provide advice on Sharia issues and to ensure that its operations and activities comply with Sharia principles. In the case of Malaysia, the Sharia Advisory Council established at the Bank Negara Malaysia (BNM) is the highest Sharia authority set up to provide advice on Sharia matters pertaining to Islamic banking and insurance in Malaysia. Other countries have similar councils.

BOX 5.3 FREQUENTLY ASKED QUESTIONS ABOUT ISLAMIC BANKING

1 How do Islamic banks reward depositors as interest payments are not allowed?

Sharia allows profit-sharing arrangements between the bank and the depositor. Profits from Islamic banking activities will be shared between the bank and the depositor based on an agreed profit-sharing ratio and paid in the form of dividends. The amount of dividend payout depends on the profits generated from the bank's operation. Sharia also allows the bank to give **hibah** (gifts) to depositors based on its discretion.

2 Is it possible for an Islamic bank to transfer balances of a customer's Islamic account to a conventional account, or vice versa?

Yes. An Islamic bank may transfer funds from an Islamic account to a conventional account. However, only the principal amount can be transferred from a conventional account to an Islamic account. No element of interest is allowed to be transferred.

3 How does an Islamic bank make money if it cannot charge interest on its loans?

Although the charging (or payment) of interest is prohibited, the bank can act as an agent to facilitate transactions – so buying goods and services required by the borrower and then selling these on at a mark-up is allowed, and repayment may be over time or in one instalment. Alternatively, the bank may lend to a business on a specific project and will take a share of profits if the project is a success. Depending on the contract entered into, the bank may take all the risk and bear losses, or these may be apportioned between

Box 5.3 Frequently asked questions about Islamic banking (*continued*)

the bank and borrower. In practice, the bulk of Islamic banking contracts are done on a mark-up basis.

4 Do Islamic banks compete with conventional banks?

Yes. In virtually all the countries where Islamic banks operate they have to compete with conventional banks – the only exceptions are in Iran and Sudan, where the banking system is entirely Islamic. As such, Islamic banks typically price their loans and pay returns on deposits in a similar fashion to conventional banks – the costs of banking services are not dramatically different between the two types of banks.

5.4 Industry features

As discussed in Section 5.1, the size of the Islamic banking and finance industry stood at $2.7 trillion by 2020. Banking constituted nearly $1.7 trillion so it is by far the most important part of the Islamic financial sector. Islamic bonds (sukuk) $544 billion, mutual funds ($103 billion) and insurance (*takaful*) ($28 billion) make up the rest of the industry. Table 5.2 provides a geographical breakdown and shows that the GCC (Gulf Cooperation Council countries) has the largest Islamic banking sector – some $854 billion in assets followed by MENA (Middle East and North Africa) at $584 billion and then Asia ($241 billion).

Figure 5.2 shows that global Islamic banking assets have more than doubled since 2008. Only two countries have full Islamic banking systems – Iran and Sudan – and as we have

Table 5.2 Breakdown of Islamic Financial Services Industry by Sector and Region (US $bn and %, 2019)

Region	Banking Assets		Sukuk (Islamic Bonds)		Assets of Islamic Funds		Takaful (Islamic Insurance)		Total	
	US $ billion	%	US $ billion	%	US $ billion	%	US $ billion	%	US $ billion	%
GCC	854	48	205	38	36	35	12	43	1228	50
Middle East and North Africa (MENA)	584	33	19	3	17	17	11	39	684	28
South-East Asia	241	14	303	56	27	26	3	11	670	27
Africa	34	2	2	0	2	2	1	4	43	2
Others	53	3	15	3	21	20	1	4	116	5
Total	**1766**	**100**	**544**	**100**	**103**	**100**	**28**	**100**	**2741**	**112**

Notes: Sukuk (Islamic bonds) = value of issues outstanding; Takaful (Islamic insurance) = premiums.
GCC is the Gulf Cooperation Council countries, comprising Bahrain, Kuwait, Kingdom of Saudi Arabia, Kuwait, Oman and Qatar.
Authors' elaborations. Data from the from Islamic Financial Services Stability Report (2020), published by the Islamic Financial Services Board (www.ifsb.org)

Source: Islamic Financial Services Board (2020) Islamic Financial Services Industry Stability Report. www.ifsb.org/

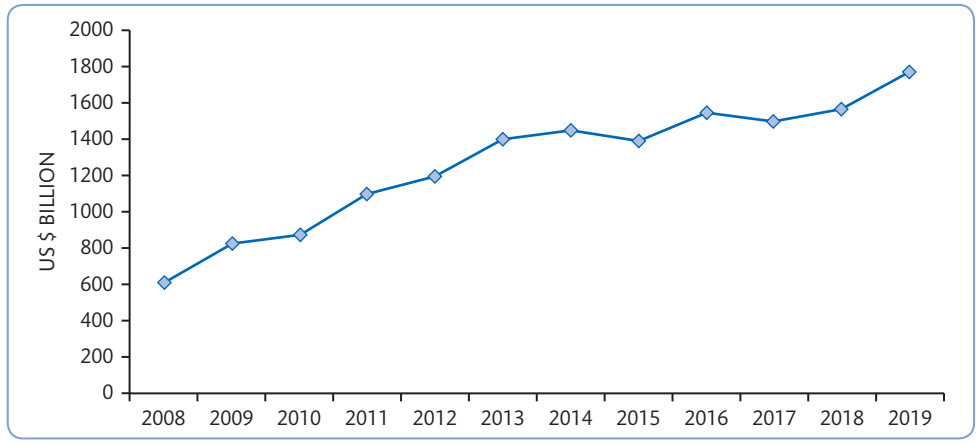


Figure 5.2 Growth in Islamic Banking Assets 2008 to 2019 (US $bn)

Notes: GCC is the Gulf Cooperation Council countries, comprising Bahrain, Kuwait, Kingdom of Saudi Arabia, Kuwait, Oman and Qatar.

Source: Authors' elaborations. Data from the from Islamic Financial Services Stability Report (2020), published by the Islamic Financial Stability Board (www.ifsb.org)

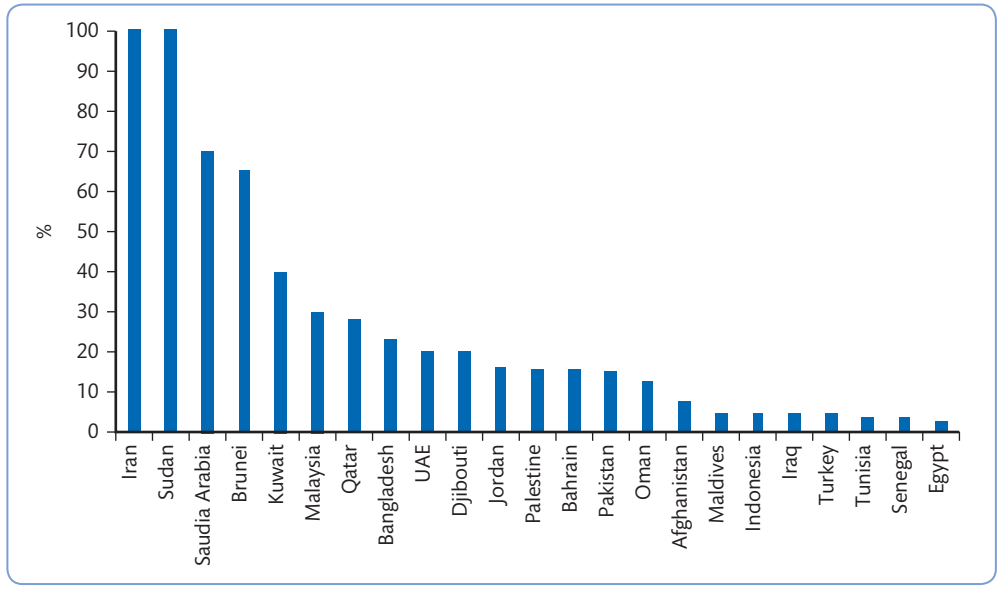


Figure 5.3 Islamic Banking Share in Total Banking Assets by Country 2019 (%)

Source: Authors' elaborations. Data from the from Islamic Financial Services Stability Report (2020), published by the Islamic Financial Services Board (www.ifsb.org)

already noted, in most cases Islamic banks compete with conventional banks. Figure 5.3 illustrates that 70 per cent of the banking system in Saudi Arabia is dedicated to Islamic banking (and 40 per cent in Kuwait). Surprisingly, Pakistan, whose population is primarily Muslim, only has a small Islamic banking sector – only 15 per cent of total banking sector assets.

Other interesting features of global Islamic banking are highlighted in Figures 5.4 and 5.5. Figure 5.4 shows the share of global Islamic banking assets on a country-by-country basis. Iran accounts for 29 per cent of global Islamic banking assets, followed by

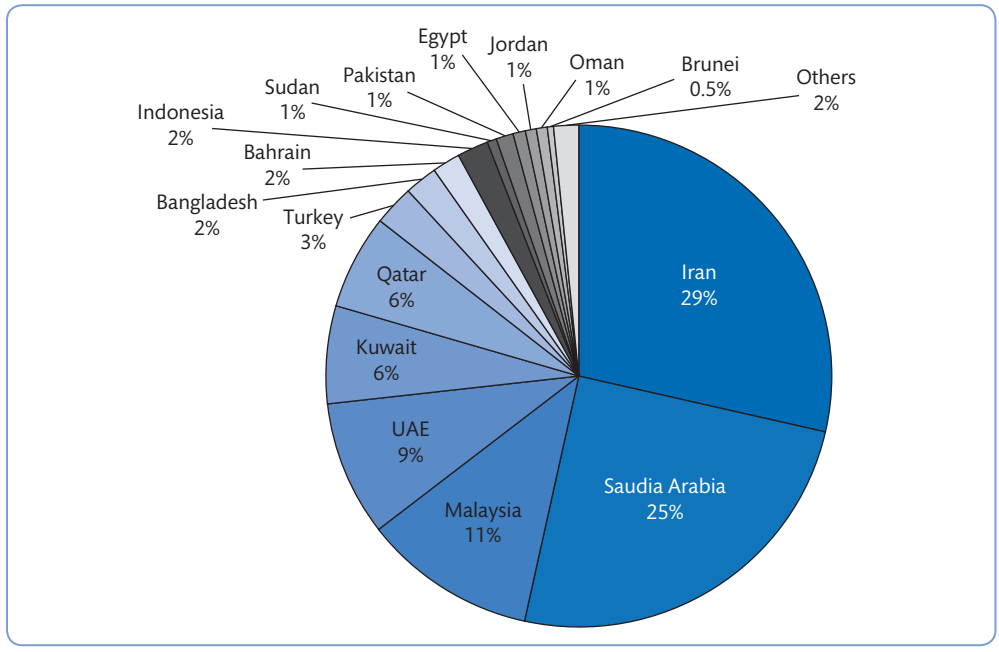


Figure 5.4 Shares of Global Islamic Banking Assets (2019)

Source: Authors' elaborations. Data from the from Islamic Financial Services Stability Report (2020), published by the Islamic Financial Services Board (www.ifsb.org)

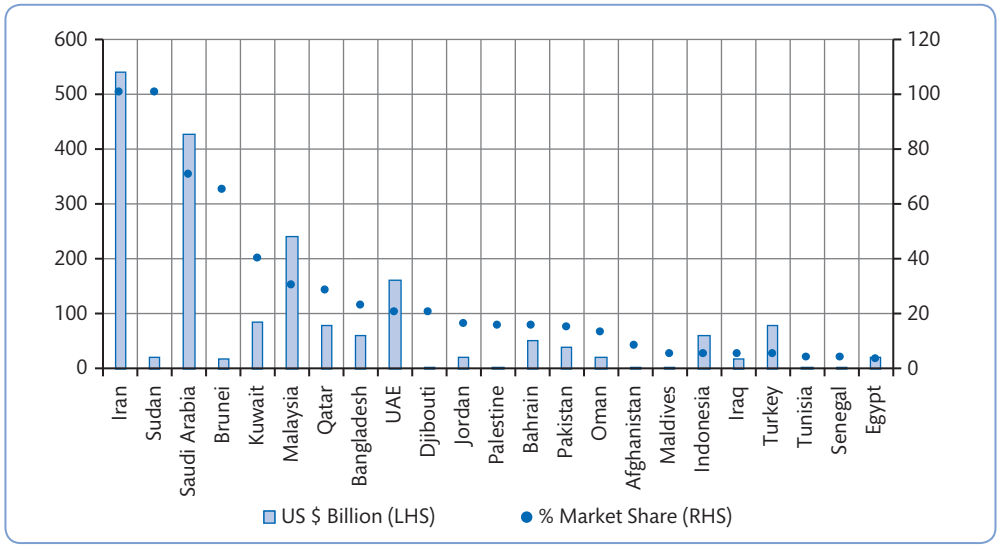


Figure 5.5 Islamic Banking Assets (US $bn) and Market Share (%) (2019)

Source: Authors' elaborations. Data from the from Islamic Financial Services Stability Report (2020), published by the Islamic Financial Services Board (www.ifsb.org)

Saudi Arabia at 25 per cent, Malaysia (11 per cent) and the United Arab Emirates (UAE) (9 per cent).

Figure 5.5 shows the US$ assets size of each Islamic banking sector for individual countries together with its market share of the domestic banking system. Figure 5.5 also shows that

Table 5.3 Top Islamic banks by assets size (US$mil), 2018

	Bank Name	Country	Total assets (US$mil)	World rank by assets size
1	Al Rajhi Bank Public Joint Stock Company	SA	91,498	259
2	Bank Melli Iran	IR	59,712	365
3	Kuwait Finance House	KW	57,496	377
4	Bank Mellat	IR	56,909	380
5	Dubai Islamic Bank PJSC	AE	56,457	388
6	Maybank Islamic Berhad	MY	49,851	443
7	Bank Saderat Iran	IR	45,788	474
8	Qatar Islamic Bank SAQ	QA	41,312	521
9	Bank Maskan	IR	37,395	n.a.
10	Bank Tejarat	IR	34,737	591
11	Abu Dhabi Islamic Bank – Public Joint Stock Co.	AE	33,568	611
12	Alinma Bank Public joint stock company	SA	30,668	651
13	Bank Sepah	IR	28,564	686
14	Masraf Al Rayan (Q.S.C.)	QA	28,283	697
15	Bank Kerjasama Rakyat Malaysia Berhad	MY	25,961	739
16	Albaraka Banking Group B.S.C.	BH	25,453	751
17	Bank Keshavarzi-Agricultural Bank of Iran	IR	23,585	800
18	Parsian Bank	IR	22,400	830
19	CIMB Islamic Bank Berhad	MY	20,994	876
20	Bank Pasargad	IR	20,918	882
21	Bank AlJazira JSC	SA	18,210	980
22	Bank AlBilad	SA	16,855	1038
23	Emirates Islamic Bank PJSC	AE	16,850	1039
24	BIMB Holdings Berhad	MY	16,195	1067
25	Refah Kargaran Bank-Bank Refah	IR	15,140	1104

Notes: SA = Saudi Arabia; IR = Iran; KW = Kuwait; AE = United Arab Emirates; MY = Malaysia; QA = Qatar; BH = Bahrain.

Source: Data from Orbis Bank Focus, Bureau van Dijk.

only Iran, Sudan, Saudi Arabia, Kuwait and Brunei have banking systems where Islamic banks have more than 30 per cent of the domestic market. Clearly Islamic banks are the minority and operate together with conventional banks in most countries. Table 5.3 shows the latest data on the size of the largest Islamic banks. The biggest bank is the Al Rajhi Bank based in Saudi Arabia, followed by Bank Melli (Iran), Kuwait Finance House, Bank Mellat (Iran) and Dubai Islamic Bank. The largest Islamic bank – Al Rahji – is ranked 259th in the world by assets size.

5.5 Balance sheet and income statement features

The balance sheet and income statement characteristics of Islamic banks are generally similar to those of conventional banks, with a few obvious exceptions: there is no reference to interest cost or revenue in the income statement. Reference to loans or lending is generally

Table 5.4 Dubai Islamic Bank PJSC balance sheet

Assets	**AED'000**
Cash and balance with central banks	27,885,248
Due from banks and financial institutions	4,676,652
Islamic financing and investing assets, net	133,334,227
Investments in Islamic sukuk measured at amortised cost	24,022,680
Other investments measured at fair value	1,961,733
Investments in associates and joint ventures	2,135,931
Properties held for development and sale	1,274,406
Investment properties	3,570,154
Receivables and other assets	7,339,199
Property and equipment	1,136,479
Total assets	**207,337,009**
Liabilities and equity	**AED'000**
Customers' deposits	147,180,951
Due to banks and financial institutions	14,877, 554
Sukuk issued	8,658,707
Payables and other liabilities	7,458,907
Zakat payable	280,372
Total liabilities	**178,456,491**
Share capital	4,942,189
Tier 1 sukuk	7,346,000
Other reserves and treasury shares	7,785,557
Investments fair value reserve	−615,389
Exchange translation reserve	−484,615
Retained earnings	6,964,089
Equity attributable to owners of the bank	**25,937,831**
Non-controlling interests	2,942,687
Income from properties held for development and sale, net	196,629
Income from investment properties	118,637
Share of profit from associates and joint ventures	122,050
Total equity	**28,880,518**
Total liabilities and equity	**207,337,009**

Source: Dubai Islamic Bank PJSC (2017) *Annual Report*.

referred to as financing assets or investment assets. Table 5.4 provides a snapshot of the Dubai Islamic Bank's balance sheet for 2017. The largest item is 'Islamic financing and investment assets, net', which primarily refers to their lending activities. The second-largest item refers to their investments in sukuk (bonds). One can also see that on the liabilities side of the balance sheet they are heavily dependent on customers' deposits, reflecting the retail nature of the Bank's activities – wholesale deposits are just over 8 per cent of total liabilities. It is also noticeable that Dubai Islamic Bank is relatively highly capitalised, with an equity to assets ratio sitting at a respectable near 14 per cent – this compares with 12.75 per cent for HSBC and under 12 per cent for Citigroup.

Table 5.5 Dubai Islamic Bank PJSC profit and loss statement

Net income	**AED'000**
Income from Islamic financing and investing transactions	7,794,582
Commission, fees and foreign exchange income	1,406,507
Income from other investments measured at fair value, net	31,038
Other income	529,342
Total income	10,198,785
Less: depositors' and sukuk holders' share of profit	−2,511,671
Net income	7,687,114
Operating expenses	**AED'000**
Personnel expenses	(1,568,090)
General and administrative expenses	(602,378)
Depreciation of investment properties	(45,723)
Depreciation of property and equipment	(119,451)
Total operating expenses	(2,335,642)
Net operating income before net impairment charges and taxation	5,351,472
Impairment charges, net	(823,453)
Profit for the year before income tax expense	4,528,019
Income tax expense	(24,439)
Net profit for the year	4,503,580
Attributable to: owners of the bank	4,322,195
Attributable to: non-controlling interests	181,385
Basic and diluted earnings per share (AED per share)	0.78

Source: Dubai Islamic Bank PJSC Annual Report 2017. AED is the United Arab Emirates Dirham.

Table 5.5 shows the Bank's income statement. The two main income sources are as follows:

1 Income from Islamic financing and investment transactions – this is revenue from lending and investments (and is broadly equivalent to interest income at a conventional bank).

2 Commission, fees and foreign exchange income – this is called non-interest income in conventional banks.

You can also see that income from profit sharing is small, reflecting the low level of PLS undertaken by the bank compared to NPLS business.

5.6 Regulating Islamic banks

The way Islamic banks are regulated varies from country to country, as does the legislation that governs their operations. In some countries Islamic and conventional banks operate under the same legal framework and have the same licensing requirements. Elsewhere there may be different laws and other requirements for Islamic compared to conventional banks. Different jurisdictions have moved at varying pace to implement international rules and regulations. Recent work from the IMF (see Box 5.4) highlights Bahrain and Malaysia as the two

BOX 5.4 ENSURING FINANCIAL STABILITY IN COUNTRIES WITH ISLAMIC BANKING – COUNTRY CASE STUDIES – OVERALL FINDINGS

In mid-2017 the IMF produced a report entitled 'Multi-country report: Ensuring financial stability in countries with Islamic banking – case studies', which aimed to review experiences with and the progress made in adapting prudential, safety nets and resolution frameworks to the specifics of Islamic banks. Detailed case studies were undertaken on the following countries where Islamic banks operate to varying degrees: Bahrain, Djibouti, Indonesia, Kenya, Kuwait, Malaysia, Nigeria, Pakistan, Sudan, Turkey and the United Kingdom. The study sought to investigate the main approaches to the regulation of Islamic banks and highlight areas for future development. Here we summarise the main findings of these case studies.

The case studies highlight important, but uneven, progress in adapting the legal, regulatory and supervisory frameworks to the specificities of Islamic banks (IBs). Significant advances have been made in putting in place legislation that allow the establishment of IBs and the use of specific Islamic financial contracts. Sharia governance frameworks have been established in most countries and there has been an increase in the number of countries adopting centralised Sharia boards – who provide national standards, albeit from a low base. The industry has been growing rapidly and, in most countries, the balance sheets of IBs exhibit substantial differences from those of conventional banks, as a result of which IBs entail some unique risks. Meanwhile, progress in adapting the prudential, consumer protection, liquidity management, safety nets and resolution frameworks remains uneven across countries. Bahrain and Malaysia have made the most advances in systematically adapting their policy frameworks in line with standards issued by the Islamic Financial Services Board (IFSB) and Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI).

Based on the selected country experiences, a number of important lessons and policy options can be drawn that have implications for the stable and sound development of IBs. These include:

An enabling regulatory and institutional framework and a level playing field for conventional and Islamic banks is critical for the sound and stable growth of the IB industry. The country experiences underscore the importance of providing an enabling framework while letting market forces determine the size of the industry. For example, in Indonesia, Kuwait and Djibouti, Islamic banks which had been in existence for many years grew rapidly after legal and regulatory frameworks were put in place and disincentives to Islamic banking reduced. The UK's experience also points to the importance of a 'no favour, no obstacle' policy with respect to taxation and central banking operations.

Flexibility in approaches to Islamic banking has also fostered greater acceptance of Islamic banking principles and their benefits. Selected countries (Turkey, Nigeria) have branded the industry with neutral terms and this has facilitated industry growth. In Turkey, Islamic banking is branded as 'participation banking', and in Nigeria it has been branded as 'interest-free banking'.

Licensing requirements have not been effectively used as a tool for ensuring that licensed Islamic banks have in place key structures that support supervision. In four of the countries (Djibouti, Kenya, Nigeria and UK), Islamic banks are licensed based on a standard banking licence that applies the criteria for conventional banks. In addition, at least four countries (Djibouti, Kenya, Turkey and the UK) do not require conventional banks to maintain Islamic deposit accounts (demand deposit, unrestricted investment accounts – URIAs, etc.) separately from other funds under the control of the conventional bank. While many of the licensing criteria for conventional banks have the key elements to ensure financial stability, it is important that the approval process for IBs is also conditioned upon proof of *ex-ante* and *ex-post* robust Sharia governance frameworks and internal controls tailored to address risks specific to IB operations. Conventional banks that offer Islamic products through windows should also be required to provide proof of systems and procedures that separate IB activities from conventional ones. Fit and proper requirements for Sharia board members or advisors within IBs should include an appropriate level of knowledge of IB.

Jurisdictions continue to take **different approaches to the application of capital adequacy requirements**, which undermines the comparability

Box 5.4 Ensuring financial stability in countries with Islamic banking – country case studies – overall findings (*continued*)

of solvency risks. Some countries (Bahrain, Malaysia and Sudan) have adopted relevant Islamic Financial Services Board standards; others still apply the capital regime for conventional banks and some (Pakistan) are in the process of changing. Greater consistency is needed in the approaches to the application of capital adequacy requirements with respect to the loss-absorbency of profit-sharing investment accounts (PSIA), the eligibility of profit equalisation reserves (PER) and investment risk reserve (IRR) in the regulatory capital, and the risk-weights for assets.

Other prudential regulations, including those related to classification and provisioning, large exposures, investment in properties and liquidity, are mostly identical for conventional and Islamic banks. For instance, the regulations do not fully take into account the differential credit risk and provisioning requirements between debt-based products (Mudarabah, *Ijarah*) and risk-sharing products (Musharakah and Mudarabah). There is, therefore, a need to better take into account the differential characteristics of IB products while ensuring a level playing field for Islamic and conventional banks.

Centralised Sharia boards that help standardise industry practices and improve consumer perceptions have been established in only a limited number of countries. Further strengthening Sharia governance frameworks towards centralised Sharia boards could help ensure consistency in Sharia rulings within jurisdictions. There is also a need for better integration of the Sharia audit function in the enforcement process.

Supervisory reporting and processes should be enhanced to allow adequate monitoring of Islamic banking risks. Manuals should include guidelines for supervisors on how to effectively undertake on-site and off-site supervision, and rating systems should include parameters that capture Islamic banking-specific risks, including Sharia compliance risk.

Liquidity management frameworks need further strengthening. In order to provide Islamic banks with instruments and markets comparable to the ones existing for conventional banks, more work is needed to develop Sharia-compliant capital and interbank markets, and to adapt central bank monetary operations, including the lender of last resort (LoLR) framework. Regular sovereign issuance of tradable Sukuk with different maturities would also help to provide a benchmark pricing curve and to increase the provision of high-quality liquid assets (HQLAs).

Efforts to develop resolution frameworks and Sharia-compliant deposit insurance schemes (SCDIS) are also needed to facilitate orderly resolution of IBs, if and when stresses emerge. Special resolution frameworks for Islamic banks are needed that also provide legal clarity on the treatment of investment accounts in resolution. Resolvability of large and complex Islamic financial institutions (IFIs) should also be enhanced through recovery and resolution planning. Strengthening SCDIS and other safety nets should help promote financial stability in the jurisdictions where IBs operate.

Source: Adapted from International Monetary Fund (2017b), pp. 9–11.

jurisdictions that have gone furthest to implement international regulatory standards. The same IMF report highlights the 'uneven progress' of countries in adapting their legal, regulatory and supervisory frameworks for Islamic banks and also notes that more work needs to be done to develop more capital and liquidity instruments for Islamic banks. The IMF also notes that there is a need to strengthen deposit insurance schemes to more strongly protect depositors. Box 5.4 outlines the key regulatory issues facing Islamic banks and provides various country examples.

5.7 Comparing Islamic and conventional banks

There has been a substantial literature aimed at investigating features of Islamic and conventional banks. Abedifar *et al*. 2015 survey the literature and note that early empirical work focuses on the efficiency and production technology features of banks (El-Gamal and Inanoglu, 2005), whereas more recent studies examine areas including:

- competition (Chong and Liu, 2009; Weill, 2011);
- asset quality (Beck *et al*., 2013);
- stability (Čihak and Hesse, 2010; Abedifar *et al*., 2013);
- other risk dimensions including loan default rates (Baele *et al*., 2014).

Abedifar *et al*. (2013) investigate the risk and stability features of Islamic banking using a sample of 553 banks from 24 countries between 1999 and 2009. They find that small Islamic banks that are leveraged and based in countries with predominantly Muslim populations have lower credit risk than conventional banks. Also, in terms of insolvency risk, small Islamic banks appear more stable. Interestingly, they also find that income and expenses, as well as the loan quality of Islamic banks, are less responsive to domestic interest rates changes compared to conventional banks. A study by Mollah *et al*. (2016) used information from 14 countries, consisting of 52 Islamic banks and 104 conventional banks, to investigate whether governance structures influence risk-taking and performance of Islamic banks vis-a-vis conventional banks. They conclude that the governance structure of Islamic banks allows them to take higher risks and achieve better performance because of product complexities and transaction mechanisms. Narayhan and Phan (2018) review over 40 recent studies that compare the financial features of Islamic and conventional banks. They have four main findings:

1. On bank efficiency, there is mixed evidence with some studies finding Islamic banks to be more efficient than conventional banks while others find not much difference between the two types of banks.
2. Generally, relatively small Islamic banks tend to be more stable and are able to mitigate risks better.
3. Islamic banks are characterised by better asset quality and are found to be less at risk of failure compared to conventional banks.
4. Islamic banks are more inclined toward funding SMEs.

Another detailed survey by Hassan and Aliyu (2018) confirms to a certain extent the earlier review by Abedifar *et al*. (2015) that, apart from some notable exceptions, the empirical literature generally suggests no major differences between Islamic and conventional banks in terms of their efficiency, competition and risk features. The authors are also somewhat skeptical about the operations of Islamic banks, suggesting that they have moved away from PLS activity and are not really as resilient as earlier studies thought.

5.8 Conclusion

Islamic banking and finance is a relatively new but growing part of the global financial industry. Although Islamic banking and finance assets only account for less than 3 per cent of total global financial assets, it has generated strong interest in recent years. Business is driven by the desire to have financial services provided in a manner consistent with Muslim belief. There remain substantial growth opportunities if one considers that around 24 per cent of the world's population in 2016 were Muslim and this is expected to grow to 27 per cent by 2030. Islamic banking and finance activity, while strongly linked to the countries of the GCC, MENA and various Asian countries, is gradually expanding. London is competing, along with New York, Dubai, Bahrain and Kuala Lumpur to position itself as the major Islamic finance centre – even some major infrastructure projects like London's Olympic Village and The Shard were part-funded by sukuk issuance. Despite its differences to conventional interest-based banking, the emergence of Islamic banking now provides consumers with a real choice. The growth prospects for the Islamic banking and finance business remain promising.

Key terms

Debt-based financing
Fiqh muamalat
Gharar
Haram
Hibah
Lease-based financing
Mudarabah
Murabahah
Musharakah
Non-profit and loss sharing (NPLS)
Profit and loss sharing (PLS)
Riba
Sharia
Sukuk
Takaful

Key reading

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REVISION QUESTIONS AND PROBLEMS

5.1 How do Islamic banks reward depositors if the payment of interest is prohibited?

5.2 How can Islamic banks earn revenue if they cannot charge interest on their loans?

5.3 Only in two countries do Islamic banks have 100 per cent of the domestic banking market. What are their key characteristics?

5.4 What region of the world is the leader (in terms of assets size) in Islamic banking and finance?

5.5 What is financing revenue?

5.6 Explain the difference between PLS and NPLS activity in an Islamic bank.

5.7 What are takafuk and sukuk?

5.8 Discuss the main differences between Mudarabah, Murabahah and Musharakah.

5.9 Can you transfer funds from a conventional to an Islamic bank?

5.10 What are gharar and haram in Islamic banking and finance?

PART 2

Central banking and bank regulation

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Chapter 6

Central banking

Learning objectives

- To understand the role of central banks in the financial sector
- To describe the main functions of a central bank
- To understand the monetary policy functions of central banks
- To discuss the arguments for and against an independent central bank
- To understand the relevance of central banks during crises

6.1 Introduction

The core functions of central banks in any countries are to manage monetary policy with the aim of achieving **price stability**; to prevent liquidity crises, situations of money market disorders and financial crises; and to ensure the smooth functioning of the payments system. This chapter explores these issues and focuses in particular on the conduct of monetary policy, distinguishing between instruments, targets and goals. Furthermore, it examines some basic concepts as they relate to central banking theory. Specifically, the chapter investigates the following fundamental areas:

- What are the monetary policy functions of a central bank?
- Why do banks need a central bank?
- Should central banks be independent from government?

It is important to note that, in addition to monetary policy objectives, the majority of central banks operate under the presumption that they have a policy responsibility for **financial stability**. For example, the Bank of England's primary functions are to maintain monetary stability and oversee financial stability of the UK financial system. In addition, the Bank of England acts as the lender of last resort and as the custodian of the official gold reserves in the United Kingdom. The focus of this chapter is on the monetary policy function of central banks. Issues relating to financial stability will be discussed in Chapter 8.

6.2 What are the main functions of a central bank?

A central bank can generally be defined as a financial institution responsible for overseeing the monetary system for a nation, or a group of nations, with the goal of fostering economic growth without inflation. The main functions of a central bank can be listed as follows:

1 The central bank controls the issue of notes and coins (legal tender). Usually, the central bank will have a monopoly of the issue, although this is not essential as long as the central bank has power to restrict the amount of private issues of notes and coins.

2 It has the power to control the amount of credit-money created by banks. In other words, it has the power to control, by either direct or indirect means, the money supply.

3 A central bank should also have some control over non-bank financial intermediaries that provide credit.

4 Encompassing both points 2 and 3, the central bank should effectively use the relevant tools and instruments of monetary policy in order to control:

- credit expansion;
- liquidity; and
- the money supply of an economy.

5 The central bank should oversee the financial sector in order to prevent crises and act as a **lender of last resort (LOLR)** in order to protect depositors, prevent widespread panic withdrawals and otherwise prevent the damage to the economy caused by the collapse of financial institutions.

6 A central bank acts as the government's banker. It holds the government's bank account and performs certain traditional banking operations for the government, such as deposits and lending. In its capacity as banker to the government it can manage and administer the country's national debt.

7 The central bank also acts as the official agent to the government in dealing with all its gold and foreign exchange matters. The government's reserves of gold and foreign exchange are held at the central bank. A central bank, at times, intervenes in the foreign exchange markets at the behest of the government in order to influence the exchange value of the domestic currency.

The first central banks were created in the 17th century (the Amsterdamse Wisselbank, the Swedish Riksbank and the Bank of England). However, the dawn of central banks was in the 19th century, as shown in Figure 6.1.

Central banks differ from country to country in their organisation and structure as well as in the specific tasks carried out; their main tasks nowadays is to carry out a country's monetary policy function. Central banks usually also have important financial stability functions, which become more prominent during times of financial turmoil. As central banks' mandates in the economy expanded in the aftermath of the financial crisis, new challenges arose in particular with respect to the balance between their **accountability** and *independence* as well as the increased risk of politicisation. Section 6.3 briefly introduces monetary policy objectives.

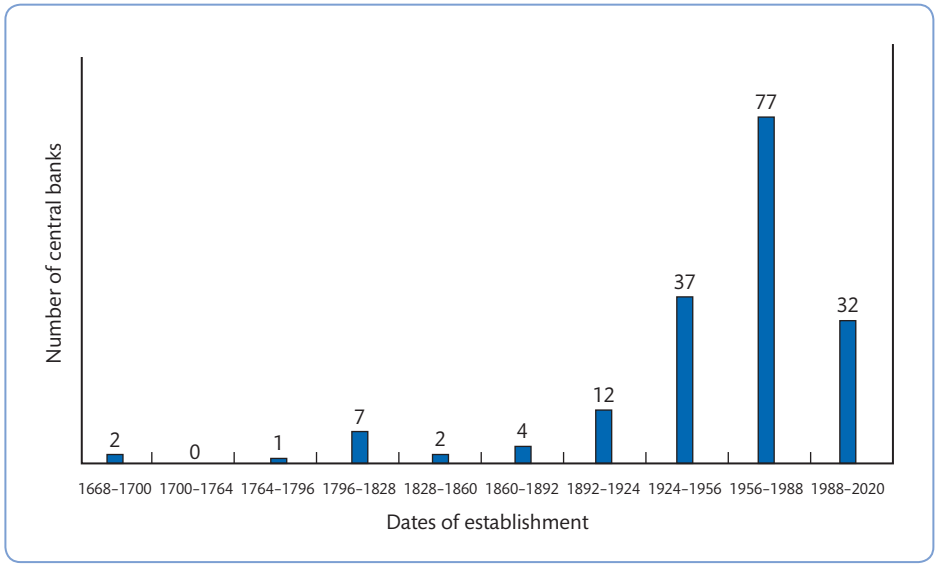


Figure 6.1 Dates of establishment of central banks

Source: Adapted from Bossu and Rossi (2019).

6.3 How does monetary policy work?

There are five major forms of economic policy (or, more strictly macroeconomic policy) conducted by governments that are of relevance. These are monetary policy, fiscal policy, exchange rate policy, prices and incomes policy, and national debt management policy.

- **Monetary policy** is concerned with the actions taken by central banks to influence the availability and cost of money and credit by controlling some measure (or measures) of the money supply and/or the level and structure of interest rates.[1]
- **Fiscal policy** relates to changes in the level and structure of government spending and taxation designed to influence the economy. As all government expenditure must be financed, these decisions also, by definition, determine the extent of public sector borrowing or debt repayment. An expansionary fiscal policy means higher government spending relative to taxation. The effect of these policies would be to encourage more spending and boost the economy. Conversely, a contractionary fiscal policy means raising taxes and cutting spending.
- **Exchange rate policy** involves the targeting of a particular value of a country's currency exchange rate thereby influencing the flows within the balance of payments. In some countries it may be used in conjunction with other measures such as exchange controls, import tariffs and quotas.[2]

[1] See also Appendix A1.

[2] Note that exchange controls, tariffs and quotas are restricted or forbidden under a number of trade agreements (such as those implemented by the EU and the World Trade Organization).

- A **prices and incomes policy** is intended to influence the inflation rate by means of either statutory or voluntary restrictions upon increases in wages, dividends and/or prices.
- **National debt management policy** is concerned with the manipulation of the outstanding stock of government debt instruments held by the domestic private sector with the objective of influencing the level and structure of interest rates and/or the availability of reserve assets to the banking system.

In this section we focus on what monetary policy involves. However, it must be remembered that any one policy mentioned above will normally form part of a policy package, and that the way in which that policy is employed will be dependent upon the other components of that package. Box 6.1 provides essential background reading for this section on the concept and functions of **money**.

BOX 6.1 THE CONCEPT AND FUNCTIONS OF MONEY AND MONETARY AGGREGATES

In general, money is represented by the coins and notes that we use in our daily lives; it is the commodity readily acceptable by all people wishing to undertake transactions. It is also a means of expressing a value for any kind of goods or service. For economists, money is referred to as 'money supply' and includes anything that is accepted in payment for goods and services or in the repayment of debts. In an economic system money serves four main functions: (1) medium of exchange; (2) unit of account; (3) store of value; and (4) standard of deferred payment.

1 *Medium of exchange* is probably the main function of money. If barter were the only type of trade possible, there would be many situations in which people would not be able to obtain the goods and services that they wanted most. The advantage of the use of money is that it provides the owner with generalised purchasing power. The use of money gives the owner flexibility over the type and quantities of goods they buy, the time and place of their purchases, and the parties with whom they choose to deal. A critical characteristic of a medium of exchange is that it be acceptable as such. It must be readily exchangeable for other things. It is usual for the government to designate certain coins or paper currency as the medium of exchange.

2 If money is acceptable as a medium of exchange it almost certainly comes to act as a *unit of account* by which the prices of all commodities can be defined and then compared. This, of course, simplifies the task of deciding how we wish to divide our income between widely disparate items. For this reason, it is sometimes said that money acts as a measure of value, and this is true if value is taken to mean both price and worth, the latter being a much more subjective concept.

3 Money is also a liquid *store of value* in that it provides individuals with a means of holding and accumulating their wealth in a form which can, at any time, be converted immediately into goods and services. When a person holds money as a store of value they are effectively treating it as a substitute to holding alternative forms of financial assets such as bonds or deposit accounts. The holder of money therefore foregoes the payment of an explicit yield.

4 Money can also act as a *standard of deferred payment*. Due to this function it is possible to undertake a number of transactions in the present and actually settle the account (or bill) at some time in the future, e.g. buy now and pay later. The sale and production of goods are made easier by money performing this function since goods and services can be acquired prior to payment being made. Because money acts as a standard of deferred payment the acquisition of labour, raw materials and other goods and services can be acquired, and the various parties involved will know the sums involved and payments to be made at a future date. Although this

Box 6.1 The concept and functions of money and monetary aggregates (*continued*)

particular function of money is not essential for lending, borrowing and production to take place, it certainly makes such activities easier. Money's function as a standard for deferred payment may be questioned in times of high inflation where the real value of money declines rapidly. In such situations the debtor would benefit from a deferred payment. However, the meaning of the function of money as a standard for deferred payment is that it permits commercial lending to take place. A borrower can agree that if a lender supplies them with ten units of money today, they will pay back eleven units in (say) three months' time. The charging of interest has become possible.

The formal definition of what constitutes money is summarised by central banks' definitions of what they call **monetary aggregates**.

Bank of England

In the UK, for example, official estimates of the money supply have been published since 1966. The earliest definition of the money supply was a broad one covering notes and coin held by UK non-banks and deposits (in both sterling and foreign currency) held by UK residents with banks in the UK. From 1970 onwards, this definition has been amended and supplemented on a number of occasions, reflecting developments in the financial system and policy. Common practice among central banks is to construct monetary aggregates from a list of monetary assets by adding together those that are considered to be likely sources of monetary services. The monetary aggregates play a role in the formulation of the monetary policy. In the UK, M0 is the narrowest measure of money stock and M4 the broadest.

M0 = sterling notes and coins
+ banks' operational deposits with the Bank of England

M4 = UK private sector other than MFIs holdings of:
+ sterling notes and coins
+ sterling deposits, including certificates of deposit
+ commercial paper, bonds, floating rate notes (FRNs) and other instruments up to and including five years' original maturity issued by UK MFIs
+ claims on UK MFIs arising from repos
+ estimated holdings of sterling bank bills
+ 35 per cent of the sterling inter-MFI difference

Note that MFIs comprise the central bank (i.e. banking department and issue department of the Bank of England), other banks and building societies (see also Section 2.3). The inter-MFI difference is the difference between MFIs' liabilities attributed to other MFIs and MFIs' assets attributed to other MFIs. In theory, these items should be equal but in practice small reporting errors cause a difference. Deposits include sight deposits that are funds that can be converted immediately and without restrictions into cash; and time deposits, that are funds invested at a bank for a fixed period of time and that the investor cannot access until the end of an agreed period (e.g. 30- and 60-day savings accounts). Certificates of deposit (CD) are negotiable certificates confirming that a (usually large) deposit has been made for a specified period of time with a bank.

M4 can be analysed either in terms of its components – cash and deposits – or of its asset counterparts, which represent the other side of the banks' and building societies' balance sheets (and must, as an accounting identity, sum to the same). These counterparts include banks' and building societies' lending to the private sector and their transactions with the public sector and with overseas residents.

European Central Bank

The European Central Bank's definition of monetary aggregates is slightly different from the Bank of England's detailed above. In line with international practice, the euro-system has defined a narrow aggregate (M1), an 'intermediate' aggregate (M2) and a broad aggregate (M3). These aggregates differ with regard to the degree of 'moneyness' of the assets included. These are defined as:

- *Narrow money* (M1) includes currency (i.e. bank notes and coins), as well as balances which can immediately be converted into currency or used for cashless payments (i.e. overnight deposits).
- *Intermediate money* (M2) comprises narrow money (M1) and deposits with a maturity of up to two years and deposits redeemable at a period

Box 6.1 The concept and functions of money and monetary aggregates (*continued*)

of notice of up to three months. The definition of M2 reflects the particular interest in analysing and monitoring a monetary aggregate that, in addition to currency, consists of deposits which are liquid.

- *Broad money* (M3) comprises M2 and marketable instruments issued by the MFI sector. Certain money market instruments, in particular money market fund (MMF) shares/units and repurchase agreements are included in this aggregate. A high degree of liquidity and price certainty make these instruments close substitutes for deposits. As a result of their inclusion, M3 is less affected by substitution between various liquid asset categories than narrower definitions of money and is therefore more stable.

Monetary policy relates to the control of some measure (or measures) of the money supply and/or the level and structure of interest rates. Much greater emphasis nowadays is placed on monetary policy within a government's policy package. This is because a broad consensus has emerged that suggests that price stability is an essential pre-condition for achieving the central economic objective of high and stable levels of growth and employment. Monetary policy is viewed as the preferred policy choice for influencing prices.

Although traditionally the choice of monetary policy over fiscal policy as the main policy tool was viewed as a matter of ideological choice, nowadays it is seen more as a pragmatic solution. As it is widely recognised that high and variable inflation harms long-term growth and employment, policy makers have tended to focus on those policies that appear to be most successful in dampening inflationary pressures. Price stability, therefore, has become a key element of economic strategy, and monetary policy is widely accepted as the most appropriate type of policy to influence prices and price expectations.

The preference for using monetary policy over other types of policy relates to two main factors – the role of the monetary authorities (central banks) as sole issuers of banknotes and bank reserves (known as the monetary base) and the long-run neutrality of money (see below).

The central bank is the monopoly supplier of the monetary base and as a consequence can determine the conditions at which banks borrow from the central bank. The central bank can influence liquidity in the short-term money markets and so can determine the conditions at which banks buy and sell short-term wholesale funds. By influencing short-term money market rates, the central bank influences the price of liquidity in the financial system and this ultimately can impact on various economic variables such as output or prices.

In the long run a change in the quantity of money in the economy will be reflected in a change in the general level of prices but it will have no permanent influence on real variables such as the level of (real) output or unemployment. This is known as the *long-run neutrality of money*. The argument goes that real income, or the level of employment is, in the long term, determined solely by real factors, such as technology, population growth or the preferences of economic agents. Inflation is therefore solely a monetary phenomenon.

As a consequence, in the long run:

- a central bank can only contribute to raising the growth potential of the economy by maintaining an environment of stable prices;
- economic growth cannot be increased through monetary expansion (increased money supply) or by keeping short-term interest rates at levels inconsistent with price stability.

In the past it has been noted that long periods of high inflation are usually related to high monetary growth. While various other factors (such as variations in aggregate demand, technological changes or commodity price shocks) can influence price developments over the short period, over time these influences can be offset by a change in monetary policy.

6.4 Monetary policy functions of a central bank

The most important function of any central bank is to undertake monetary control operations. Typically, these operations aim to administer the amount of money (money supply) in the economy and differ according to the monetary policy objectives they intend to achieve. These latter are determined by the government's overall macroeconomic policies (see Box 6.2).

BOX 6.2 MONETARY POLICY OBJECTIVES

Monetary policy is one of the main policy tools used to influence interest rates, inflation and credit availability through changes in the supply of money (or liquidity) available in the economy. It is important to recognise that monetary policy constitutes only one element of an economic policy package and can be combined with a variety of other types of policy (e.g. fiscal policy) to achieve stated economic objectives. Historically, monetary policy has, to a certain extent, been subservient to fiscal and other policies involved in managing the macro economy, but nowadays it can be regarded as the main policy tool used to achieve various stated economic policy objectives (or goals). These vary across central banks. The main objectives of economic (and monetary) policy include:

- *High employment* – often cited as a major goal of economic policy. Having a high level of unemployment results in the economy having idle resources that result in lower levels of production and income, lower growth and possible social unrest. However, this does not necessarily mean that zero unemployment is a preferred policy goal. A certain level of unemployment is often felt to be necessary for the efficient operation of a dynamic economy. It will take people a period of time to switch between jobs, or retrain for new jobs, and so on – so even near full employment there may be people switching jobs who are temporarily out of work. This is known as *frictional unemployment*. In addition, unemployment may be a consequence of mismatch in skills between workers and what employers want – known as *structural unemployment*. (Typically, although structural unemployment is undesirable monetary policy cannot alleviate this type of unemployment). The goal of high employment, therefore, does not aim to achieve zero unemployment but seeks to obtain a level above zero that is consistent with matching the demand and supply of labour. This level is known as the *natural rate of unemployment*. Milton Friedman (1968) defined the natural rate of unemployment as the level of unemployment which resulted from real economic forces, the long run level of which could not be altered by monetary policy. There is a large economic literature on measuring the natural rate of unemployment, although with little consensus on a measure, as shifts in local labour market conditions, changes in both labour supply and labour demand can influence the natural rate of unemployment.
- *Price stability* – considered an essential objective of economic policy, given the general wish to avoid the costs associated with inflation. Price stability is viewed as desirable because rising price levels create uncertainty in the economy, and this can adversely affect economic growth. Many economists (but by no means all) argue that low inflation is a necessary prerequisite for achieving sustainable economic growth. Some central banks (e.g. the European Central Bank) list price stability as a primary objective. A formal adoption of an inflation target is one way to control the general rise in the

Box 6.2 Monetary policy objectives (*continued*)

price level. For more information on how inflation targeting works, see e.g. Hammond (2012).

- *Stable economic growth* – provides for the increases over time in the living standards of the population. The goal of steady economic growth is closely related to that of high employment because firms are more likely to invest when unemployment is low – when unemployment is high, and firms have idle production they are unlikely to want to invest in building more plants and factories. The rate of economic growth should be at least comparable to the rates experienced by similar nations.
- *Financial market stability* – also an important objective of public policy and one major concern of central banks. A collapse of financial markets can have major adverse effects on an economy. The crisis that hit the global financial system in 2007–2009 caused a sharp contraction in output, weakened the effectiveness of the transmission mechanism and contributed to inefficient capital allocation. A similar crisis occurred in 1929, when the US Wall Street Crash resulted in a fall of manufacturing output by 50 per cent and an increase in unemployment to 25 to 30 per cent of the US workforce by 1932. (Over 11,000 banks closed over this period.) Such major crises may be rare, but they do highlight the serious consequences of financial crises. A less dramatic example of how policy makers view the adverse effects of a crisis in financial markets relates to the case of the US-based hedge fund Long-Term Capital Management. In September 1998 the US Federal Reserve organised a rescue of Long-Term Capital Management, a very large and prominent hedge fund on the brink of failure. The monetary authorities intervened because they were concerned about the serious consequences for world financial markets if they allowed the hedge fund to fail. Note that financial market stability is influenced by stability of interest rates because increases in interest rates can lead to a decrease in the value of bonds and other investments resulting in losses in the holders of such securities. In early 2020, the fast spread of Covid-19 delivered an unprecedented macro-economic shock, bringing international uncertainty and pushing the world economy into a recession much faster than any previous crisis. The shutdown of the bulk of economic activity has placed the financial system under strain, so prompt actions have been taken by the authorities to monitor financial stability risks.
- *Stability in foreign exchange markets* – has become a policy goal of increasing importance especially in the light of greater international trade in goods, services and capital. A rise in the value of a currency makes exports more expensive (an increase in the value of sterling relative to the dollar means that consumers in the US have to pay more for UK goods), whereas a decline in the value of a currency leads to domestic inflation (if sterling declines relative to the dollar, US goods sold in the UK become more expensive). Extreme adverse movements in a currency can therefore have a severe impact on exporting industries and can also have serious inflationary consequences if the economy is open and relatively dependent on imported goods. Ensuring the stability of foreign exchange markets is therefore seen as an appropriate goal of economic policy.

At first glance it may appear that all these policy objectives are consistent with one another, but conflicts do arise. The objective of price stability can conflict with the objectives of interest rate stability and full employment (at least in the short run) because as an economy grows and unemployment declines, this may result in inflationary pressures forcing up interest rates. If the monetary authorities do not let interest rates increase this could fuel inflationary pressures, yet if they do increase rates then unemployment may occur. These sorts of conflicts create difficulties for the authorities in conducting monetary and other macroeconomic policy.

Typically, the most important long-term monetary target of a central bank is price stability that implies low and stable inflation levels. As shown in Figure 6.2 such a long-term

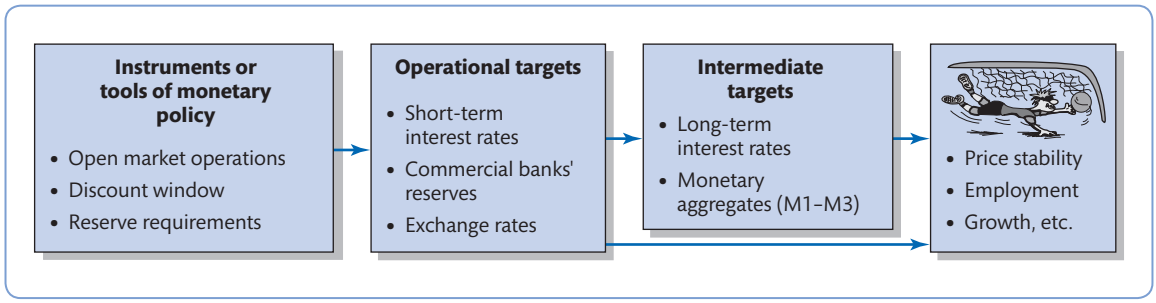


Figure 6.2 Monetary policy instruments, targets and goals

goal can only be attained by setting short-term operating targets. Operating targets are usually necessary to achieve a particular level of interest rates, commercial banks' reserves or exchange rates. Often, they are complemented by intermediate targets such as a certain level of long-term interest rates or broad money growth (monetary aggregates). In choosing the intermediate targets, policy makers should take into account the stability of money demand and the controllability of the monetary aggregate. The chosen target should also be a good indicator of the effect of the monetary policy decision on the price stability target. Broad aggregates normally show higher stability and display better indicator properties than narrow aggregates. In contrast, in the short term narrow aggregates are easier to control via official interest rates than broad aggregates. Although central banks cannot use monetary policy instruments directly to affect intermediate targets, they can use them to affect operating targets, such as reserve money and short-term interest rates, which influence movements in intermediate variables.

Let us now focus on the tools or instruments of monetary policy. In the past, it was common for central banks to exercise direct controls on bank operations by setting limits either to the quantity of deposits and credits (e.g. ceilings on the growth of bank deposits and loans), or to their prices (by setting maximum bank lending or deposit rates). As a result of the significant financial liberalisation process aimed at achieving an efficient allocation of financial resources in the economy, there has been a movement away from direct monetary controls towards indirect ones (Gray and Talbot, 2006).

Indirect instruments influence the behaviour of financial institutions by affecting initially the central banks' own balance sheet. In particular the central bank will control the price or volume of the supply of its own liabilities (reserve money) that in turn may affect interest rates more widely and the quantity of money and credit in the whole banking system.

To understand how a central bank can direct and control the money supply through indirect instruments it is essential to first evaluate the role and importance that the different classes of assets and liabilities detailed in its balance sheet have for monetary policy.

As any other bank, the central bank has to produce a financial statement each year (for more details on banks' accounts see Chapter 9) and the items contained in its balance sheet do not differ substantially from those of commercial banks. Table 6.1 illustrates a simplified central bank balance sheet.

The asset side of the balance sheet of any central bank includes two asset types: net foreign reserves and domestic claims. These are typically represented by loans and advances (to banks and other institutions) and debt securities. On the liability side, it is possible to identify the so-called 'high powered' money or monetary base (currency and reserves), other deposits

Table 6.1 A simplified central bank balance sheet

Assets	Liabilities
Foreign assets	Reserve money
Domestic assets	Currency in circulation
Claims on government and public enterprises	Reserves of commercial banks
Claims on the private sector	Foreign liabilities
Claims on domestic money banks	Other deposits of commercial banks
Claims on other financial sector entities	Central bank securities
	Government deposits
	Others
	Equity capital
Total	**Total**

Source: Adapted from Filardo and Yetman (2011), Table 1.

of banks and other institutions (e.g. the government), the central bank's own securities and equity capital. This latter includes accumulated profits/losses and transfers of resources from the government.

Central banks' balance sheets have expanded markedly. Financial crises and economic downturns have resulted in unusual and/or extraordinary measures that are reflected in substantial changes in both the structure and size of central banks' balance sheets. In the UK, the money market reforms of 18 May 2006 and the measures implemented after the 2007–2009 crisis had a substantial effect on the Bank of England's balance sheet. 'Unprecedented' expansion trends in central banks' balances sheets are found both in the US and eurozone and in Asia Pacific, with China leading the trend. In most cases changes have been driven by the growth in net foreign assets, particularly US$ denominated bonds. Table 6.2 reports selected balance sheet data for the Bank of England (as published on 29 February 2019).

If we focus on the asset side, it is possible to see that the item 'other loans and advances' represents the most significant asset of the Bank of England (73.97 per cent) while on the liability side, deposits from banks and other financial institutions are the largest proportion (82.95 per cent). These latter are the reserve balances, i.e. current account balances held by commercial banks at the Bank of England.

As discussed in Box 6.3, currently commercial banks earn an interest on their reserves that is equal to the Bank official rate and this represents a key part in the implementation of the UK's monetary policy (Hauser, 2019). Since March 2009 there has been a sharp increase in reserves balances and this reflects the fact that asset purchases under the Monetary Policy Committee (MPC)'s policy of **quantitative easing (QE)** have been financed by increasing reserves balances (see Section 6.4.5 for a specific discussion of unconventional monetary policy tools). To steer the quantity towards the required target, the Bank of England uses its open market operations.

The indirect instruments used by central banks in monetary operations are generally classified into:

- **open market operations** (OMOs);
- **discount window** (also known as **standing facilities**); and
- **reserve requirements**.

Table 6.2 Balance sheet, Bank of England

		(£m)
Assets		
Cash and balances with other central banks		698
Loans and advances to banks and other financial institutions		136,222
Other loans and advances		445,002
Securities held at fair value through profit and loss		6,064
Derivative financial instruments		156
Available for sale securities		–
Securities held at amortised cost		–
Securities held at fair value through other comprehensive income		10,302 1,249
Inventories		5
Property, plant and equipment		412
Intangible assets		47
Retirement benefit assets		927
Other assets		499
	Total assets (100%)	**601,583**
Liabilities		
Deposits from central banks		9,922
Deposits from banks and other financial institutions		495,406
Deposits from banks – cash ratios deposits		7,884
Other deposits		76,799
Foreign currency bonds in issue		6,042
Derivative financial instruments		111
Current tax liabilities		–
Deferred tax liabilities		289
Retirement benefit liabilities		207
Other liabilities		573
	Total liabilities (100%)	**597,233**
Equity		
Capital		15
Retained earnings		3,076
Other reserves		1,259
	Total equity attributable to shareholder	**4,350**
	Total liabilities and equity	**601,583**

Source: Bank of England (2019) *Annual Report and Accounts*.

BOX 6.3 BANK OF ENGLAND AND THE OFFICIAL INTEREST RATE

The MPC has responsibility within the Bank of England for formulating monetary policy. The MPC announces the interest rate decision the first Thursday of every month at 12 noon, reviewing the short-term **official bank rate** (also referred to as 'policy rate' or 'base rate') in response to economic conditions. In the United Kingdom, the bank rate (0.1 per cent since 19 March 2020) is the overnight interest rate at which the Bank of England lends to financial institutions. In setting this key rate, the Bank considers the amount at which banks borrow from each other overnight.

The official bank rate replaces the repo rate that was used prior to the May 2006 reforms to the Bank's framework for its operations in the sterling money market. These changes allow banks and building societies that hold cash ratio deposits (CRDs) at the Bank of England to place additional deposits overnight in an account at the central bank.[a] These assets are called reserve balances and they represent claims on the central bank. Their role includes the following: (1) they are the most liquid risk-free assets in the economic system, together with banknotes; (2) they are the ultimate assets for settling payments between customers of different banks; and (3) they facilitate banks' liquidity management that derives from typical lending and borrowing bank activities. In recent years, as a result of the quantitative easing, the holding of reserves has increased significantly. The Bank invests the CRDs in interest-yielding assets, generating income to fund its policy functions. Any gains or losses will be recognised in the Bank's capital.

Since 2009 the Bank of England pays reserves balances an interest that is typically the bank rate. By doing so the Bank keeps market interest rates in line with the bank rate and establishes an important benchmark short-term risk-free rate. Banks can decide to change their holdings of reserves daily to meet day to day liquidity needs. The bank rate will affect the rates banks are willing to charge or pay on short-term loans or borrowing in the money market. In the longer term, money markets rates will be influenced by expectations about future bank rates. Consumer and business demand (i.e. the aggregate spending) will be affected by changes in the bank rate through several channels in the transmission mechanism of monetary policy, namely by changes in (1) the deposit and lending rates charged by commercial banks and building societies, (2) financial assets prices (e.g. bonds and equities) and (3) exchange rates (for more details, see Box 6.5).

In the context of the monetary framework operations of the Bank of England, operational standing facilities (OSFs) have two roles: (1) to provide an arbitrage mechanism in normal market conditions to prevent money market rates moving far away from the Bank rate (and therefore they are a vital part of implementing monetary policy) and (2) to provide a means for participating banks to manage unexpected payment shocks which may arise due to technical problems in banks' own systems or in the market-wide payments and settlements infrastructure.

The OSFs allow participating institutions to deposit reserves with or borrow reserves directly from the Bank on a bilateral basis throughout each business day. The operational standing lending facility takes the form of an overnight repo transaction against high-quality, highly liquid collateral. The operational standing deposit facility takes the form of an unsecured deposit with the Bank. On those terms, the OSFs are available in unlimited size. Commercial banks borrowing from the lending facility are required to pay a premium over bank rate, while those placing reserves in the deposit facility are remunerated at a rate below bank rate. Commercial banks will typically be unwilling to deal in the market on worse terms than those available at the Bank – for example, if market rates are above the lending facility rate, banks will tend to borrow from the Bank in preference to the market. So the OSF rates establish a corridor around bank rate and help limit volatility in overnight market interest rates while incentivising banks to manage their liquidity prudently.

Note: [a] Cash ratio deposits (CRDs) are non-interest bearing deposits lodged with the Bank of England by eligible institutions (i.e. banks and building societies), who have reported average eligible liabilities (ELs) of over £600 million over a calculation period. The level of each institution's CRD is currently calculated twice-yearly (currently in May and November) at 0.30 per cent (up from 0.18 per cent in the previous period) of average ELs, over the previous six end-calendar months, in excess of £600mn. The value bands and ratios were specified by HM Treasury in the Cash Ratio Deposits (Value Bands and Ratios) Order 2018 No 633.

Open market operations are by far the most common means of implementing conventional monetary policy and they are used by central banks all over the world. By injecting (or absorbing) liquidity in (or from) the banking sector central banks manipulate the short-term interest rate and the money supply in the economy. However, there are variations in the way central banks use these instruments and conduct these operations across countries. For useful summary tables comparing frameworks across countries see Bank for International Settlements (2019b).

6.4.1 Debt securities and open market operations

Debt securities are mainly represented by Treasury securities (i.e. government debt) that central banks use in open market operations. These operations are the most important tools by which central banks can influence the amount of money in the economy.

Although the practical features of open market operations may vary from country to country, the principles are the same: the central bank operates in the market and purchases or sells government debt to the non-bank private sector. In general, if the central bank sells government debt the money supply falls (all other things being equal) because money is taken out of bank accounts and other sources to purchase government securities. This leads to an increase in short-term interest rates. If the government purchases (buys-back) government debt this results in an injection of money into the system and short-term interest rates fall. As a result, the central bank can influence the portfolio of assets held by the private sector. This will influence the level of liquidity within the financial system and will also affect the level and structure of interest rates (see Figure 6.3).

The main attractions of using open market operations to influence short-term interest rates are as follows:

- they are initiated by the monetary authorities who have complete control over the volume of transactions;
- open market operations are flexible and precise – they can be used for major or minor changes to the amount of liquidity in the system;
- they can easily be reversed;
- open market operations can be undertaken quickly.

Open market operations are the most commonly used indirect instruments of monetary policy in developed economies. One of the main reasons for the widespread use of open

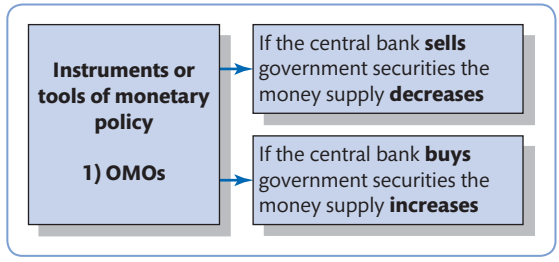


Figure 6.3 Open market operations: outright purchases of government securities

market operations relates to their flexibility in terms of both the frequency of use and scale (i.e. quantity) of activity. These factors are viewed as essential if the central bank wishes to fine-tune its monetary policy. In addition, OMOs have the advantage of not imposing a tax on the banking system.

In the United Kingdom, the Bank of England uses open-market operations (outright buying and selling of securities) to supply, in aggregate, the reserves that banks need to meet their collected targets. However, the amount of reserves that it aims to supply is affected by the banks' reserves targets as well as the expected impact of other factors that may influence the supply, such as an increase in the demand for banknotes (Bank of England, 2012b). The Bank of England may also supply banks with funds temporarily by using 'repo' agreements, i.e. sale and repurchase agreements relating to financial assets. For example, it may engage in gilt repo transactions, whereby the Bank purchases gilt-edged securities from private sector counterparties with a legally binding commitment that the securities will be repurchased by the counterparties at a pre-determined price and date. Gilt repos are, in effect, cash loans with the gilt-edged securities used as collateral. While the stance of monetary policy is expressed as the level of the Bank Rate (see Box 6.3), under the current operational framework two types of open market operations can be used to supply reserves: short-term and long-term. The former are aimed to ensure that the Bank of England rate does not diverge from the interbank rate and to steer the quantity of reserves to the amount necessary for the banking system as a whole to meet its targets. The latter have been introduced to provide a sort of liquidity insurance as the Bank of England offers to lend reserves for longer periods against a broad range of collateral (Clews *et al.*, 2010).

6.4.2 Loans to banks and the discount window

The second most important monetary policy tool of a central bank is the so-called discount window (in the United Kingdom this tool is often referred to as 'standing facilities'). It is an instrument that allows eligible banking institutions to borrow money from the central bank, usually to meet short-term liquidity needs. By changing the discount rate, that is, the interest rate that monetary authorities are prepared to lend to the banking system, the central bank can control the supply of money in the system. If, for example, the central bank is increasing the discount rate, it will be more expensive for banks to borrow from the central bank so they will borrow less thereby causing the money supply to decline. Vice versa, if the central bank is decreasing the discount rate, it will be cheaper for banks to borrow from it so they will borrow more money (Figure 6.4).

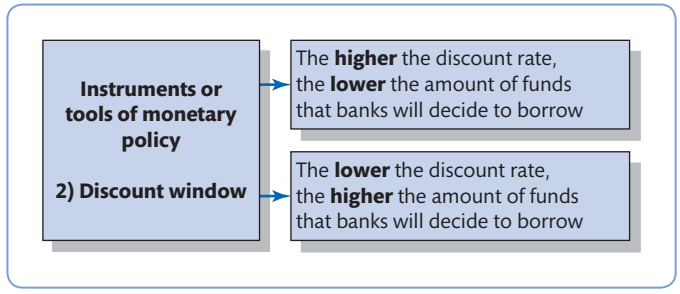


Figure 6.4 Discount window

Manipulation of the discount rate can therefore influence short-term rates in the market. For instance, the eurozone's discount rate is known as a 'marginal lending facility', which offers overnight credit to banks from the euro system. Table 6.3 summarises the Eurosystem monetary policy operations.

In the United States, when the Federal Reserve System was established in 1913, lending reserve funds through the discount window was intended to be the most important instrument of central banking operations but it was soon replaced by open market operations. Indeed, today banks are discouraged from using this type of borrowing.[3] Direct lending to banks can also occur through the central bank's lender of last resort (LOLR) function. By acting as a lender of last resort the central bank provides liquidity support directly to individual financial institutions if they cannot obtain finance from other sources. Therefore, it can help to prevent financial panics. Some drawbacks of this function are discussed in Section 6.5.1.

Table 6.3 Eurosystem monetary policy operation

Monetary policy operations	Types of instruments		Maturity	Frequency	Procedure
	Liquidity providing	Liquidity absorbing			
Open market operations					
Main refinancing operations	• Reverse transactions		1 week	Weekly	Standard Tenders
Longer-term refinancing operations	• Reverse transactions		3 months	Monthly	Standard Tenders
Fine tuning operations	• Reverse transactions	• Reverse transactions	Non-standardised	Non-regular	Quick tenders
	• Foreign exchange swaps	• Collection of fixed-term deposits			Bilateral procedures
		• Foreign exchange swaps			
Structural operations	• Reverse transactions	• Issuance of debt certificates	Standardised/ non-standardised	Regular and non-regular	Standard tenders
	• Outright purchases	• Outright sales		Non-regular	Bilateral procedures
Standing facilities					
Marginal lending facility	Reverse transactions		Overnight	Access at the discretion of counterparties	
Deposit facility		Deposits	Overnight	Access at the discretion of counterparties	
*Minimum reserves**					
The Eurosystem requires credit institutions to hold minimum reserves on accounts with the national central banks. Until January 2012 the reserve ratio was a minimum of 2 per cent for the majority of the items for which the reserve base applies (deposits, debt securities and money market paper). Since then, the ratio has been lowered to 1 per cent. Reserve holdings are remunerated at the Eurosystem's rate on its main refinancing operations.					

Source: **www.ecb.europa.eu/mopo/implement/html/index.en.html** See also The Governing Council of the European Central Bank (2018). Published on the Official Journal of the European Union (L 95/123 of 13/04/2018).

Note: *Regulation (EC) No. 1745/2003 of the European Central Bank of 12 September 2003 on the application of minimum reserves (ECB/2003/9) (OJ L 250, 2.10.2003, pp. 10–16).

[3] For more details, see **www.frbdiscountwindow.org**

6.4.3 Reserve requirements

Banks need to hold a quantity of reserve assets for prudential purposes. If a bank falls to its minimum desired level of reserve assets it will have to turn away requests for loans or else seek to acquire additional reserve assets from which to expand its lending. The result in either case will generally be a rise in interest rates that will serve to reduce the demand for loans.

The purpose of any officially imposed reserve requirements is effectively to duplicate this process. If the authorities impose a reserve requirement in excess of the institutions' own desired level of reserves (or else reduce the availability of reserve assets) the consequence will be that the institutions involved will have to curtail their lending and/or acquire additional reserve assets. This will result in higher interest rates and a reduced demand for loans that, in turn, will curb the rate of growth of the money supply.

By changing the fraction of deposits that banks are obliged to keep as reserves, the central bank can control the money supply. This fraction is generally expressed in percentage terms and thus is called the *required reserve ratio*: the higher the required reserve ratio, the lower the amount of funds available to the banks. Vice versa, the lower the reserve ratio required by the monetary authorities, the higher the amount of funds available to the banks for alternative investments (see Figure 6.5).

The advantage of reserve requirements as a monetary policy tool is that they affect all banks equally and can have a strong influence on the money supply. However, the latter can also be a disadvantage, as it is difficult for the authorities to make small changes in money supply using this tool. Another drawback is that a call for greater reserves can cause liquidity problems for banks that do not have excess reserves.[4] If the authorities regularly make decisions about changing reserve requirements it can cause problems for the liquidity management of banks. In general, an increase in reserve requirements affects banks' ability to make loans and reduces potential bank profits because the central bank pays no interest on reserves.

In some countries, such as in the United States, Japan and eurozone, central banks use reserve requirements now and again as a monetary policy tool. However, in reality they are rarely used compared with OMOs and the discount window. In fact, various central banks (such as those in Canada, Mexico, Sweden and the UK) have eliminated them entirely.[5] The main reason for this is that the application of reserve ratios discriminates against banks (as other financial firms do not have to hold reserves at the central bank). Also, many banks may have internal resources well in excess of minimum reserve requirements and so any call to

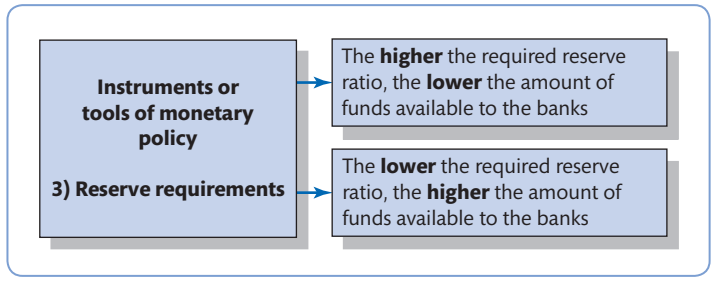


Figure 6.5 Reserve requirements

[4] 'Excess reserves' can be defined as additional reserves that banks decide to hold over the present mandatory requirements.

[5] (Data correct as of September 2019).

increase reserves from the authorities can easily be achieved without affecting bank behaviour in a significant fashion.

In the United Kingdom, compulsory reserve requirements were used during most of the post-war period but were abandoned as a monetary policy tool in the late 1970s especially as a result of the processes of deregulation and innovation. There are, however, compulsory *cash ratio deposits (CRD)* – not used for monetary policy purposes – determined by the Bank of England that are non-interest bearing deposits of eligible institutions (i.e. banks and building societies) that have reported average liabilities greater than £600m over a calculation period. The level of CRD is calculated twice-yearly (currently in May and November) at 0.30 per cent of average eligible liabilities (see Box 6.4).

Reserve requirements are often referred to as **instruments of portfolio constraint**. It means that they may be imposed by the authorities on the portfolio structure of financial institutions, with the purpose of influencing credit creation and, possibly, the type of lending taking place. Other instruments of portfolio constraint that are potentially available for use include: special deposits, moral suasion and direct controls.

6.4.4 Other instruments of portfolio constraint

6.4.4.1 Special deposits

In the United Kingdom, special deposits are deposits that the Bank of England may require from certain banking institutions. These deposits, equal to a specified proportion of certain elements of bank's deposit liabilities, are then 'frozen' at the Bank of England and may not be used as part of the reserve asset base for lending purposes. While they are particularly discriminatory as regards the institutions to which they apply, they do have a very rapid impact upon the ability of these institutions to create credit and are useful for drawing off any excess reserve assets within the system. At present, they are not used for monetary policy purposes. During the 1970s the Bank of England used a scheme known as 'supplementary special deposits'. These were deposits that banking institutions had to make at the Bank of England if the growth rate of some interest-bearing deposit liabilities exceeded an upper limit set by the Bank. The Bank of England operated this mechanism, referred to as the 'corset', on a periodic basis between 1973 and 1980. Institutions exceeding the specified growth rate for liabilities were required to make supplementary special deposits with the Bank on a scale dependent upon the extent of the overshoot. Supplementary special deposits could not be used as part of the reserve asset base by banks, and they attracted no interest payment. The main objective of special deposits is to remove excess liquidity from the system if bank deposit growth (and therefore loan growth) is increasing too rapidly.

6.4.4.2 Moral suasion

Moral suasion refers to the range of informal requests and pressure that the authorities may exert over banking institutions. The extent to which this is a real power of the authorities relative to direct controls is open to question, since much of the pressure that the authorities would exert involves the institutions having to take actions that might not be in the banks' commercial interests. However, the position and potential power of the authorities probably provides them with some scope to use moral suasion, which may perhaps be utilised most effectively in the context of establishing lending priorities rather than absolute limits to credit creation.

6.4.4.3 Direct controls

Direct controls involve the authorities issuing directives in order to attain particular intermediate targets. For example, the monetary authorities might impose controls on interest rates payable on deposits, may limit the volume of credit creation or direct banks to prioritise lending according to various types of customer. Although these direct controls have the benefits of speed of implementation and precision, they are discriminating towards the institutions involved and are likely to lead to disintermediation as both potential borrowers and potential lenders seek to pursue their own commercial interests. Their use, therefore, is perhaps best reserved for short-term requirements not least since their effectiveness will tend to decline the longer they are applied. Such controls, however, are widely used in many developing countries where the authorities may force banks to (say) lend a certain percentage of loan-book to 'priority sectors'.

6.4.4.4 The decline in use of portfolio constraints

In contrast to market intervention instruments (OMOs and standing facilities), instruments of portfolio constraint tend to have a narrow and therefore distorting impact. Although in principle they could be applied to a wide range of financial institutions, in the past in the UK and in the United States they have been applied only to banking institutions. The result of this is that banks have, in effect, been discriminated against. It should also be noted that disintermediation has often occurred as potential borrowers have sought alternative sources of funds, from outside of the monetary control regime.

As we noted in the case of reserve requirements, there has generally been a decline in the use of portfolio constraints as a tool of monetary policy in the world's largest economies (although they are still prevalent in many developing countries).

Portfolio constraints are less widely used in the developed world for the following reasons:

- Deregulation and increasing competition in the provision of financial services and products traditionally offered by banks have broadened considerably the number and type of institutions that would need to be brought within the control regime. Defining and implementing effective portfolio constraints would be difficult and open to controversy.
- Disintermediation, primarily involving large companies, has undermined portfolio constraints. By contrast, the use of market intervention allows the authorities to influence all relevant parts of the financial system, with monetary control coming via the price of credit.
- Throughout the 1950s, 1960s and 1970s, when portfolio constraints were used extensively, most countries maintained a system of foreign currency exchange control. This restriction on the movement of funds to and from abroad prevented borrowers from seeking finance from overseas when domestic monetary policy was restrictive. These exchange controls had the effect of supporting the portfolio constraints but (for many countries) they now no longer exist, with the result that domestic borrowers have much greater scope to seek funds from overseas.
- Portfolio constraints are regarded as inimical to competition because they place restrictions, of one kind or another, on the business freedom and growth of banks and other intermediaries falling within the constraints. Also, markets are distorted and economic efficiency tends to be undermined.

6.4.4.5 Monetary policy: transmission mechanism, fixed rules and discretion

How does the monetary transmission mechanism work?

The **monetary transmission mechanism** consists of the several channels through which policy-induced changes in money supply and interest rates influence real economic activity and in particular the price level. Understanding the channels through which monetary policy actions and strategies impact output and inflation and the time needed for a policy action to be effective is crucial for the design and implementation of sound monetary policy strategies (Figure 6.6).

The transmission mechanism of monetary policy includes several different channels. Figure 6.7 shows that changes in the official interest rates first alter money market rates and the public's expectations. These in turn affect bank rates, asset prices, the availability of bank loans and the foreign exchange rate.

Specifically:

1. The first indirect effect of a change in official bank rate is on the cost of borrowing. Changes in retail banks' rates for conventional financial products like mortgages, loans and deposits rates have an impact on consumption and investment.
2. Another channel is through prices of financial and other assets. This is also known as wealth channel because higher interest rates depress bond, stock and real estate prices, thereby decreasing households' wealth.
3. A third channel is money and credit availability as higher interest rates increase borrowers' default risk so households and businesses may be subject to credit rationing, thus reducing their consumption and investments.
4. Finally, in an open market changes in the official policy rate affect foreign exchange markets. For example, in the UK, an increase in interest rates relative to rates in other countries makes the pound stronger and more attractive to investors while British products become more expensive so their demand drops.

Figure 6.7 also shows that eventually changes in policy rate influence the overall spending in the economy i.e. the aggregate demand (AD). This is the sum of consumers' spending (C), firms investments (I), government spending (G) and net exports (NX) so that AD = C + I + G + NX. The general price levels are affected by the relationship between AD and the ability of the economy to supply them (aggregate supply, or AS). If AD > AS

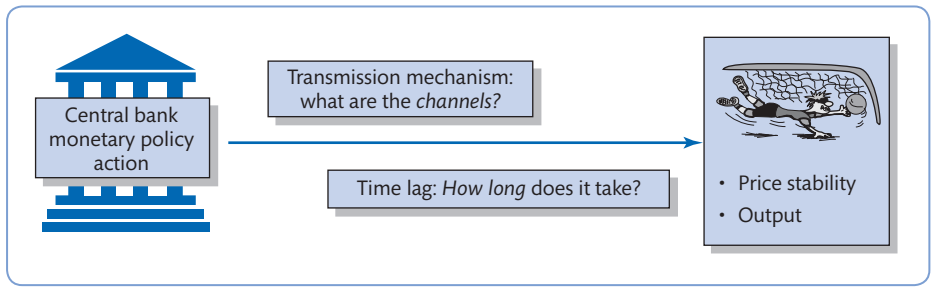


Figure 6.6 The key issues in monetary policy transmission

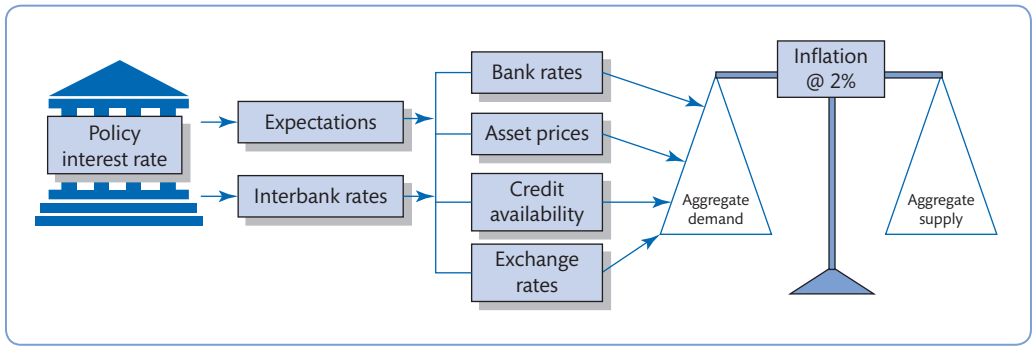


Figure 6.7 Channels of monetary policy transmission

then prices will increase so the monetary authorities may intervene to raise the policy rate to reduce growth and avoid that inflation goes above the government target (currently 2 per cent in the UK). Vice versa, if AD < AS monetary authorities may be inclined to ease monetary policy to stimulate spending and keep inflation from falling below the target. To sum up changes in monetary policy ultimately alter the propensity and the ability to consume and invest of households, businesses, the government and foreign economic agents and shift aggregate demand and supply. *How long* it takes for monetary policy actions to impact output and price levels depends on a number of factors, including (1) public expectations on long-term interest rates and inflation and (2) the extent to which markets have been able to anticipate monetary policy actions and factor in future price increases.

While changes in policy rates affect relatively quickly bank rates, asset prices and exchange rates, the impact of monetary policy actions on output can take anything from three months to two years; and on inflation from one to three years or more (Figure 6.8). This is why the central banks' decisions typically have to be made with a view to the future, taking into account associated uncertainty.

How is monetary policy implemented?

Monetary authorities operate with almost complete discretion in the conduct of monetary policy. This means that although they are expected to achieve various goals in terms of sustainable economic growth, employment and price stability, current institutional settings enable them to freely weigh and pursue these goals using their own judgement.

For example, the committee in charge of setting the US monetary policy (the Federal Open Market Committee, or FOMC) meets regularly eight times a year to evaluate the current state

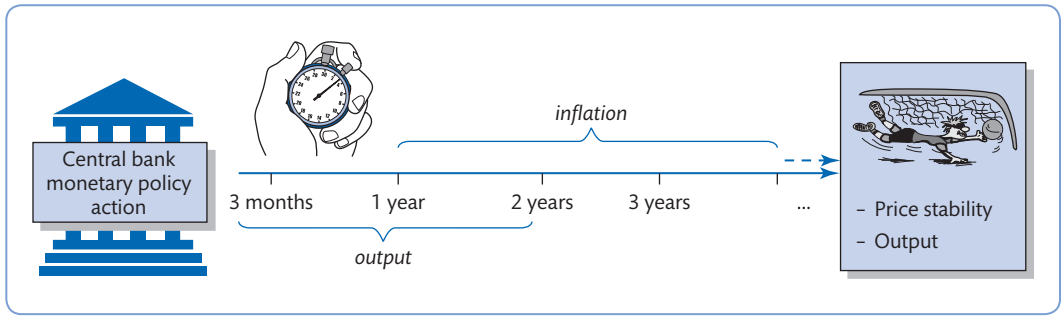


Figure 6.8 Transmission lags of monetary policy

of the economy and assess the forecast of future economic and financial conditions. Based on these considerations, the FOMC sets the Federal fund rate and then the Fed adjusts the money supply to reach that interest rate target.

Some economists advocate that monetary policy made by a precise, legislated *rule* would be more successful in ensuring a stable macroeconomic environment than using discretionary powers. A classical example of a tight, fixed rule is Friedman's constant money (k%) growth rule.[6] As pointed out by Bernanke and Reinhart (2004), although they have never been implemented, 'rule-like' monetary policy arrangements have existed in the real world, such as the international gold-standard.

Although it is not in the remit of this textbook to go into the details of the rules vs. discretion debate over monetary policy, it is useful to summarise some of their most important pros and cons (Table 6.4).

The time inconsistency problem viz. 'eat your soup or no TV'

One of the most important problems of discretion is the time inconsistency that was analysed first by economics Nobel prize winners Finn Kydland and Edward Prescott in the article 'Rules rather than discretion: The inconsistency of optimal plans', published in the *Journal of Political Economy* in 1977. Time inconsistency of policy occurs when monetary authorities decide to announce *ex ante* the policy they want to pursue to influence the expectations of private economic agents. However, *ex post*, i.e. when these latter have acted based on their expectations, monetary authorities may be tempted to revoke their decision. The outcome of this situation is that when private economic agents realise that monetary authorities' may be inconsistent over time, they lose their trust in policy makers' announcements. In order to gain credibility for their announcements, policy makers may find it optimal to commit to a fixed policy rule.

Examples of time inconsistencies can be found in different scenarios, even in relation to parenting, where the parent (policy maker) announces a punishment for bad behaviour for a child (the economic agent), e.g. 'eat your soup or no TV'. The purpose of the threat is to

Table 6.4 Pros and cons of discretion vs. fixed rules in monetary policy

	Discretion	Fixed rule-based policy
Pros	• Flexible and adaptable to changing economic conditions • Active approach that works without rules • Policy makers can respond quickly to events	• Transparent and predictable • Removes the active role of the policy maker • Leave less room for policy makers' mistakes
Cons	• Time inconsistency 'trap' and trend to forbearance especially during downturn • Long lags between problem observation and policy implementation • Unclear what monetary authority should do in case of unexpected shock • Works only if the public trust the policy maker • Requires accurate knowledge and measure of current and future economic conditions (forecast)	• Too mechanical and unpractical • Passive approach that lacks flexibility in case of unexpected shock • If too strict it cannot accommodate special circumstances and it may become inapplicable • Requires a high degree of confidence that the variables will perform as expected • Need 'escape clause' in case of exceptional events (such as a war) and thus could be liable to abuse

[6] Friedman (1968). There are other well-known rules such as the Taylor rule and the McCallum rule. For more details Bernanke and Reinhart (2004) and Mishkin (2011).

affect the expectations of the child and therefore their behaviour. Although there is a clear threat, the parent may have incentives to give concessions to the child. However, the parent will be better off sticking to the behavioural rule of 'no TV' as the best outcome for the parent is to never relent to avoid undermining their credibility and prevent time inconsistency. The corollary is that policy makers can better achieve their goals by having the discretion taken away from them. In the monetary policy practice, one way of approximating this outcome might be to give the policy maker (central bank) a simple rule which is a reasonable approximation to the optimal rule. In this way if the central bank wants to deviate from this rule by more than some pre-specified amount, it is allowed to do so, but at the cost that it must explain its rationale (e.g. Athey *et al.*, 2005). Referring back to Table 6.4, it is clear that there are a number of pros and cons of the two extreme cases of pure discretion and fixed rules. This is why many countries have adopted hybrid regimes of 'constrained discretion' in monetary policy that combine elements of both fixed rules and discretion.[7]

A classic example is inflation targeting that involves 'a strong, credible commitment by the central bank to stabilise inflation in the long run, often at an explicit numerical level, but also allows for the central bank to pursue policies to stabilise output around its natural rate level in the short run.' (Mishkin, 2011). The key requirements for sound inflation targeting policies are that central banks (1) have some degree of independence and (2) are committed (and allowed) not to target other indicators (e.g. employment or exchange rates). In the case of inflation targeting, the 'constrained discretion' framework combines two distinct elements: a precise numerical target for inflation in the medium term and a response to economic shocks in the short term. For more information on inflation targeting, see e.g. Jahan (2017).

BOX 6.4 QUANTITATIVE EASING IN JAPAN

The first experiment of quantitative easing was pioneered in Japan in the first half of the 2000s following what has been defined as a 'lost decade' of economic stagnation. Japan's problems started in the 1980s when the economy experienced an unsustainable boom – a 'bubble economy' – accompanied by several 'mistakes' in the monetary policy decisions. (For a thorough discussion of the Bank of Japan's monetary policy options during the asset price bubble see Ito and Mishkin (2004).) During the boom period banks expanded considerably their lending activity to riskier costumers in different industrial sectors, including real estate and construction, and small and medium businesses. Banks' lending decisions were typically based on collateral requirements and, unsurprisingly, a high proportion of these collateral were real estate (Kanaya and Woo, 2000).

When the bubble burst in the early 1990s, non-performing loans had reached alarming levels and Japan entered a period of virtually zero growth and high deflationary pressures. The highly overvalued stock and real estate markets fell dramatically, and bad loans, capital erosion and a slow policy response resulted first in the failure of small- to medium-size financial institutions in the first half of the 1990s, then a major banking crisis in 1997–1998, that saw the collapse of several large Japanese banks. Monetary authorities resorted to unconventional

[7] Most countries' Central Banks provide illustrations of the transmission mechanism of monetary policy. These documents are often available from the Central Banks' websites. For example, see Bank of England ('The transmission mechanism of monetary policy', **www.bankofengland.co.uk/markets/bank-of-england-market-operations-guide/our-objectives**; European Central Bank ('Transmission mechanism of monetary policy', **www.ecb.europa.eu/mopo/intro/transmission/html/index.en.html**) and Bank of Canada ('How monetary policy works: The transmission of monetary policy', **www.bankofcanada.ca/core-functions/monetary-policy/**).

Box 6.4 Quantitative easing in Japan (*continued*)

monetary policies when the Bank of Japan official rate (the 'uncollaterised call rate') was lowered to virtually zero in 2001 and yet failed to reverse the process.

The Bank of Japan changed its main operating target for money market operations from the uncollaterised call rate to the current account (reserves) balances held by commercial banks, in excess of the required reserves. Initially the target amount of current account was set at 5 trillion yen, while the required reserves were about 4 trillion yen. By January 2004 the target amount has been raised in several steps to a range of 30–35 trillion yen and remained unchanged until the quantitative easing policy was terminated in March 2006. The Bank also expanded the amount of monthly outright purchase of long-term Japanese government bonds, from 400 billion yen to 600 billion yen in August 2001, and in several steps to 1,200 billion yen in October 2002. In addition, purchases of some of private debts, including asset-backed securities (ABS), as well as stocks held by financial institutions, have been introduced (Ito and Mishkin, 2004; Shiratsuka, 2010).

Although back in 2001 the Bank of Japan committed to maintain these policies until the core inflation stopped declining, many economists reckon that quantitative easing did not provide a sufficient stimulus to aggregate demand to overcome the risk of persistent consumer price deflation. In contrast, some analysts (Bowman *et al*., 2011) argue that quantitative easing policies have had some (albeit small) positive effects on Japan's economy but this was weakened by various factors, not least severe weaknesses in the banking sector.

6.4.5 Unconventional tools of monetary policy and the 'zero-bound'

In 'normal' times, monetary policy aims at setting a target for the overnight interest rate in the money market and adjusting the supply of central bank money to that target through open market operations. In doing so, the central bank controls the liquidity levels in the market without having to lend to the private sector or the government. But what if interest rate and money supply, i.e. the 'conventional' monetary policy tools, are not effective in providing monetary stimulus to the economy and in limiting inflationary forces? What if interest rates reach zero or near zero levels and although the economy is struggling the monetary authorities cannot cut interest rates any further?

If a central bank reaches the 'zero-bound' i.e. cannot cut policy rates any further, then 'unconventional' or 'non-standard' policies may be used to try to spur lending and spending in the economy. In general terms this can be achieved by (1) providing assurance to financial investors that short rates will be lower in the future than they currently expect; (2) changing the relative supplies of securities (such as Treasury notes and bonds) in the marketplace by shifting the composition of the central bank's balance sheet; and (3) increasing the size of the central bank's balance sheet beyond the level needed to set the short-term policy rate at zero ('*quantitative easing*').[8]

Quantitative easing can be defined as an unconventional monetary stimulus designed to inject money directly into the economy to counterbalance a sharp fall in aggregate demand as spending has declined. In practical terms, the central bank purchases assets (mainly government bonds) from private business using new money created electronically. The institutions selling those bonds (such as commercial banks, other financial intermediaries and

[8] See Bernanke and Reinhart (2004).

non-financial firms) will have new money in their account that is expected to stimulate the money supply.

In the United Kingdom the MPC introduced quantitative easing for the first time in history in March 2009, when the bank rate was reduced to 0.5 per cent. The series of asset purchases undertaken between March 2009 and February 2012 injected money directly into the system with the aim of boosting nominal demand and giving a monetary stimulus to the economy. Similarly, in an emergency meeting in March 2020, at the peak of the Covid-19 crisis, the bank rate dropped to its all-time low of 0.1 per cent and revived QE with the announcement of £200 billion of bonds emergency purchases, bringing the total to £645 billion. Table 6.5 summarises the purchases of government debt ('gilts') as well as corporate bonds authorised by the MPC since 2009 as part of the quantitative easing programme to date (December 2012). The Bank of England purchases gilts from private investors (typically non-bank financial intermediaries) that have an interest in selling low yielding assets i.e. gilts, so that they can purchase other assets like corporate bonds and shares. This process should lower longer-term borrowing costs and encourage the issuance of new equities and bonds thus improving the functioning of corporate credit market (Joyce *et al*., 2011). While both the Japanese and UK's quantitative easing experience has implied the use of both sides of the central bank balance sheet, the US Federal Reserve bank policy appears to focus more on the asset side, a fact that explains why it is sometimes referred to as credit (rather than quantitative) easing. The US Federal Fund rate was lowered to near zero levels in December 2008, amid the financial crisis and economic slowdown. At that time, the Federal Reserve started the first programme of large scale asset purchases, which ended in March 2009 and reached $1.75 trillion (see Table 6.5).

In theory, a narrow definition of quantitative easing implies an increase in the size of the central bank balance sheet without changing its composition. Conversely **credit easing** (narrowly defined) corresponds to changes in the composition of the balance sheet without changing its size, i.e. by replacing conventional assets with unconventional ones. Shiratsuka (2010) argues that, in practice, to be an effective non-standard policy, both sides (assets and liabilities) of the balance sheet should interact *and* the two elements of the balance sheet (size and composition) should be combined.

Table 6.5 UK and US asset purchase programmes (in figures)

Month/year	UK	US
December 2008		$1.75 trillion
November 2009	£200 billion	
November 2010		$600 billion
October 2011	£75 billion	
February 2012	£50 billion	
July 2012	£50 billion	
September 2012		$85 billion/month
August 2016	£60 billion	
October 2019		$60 billion/month
March 2020	£210 billion	$700 billion

Note: In September 2011 and until December 2012 the US Fed launched the so-called 'operation twist' or maturity extension programme, aimed at amplifying the effects of QE on longer-term interest rates.

Source: Central banks' websites.

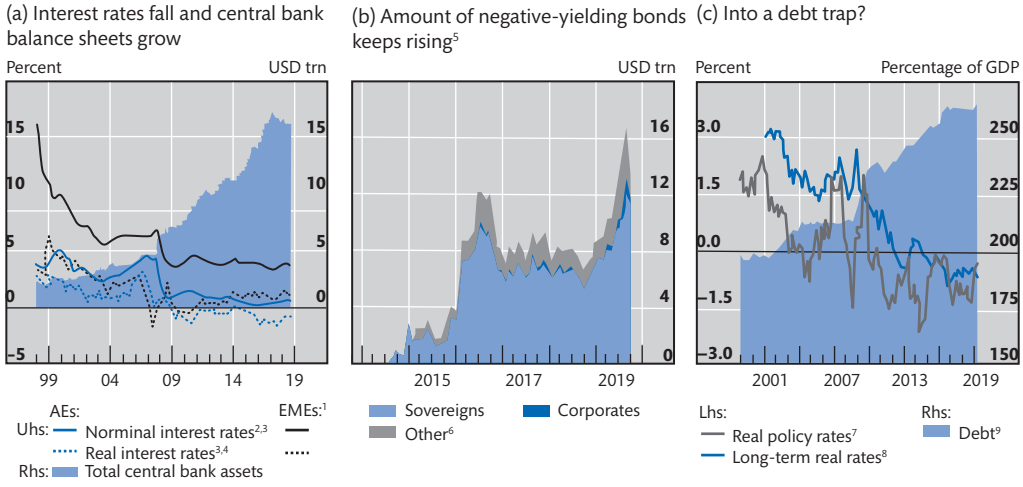
Generally speaking, the ECB's actions in the aftermath of the 2007–2009 global financial crisis were similar to those implemented by the BoE and the Fed as they were primarily aimed at extending the range of available facilities and designing novel mechanisms to ensure that banks could easily access the liquidity they needed. Since August 2007 the ECB has engaged in exceptional monetary policy measures known as *enhanced credit support* to stimulate the economy of the eurozone states (ECB, 2010b). The ECB's main objectives have been to increase liquidity and to improve the functioning of money markets in the euro area. Importantly, the ECB has broadened the scope of its standard refinancing operation by using 'fixed rate full allotment' provisions (rather than variable rate tender procedures) with a longer maturity of maximum one year. With these operations, the interest rate is set in advance and the ECB provides as much liquidity as the banks require provided they offer suitable collateral.

However, with the sovereign debt crisis that developed in late 2009 (see Chapter 14 for more details of the eurozone crisis) the ECB took a different approach to the Fed's and BoE's easing programmes and implemented first a **Securities Markets Programme** (SMP) in spring 2010 and then a set of **longer-term refinancing operations** (LTROs) in December 2011. In addition, the ECB introduced two programmes in 2009 and 2011 to purchase **covered bonds** (covered bond purchase programme, or CBPP) for a total of €100bn. Covered bonds are debt obligations secured by a cover pool of high- quality collateral (mortgage loans or public sector debt) that the issuer is required to maintain on balance sheet, as opposed to asset-backed securities where the credit risk can be transferred and the assets are taken off balance sheet (ECB, 2008a). The aims of the covered bond purchase programme are (1) to ease funding conditions for banks and firms and (2) to stimulate bank lending.

In mid-2014, the ECB initiated an asset purchase programme (APP) to support the monetary transmission mechanism and provide the amount of policy accommodation needed to ensure price stability. It included the purchase programmes of the corporate sector (CSPP), public sector (PSPP), asset-backed securities (ABSPP) and the covered bonds (third round, CBPP3). In addition, due to Covid-19 the ECB also initiated on 26 March 2020 a temporary pandemic emergency purchase programme (PEPP) with an overall envelope of €750 billion. All asset categories eligible under the existing APP described above are eligible for the PEPP. The total cumulative net purchases at the end of April 2020 was €2,822 billion with most of the stock (over 80 per cent) in PSPP.

Figure 6.9 reports the exceptional growth in central banks' balance sheet over the period 1999–2019 (panel a). It also shows that interest rates fell sharply both in nominal terms and became negative in real terms, with negative-yielding government and corporate bonds peaking at around $17 trillion or 20 per cent of world GDP (panel b). Borio (2019) argues that this is the result of central banks' strenuous efforts to push a stubbornly low inflation back towards the 2 per cent targets. Finally, panel (c) shows that both private and public debt is now significantly higher as a ratio of GDP than pre-crisis.

Other forms of unconventional monetary policy in addition to quantitative easing are **forward guidance** and negative interest rate policies. Forward guidance is when the central bank communicates its future monetary policy intentions based on its assessment of the outlook for price stability. In practice, the central bank makes a public statement about the future path of interest rates, hence influencing market expectations and reducing uncertainty. There are three types of forward guidance that have been used by central banks in recent years (Ehrmann *et al.*, 2019). The first type, open-ended forward guidance, is a purely qualitative statement about the policy path. An example is the ECB's statement used



[1] A few outliers for which the nominal interest rate exceeds 60% are omitted from the sample. [2] Policy rate or closest equivalent. [3] Simple monthly averages across economies. [4] Nominal interest rate less consumer price inflation. [5] Based on Bloomberg Barclays Global Aggregate Negative Yielding Debt Indices. [6] Sum of goverment-related and securitised. [7] Nominal rate less headline consumer price inflation. Unweighted average of United States, Germany and Japan. [8] Simple average of index-linked 10-year goverment bond yields of United States, France and Japan. [9] Total credit to non-financial sectors. Weighted average of G7 economies plus China based on GDP and PPP exchange rates.

Figure 6.9 The room for monetary policy manoeuvre keeps narrowing

Source: Borio (2019).

between July 2013 and January 2016 that 'we expect the key ECB interest rates to remain at present or lower levels for an extended period of time'. The second type, data-based forward guidance, outlines a policy path conditional on economic outcomes. An example is when the ECB stated that policy rates will remain unchanged 'for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term'. Finally, calendar-based forward guidance is a policy path with an explicit reference to a calendar date. An example is the current guidance by the ECB that key policy rates are expected to remain at their present levels 'at least through the first half of 2020'.

Negative interest rates have been implemented by the ECB and Bank of Japan by charging, rather than paying, interest rates on the reserves that commercial banks hold at the central bank. The expected effect is that banks will lower their excess reserves by increasing lending and purchasing other financial assets. The policy objective is to reduce lending rates, increase credit supply and boost prices across financial markets. For a detailed discussion of the non-standard monetary policy measures in practice in the eurozone, UK and Japan, see Dell'Ariccia *et al*. (2018).

6.5 Why do banks need a central bank?

The banking sectors of most countries have a pyramid structure where a central bank is at the apex and the ordinary banking institutions are at the base of the pyramid. An interesting theoretical explanation for the existence of central banks is given by Goodhart (1987). He highlights three possible reasons that might lead banks to prefer to form interbank organisations (a banking club) to which to delegate certain functions. First, the transaction and monitoring costs for interbank loans would be reduced if the central bank arranged them centrally. Second, banks would be obliged to hold a sort of 'socially optimum' amount of reserves that most probably would not keep otherwise. Finally, they would mitigate potential negative externalities derived by bank contagion effects.

In Goodhart's view central banks are needed for two main reasons. First, because banks provide two essential functions: they operate the payment systems and undertake portfolio management services. These are considered to be 'public goods' and hence need to be preserved; meanwhile, bankers themselves have an economic interest in protecting the reputation of the banking sector as a whole and in keeping the confidence of investors. A central bank aims to prevent the collapse of the banking sector that could arise from information problems, abuses by bankers and excessive risk taking. However, Goodhart's argument challenges the conventional view that the joint provision of payments' services together with portfolio management functions of banks exposes the monetary system to contagious failure, which a central bank should prevent. Instead, the author maintains that it is the special nature of banks' assets, largely non-marketable, fixed nominal-value loans of uncertain true worth that makes them more vulnerable than other non-banking firms.

Central banks can also be thought of as 'super-banks', at the centre of the financial system, responsible for both 'macro' functions, such as monetary policy decisions, and 'micro' functions, including the lender of last resort assistance of the banking sector. Over time the role and functions of central banks have developed and evolved, as has the environment in which banks operate. The presence of a central bank acting as a 'super-bank' has been investigated by the so-called 'free-banking school'. **Free banking** theorists argue that regulation should be left to the market. Therefore, they object to a single central bank being given the 'privilege' – or monopoly – in issuing banknotes (Dowd, 1996).

Liberalisation, financial innovation and technology have contributed to major changes in the operating environment. Many banks have converted their status to private institutions – that by definition are demand or customer-driven – while the global riskiness and uncertainty of the sector has significantly increased. The next section focuses on the LOLR function of central banks and how this has changed following the 2007–2009 financial crisis. While there is debate about the merits and demerits of central banks it is a fact that there is a central bank in virtually every country in the world. One of the key issues is whether central banks should be given independence from governments and, if so, to what extent. These issues are covered in Section 6.6.

6.5.1 The lender of last resort function of the central bank

The lender of last resort function of a central bank is often subject to controversial debates and criticisms because it implies direct intervention of the monetary authorities in the banking markets.

In its role as a LOLR, the central bank will provide reserves to a bank (or banks) experiencing serious financial problems due to either a sudden withdrawal of funds by depositors or to a situation where the bank has embarked on highly risky operations and thus cannot find liquidity anywhere else (i.e. no other institutions will lend to a bank considered near collapse). Technically, this important function of central banks derives from the discount window tool that, as illustrated in Section 6.4.2, is one of the instruments used to influence reserves and money supply in the banking sector. However, central banks operate under different frameworks in conducting the LOLR activities. These differences can reflect various country-specific factors such as public policy objectives, historical experience or other elements.

A central bank will extend credit to an illiquid bank to prevent its failure only in exceptional circumstances and in doing so it also carries out a 'macro' function by preventing potential financial panics. However, the central bank cannot guarantee the solvency of every banking institution in a country. (On the relationship between liquidity and solvency see Box 6.5.) This is because it would encourage bankers to undertake undue risk and operate imprudently, especially if banks knew that they would always be bailed out (by taxpayers' money) were they to become insolvent. In other words, the security of the LOLR function could induce or increase moral hazard in banks' behaviour.

BOX 6.5 RELATIONSHIP BETWEEN LIQUIDITY AND SOLVENCY

As we noted earlier, the liquidity of a bank relates to its ability to meet short-term obligations (expected and unexpected) when they fall due. For example, banks can predict with a certain degree of accuracy how much cash they need to hold to meet such things as payment of utility bills (electricity, water bills), rent on buildings and (under normal market conditions) deposit withdrawals. In addition to these expected calls on liquidity, banks also have to hold a cushion above this amount to meet unexpected liquidity requirements and this is why liquidity risk management is a key feature of banking business.

Solvency is the ability of a bank ultimately to meet all its obligations. This means that the value of assets has to be greater than liabilities – the difference between the two being the bank's capital. If some assets go bad (e.g. loans are not repaid) then the bank must make charges against the loan portfolio (loan loss provisions) that are paid for from retained profits. As long as profits are sufficient to cover these provisions, the level of bank capital and its capital adequacy ratio (the Basel risk-weighted capital–asset ratio) remain unchanged. However, when profits do not cover provisions, then losses will have to be written out of capital (the amount of capital the bank has declines) or alternatively, shareholders will be asked to provide additional capital to restore the capital ratio to the required level.

The liquidity and solvency position of a bank are related because a severe liquidity shortfall can ultimately result in a solvency problem. For example, a continuous liquidity shortage could lead a bank to tighten its lending policy, for instance, by not renewing short-term revolving lines of credit. This would force borrowers to repay their loans earlier than expected and those unable to do so will default on their loan payments. In turn, the quality of the loan portfolio will deteriorate, requiring additional loan loss provisions. If the bank does not have sufficient provisions then the losses will be written out of capital resources thus reducing the solvency of the bank. In general, if a bank is unable to meet its liquidity requirements it will first attempt to obtain support through the LOLR facility by borrowing from the central bank. However,

Box 6.5 Relationship between liquidity and solvency (*continued*)

if this option is not available then the bank will have to consider bearing the losses from its capital resources thus reducing the bank's capital position.

A liquidity crisis can quickly change into a solvency crisis. For example, if a bank has actual (or even perceived) liquidity difficulties, and this becomes known to other banks, then the latter will withdraw their wholesale interbank deposits from the illiquid bank, leading to a wholesale deposit run, which may then spread to retail deposit withdrawals. In this case the bank will not be able to meet its short-term obligations and will have to resort to using capital resources to bear any losses. Ultimately the bank may not have sufficient capital resources to meet these losses, resulting in insolvency.

In the case of an individual bank failure, the decision as to whether a bank is illiquid or insolvent is a critical judgement that the regulators have to make in order to decide whether to support a troubled bank or to let it fail. For example, if a small bank is facing financial difficulties the regulator has to decide whether this is a result of a short-term liquidity problem or a longer-term solvency issue. If the authorities decide the problems are caused by liquidity problems, they are more likely to offer support through the lender of last resort facility (providing new liquidity to the bank to help it get through its liquidity problem). If the bank is deemed to have a solvency problem, then the authorities are more likely to consider letting the bank go bankrupt or organising some form of rescue. In theory regulators should consider supporting banks with a liquidity problem but not with a solvency problem – although we know in reality that this is not always the case. Another point to note is that regulators have a very difficult task in deciding whether a bank that is in trouble is either illiquid or insolvent as often a decision has to be made very quickly as to whether liquidity support is to be provided or not. Often regulators have to decide in a matter of days the liquidity and solvency position of a troubled bank and they will also have to take into consideration whether a decision not to provide liquidity will result in failure and serious systemic repercussions. In general, the relationship between liquidity and solvency is at the heart of bank regulation and is a critical feature of the bank supervisory process.

One of the most famous examples of the direct support given by the Bank of England to the banking sector was offered in 1973–1974 where the Bank organised help for 26 fringe (or secondary) banks facing severe liquidity problems. In the United States, famous examples of the Fed acting as a LOLR include the rescue effort of two troubled banks: Franklin National in 1974 and Continental Illinois National Bank in 1984.

Since 2007, the Bank of England, the Fed and the European Central Bank have injected substantial amounts of liquidity into their respective banking systems; these market interventions placed their actions increasingly under the spotlight. In an unprecedented move, on 1 December 2010, the Federal Reserve released previously confidential information about its function as LOLR during the 2007–2009 period, including the names of the financial institutions and foreign central banks that received financial assistance, the amounts borrowed, the dates credits were extended, the interest rates charged, information about collateral, and a description and rationale of the credit terms under each Federal Reserve emergency facility.[9]

[9] The release of data was as a consequence of Bloomberg's request for the data under the Freedom of Information Act. After a series of appeals, the Fed conceded the issue and in December 2010 it released detailed information about individual credit and other transactions conducted during the financial crisis. In accordance with the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010, transaction-level details for discount window loans and open market transactions will be made available on a quarterly basis and with an approximately two-year lag. Information is available through the Federal Reserve Board's website and the Federal Reserve Bank of New York's websites.

After Greek banks fell into arrears with the International Monetary Fund in 2015, the ECB granted the Bank of Greece a loan through the **Emergency Liquidity Assistance** (ELA). This is a last safety net provided by national central banks in the euro area for domestic banks in difficulty. The ECB's role within ELA is to check and monitor the national central banks' LOLR activities.

The depth and length of the global financial crisis transformed the role of LOLR to what is now discussed as a **market maker of last resort (MMOLR)** function. The traditional Bagehot rule of central banking (LOLR activities should be limited to solvent but illiquid banks with good collateral, to avoid moral hazard problems) has been stretched to the limit in order to meet the liquidity needs of increasingly dysfunctional financial markets. Some commentators have welcomed this transition, as it reflects the evolution of the LOLR function to meet the reality of modern financial systems but in stressed situations where there are no market buyers, the central bank acts more like a 'purchaser of last resort'. Others are more critical of the explosion of central banks' balance sheets, as well as of the collateral policies central banks followed during and after the 2007–2009 crisis. Other concerns include the inflationary consequences of this expansion of central bank credit and the lack of transparency of the decision-making process. Some have criticised central banks for bailing out insolvent institutions, and many have noted that quasi-fiscal support has been provided through generously priced bank support packages (Moe, 2012).

6.6 Should central banks be independent?

There has been a significant trend towards **central bank independence** in many countries and the issue has generated substantial debate all over the world. Theoretical studies seem to suggest that central bank independence is important because it can help produce a better monetary policy. For example, an extensive body of literature predicts that the more independent a central bank, the lower the inflation rate in an economy.

Central bank independence can be defined as independence from political influence and pressures in the conduct of its functions, in particular monetary policy. It is possible to distinguish two types of independence: goal independence, that is, the ability of the central bank to set its own goals for monetary policy (e.g. low inflation, high production levels); and instrument independence, that is, the ability of the central bank to independently set the operational instruments of monetary policy to achieve these goals (Mishkin, 2000).

It is common for a central bank to have instrument independence without goal independence; however, it is rare to find a central bank that has goal independence without having instrument independence. In the United Kingdom, for example, the Bank of England is currently granted instrument independence and practises what is known as inflation targeting. This means that it is the government that decides to target the inflation rate (at the time of writing – 2021 – set at 2 per cent) and the Bank of England is allowed to independently choose the policies that will help to achieve that goal. Such a situation is only acceptable in a democracy because the Bank of England is not elected and thus goals should only be set by an elected government.

While central bank independence indicates autonomy from political influence and pressures in the conduct of its functions (in particular monetary policy), dependence implies subordination to the government. In this latter case, there is a risk that the government may

BOX 6.6 WHO OWNS THE CENTRAL BANK?

There is no general answer to this question. It depends on the specific cases. For example, the Bank of England is 'wholly-owned by the UK government'. This means that the entire capital of the Bank is held by the Treasury solicitor on behalf of HM Treasury. Current regulations provide that the Bank is required to pay to HM 'on every fifth day of April and October, a sum equal to 25% of the Bank's post-tax profit for the previous financial year or such other sum as the Bank and the Treasury may agree'. The overall effect is that the Bank and HM Treasury will normally share post-tax profits equally (see the Bank of England Act 1946 and 1998 amendments).

While the Bank of England is owned by the British government, the ECB is owned by the central banks of member states as clearly reported in its Statute. This means that member central banks have voting powers as shareholders (article 10.3 on Governing Council) and share the profits and losses of the ECB (article 33.1). But who owns the national member state central banks then? The answer can be found in their own statutes: they are owned by the major financial institutions in a country.

Another interesting example is that of the US Federal Reserve System. Who owns the Fed? The Federal Reserve System is not 'owned' by anyone. The Federal Reserve was created in 1913 by the Federal Reserve Act to serve as the nation's central bank. The Board of Governors in Washington, DC, is an agency of the federal government and reports to and is directly accountable to the Congress. The Federal Reserve, like many other central banks, is an independent government agency but also one that is ultimately accountable to the public and the Congress.[10] The 12 regional Federal Reserve Banks, which were established by the Congress as the operating arms of the nation's central banking system, are organised similarly to private corporations – possibly leading to some confusion about 'ownership'. For example, the Reserve Banks issue shares of stock to member banks. However, owning Reserve Bank stock is quite different from owning stock in a private company. The Reserve Banks are not operated for profit, and ownership of a certain amount of stock is, by law, a condition of membership in the System. The stock may not be sold, traded, or pledged as security for a loan; dividends are, by law, 6 per cent per year. This means that the concept of ownership in the case of member banks takes some unique connotations.

'manipulate' monetary policy for economic and political reasons. It should be noted, however, that all independent central banks have their governors chosen by the government; this suggests that to some extent central banks can never be entirely independent.

Since the financial crisis, the growing consensus on the positives of central bank independence has come under increasing pressure. For example, after the collapse of Lehman Brothers in 2008, the independence of the Fed has been under scrutiny. The Fed's performance during and after the 2007–2009 crisis has been severely criticised. As a consequence of growing political pressure, the Dodd–Frank Act amended Section 13(3) to require the Treasury's approval for its exercise of LOLR activities. The ECB independence has also been compromised by the adoption of the Outright Monetary Transactions (OMT) programme, which entails a promise to purchase sovereign debt of individual euro member states. The programme implies that purchases are conditional on the state meeting certain fiscal targets. While the programme has helped recover market confidence, some see it as a 'fiscalisation of monetary policy', as it allows government intervention and may lead to the loss of ECB's independence (Bullard, 2013).

[10] see **www.federalreserve.gov/faqs/about_14986.htm**

It is possible to distinguish between the case 'for' and the case 'against' independence. In general terms there are mainly political and economic reasons in support of central bank independence. Moreover, there is a principal–agent problem between the public (the principal) and the central bank and the government (the agents). The agents may have incentives to act against the interest of the public. According to the supporters of central bank independence it is the government in particular that has a strong incentive to act in its own interest. Only an independent central bank operating outside the day-to-day business of politics can be considered a guarantor of long-term economic stability. Table 6.6 summarises the arguments in favour and against central bank independence.

A survey on the future of central bank independence and inflation targeting conducted in 2017 (Den Haan *et al.*, 2017) emphasised the importance of measuring empirically central bank independence using different indicators, including the rules of appointment and dismissal of governors, the extent to which the government and tax authorities must be consulted before monetary policy decisions and the bank's financial autonomy. Central banks are complex organisations whose mandate has expanded after the great financial crisis. As discussed in this chapter, many have adopted unconventional monetary policies, acted with a great deal of discretion and some were even given powers to go beyond their traditional monetary policy mandate in macro- and micro-prudential supervision and crisis management (see Chapter 7). In this context perhaps it is not a surprise that the debate over their independence has intensified in recent years because of the rise of populism (Goodhart and Lastra, 2018; Masciandaro and Passarelli, 2018) and many have emphasised the need for a robust governance framework and adequate mechanisms to 'guard the guardians' (Cochrane and Taylor, 2016; Bossu and Rossi, 2019).

Table 6.6 Central bank independence (CBI)

In favour	Against
• As monetary policy works with lags, it is necessary to take a long-term view when making decisions. CBI offers a safeguard against short-term political interests.	• Lack of democratic governance.
• CBI can prevent governments from using central banks to finance government spending. Given the large public debt in many countries, CBI should act as a safeguard against deficit increases.	• Constraints of central banking (i.e. central banks may be too cautious for fear of political interference and for fear of losing independence and credibility).
• Political pressures can damage the credibility of a central bank, and distort inflation expectations, which goes against central banks' ultimate goal to maintain price stability.	• Poor social outcomes (deflation).
• Many empirical studies have shown that higher levels of CBI result in economic growth and price stability.	
• CBI also allows central banks to move more swiftly and effectively in response to macroeconomic shocks.	

Source: Adapted from Toyoda (2013).

6.7 Conclusion

A central bank's main function is to undertake monetary control operations and thus to administer the amount of money in the economy, given the specific monetary policy objectives set by the government. Central banks tend to use indirect instruments, or tools, in the conduct of their monetary policy and can generally choose between (1) open market operations, (2) the discount window and (3) reserve requirements. OMOs are popular instruments used by central banks as they are tax-free (in that they do not place specific constraints on banks' operations) and flexible (in terms of their frequency of use and scale of activity). In particular, the main attractions for using OMOs to influence short-term interest rates are as follows: they are initiated by the monetary authorities who have complete control over the volume of transactions; they are flexible and precise – they can be used for major or minor changes in the amount of liquidity in the system; they can easily be reversed; and finally, they can be undertaken quickly.

The financial crisis of 2007–2009 brought to the fore the key role of central banks in responding to crises. In particular, unconventional policies such as quantitative and credit easing have been key monetary policy tools in the aftermath of the global financial crisis. While the role and core functions of central banks around the world keep evolving to adapt to the transformations in the operating environment, recent debates have revolved around their greater powers and discretion particularly in emergency times. So, if there has been a trend in both developed and developing countries towards increased independence of central banks from political pressure, central bank independence has come under renewed scrutiny post financial crisis. Concerns have emerged in particular with respect to the balance between their accountability, transparency and independence, as well as the increased risk of politicisation. Hence the growth in the interest in central bank governance frameworks and in discussions over whether and to what extent central banks should abide by rule-based policy in normal times and then take a 'what-it-takes' approach with emergency powers in case of crises.

Key terms

Accountability
Central bank independence
Covered bonds
Credit easing
Discount window
Emergency liquidity assistance (ELA)
Exchange rate policy
Financial stability
Fiscal policy
Forward guidance
Free banking
Instruments of portfolio constraint
Lender of last resort (LOLR)
Longer-term refinancing operations (LTRO)
Market maker of last resort (MMOLR)
Monetary aggregates
Monetary policy
Monetary transmission mechanism
Money
National debt management policy
Official bank rate
Open market operations
Price stability
Prices and incomes policy
Quantitative easing (QE)
Reserve requirement
Securities Markets Programme
Standing facilities

Key reading

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REVISION QUESTIONS AND PROBLEMS

6.1 What are the five major forms of economic policy?

6.2 What is money and what are the monetary aggregates?

6.3 Outline the differences between monetary policy tools, instruments and goals.

6.4 Why are OMOs the most popular monetary policy tool?

6.5 What is the Bank of England official rate?

6.6 Explain the meaning and limitations of the 'instruments of portfolio constraint'.

6.7 Discuss the key issues in the transmission of monetary policy. Briefly explain the channels through which monetary policy actions impact the economy.

6.8 Outline the advantages and disadvantages of discretion versus fixed-rules in monetary policy. Focus on the time inconsistency problem.

6.9 Define the unconventional monetary policy tools. What is quantitative easing?

6.10 What are forward guidance and negative interest rate policies?

6.11 Explain the lender of last resort function. Why is it controversial?

6.12 What are the arguments for and against an independent central bank?

Chapter 7

Bank regulation and supervision

Learning objectives

- To understand the rationale for financial regulation
- To appreciate different types of regulation
- To understand the elements of the financial safety net
- To understand the limitation and costs of regulation
- To understand the causes for regulatory reform
- To understand bank capital regulation
- To understand the increased importance of the international dimension

7.1 Introduction

The regulation of financial markets in general, and of banking institutions in particular, is considered a controversial issue. The financial sector is one of the most heavily regulated sectors in the economy and banking is by far the most heavily regulated industry. In Chapter 1, we presented some of the reasons why banks are considered 'special', outlined the existence of market imperfections (such as information asymmetries, moral hazard and adverse selection) and noted how the existence of banks can help minimise such problems. In this chapter we note the pivotal role played by banks in the economy to understand the rationale for regulation (Section 7.2). We will discuss the aims and objectives and the different types of regulation in Section 7.3. Section 7.4 will discuss the elements of the financial safety net. The limitations of regulation and the possible reasons behind regulatory failure are discussed in Section 7.5. Section 7.6 reviews the causes of regulatory reform. International policy initiatives, such as the Basel Capital Adequacy Accords, are reviewed in Sections 7.7 to 7.12.

Before we discuss the rationale for regulation it is useful to introduce various terms that are often used to describe the regulatory environment. **Regulation** relates to the setting of specific rules of behaviour that firms have to abide by – these may be set through legislation (laws) or be stipulated by the relevant regulatory agency. **Monitoring** of these regulations refers to the process whereby the relevant authority assesses financial firms to evaluate whether these rules are being obeyed. **Supervision** is a broader term used to refer to the

general oversight of the behaviour of financial firms. In practice, one should note that these terms are often used interchangeably in general discussion of the regulatory environment.

7.2 The rationale for regulation

There is a vast body of financial regulation in existence. This is normally extended incrementally, frequently to close a loophole that some earlier fraud has exposed. Financial regulation is often (but not always) enacted in response to a crisis. For example, the Glass–Steagall Act (1933) introduced the separation of bank types according to their business (commercial and investment banking) and founded the Federal Deposit Insurance Corporation (FDIC) for insuring bank deposits in response to widespread bank failures and massive losses to bank customers. Figure 7.1 illustrates a broad timeline of some of the key milestones in financial regulation over the last two centuries.

Financial systems are prone to periods of instability. A number of financial crises around the world (South East Asia, Latin America and Russia) have brought about a large number of bank failures. Further, the 2007–2009 crisis and the widespread financial turmoil that it caused brought these issues to the fore once again. These occurrences, some argue, suggest a case for more effective regulation and supervision. Others attribute many of these crises, including the global financial crisis of 2007–2009, to the failure of regulation. Advocates of the so-called 'free banking' argue that the financial sector would work better without regulation, supervision and central banking.[1]

In the absence of government regulation, they argue, banks would have greater incentives to prevent failures. However, the financial services industry is a politically sensitive one and largely relies on public confidence. Because of the nature of their activities (illiquid assets and short-term liabilities), banks are more prone to troubles than other firms. Further, because of the interconnectedness of banks, the failure of one institution can immediately affect others.

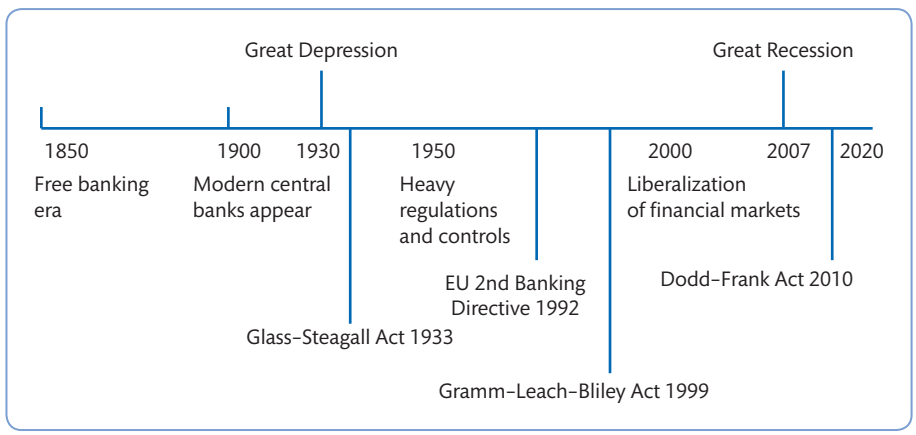


Figure 7.1 A timeline of financial regulation

[1] See Chapter 6 for more discussion on free banking.

This is known as bank **contagion** and may lead to **bank runs**. Banking systems are vulnerable to **systemic risk**, which is the risk that problems in one bank will spread through the whole sector (bank failures and financial crises will be analysed in detail in Chapter 8).

Bank runs occur when a large number of depositors, fearing that their bank is unsound and about to fail, try to withdraw their savings within a short period of time. A bank run starts when the public begins to suspect that a bank may become insolvent. This creates a problem because banks keep only a small fraction of deposits in cash – they lend out the majority of deposits to borrowers or use the funds to purchase other interest-bearing assets. When a bank is faced with a sudden increase in withdrawals, it needs to increase its liquidity to meet depositors' demands. Banks' reserves may not be sufficient to cover the withdrawals and banks may be forced to sell their assets. Banks' assets (loans) are highly illiquid in the absence of a secondary market and if banks have financial difficulties they may be forced to sell loans at a loss (known as 'fire-sale' prices in the United States) in order to obtain liquidity. However, excessive losses made on such loan sales can make the bank insolvent and bring about bank failure.

Bank loans are highly illiquid because of information asymmetries: it is very difficult for a potential buyer to evaluate customer-specific information on the basis of which the loan was agreed. The very nature of banks' contracts can turn an illiquidity problem (lack of short-term cash) into insolvency (where a bank is unable to meet its obligations – or to put this differently – when the value of its assets is less than its liabilities).

In summary, regulation is needed to ensure consumers' confidence in the financial sector. The main reasons for financial sector regulation can be summarised as follows:

- to ensure systemic stability;
- to ensure the safety and soundness of individual financial institutions;
- to provide smaller, retail clients with protection, and to protect consumers against monopolistic exploitation.

Systemic stability is one of the main reasons for regulation, as the social costs of bank failure are greater than the private costs. Financial stability has become a common term since the 2007–2009 financial crisis. While definitions might differ, at the core, financial stability implies that the financial system – which includes financial intermediaries, markets and market infrastructures – is capable of withstanding shocks, whatever the origin of such shocks, without major disruption to the real economy. The second concern is to maintain the safety and soundness of individual financial institutions. This concern is at the core of **microprudential regulation**, which relies on the view that if banks do not take excessive risks, the financial system will be safe and the real economy will not suffer from a financial crisis. However, this approach failed during the global financial crisis because it ignored systemic risk. The final concern relates to **consumer protection**. In financial markets *caveat emptor* (a Latin phrase meaning 'Let the buyer beware') is not considered adequate, as financial contracts are often complex and opaque. The costs of acquiring information are high, particularly for small, retail customers. Consumer protection is a particularly sensitive issue if customers face the loss of their lifetime savings. Finally, regulation serves the purpose of protecting consumers against the abuse of monopoly power in product pricing. Table 7.1 illustrates the objectives, the reasons, the economic rationale and the costs of financial regulation. The case for regulation depends on various market imperfections and failures, which, in absence of regulation, produce sub-optimal results and reduce consumer welfare. The purpose of regulation should be limited to correcting for identified market imperfections and failures.

Table 7.1 Bank regulation: key concepts

Objectives	Reasons	Rationale	Costs
Sustain systemic stability	Key position of banks in the financial system	Market failures and imperfections	Moral hazard
Maintain the safety and soundness of financial institutions	Consumer demand	Potential systemic problems	Agency capture
Protect consumer		Monitoring of financial firms	Compliance costs Costs of entry/exit
		Ensuring consumers' confidence	Control over products/ activities/prices

7.3 Types of regulation

It is possible to identify three different types of regulation:

- systemic (or macro-prudential) regulation;
- prudential (or micro-prudential) regulation;
- conduct of business regulation.

7.3.1 Systemic (macro-prudential) regulation

In response to the lessons of the global financial crisis, **macro-prudential regulation** is now a key financial policy area. Macro-prudential regulation aims to mitigate risk to the financial system as a whole and uses primarily prudential tools to limit systemic risk and to mitigate its effects on the real economy.

The macro-prudential approach is 'top-down': common exposures among institutions and correlations are important. More specifically, macro-prudential policies have two main objectives:

- to strengthen the resilience of the financial system; and
- to limit the build-up of systemic financial risks.

Macro-prudential policies focus on the interaction between the financial institutions, markets, infrastructure and the wider economy. In addition, macroprudential policies aim to ensure that large, systemically important financial institutions (SIFIs) are subject to more stringent prudential requirements and supervision than smaller players. This is because the potential failure of such institutions would have more serious consequences to the financial system and the economy as a whole (see also Chapter 8). Prudential regulations target individual institutions, regardless of the institution's impact on the financial system as a whole, and tend to apply uniformly across all institutions in the financial system, regardless of the prevailing macroeconomic conditions at any given point in time: the micro-prudential approach assumes that the sources of risk are exogenous and independent of the collective impact of the interactions between individual institutions. Importantly, prudential guidelines apply to regulated entities (i.e. banks) and do not often cover other financial institutions.

However, macro-prudential policies aim to address the system as a whole. In this context, a macro-prudential policy framework would simultaneously consider both the cross-sectional dimension (i.e. the concentration of risks in the financial system) as well as the time-dimension aspects (i.e. the build-up of risk over time).

Macro-prudential regulation has three key dimensions:

- *Time dimension*: relates to policies designed to prevent the excessive build-up of risk, resulting from external factors and market failures, to smooth the financial cycle.
- *Cross-sectional dimension*: relates to policies designed to make the financial sector more resilient and limit contagion effects.
- *Structural dimension*: relates to policies designed to encourage a system-wide perspective in financial regulation to create the right set of incentives for market participants.

Macro-prudential supervision is concerned with the aggregate effect of individual banks' actions. Because it aims to generate an overall picture of the functioning of the financial sector, macro-prudential supervision is also referred to as 'top-down supervision'.

Under the heading of macro-prudential regulation, we also consider all public policy regulation designed to minimise the risk of bank runs that goes under the name of the **financial safety net**. In particular, the safety net encompasses two main features – **deposit insurance** arrangements and the **lender of last resort** (LOLR) function:

- Deposit insurance is a guarantee that all or part of the amount deposited by savers in a bank will be paid in the event that a bank fails.
- The LOLR function is one of the main functions of a central bank. The central bank, or other central institution, will provide funds to banks that are in financial difficulty and are not able to access any other credit channel. A more detailed discussion of the functions of central banks was presented in Chapter 6. Through the LOLR mechanism, the authorities can provide liquidity to the banking sector at times of crises.

7.3.2 Prudential regulation

Prudential regulation is mainly concerned with consumer protection. It relates to the monitoring and supervision of financial institutions, with particular attention paid to asset quality and **capital adequacy**. The case for prudential regulation is that consumers are not in a position to judge the safety and soundness of financial institutions due to imperfect consumer information and agency problems associated with the nature of the intermediation business.

- *Micro-prudential regulation* – the objective of micro-prudential regulation is to limit the distress of individual financial institutions. The micro-prudential regulatory approach is 'bottom up' – in this context correlations and common exposure across institutions are of secondary importance. Micro-prudential supervision checks that individual financial firms are complying with financial regulation and involves the collection and analysis of information about the risks that the firms take, their systems and their personnel. Because micro-prudential supervision uses firm-specific information to generate a picture of risk and its management, it is also referred to as 'bottom-up supervision'.

- *Conduct of business regulation* – this focuses on how banks and other financial institutions conduct their business. This kind of regulation relates to information disclosure, fair business practices, competence, honesty and integrity of financial institutions and their employees. Overall, it focuses on establishing rules and guidelines to reduce the likelihood that:
  - consumers receive bad advice (possible agency problem);
  - supplying institutions become insolvent before contracts mature;
  - contracts turn out to be different from what the customer was anticipating;
  - fraud and misrepresentation take place;
  - employees of financial intermediaries and financial advisors act incompetently;
  - insider trading takes place;
  - money will be laundered.

7.3.3 Micro- and macro-prudential policies

Micro- and macro-prudential policies usually complement each other in pursuit of their respective goals. For example, the safety and soundness of individual institutions is a necessary, though not sufficient, condition for systemic stability. Similarly, a stable system contributes to the health of individual institutions. However, conflict might occur because of overlapping policy mandates and the way in which policies are applied. Both micro-prudential and macro-prudential authorities might use the same policy instruments, but they have different objectives. For example, both use buffers (capital and liquidity), but micro-prudential policy adjusts capital based on individual institutions' risks, while macro-prudential policy adjusts overall levels of capital based on the financial cycle and systemic relevance to guard against systemic risk build-up (Osiński *et al.*, 2013). Table 7.2 summarises the main policy toolkits.

Table 7.2 Micro- and macro-prudential policy tools

Instrument	Micro-prudential	Macro-prudential
Capital risk weights	Yes	Yes
Pillar 2 capital requirements	Yes	Yes
Countercyclical capital buffer	No	Yes
Capital conservation buffer	Yes	No
Systemic capital surcharge	No	Yes
Dynamic provisioning	Yes	Yes
Leverage ratio	Yes	Yes
Large exposure limits	Yes	Yes
Loan-to-value limits	Yes	Yes
Debt-to-income limits	Yes	Yes
Foreign exchange limits	Yes	Yes
Liquidity requirements	Yes	Yes
Risk management standards	Yes	No
Licensing standards	Yes	No

7.4 The financial safety net

One of the consequences of the 2007–2009 global financial crisis is that more attention is now being paid to financial regulation, and that holds true both regarding the protection of the stability of individual banks (micro-prudential regulation) as well as the system overall (macro-prudential regulation). A financial safety net is a comprehensive system for enhancing and ensuring a country's financial stability. It often consists of five elements (see Figure 7.2), which complement and strengthen each other (Bernet and Walter, 2009):

- regulation and supervision;
- deposit insurance schemes;
- lender of last resort;
- bank insolvency/resolution laws;
- co-operation and resolution processes.

7.4.1 Deposit insurance

As mentioned, deposit insurance is a guarantee that all or part of the amount deposited by savers in a bank will be paid in the event that the bank fails. The guarantee may be either explicitly given in law or regulation, offered privately without government backing or may be inferred implicitly from the verbal promises and/or past actions of the authorities. The level and coverage of deposit insurance is country specific. In some countries there are no statutory rules regarding the eligibility of bank liabilities, the level of protection provided or the form which reimbursement will take. The United States was the second country (after

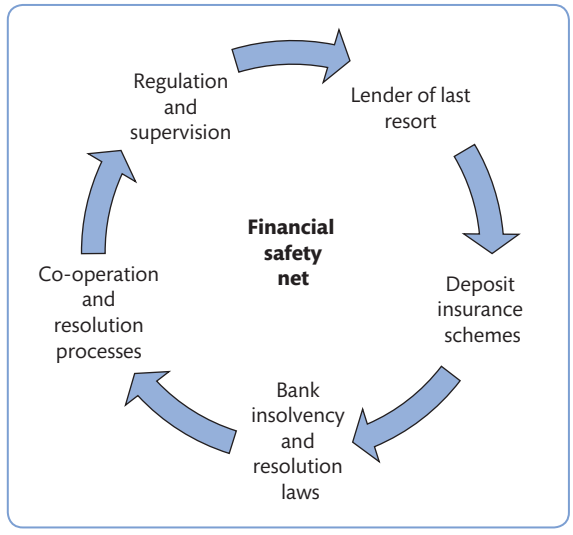


Figure 7.2 Elements of the financial safety net

Source: Adapted from Bernet and Walter (2009).

Czechoslovakia) to introduce deposit insurance in the 1930s; a substantial number of countries adopted deposit insurance schemes/systems (DIS) between 1970 and 2011.[2]

According to the International Association of Deposit Insurers (IADI), 146 countries had deposit insurance schemes in place in 2020, up from 111 in 2011. In Europe, the first EU Directive on deposit guarantee schemes was issued in 1994 (Directive 94/19/EC), setting minimum levels of deposit insurance that had to be in place. A number of countries did not have an explicit DIS in the run up to the 2007–2009 global financial crisis: for example, Australia, China, Saudi Arabia and South Africa, among others, had no explicit deposit protection systems.

Figure 7.3 illustrates a timeline of the introduction of DIS across the world – we can see that most countries set up their own schemes in the 1990s and 2000s, although several did so only after the financial crisis.

The crisis also exposed some fundamental weaknesses in the deposit insurance schemes operating at the time. In addition, for a number of years the IMF and the World Bank have been posing questions concerning the adjustment of deposit insurance schemes to the rapidly changing national and international conditions of financial markets. In nearly all countries hit by the crisis, there began a fundamental revision of the existing deposit insurance schemes. The financial crisis also caused a range of other supranational institutions to concern themselves with questions relating to the structure and implementation of national deposit insurance schemes. A report by the Financial Stability Forum (FSF) in early 2008 stressed the necessity of internationally recognised basic principles and conditions for the structure of deposit insurance schemes (FSF, 2008). In response, in the summer of 2008, the Basel Committee on Banking Supervision (BCBS), together with the IADI, issued the revised version of the so-called 'Core principles for effective deposit insurance systems'. The

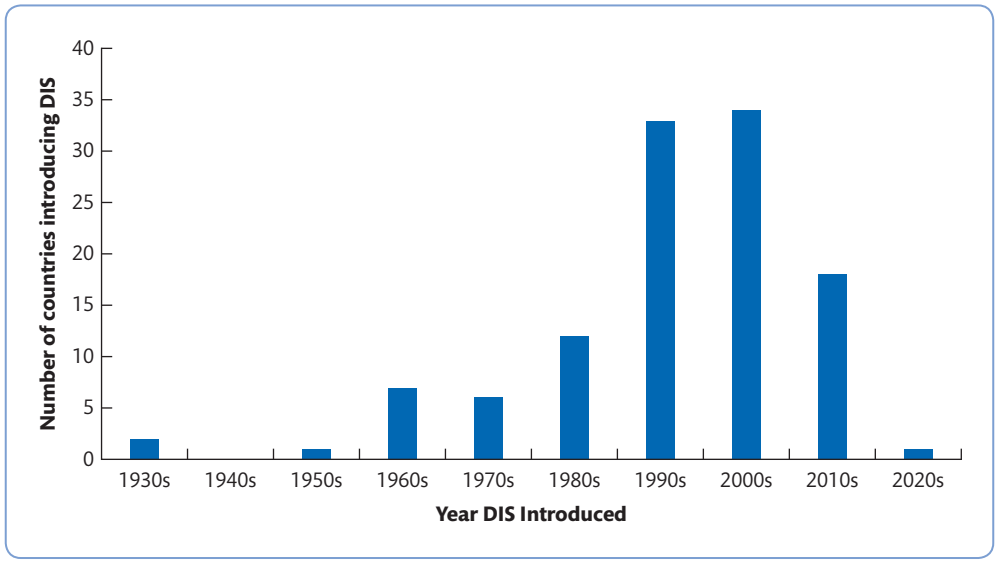


Figure 7.3 A timeline of DIS introduction

Source: Authors' elaborations. Data from The World Bank. Deposit Insurance Dataset. Available at https://datacatalog.worldbank.org/dataset/deposit-insurance-dataset

[2] The Federal Deposit Insurance Corporation (FDIC) was created in 1933 in response to the thousands of bank failures that occurred in the 1920s and early 1930s.

results of this work – a set of 18 principles in total, which together define the target function of a modern deposit insurance scheme – were presented in the summer of 2009. Since then, IADI has been collaborating with the BCBS, the European Forum of Deposit Insurers (EFDI), the IMF, the World Bank and the European Commission (EC) to develop a robust methodology to assess compliance with the Core Principles. A final version of the Core Principles was submitted to the Financial Stability Board in December 2010 (Basel Committee on Banking Supervision and International Association of Deposit Insurers, 2010).[3] These Core Principles are intended as a voluntary framework for effective deposit insurance practices. National authorities are free to put in place supplementary measures that they deem necessary to achieve effective deposit insurance in their jurisdictions. The Core Principles (summarised in Box 7.1) are not designed to cover all the needs and circumstances of every deposit insurance system or prescribe a single specific form of deposit insurance but are designed to be adaptable to a broad range of country circumstances, settings and structures. Following the development of the Core Principles and their assessment methodology, the FSB agreed to undertake a peer review of deposit insurance systems in 2011. While the original Core Principles served their purpose well in terms of helping jurisdictions assess their deposit insurance systems and identify areas for improvement, efforts were made to improve compliance, maintain continuity and increase. As a result, a revised set of Core Principles was published in 2014.

BOX 7.1 CORE PRINCIPLES FOR EFFECTIVE DEPOSIT INSURANCE SYSTEMS

1. Public policy objectives
2. Mandate and powers
3. Governance
4. Relationship with other safety net participants
5. Cross-border issues
6. Deposit insurer's role in contingency planning and crisis management
7. Membership
8. Coverage
9. Sources and uses of funds

[3] The Financial Stability Board (FSB) was established in April 2009 as the successor to the Financial Stability Forum (FSF). The FSF was founded in 1999 by the G7 finance ministers and central bank governors. In November 2008, the leaders of the G20 countries called for a larger membership of the FSF. In April 2009 an expanded FSF was re-established as the FSB with a broadened mandate to promote financial stability. The FSB member institutions are the central banks and/or Treasuries (or equivalent government departments) from the following countries: Argentina, Australia, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Indonesia, Italy, Japan, Mexico, the Netherlands, Republic of Korea, Russia, Saudi Arabia, Singapore, South Africa, Spain, Switzerland, Turkey, United Kingdom and United States. It also includes the following international organisations: Bank for International Settlements, European Central Bank, International Monetary Fund, Organisation for Economic Co-operation and Development and the World Bank. In addition, the following international standard-setting bodies are also members: Basel Committee on Banking Supervision, Committee on the Global Financial System, Committee and Payment and Settlement Systems, International Association of Insurance Supervisors, International Accounting Standards Board and the International Organization of Securities Commissions.

Box 7.1 Core principles for effective deposit insurance systems (*continued*)

10 Public awareness
11 Legal protection
12 Dealing with parties at fault in a bank failure
13 Early detection and timely intervention and resolution
14 Effective resolution processes
15 Reimbursing depositors
16 Recoveries

Source: **www.iadi.org/en/core-principles-and-research/core-principles/**

An explicit DIS is considered preferable to implicit protection if it clarifies the authorities' obligations to depositors and limits the scope for discretionary decisions that may result in arbitrary actions. A DIS should cover all those deposits that can lead to a liquidity problem for a bank; these include all kind of saving accounts and short-term deposits held by private individuals and business customers (excluding financial institutions). In the European Union, deposits are defined in Article 1(1) of Directive 94/19/EC. In 2008, the need to restore confidence in the financial sector was vital and the European Commission put forward a revision of EU rules to promote convergence of deposit guarantee schemes within member states in order to improve depositor protection, including increased level of coverage for deposits (from €20,000 to €100,000), the removal of co-insurance (i.e. where the depositor bears part of the losses) and the reduction of the payout period from three months to three days. These proposals were adopted by the European Council in February 2009. However, the evolution of the eurozone crisis highlighted the need for more drastic improvements, leading to the creation of a Single Deposit Guarantee Scheme (SDGS). The EU SDGS deal is discussed in Section 14.4.5.

In general terms, the deposits that are repayable by the DIS are called eligible deposits. Not all eligible deposits are repayable, as some countries apply a coverage limit. For example, in the UK if a bank, building society or credit union were to default, the Financial Services Compensation Scheme (FSCS) would automatically refund savings up to £85,000 (up to £170,000 for joint accounts). According to the FSCS, around 98 per cent of the UK population have less than £85,000 in savings and are therefore covered by the protection limit. The level of deposit protection in the EU is harmonised at €100,000 (or equivalent amount in the local currency).

A lesson from the 2007–2009 financial crisis is that a low level of coverage can increase financial instability. While a high level of coverage might reduce the incentive of depositors to run, it also reduces market discipline. The Core Principles do not prescribe a preferred coverage level. However, they suggest that limits should be set so that the vast majority of small-scale retail depositors are covered in full (so they have no incentive to run) but that a significant portion of the value of total deposit liabilities remains uncovered and exposed to market discipline.

To contribute effectively to the stability of a country's financial system a DIS needs to be: (i) credible; (ii) properly designed; (iii) well implemented and understood by the public; (iv) supported by strong prudential regulation and supervision; (v) supported by sound accounting and disclosure regimes; and (vi) supported by the enforcement of effective laws (Bernet and Walter, 2009; Adema *et al*., 2019).

It is necessary to point out that a deposit insurance system can deal with a limited number of simultaneous bank failures, but cannot be expected to deal with a systemic banking crisis. The practical organisation of a DIS is country-specific; it can be either private or public, depending on a country's legal circumstances.

7.4.1.1 Types of deposit insurance schemes

There are different types of deposit insurance schemes, of which the most common are the following:[4]

- the paybox model;
- the cost reducer model (or loss minimiser);
- the resolution facilitator model;
- the supervisor model (or risk minimiser).

In the *paybox model* the role of the deposit insurance institution is narrowly based and limited to a settlement function (i.e. limited to paying out the depositors and ensuring an orderly settlement of all claims). A number of countries adopt this narrow mandate, including Australia, Germany, Hong Kong, India, the Netherlands, Singapore and Switzerland. The UK (together with Argentina and Brazil) adopts a so-called 'paybox plus' model, where the deposit insurer has some additional responsibilities, such as a resolution function.

In the *cost reducer model*, the deposit insurance institution retains the settlement function of the paybox model and, in addition to it, takes on the role of handling any occurrence of insolvency in an insured institution with the lowest possible costs and externalities for the financial system. Nine countries adopt this loss-minimiser approach, where the deposit insurer is tasked with pursuing the least-cost resolution strategy: Canada, France, Indonesia, Italy, Japan, Mexico, Russia, Spain and Turkey.

In the *resolution facilitator model*, the deposit insurance institution has additional powers: it can intervene to support a bank in difficulties (but not an illiquid or insolvent bank); it can facilitate a corporate restructuring or even a merger in order to protect depositors.

Finally, in the *supervisor model*, the deposit insurance institution has a broad mandate, as it is part of the supervisory system (for example, the Federal Deposit Insurance Corporation (FDIC) in the US and the Korean Deposit Insurance Corporation, KDIC).

Following the 2007–2009 financial crisis, the mandates of many deposit insurers have been revised and expanded and many countries have adopted versions of the 'cost minimiser' approach. The financial crisis also illustrated that depositors' confidence depended, in part, on knowing that adequate funds would always be available to ensure the prompt reimbursement of their claims (Core Principle 11). While the primary responsibility for paying the cost of deposit insurance should be borne by banks, adequate emergency funding arrangements were also considered important (FSB, 2012d). The main issues policy makers have to address in relation to the funding of a DIS is whether it should be funded *ex ante* (where a fund it set up so that it can be drawn upon to secure payments) or *ex post* (where there is no fund and the participants in the DIS will be required to contribute in the event of a claim). Both *ex-ante* and *ex-post* funding have a number of advantages and disadvantages. *Ex post* funding fosters

[4] For a detailed discussion of different types of deposit insurance, see Bernet and Walter (2009) and Adema *et al*. (2019).

market discipline, as banks have an incentive to monitor each others' activities. However, there may be delays when the funds are needed. In addition, requests for contributions to the DIS may come at a time of economic instability, triggering a domino effect of bank failures.

Ex-ante financing, meanwhile, might boost public confidence, smooth premium payments and reduce moral hazard if it incorporates risk adjusted premiums (see Box 7.2 for a discussion of how safety net arrangements can increase moral hazard). Drawbacks of setting up an insurance fund *ex ante* include the difficulty in establishing and managing a fund of adequate size to guarantee deposits of large financial institutions. In addition, while depositors seem to have a clear preference for a DIS based on *ex-ante* financing, this type of funding requires the definition of a deposit insurance premium. The key unanswered questions in this context are how to price the deposit insurance premiums; how to arrive at a 'fair' premium; what the premium should cover and how to incorporate systemic risk in the deposit insurance premiums.

The investigation of risk-based models for computing contributions of DIS members has become a crucial goal for regulators in the aftermath of the global financial crisis. For example, the European Commission Joint Research Centre, in co-operation with the European Forum of Deposit Insurers (EFDI), has investigated potential models and assessed their potential impact across EU member states (European Commission, 2009). In addition, the Financial Stability Board (2012c) has undertaken a comprehensive review of the reforms carried out to ensure depositors protection as well as the structure of possible arrangements going forward. Table 7.3 presents a cross-country comparison of deposit insurance systems

Table 7.3 DIS cross-country comparison

Country	Coverage level (US$)[1]	Public policy objectives formalised	Admin	Multiple agencies/ systems	Type/ mandate	Type/ funding
Argentina	7,545	In law	Private	No	Paybox Plus	*Ex ante*
Australia	1,016,300	In annex to law	Public	No	Paybox	*Ex ante*
Brazil	42,000	In statutes	Private	Yes	Paybox plus	*Ex ante*
Canada	100,000	In law	Public	Yes	Loss minimiser	*Ex ante*
France	136,920	In law and regulation	Mixed	No	Loss minimiser	*Ex ante*
Germany	136,920	In law	Mixed	Yes	Paybox	*Ex ante*
Hong Kong	64,000	In law	Public	No	Paybox	*Ex ante*
India	2,240	Preamble of law, annual report	Public	No	Paybox	*Ex ante*
Indonesia	235,294	In law	Public	No	Loss minimiser	*Ex ante*
Italy	136,920	In law	Private	Yes	Loss minimiser	*Ex ante*
Japan	122,775	In law	Mixed	Yes	Loss minimiser	*Ex ante*
Korea	43,902	In law	Public	No	Risk minimiser	*Ex ante*
Mexico	146,606	In law	Public	No	Loss minimiser	*Ex ante*
Netherlands	136,920	In law	Public	No	Paybox	*Ex post*
Russia	23,064	In law	Public	No	Loss minimiser	*Ex ante*
Singapore	38,835	Ministerial statement, preamble of law	Public	No	Paybox	*Ex ante*
Spain	136,920	In law	Private	No	Loss minimiser	*Ex ante*

Table 7.3 continued

Country	Coverage level (US$)[1]	Public policy objectives formalised	Admin	Multiple agencies/ systems	Type/ mandate	Type/ funding
Switzerland	96,830	In law and statutes	Private	No	Paybox	*Ex post*
Turkey	32,341	In law	Public	No	Loss minimiser	*Ex ante*
UK	133,068	In law and statutes	Public	No	Paybox plus	*Ex post*
US	250,000	In law	Public	Yes	Risk minimiser	*Ex ante*

Notes: [1]Using the exchange rate as of end-2010.
Source: The information shown in this table is collated from different tables in Annex C of the Thematic Review on Deposit Insurance Systems, Financial Stability Board (2012d).

features. Overall, explicit deposit insurance is widely adopted across the world and is now a standard policy of bank regulators and supervisors. The 2007–2009 global financial crisis has reinforced the importance of deposit insurance in promoting stability and its role in the overall financial safety net provided to the banking sector (Anginer *et al.*, 2019).

7.4.2 Lender of last resort

The lender of last resort function is typically one of the main functions of a central bank (see Section 6.5.1). The central bank, or other central institution, will provide funds to banks that are in financial difficulty and are not able to access any other credit channel. Through the LOLR mechanism, the authorities can provide liquidity to the banking sector at times of crises. The lender of last resort normally operates at the domestic level. The growing internationalisation of banking institutions and the banking and financial crises have raised the issue of an international lender of last resort. However, there is little agreement on the desirability of such cross-country deposit insurance institution. In the case of a global scheme it is not clear whether it would be appropriate for the IMF to play such a role. However, a number of elements of a global financial safety net are at various stages of approval (the IMF, for example, has introduced a new precautionary line of credit and improved its existing flexible line of credit for countries that meet a rigorous set of criteria). The IMF publishes a *Global Financial Stability Report*, which examines current risks facing the global financial system and highlights policy actions that may mitigate these (see also Chapter 8).

7.4.3 Bank insolvency and resolution laws

As a part of the regulation specific to the financial industry, bank insolvency and resolution laws refer to the legal provisions that regulate the conditions for the handling of bank failures and insolvencies. Bankruptcy laws applicable for general types of companies are generally not suited for balancing or preventing the negative externalities to the real economy triggered by bank insolvency. For this reason, most countries have enforced a bankruptcy law or insolvency regime aimed specifically at banks and financial institutions (Bernet and Walter, 2009). These are also known as special resolution regimes (SRR). The design and implementation of bank insolvency regulations is subject to strong political influence and there is a wide range of approaches adopted in EU countries and elsewhere. Since the onset of the global financial crisis in 2007, many countries have enacted major regulatory reforms to develop new, or

revise existing resolution regimes. In the UK, the Banking Act of 2009 created an SRR that gives the UK authorities (HM Treasury, Bank of England and Prudential Regulation Authority) a permanent framework, providing them with tools for dealing with failing UK banks, building societies and certain investment firms.[5] The Act also gave the Bank of England a key role in implementing a resolution using statutory resolution tools. The PRA, in consultation with the Bank of England and the Treasury, makes the decision to put a bank into the SRR. A number of regulatory authorities then play a role in the SRR. HM Treasury decides whether to put a bank into temporary public ownership. If a bank is not temporarily nationalised, the Bank of England, in consultation with the other authorities, decides which of the tools to use and implements the resolution. This work is done by the Special Resolution Unit (SRU) within the Bank of England. The SRU was established in February 2009 to specifically deal with distressed banks and building societies. The Financial Services Compensation Scheme (FSCS) also has a role in the SRR, paying out depositors covered by its depositor compensation scheme and its funds may be used also to support a non-payout resolution provided that is no more costly to the FSCS, net of recoveries, than a payout.

The 2009 UK Banking Act sets out five key objectives that must be considered in choosing which resolution tools to use (Bank of England, 2017):

- protect and enhance financial stability;
- protect and enhance public confidence in the financial system's stability;
- protect public funds;
- protect depositors and investors covered by the FSCS;
- protect (where relevant) client assets;
- avoid interfering in property rights.

In the United States and Canada, the Federal Deposit Insurance Corporation (FDIC) and the Canada Deposit Insurance Corporation (CDIC) are subject to least-cost resolution (LCR) requirements, whereby they must adopt the resolution method which costs the least to the deposit insurance fund regardless of other objectives (although these requirements can be overridden in circumstances that trigger 'financial stability exceptions'). Some countries specify public interest objectives in their SRRs, including New Zealand and Hong Kong. Other countries, for example EU countries, do not specify financial stability of public interest objectives in the legislation relating to the resolution of failing banks.

In the EU, a Single Resolution Mechanism (SRM) was established in 2013 in the context of the creation of the Banking Union (see Chapter 14). The SRM regulation builds on the 'Rulebook on bank resolution' set out in the 2013 **Bank Recovery and Resolution Directive (BRRD)**; it comprises establishing a Single Resolution Board (SRB) and a Single Bank Resolution Fund (SRF); these are discussed in Section 14.4.4. The harmonisation of the EU legislation in this area should ensure that future bank failures could be managed with minimal disruption for financial stability and public finances. Given the present diversity in European resolution legislation and practice (see Table 7.4) this seems a necessary step forward for the EU banking systems. Even outside the EU, the growing internationalisation of banking requires a closer co-operation of national deposit insurance institutions, regulators and resolution authorities.

Table 7.4 illustrates the administrative authority responsible for restructuring banks in a number of countries. There are substantial cross-country differences, in terms of scope,

[5] In 2014, the resolution regime was extended to include central counterparties (CCPs).

mandates and powers of authorities, which reflect differences in the regulatory environment. While there is no preferred resolution regime, there are significant divergences and inconsistencies that make the resolution of internationally active banks extremely difficult. To address some of these issues, the Basel-based Financial Stability Board (2011a), in consultation with relevant standard-setting bodies, published 'Key attributes of effective resolution regimes for financial institutions' as part of the package of policy measures to address the moral hazard risks posed by systemically important financial institutions (SIFIs).

Table 7.4 Bank resolution authorities: a cross-country comparison

	Resolution authority				
Country	**Central bank and banking supervisor**	**Banking supervisor**	**Deposit insurance and bank resolution agency**	**Integrated financial regulator**	**Public agency/ government authority**
Argentina	Banco Central de la Republica Argentina (BCRA)				
Australia				Australian Prudential Regulation Authority (APRA)	
Brazil	Banco Central do Brasil (BCB)				
Canada			Canada Deposit Insurance Corporation (CDIC)		
China	People's Bank of China(PBC)	China Banking Regulatory Commission (CBRC)			
France		Autorité de contrôle prudentiel (ACP)			
Germany				Federal Financial Supervisory Authority	Federal Agency for Financial Market Stabilisation (FMSA)
Hong Kong					Hong Kong Monetary Authority (HKMA)
India	Reserve Bank of India (RBI)				
Indonesia	Financial System Stability Forum, within Bank Indonesia		Indonesia Deposit Insurance Corporation (IDIC)		
Italy	Bank of Italy				
Japan				Financial Services Agency (FSA)	

Table 7.4 continued

Country	Resolution authority				
	Central bank and banking supervisor	Banking supervisor	Deposit insurance and bank resolution agency	Integrated financial regulator	Public agency/ government authority
Korea			Korea Deposit Insurance Corporation (KDIC)	Financial Services Commission Financial Supervisory Service	
Mexico			Instituto para la Protección al Ahorro Bancario (IPAB)		
Netherlands	De Nederlandsche Bank (DNB)				Dutch Ministry of Finance[1]
Russia	Central Bank of The Russian Federation (CBR)		Deposit Insurance Agency		
Saudi Arabia	Saudi Arabian Monetary Agency (SAMA)				
Singapore				Monetary Authority of Singapore (MAS)	
South Africa	Registrar of Banks, within South Africa Reserve Bank				
Spain	Bank of Spain		Fondo de reestructuración ordenada bancaria (FROB)		
Switzerland				Swiss Financial Market Supervisory Authority (FINMA)	
Turkey		Banking Regulation and Supervision Agency	Savings Deposit Insurance Fund		
UK	Bank of England (BoE)				HM Treasury[2]
US	Federal Deposit Insurance Corporation (FDIC)[3]				

Notes: [1] The Dutch Ministry of Finance is given resolution powers if the failure of a financial institution (or its parent firm) presents an immediate and serious threat to financial stability in the Netherlands.

[2] The UK HM Treasury is the relevant authority only in the case of temporary public ownership.

[3] The OCC (Office of the Comptroller of the Currency) may appoint a receiver for a federally licensed branch of a foreign bank.

Source: Collated from 'Thematic review on resolution regimes', Financial Stability Board (2013a).

In 2014, the FSB adopted additional guidance that elaborates on specific key attributes (KAs) relating to information sharing for resolution purposes and sector-specific guidance that sets out how the KAs should be applied for insurers, financial market infrastructures (FMIs) and the protection of client assets in resolution (FSB, 2014). The KAs set out the core elements of effective resolution regimes that apply to any financial institution that could be systemically significant or critical if it fails. Their implementation should allow authorities to resolve financial institutions in an orderly manner, without taxpayer exposure to loss from solvency support, while maintaining continuity of their vital economic functions. They set out essential features in 12 areas that should be part of the resolution regimes of all jurisdictions, which relate to:

1. scope of the resolution regime;
2. resolution authority (existence, mandate and governance);
3. resolution powers;
4. legal framework governing set-off rights, contractual netting, collateralisation arrangements and segregation of client assets;
5. the existence of safeguards;
6. funding arrangements to support the resolution of firms;
7. legal framework conditions for cross-border co-operation;
8. crisis management groups (CMGs);
9. institution-specific cross-border co-operation agreements (COAGs) – these mainly apply to global systemically important financial institutions (G-SIFIs);
10. resolvability assessments;
11. recovery and resolution planning;
12. access to information and information sharing.

7.4.4 Co-operation and resolution processes

Finally, the viability of a safety net in case of crisis also depends on efficient communication and co-operation between all network elements (see Figure 7.2). This requires appropriately standardised and clearly regulated processes that at best are also internationally harmonised. The 2007–2009 global financial crisis highlighted the need for further work in this area, as information exchange and a co-ordinated decision-making process have proven difficult at the national level, let alone internationally.

7.5 Limitations of regulation

So far, we have highlighted the case for financial regulation, which depends mainly on various market imperfections and failures (information asymmetries, agency problems, etc.), which, in the absence of regulation, would produce sub-optimal results and reduce consumer welfare. As a consequence, the purpose of regulation should be limited to correcting for identified market imperfections and failures. There are, however, a number of arguments against regulation.

Regulatory arrangements, in particular the 'safety net' arrangements create moral hazard. The concept of moral hazard was introduced in Chapter 1. Deposit insurance and the LOLR can cause people to be less careful than they would be otherwise. For example, with 100 per cent deposit insurance, depositors will not be concerned about the behaviour of their bank. Similarly, the belief that the LOLR will eventually bail out troubled banks may encourage institutions to take greater risks in lending. Box 7.2 illustrates these concepts. Other examples of the moral hazard caused by the **government safety net** are known as the **too big to fail** (TBTF) and the **too important to fail** (TITF) cases. Because the failure of a large (or strategically important) bank poses significant risks to other financial institutions and to the financial system as a whole, policy makers may respond by protecting bank creditors from all or some of the losses they otherwise would face. If managers of large (or important) banks believe that they will be bailed out by the authorities (with taxpayers' money) if they get into financial difficulty then this increases the moral hazard incentives for big banks, resulting in banks taking on even greater risks to increase profits and executive remuneration. Executives may be less concerned about taking big risks if they know depositors and the bank will ultimately be protected by government bailouts if things go wrong.

BOX 7.2 MORAL HAZARD AND GOVERNMENT SAFETY NET ARRANGEMENTS

Financial regulation and supervision are needed because moral hazard can be associated with government safety net arrangements that are designed to protect the banking and financial system. For example, banks that face liquidity problems and cannot borrow from other banks in the market may approach the regulators to act as a lender of last resort in order to provide emergency liquidity assistance. This, in principle, seems a good thing as the authorities have a mechanism for providing liquidity to the banking system at times of crises. However, moral hazard arises in that if banks all believe they have access to the LOLR, they may be inclined to take on excessive risks knowing that in the event of trouble they will be bailed out by the authorities (in other words, the taxpayer, as these are public funds being used). To mitigate this moral hazard problem the authorities need to establish a regulatory framework that assures that access to the LOLR facility is by no means guaranteed for banks.

Linked to this is the too big to fail argument, whereby the largest banks are viewed as being too big to be allowed to fail and therefore they must have guaranteed access to the LOLR – which could cause moral hazard problems. No financial regulatory authority will ever provide guaranteed access to the LOLR financing, although history does tell us that (for systemic and other reasons) large banks are likely to be bailed out more than small banks. In addition, the too important to fail view argues that size by itself is not the relevant criteria for bailing out troubled banks – rather the significance or importance of banks in specific markets and the expected scale/impact of potential failure should be the main criteria in providing support.

Similar moral hazard issues relate to the design of appropriate deposit insurance and other investment (and insurance) compensation schemes. As noted earlier, if deposit insurance is too generous it creates incentives for banks to take on more risk as they know their customers' deposits will be protected in the event of a bank failure. Similar arguments can be put forward for other compensation schemes. Financial regulations need to be designed to reduce such possible moral hazards occurring; it is important to note that regulation can never eliminate all information asymmetries, but it can (and should) be formulated in order to minimise the potential adverse effects of such market failures.

Banks may also benefit from **regulatory forbearance**. Regulatory forbearance (or renegotiation) is an example of time inconsistency. Time inconsistency refers to the problem that it may not be optimal *ex post* (after an event occurs) to implement regulations that were optimal *ex ante* (before the event occurred). When financial intermediaries are in trouble, there may be pressures not to apply existing regulations, for example, to impose higher capital or liquidity requirements. This is because it could worsen the institution's problems. If the bank was allowed to fail, this could drain the deposit insurance fund. Furthermore, publicity surrounding a bank facing difficulties may worry the public, who may be induced to withdraw their savings, thereby aggravating the bank's problems (with a possible domino effect on other institutions leading to further bank failures). Also, there might be political costs associated with enforcing regulations and therefore an incentive to delay action. There are some benefits of forbearance. First, not publicising the bank's problems may help avoiding systemic risk caused by bank runs. In addition, the bank may be worth more as a 'going concern', that is, remaining in operation rather than going out of business and liquidating its assets. To stay operational, a bank must be able to generate enough resources. As we have seen, banks assets are highly illiquid and therefore their sale might not generate enough cash to satisfy creditors.

There are, however, costs associated with forbearance. First, it may cause moral hazard: forbearance in one case may lead to expectations of similar behaviour in future cases, causing other financial institutions to observe regulations less carefully. Furthermore, regulators and regulated firms may become locked into an ever-worsening spiral, resulting in a loss of public confidence in how banks and the financial system in general are being regulated.

Regulation can create problems of **agency capture** – that is, the regulatory process can be 'captured' by producers (in this case by banks and other financial institutions) and used in their own interest rather than in the interests of consumers. For example, some have argued that the Basel II Capital Accord had too much input from banking sector participants and large banks in particular. The Basel II capital rules allowed the largest banks to use their own internal models for assessing risk and capital adequacy positions – which are likely to have led the biggest banks to hold less capital for regulatory purposes (see also Section 7.10). The fact that major banks have had a strong say in devising regulations that govern their own operations is a possible indicator of agency capture.

Regulation is a costly business and the costs of compliance with the regulatory process will be passed on to consumers, resulting in higher costs of financial services and possibly less intermediation business. In addition, regulatory costs may act as a barrier to entry in the market and this may consolidate monopoly positions.

The notion of incremental **compliance costs** is set out in Alfon and Andrews (1999), p. 16 as follows:

> Compliance costs are the costs to firms and individuals of those activities required by regulators that would not have been undertaken in the absence of regulation. Thus the term 'compliance costs' as used here refers to the incremental costs of compliance caused by regulation, not to the total cost of activities that happen to contribute to regulatory compliance. Examples of compliance costs include the costs of any additional systems, training, management time and capital required by the regulator.

However, none of these criticisms are enough to reject financial regulation. Regulation is always about making judgements and considering trade-offs between costs and benefits. While it is important to recognise the limitations of regulation, a well-designed regulatory framework is necessary to ensure consumers' confidence in the financial sector. Although there are costs involved, there is also evidence that consumers and other users demand appropriate regulation: public pressure to introduce regulations may derive from the view that market solutions to regulations do not provide users with the appropriate reassurance that they are being protected appropriately.

7.6 Causes of regulatory reform

The scope and complexity of financial regulation has tended to grow almost continually. This has been partially in response to public reaction to financial scandals and the consequent political pressures generated (i.e. increased consumers demand for regulation). Another factor that can change regulations is financial innovation. As new financial products and services emerge and gain in market significance, there are often calls for new regulation – for instance, the US Federal Reserve in early 2005 called for greater regulation of hedge funds (which are private investment funds that trade and invest in various assets such as securities, commodities, currency and derivatives on behalf of their clients) due to their rapid growth and potentially destabilising activity. Similar examples can be given regarding the regulation of derivatives activity and other financial instruments. The global financial crisis of 2007–2009 attracted regulatory attention to innovations such as derivatives, off-balance-sheet vehicles, hedge funds, private equity firms, etc.

One of the reasons financial innovations tend to attract regulatory attention is that often the innovations are due to regulatory avoidance. In other words, financial firms and markets create new products not only to meet new demands but also to circumvent regulations. For example, the growth of off-balance-sheet activities (derivatives trading, securities underwriting, foreign exchange trading, and so on) during the first half of the 1980s can be explained by the fact that this business was not subject to capital regulations, in contrast to on-balance-sheet business. Similarly, the flow of US dollars to the United Kingdom during the 1960s and the start of the dollar Eurobond market has been explained mainly because restrictive regulations in the United States (reserve requirements, limits on deposit rates – Regulation Q, and other limits on United States domestic bond issues) encouraged dollars to flow to London and borrowers to raise dollar debt finance by issuing Eurobonds. Firms innovate to get around regulations and the regulators are always one step behind the market – this is known as the regulatory dialectic.

As mentioned earlier, other factors impacting on regulatory reform are internationalisation and globalisation trends. The increased international activity of financial firms means that foreign institutions play an increasing role in many domestic financial sectors. Throughout the world, financial liberalisation has provided a passport for banks to offer services cross-border.

The increased presence of foreign financial firms raises issues relating to how they should be regulated. The main issue relates to who is ultimately responsible if a foreign bank faces difficulties in an overseas market – should it be the host or home country regulator? Generally, for large complex banks, the host regulator will supervise foreign subsidiary activity

but it is the home country that is ultimately responsible if the bank faces difficulties (see also Chapter 4, where these issues are discussed in greater detail).

In addition to the issue of regulatory responsibility, the internationalisation trend has also encouraged much greater debate about convergence of rules – so as to ensure that banks operate under similar regulations in different jurisdictions. It has been argued that minimal harmonisation (regulation based on minimum standards) allows for greater flexibility in implementing legislation and is likely to result in (or sustain) more competitive playing fields than if one chooses maximum harmonisation. Harmonisation should always result in some form of convergence in national rules and at the same time should increase actual and potential competition (as well as the safety of the system) if it is to be effective. Many commentators recognise the need for greater co-operation between supervisory authorities and improved relations between supervisory authorities, market participants and consumers.

Another factor impacting on regulatory reform – and closely linked to the internationalisation trend – is the globalisation phenomena. The growth in international activities and trade of multinational corporations has increased the demand for services from financial institutions that operate cross-border and therefore financial firms continue to expand their international presence. This means that various financial firms operate globally (e.g. HSBC, Santander, Citibank, Goldman Sachs, etc.). As a result, banks are increasingly exposed to risks originating from abroad, and risks to financial stability are less and less confined to national borders. This calls, at the minimum, for greater regulatory oversight and co-ordination between national regulators. Further, consolidation in the global banking industry has resulted in the emergence of financial conglomerates that conduct an extensive range of businesses with a group structure. The formation of financial conglomerates is forcing regulators to re-think the way in which the financial sector should be supervised.

In addition to the aforementioned factors, various other forces can have a marked impact on the regulatory environment. Major financial crises can have a big impact on regulatory changes, mainly because the occurrence of a crisis is an indication that regulation in place prior to the difficulties was not sufficient. However, not all countries tightened regulatory restrictions following the global financial crisis. A survey carried out by Barth *et al*. (2013) showed that 80 per cent of countries tightened such restrictions following the crisis, while others actually eased overall restrictions, including Brazil, Portugal and Switzerland.

One of the mainstays of banking sector policy around the world is capital regulation. Many rules and policies determine the precise amount and nature of capital that banks must hold. These are analysed in detail in Section 7.7.

7.7 Bank capital regulation

The role of capital in the financial sector, and for banks in particular, is a central element of regulation. A bank's capital may be defined as the value of its net assets (i.e. total assets minus total liabilities). In practice, this capital is the sum of the bank's paid-up share capital and its accumulated capital reserves. A bank's capital is vital for the protection of its depositors, and hence for the maintenance of general confidence in its operations, and the underpinning of its longer-term stability and growth.

The role of capital in banking can be illustrated by a simple balance sheet diagram as shown in Table 7.5, where Bank Greedy has assets of £55 billion and £5 billion of capital. The bank has £54 billion in loans and £50 billion held in deposits.

Table 7.5 Bank Greedy balance sheet

Liabilities (£)		Assets (£)	
Capital	5 billion	Cash and liquid assets	1 billion
Deposits	50 billion	Loans	54 billion
Total	55 billion	Total	55 billion

Now let us assume that the bank has made some risky loans and £4 billion-worth of loans go bad. The bank believes they will never be repaid (the bank cannot recover these loans). Bank Greedy has to take a 'hit' and the losses can be borne by the capital cushion. As shown in Table 7.6, assets shrink by £4 billion and capital falls to £1 billion.

Table 7.6 Bank Greedy balance sheet after £4 billion loans go bad

Liabilities (£)		Assets (£)	
Capital	1 billion	Cash and liquid assets	1 billion
Deposits	50 billion	Loans	50 billion
Total	51 billion	Total	51 billion

In this case Bank Greedy can bear the loss of £4 billion as it has sufficient capital to cover these losses. Note that we assume that cash and liquid assets remain at £1 billion. If, however, the losses exceed £5 billion then Bank Greedy does not have enough capital to cover these losses and it cannot meet depositor obligations. See what happens if instead of a £4 billion loss Bank Greedy has £7 billion loans go bad. This is shown in Table 7.7.

Table 7.7 Bank Greedy balance sheet after £7 billion loans go bad

Liabilities (£)		Assets (£)	
Capital	0 billion	Cash and liquid assets	1 billion
Deposits	48 billion	Loans	47 billion
Total	48 billion	Total	48 billion

It can be seen that Bank Greedy has used all its £5 billion capital to cover these losses and deposits of £2 billion have also had to be used to make up the shortfall – this means that the bank cannot repay all its depositors as the value of deposits has fallen from the original £50 billion to £48 billion – in theory the bank would have to tell its depositors that it had some bad news and unfortunately some will not be able to withdraw their deposits (or that all depositors will bear a loss). Of course, in reality this does not happen as the bank is insolvent.

The main point to stress is that any losses incurred by a bank – whether these are caused by bad loans, securities trading, the failure of a subsidiary, fraudulent activity or whatever – have to be met out of its capital as deposits have to be protected at all costs in order to maintain confidence in the bank, as well as the banking system overall. This is why bank regulators spend so much

time and energy focusing on the capital adequacy of banks. The adequacy of any given amount of capital not only depends upon the absolute volume of assets to be covered, but is also affected by the quality of those assets. The more risky the assets, the greater must be the cushion of capital funds, all other things being equal, in order to maintain a given level of capital adequacy.

For a number of years, the Bank of England specified for each UK bank individually a minimum required ratio of capital to risk-weighted assets. If the actual ratio were to fall below this 'trigger' ratio, the Bank of England would be likely to intervene in the bank's activities. This regulatory capital ratio was set to take account of the Bank of England's assessment of the bank's managerial capacity with regard to its risk position, its profitability and its overall prospects. In addition, it was expected that, in normal circumstances, each bank would maintain a 'target' capital ratio that included a margin over the value of its trigger ratio. The UK banking sector regulator has modified this approach in the light of evolving international standards. Moves at an international level to harmonise the capital adequacy ratios of banks in different countries have led to a more rigorously defined framework for capital adequacy. The Committee on Banking Regulations and Supervisory Practices of the Bank for International Settlements (BIS) put forward a framework in July 1988 for the harmonisation of standards of capital adequacy. This framework has become known as the Basel I Accord. The objective of this framework was to strengthen the world's banking system and place it in a better position to withstand any future problems in world financial markets. In addition, the requirements were intended to provide a more equal basis for competition between banks in different countries and to remove the incentive for banks to relocate activities to other countries in order to take advantage of relatively lax regulatory requirements.

Capital adequacy ratios are a measure of the amount of a bank's capital expressed as a percentage of its risk-weighted credit exposures. The Basel I Accord recommends minimum capital adequacy ratios to ensure banks can absorb a reasonable level of losses before becoming insolvent. Applying minimum capital adequacy ratios serves the purpose of protecting depositors and promoting the stability and efficiency of the financial system. As such, minimum capital standards can be seen as a vital tool to reducing systemic risk. Although the Basel Committee does not have any powers to impose the Accord, more than 100 countries have implemented its guidelines in one form or another.

7.8 The 1988 Basel Capital Accord (Basel I)

The Basel Committee on Banking Supervision was created at the end of 1974 and was charged by the Group of Ten (or G-10, the largest ten industrialised countries in the world: Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, the United Kingdom and the United States), plus Luxembourg and Switzerland, central bank governors to seek a common approach among its members towards measuring capital adequacy and the prescription of minimum capital standards.[6] In July 1988, the Basel Committee on Banking Supervision introduced its 1988 Capital Accord (the Basel I Accord). The majority of the world's leading central banks undertook to implement the Basel Accord by the end of 1992. (The EU implemented almost all of the features of the Basel Accord into EU and therefore member states law by the end of 1992.)

[6] The Basel Committee is the Committee of Central Banks and Bank Supervisors from the major industrialised countries that meets every three months at the BIS in Basel, Switzerland. Note the French spelling of the name of the Swiss city is Basle, whereas the German spelling is Basel. Nowadays the latter is more commonly used.

The Accord reflected the culmination of the committee work on international convergence of capital adequacy and is based on a risk–asset ratio (RAR) approach (see Box 7.3). The committee stated that 'a weighted risk ratio in which capital is related to different categories of asset and off-balance-sheet exposure, weighted according to broad categories of relative riskiness, is the preferred method for assessing the capital adequacy of banks' (BCBS, 1988). The 1988 Capital Accord established an international standard around a capital ratio of 8 per cent and focused on risks associated with lending (credit risks) thereby ignoring other types of risk. The Basel I definition of capital is made up of two elements: Tier 1 ('core capital') and Tier 2 ('supplemental capital'). Bank total capital is the sum between Tiers 1 and 2 ('capital base').

Specifically, the elements of capital are as follows:

- *Tier 1*
  - (a) Ordinary paid-up share capital/common stock
  - (b) Disclosed reserves
- *Tier 2*
  - (a) Undisclosed reserves
  - (b) Asset revaluation reserves
  - (c) General provisions/general loan loss reserves
  - (d) Hybrid (debt/equity) capital instruments
  - (e) Subordinated term debt

More details on the definitions of capital elements can be found in Box 7.3. The sum of Tier 1 and Tier 2 elements is eligible for inclusion in the capital base, subject to various

BOX 7.3 DETAILS OF CAPITAL ELEMENTS (ESTABLISHED 1988 AND APPLIED IN 1992)

Tier 1 (core capital) = common stockholders' equity + non-cumulative perpetual preferred stock + any surplus + minority interest in the equity accounts of consolidated subsidiaries − goodwill and other intangibles (deduction is carried out only if some conditions are met).

Required TIER 1 core capital is equal to risk weight × 4% of risk-weighted assets

Tier 2 (supplementary capital) = allowance for losses on loans and leases (reserves) + cumulative perpetual, long-term and convertible preferred stock + perpetual debt and other hybrid debt/equity instruments + intermediate-term preferred stock and term subordinated debt. The total of Tier 2 is limited to 100 per cent of Tier 1. Other limitations are specified in the 1992 revised guidelines.

Deductions from total capital (Tier 1 + Tier 2) consist of investments in unconsolidated banking and financial subsidiaries, reciprocal holdings of capital securities and other deductions (such as other subsidiaries or joint ventures) as determined by supervisory authorities with handling on a case-by-case basis or as a matter of policy after formal rule making.

Required total capital (TIER 1 + TIER 2 − deductions) is equal to risk weight × 8 per cent of risk-weighted assets

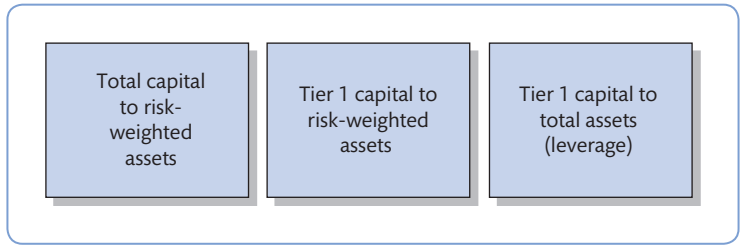


Figure 7.4 Measures of bank capital

limits described in the 1988 Basel report. Figure 7.4 illustrates the different measures of bank capital.

The general framework for capital adequacy risk-weighted assets can be summarised as follows. There are four risk classes in the risk-weighted system that reflect credit risk exposure:

1. No risk: 0 per cent (e.g. cash or equivalents, bonds issued by OECD governments).
2. Low risk: 20 per cent (e.g. short-term claims maturing in a year or less; bonds issued by agencies of OECD governments).
3. Moderate risk: 50 per cent (e.g. mortgages).
4. Standard risk: 100 per cent (e.g. commercial loans; claims by non-OECD banks and government debts).

BOX 7.4 RAR (RISK-ASSET RATIO) APPROACH

The RAR is a relative simple approach that sets out to appraise capital adequacy on the basis of banks' relative riskiness. Banks' assets are divided by the supervisory authorities into a number of equivalent risk classes. Different 'risk-weights' are assigned to each of the equivalent risk classes of assets. Total risk-weighted assets are calculated as follows:

$$\text{RWA} = \sum a_i r_i \quad \text{where} \quad A = \sum a_i \text{ and}$$

$$\text{RAR} = \frac{C}{\text{RWA}} \quad \text{where} \quad \text{RWA} = \text{total risk-weighted assets}$$

$$\text{RAR} = \text{risk-asset ratio}$$

$$A = \text{bank total assets}$$

$$a_i = \text{risk classes of assets}$$

$$r_i = \text{risk weights}$$

$$C = \text{capital as defined by the supervisory authorities}$$

Moreover, conversion factors were set for calculating credit-equivalent amounts for off-balance-sheet (OBS) items:

(a) 0 per cent (e.g. unused portion of loan commitments);

(b) 20 per cent (e.g. commercial letters of credit);

Box 7.4 RAR (risk asset ratio) approach (*continued*)

(c) 50 per cent (e.g. revolving underwriting facilities);

(d) 100 per cent (e.g. standby letters of credit).

Essentially, the capital adequacy scheme is based on a four-step approach:

1. *Classify* assets into one of four risk categories described above.
2. *Convert* OBS commitments and guarantees on their on-balance-sheet 'credit equivalent' values and classify them in the appropriate risk category.
3. *Multiply* the £ amount of assets in each risk category by the appropriate risk weight; this equals 'risk-weighted assets'.
4. *Multiply* 'risk-weighted assets' by the minimum capital percentages, either 4 per cent for tier 1 capital or 8% for total capital for a bank to be adequately capitalised.

For example, take a bank with the following assets:

- cash: $100m (0 per cent risk weighting);
- loans to other banks: $500m (20 per cent risk weighting);
- mortgage loans to owner-occupiers: $800m (50 per cent risk weighting);
- commercial loans: $1,500m (100 per cent risk weighting).

The regulatory minimum capital ratio can be calculated as follows:

Total risk-weighted assets (RWA) = ($100m × 0) + ($500m × 0.2) + ($800m × 0.5) + ($1,500m × 1) = $0 + $100m + $400m + $1,500m = $2,000m

The minimum capital requirement is 8 per cent of $2000m = $160 million, of which at least 50% needs to be held in the form of Equity (Tier 1) capital.

If the RAR calculated by the bank falls below the minimum ratio stipulated by the regulatory authorities then this obviously indicates the institution has inadequate capital. A summary of the minimum capital adequacy requirements according to the Basel I accord, and a guide as to how to distinguish well-capitalised banks from those that are undercapitalised, is given in Box 7.5.

The Basel I Accord was generally regarded as a step forward in the regulation of bank capital adequacy. It involved international agreement and it became the basis for most nations' capital regulations for all banks. Nevertheless, almost immediately debate began as to its efficiency and effectiveness. Questions were raised on capital ratios appearing to lack economic foundation, risk weights not accurately reflecting the risk associated with assets (e.g. the riskiness of loans) and the lack of recognition of asset portfolio diversification. It should also be noted that many nations chose to set capital adequacy ratios somewhat higher than the Accord's minimum, reflecting their own assessment of the risk associated with individual banks' activities.

BOX 7.5 FIVE CAPITAL-ADEQUACY CATEGORIES OF BANKS

1 *Well-capitalised*:
- Total capital to risk-weighted assets 10 per cent
- Tier 1 capital to risk-weighted assets 6 per cent
- Tier 1 capital to total assets 5 per cent

2 *Adequately capitalised (fulfilling minimum requirements)*:
- Total capital to risk-weighted assets 8 per cent
- Tier 1 capital to risk-weighted assets 4 per cent
- Tier 1 capital to total assets 4 per cent

3 *Undercapitalised*:
- Fails to meet one or more of the capital minimums for an adequately capitalised bank

4 *Significantly undercapitalised*:
- Total capital to risk-weighted assets <6 per cent
- Tier 1 capital to risk-weighted assets <3 per cent
- Tier 1 capital to total assets <3 per cent

5 *Critically undercapitalised*:

[(Common equity capital + Perpetual preferred stock − Intangible assets)/Total assets] $\leq$ 2 per cent

7.9 The 1996 amendments to the 1988 Accord

The original capital Accord focused on risks arising from the lending activity of banks thereby ignoring other types of risks (for an overview of the main bank risks see Chapter 11). A proposal for changing the original Accord to include capital charges for market risk incurred by banks was issued by the Basel Committee in April 1995. The objective was to provide 'an explicit capital cushion for the price risks to which banks are exposed, particularly those arising from trading activities'. The Basel Committee defined market risk as the risk of losses in on- and off-balance-sheet positions arising from movements in market prices.

In particular, the risks covered by the proposed framework were: (a) the bank's trading book position in debt, equity instruments and related off-balance-sheet contracts and (b) commodity and foreign exchange positions held by the bank. The amendments to the Accord to incorporate market (trading) risk resulted in the inclusion of an 'ancillary' or Tier 3 capital to support trading book activities. Moreover, a significant innovation in the market risk requirements consisted in the opportunity given to banks to use their internal risk-assessment models (see Chapter 12 for more details) for measuring the riskiness of their trading portfolios.

Overall, these regulatory changes in the minimum capital required for market risk came into force in 1996, and represented a significant step forward for the Committee in strengthening the soundness and stability of the international banking and financial systems.

7.10 The second Capital Accord (Basel II)

In response to the criticisms of the original Accord, a number of changes were made. On 3 June 1999, the Basel Committee on Banking Supervision (BCBS) formally launched proposals for a new capital adequacy framework (which was to become known as Basel II). The first version of the proposed Accord received strong criticism from bankers and academics, which prompted the committee to make substantial changes to the new framework. In May 2004, central bank governors and the heads of bank supervisory authorities in the Group of Ten (G10) endorsed the publication of the 'International convergence of capital measurement and capital standards: A revised framework' (BCBS, 2004).

In June 2006, the Committee released a comprehensive version of the Accord, incorporating the June 2004 Basel II Framework, the elements of the 1988 Accord that were not revised during the Basel II process, the 1996 amendment to the Capital Accord to incorporate Market Risks, and the 2005 amendments (BCBS, 2006). This was the outcome of the Basel Committee's work over the years to secure international convergence on revisions to supervisory regulations governing the capital adequacy of internationally active banks. The Accord's main aim was to introduce a more comprehensive and risk-sensitive treatment of banking risks. In particular, the setting of minimum capital requirements was based on an update of the risk-weighting approach including the use of banks' internal risk ratings and external credit risk assessments. Table 7.8 summarises the key differences between Basel I and Basel II, highlighting the main reasons put forward to revise the first capital accord.

Basel II was built on three main pillars. Pillar 1 dealt with the quantification of new capital charges and relied heavily on banks' internal risk-weighting models and on external rating agencies. Pillar 2 defined the supervisory review process and Pillar 3 focused on market discipline, imposing greater disclosure standards on banks in order to increase transparency. Figure 7.5 summarises the three-pillars approach.

Pillar 1

The first pillar sought to amend the old rules by introducing risk weightings that were more closely linked to borrower's credit standing. Basel II refined the methodology to reflect with greater precision the varying underlying risks against which banks were required to hold

Table 7.8 Rationale for Basel II: more flexibility and risk sensitivity

Basel I	Basel II
Focus on a single risk measure	More emphasis on banks' on internal methodologies, supervisory review and market discipline
One size fits all	Flexibility, menu of approaches, incentives for better risk management
Broad brush structure	More risk sensitivity

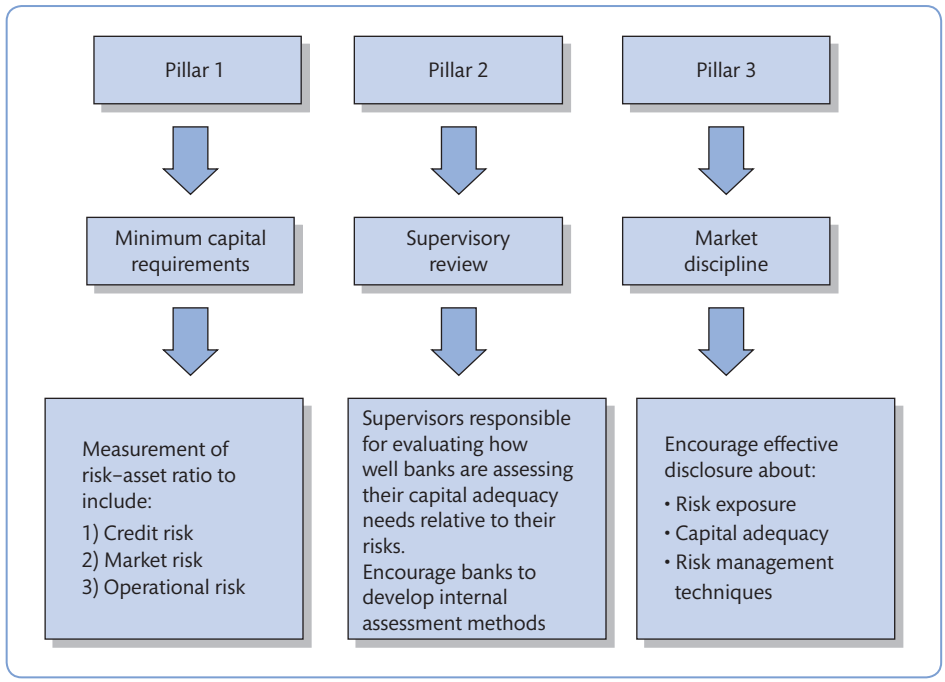


Figure 7.5 Basel II: the three pillars

capital. The second Accord did not change the definition of capital or the minimum requirement of 8 per cent capital to risk-weighted asseted. It mainly affected how banking risks (credit risk, which is risk of a borrower's default, operational risk, which is the risk associated with the potential for systems failure, and market risk, which is the risk that the value of investments will decrease due to movements in market factors) were measured. The biggest changes relate to the calculation of capital backing for credit risk. Under Basel II, banks would be able to choose from what is known as the 'menu of approaches', including the 'standardised approach' and the internal ratings based (IRB) approach. In the standardised approach, Basel II defined risk weights within broad categories of sovereigns, banks and companies, by reference to an external credit assessment firm (credit rating agency) subject to strict standards. Under IRB, banks were allowed to use their internal credit risk assessments subject to strict methodological and disclosure requirements.

Pillar 2

Pillar 2 identified the roles of the national supervisors to ensure banks use appropriate methodology to determine capital adequacy ratios and have a strategy to maintain such ratios. These were defined as follows:

- to review banks' internal assessment procedures and strategies, taking appropriate action if these fall below standard;
- to encourage banks to hold capital above the minimum requirements;
- to intervene as early as possible to ask banks to restore their capital levels if they fall below the minimum.

The supervisory review process aimed to ensure that a bank's capital adequacy position is consistent with its overall risk profile. To this end, bank regulators must be able to make qualitative judgements on the ability of each bank to measure and manage its own risks. Supervisors should also have the ability to require banks to hold capital in excess of minimum regulatory requirements.

Pillar 3

The third pillar sought to enhance effective market discipline by introducing high disclosure standards with regard to bank capital. This required banks to provide more reliable and timely information, enabling market participants to make better risk assessments. Banks were expected to disclose:

- risk exposure;
- capital adequacy;
- methods for computing capital requirements;
- all material information.

Taken together, Pillar 1 provided the rules for quantifying risk sensitivity and the minimum capital charges associated with these risks. This was balanced by the supervisory judgments available under Pillar 2 and market disclosure rules of Pillar 3. Ultimately, the Basel II Accord aimed to create a more comprehensive and flexible regulatory framework, without sacrificing the safety and soundness achieved by the Basel I Accord.

7.10.1 Criticisms of Basel II

A number of early criticisms were made about Basel II. They can be summarised as follows:

1. It is pro-cyclical, i.e. it moves with the economic cycle. The literature on the pro-cyclical effects of Basel II suggested that the rules may exacerbate downturns in the business cycle. For instance, as credit risk increases in a recession, capital requirements are likely to rise, inducing credit rationing.
2. Basel II could increase the amount of systemic risk for banks using the standardised approach. These banks have little incentive to diversify, as they are not rewarded for it.
3. Some suggested that there was a danger of banks that are part of a financial conglomerate moving their credit risk to another non-bank financial subsidiary to reduce the amount of capital they have to set aside.
4. Another concern is that Basel II requirements could encourage banks to transfer credit risk off their balance sheets (see Chapter 18 on the use of asset-backed securitisation and the use of financial derivatives).
5. Small and medium-size enterprises and firms located in developing countries may find it difficult to raise finance, as they are not listed and therefore do not have official credit ratings.
6. There is a potential conflict of interest as rating agencies also act as advisors to big banks on their risk management systems.

Some of these early criticisms were brought to the fore by the 2007–2009 global financial crisis. Since then, a number of amendments were proposed. Responses to the global financial crises called for tighter and 'more global' regulation of financial institutions. Some doubts, however, remain as to whether the attempts to regulate globally (i.e. Basel II) have if not caused then worsened the aforementioned 2007–2009 crisis.

7.11 The third Capital Accord (Basel III)

Basel II, to all intents and purposes, never came fully into effect. The global financial crisis laid bare the shortcomings of the existing prudential framework and made a thorough overhaul an overriding necessity. In July 2009, less than two years after Basel II came into force in the EU, the Basel Committee complemented its Basel II rules on trading books (also known as 'Basel 2.5').[7] The G20 approved the new Basel III solvency and liquidity rules at its Seoul summit in November 2010.

In December 2010 and June 2011, the BCBS published its latest recommendations on bank solvency and liquidity (BCBS, 2011a).

According to the BCBS, 'Basel III' is a comprehensive set of reform measures, developed by the Basel Committee on Banking Supervision, to strengthen the regulation, supervision and risk management of the banking sector. These measures aim to:

- improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source;
- improve risk management and governance;
- strengthen banks' transparency and disclosures.

The reforms target:

- bank-level, or micro-prudential, regulation, which will help raise the resilience of individual banking institutions to periods of stress;
- macro-prudential, system-wide risks that can build up across the banking sector as well as the pro-cyclical amplification of these risks over time.

The proposal was first published in December 2010, with a revised version issued in June 2011. In addition, the Basel Committee has issued the full text of the revised liquidity coverage ratio (LCR) in January 2013 (BCBS, 2013a). Being a new and complex set of rules, in the remainder of this section we will introduce the main changes under the new regulatory standards, as well as the timetable that has been set forth for their implementation.

The Basel III Accord addresses several issues. It proposes many new capital, leverage and liquidity standards to strengthen the regulation, supervision and risk management of the banking sector. The capital standards and new capital buffers will require banks to hold more capital and higher quality capital than under Basel II. The new leverage and liquidity ratios introduce a non-risk-based measure to supplement the risk-based minimum capital requirements and measures to ensure that adequate funding is maintained in case of crisis.

The enhanced capital ratios prescribed by the BCBS relate to the ratio of a firm's eligible regulatory capital divided by a regulatory prescribed calculation of risk-weighted assets. As illustrated in Figure 7.6, all three parts of this have changed, putting more pressure on a firm's compliance with the ratio. The capital ratio requirement has increased; the eligibility of

[7] The European Union implemented the Basel II Accord via the following EU Capital Requirements Directives: Directive 2006/48/EC of 14 June 2006 relating to the taking up and pursuit of the business of credit institutions and Directive 2006/49/EC of 14 June 2006 on the capital adequacy of investment firms and credit institutions.

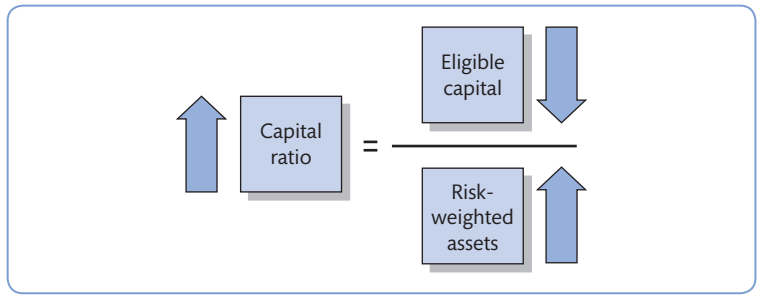


Figure 7.6 Elements of the capital ratio affected by Basel III

capital has been tightened so reducing the types of capital firms can use to meet the required ratio; and the calculation of risk-weighted assets has changed leading to an increase for many organisations.

Basel III builds upon the Basel II three pillars approach, and strengthens the three pillars, especially Pillar 1 with enhanced minimum capital and liquidity requirements. Figure 7.7 illustrates the key changes compared to Basel II.

7.11.1 The key elements of Basel III

The Basel III regulations aim to raise the quality, consistency and transparency of banks' capital base. Alongside the higher capital requirements and increased capital ratios, Basel III also introduces liquidity and leverage ratios. The main elements of the Basel III capital framework are:

- higher minimum Tier 1 capital requirement;
- a capital conservation buffer;

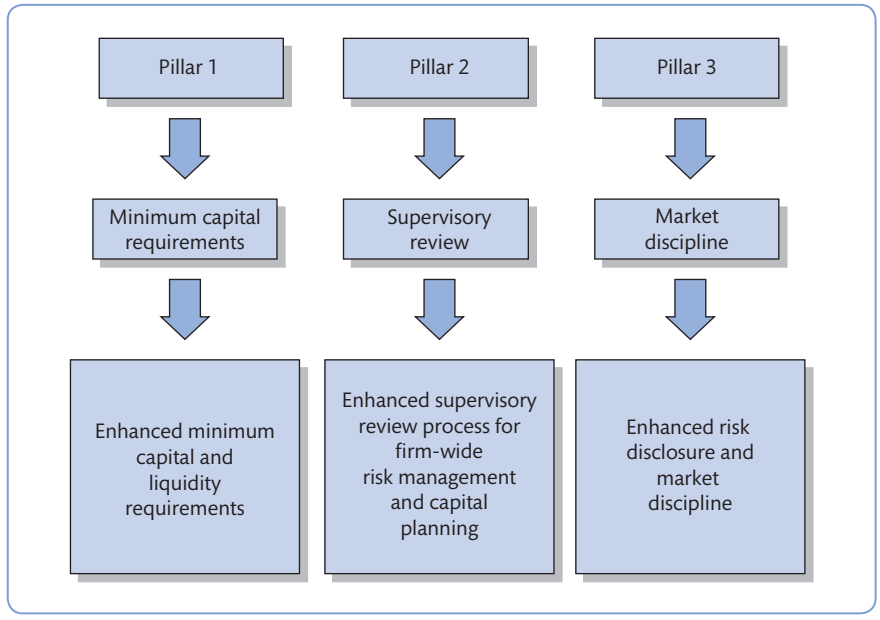


Figure 7.7 Basel III: enchancing the three-pillar approach

- a countercyclical capital buffer;
- higher minimum Tier 1 common equity requirement;
- minimum total capital ratio.

Higher minimum Tier 1 capital requirement

The crisis revealed that certain Tier 1 capital instruments – classed as core capital – were unable to absorb losses. To address this issue, Basel III has therefore tightened its definitions of regulatory capital. Tier 1 capital will now be comprised predominantly of common equity and retained earnings. Common equity will now reach 82.3 per cent of Tier 1 capital, inclusive of the capital conservation buffer. Basel III abandons the 'core Tier 1' concept in favour of the stricter 'common equity Tier 1'. The proposed requirements include increases in Tier 1 capital ratio from 4 per cent to 6 per cent. The proposed timetable for the adoption of the higher minimum Tier 1 ratio was set at 4.5 per cent from 1 January 2013, 5.5 per cent from 1 January 2014 and 6 per cent from 1 January 2015. However, the implementation date has been postponed several times, and banks now have until 1 January 2022 to implement the changes. Nonetheless, the 'Eighteenth progress report on adoption of the Basel regulatory framework' (BIS, 2020b) shows that most jurisdictions have implemented the higher Tier 1 requirements.

A capital conservation buffer

A capital conservation buffer of 2.5 per cent is to be used to absorb losses during periods of financial and economic stress. This requirement, which is designed to help banks withstand future periods of stress, will bring the total common equity requirement to 7 per cent. This is the sum of 4.5 per cent common equity requirement and the 2.5 per cent capital conservation buffer. It must be noted that the capital conservation buffer must be met exclusively with common equity and banks that do not maintain the capital conservation buffer will face restrictions on payouts of dividends, share buybacks and bonuses. Most large banks will likely maintain such a buffer, as falling below it will lead to additional regulatory scrutiny.

A countercyclical capital buffer

Basel III also introduced a countercyclical buffer within a range of 0–2.5 per cent of common equity (or other fully loss-absorbing capital). This is in effect an extension of the conservation buffer and will be implemented according to national circumstances.

Higher minimum Tier 1 common equity requirement

There is also an increase of Tier 1 common equity requirements from 2 per cent to 4.5 per cent. Common equity Tier 1 capital (CET1) is the highest quality of regulatory capital, as it absorbs losses immediately when they occur. Additional Tier 1 capital (AT1) also provides loss absorption on a going-concern basis, although AT1 instruments do not meet all the criteria for CET1. Table 7.9 summarises the components of regulatory capital.

Minimum total capital ratio

The minimum total capital ratio will remain at 8 per cent. As illustrated in Table 7.9, the addition of the capital conservation buffer increases the total amount of capital a bank must hold to 10.5 per cent of risk-weighted assets. In the EU, the Capital Requirements Directive (2013/36/EU) (CRD IV) implemented the Basel III agreement.[8] At the time of writing (May 2021), the

Table 7.9 Components of regulatory capital

Tier 1	Common equity Tier 1 (CET1)	Sum of common shares (equivalent for non-joint stock companies) and stock surplus, retained earnings, other comprehensive income, qualifying minority interest and regulatory adjustments	CET1 $>$ 4.5%
	Additional Tier 1 (AT1)	Sum of capital instruments meeting the criteria for AT1 and related surplus, additional qualifying minority interest and regulatory adjustments	CET1 + AT1 $>$ 6%
Tier 2		Sum of capital instruments meeting the criteria for Tier 2 and related surplus, additional qualifying minority interests, qualifying loan loss provisions and regulatory adjustments	CET1 + AT1 + Tier 2 $>$ 8%

Basel III reforms have been integrated into the consolidated Basel Framework, which comprises all of the current and forthcoming standards of the Basel Committee on Banking Supervision.

7.11.2 Basel III liquidity standards

The introduction of liquidity ratios is one of the main innovations of Basel III. Specifically, the new regulations propose a liquidity coverage ratio (LCR) and a net stable funding ratio (NSFR).

Liquidity coverage ratio (LCR)

The LCR is designed to ensure that sufficient **high-quality liquid assets** (HQLA) are available for one-month survival in case of a stress scenario. HQLA are defined as cash or assets that can be converted into cash at little or no loss of value in private markets to meet a bank's liquidity needs for a 30 calendar day liquidity stress scenario.

The LCR has two components: (a) the value of the stock of HQLA and (b) the total net outflows, and it is expressed as:

$$LCR = \frac{Stock\ of\ HQLA}{Total\ net\ outflows\ over\ the\ next\ 30\ calendar\ days} \geq 100\%$$

In order to qualify as HQLA, assets should be liquid in markets during a time of stress and, ideally, be central bank eligible. Assets are considered to be HQLA if they can be easily and immediately converted into cash at little or no loss of value. The liquidity of an asset depends on the underlying stress scenario, the volume to be monetised and the timeframe considered (BCBS, 2019c). According to the BIS definition, HQLA comprise Level 1 and Level 2 assets.[9] Level 1 assets are typically of the highest quality and the most liquid, and generally include cash, central bank reserves and certain marketable securities-backed by sovereigns and central banks, among others. Level 2 assets are comprised of certain government securities,

[8] The EU text was formally published in the Official Journal of the EU on 27 June 2013 (note that the Regulation has also been subject to a subsequent corrigendum). The majority of the rules contained in the legislation are applicable from 1 January 2014.

covered bonds and corporate debt securities. Level 2 assets may also include lower-rated corporate bonds, residential mortgage-backed securities and equities that meet certain conditions (these latter are known as Level 2B assets). Level 2 assets may not in aggregate account for more than 40 per cent of a bank's stock of HQLA. Level 2B assets may not account for more than 15 per cent of a bank's total stock of HQLA.

The total net outflows (over the next 30 days) are defined as:

$$\text{Total net cash outflows} = \text{Total expected cash outflows} - \text{Min (total expected cash inflows; 75 per cent of total expected cash outflows)}$$

The Basel III standard requires that, in normal conditions, the value of the LCR be no lower than 100% (that is, the stock of HQLA should at least equal total net cash outflows). During periods of financial stress, however, banks may use their stock of HQLA, thereby temporarily falling below 100 per cent.

The net stable funding ratio (NSFR)

The NSFR is designed to promote resiliency over longer-term time horizons by creating additional incentives for banks to fund their activities with more stable sources of funding on an ongoing structural basis. In addition, the NSFR aims to limit over-reliance on short-term wholesale funding during times of buoyant market liquidity and encourage better assessment of liquidity risk across all on- and off-balance-sheet items.

The NSFR is expressed as a ratio that must equal or exceed 100 per cent. More specifically, the NSFR is the ratio between the amount of available stable funding (ASF) relative to the amount of required stable funding (RSF):

$$\text{NFSR} = \text{ASF}/\text{RSF}$$

The ASF comprises weighted liabilities reflecting their contractual maturity and is defined as the portion of capital and liabilities expected to be a reliable source of funding over the one-year time horizon considered by the NSFR. The broad characteristics of an institution's funding sources, and their assumed degree of stability are the basis for determining ASF. ASF factors range from 100 per cent – meaning that the funding is expected to be still fully available in more than a year – to 0 per cent – reflecting that funding from this source is unreliable. The RSF of a specific bank is a function of the liquidity characteristics and residual maturities of the various assets held by that institution as well as those of its OBS exposures (BCBS, 2014). These range from 100 per cent to 0 per cent. An RSF factor of 100 per cent means that the asset or exposure needs to be entirely financed by stable funding because it is illiquid. However, an RSF factor of 0 per cent applies to fully liquid and unencumbered assets. The ASF and RSF are calibrated to reflect the presumed degree of stability of a bank's liabilities and liquidity of a bank's assets. The weights for assets and liabilities range from 0 per cent to 100 per cent; these are primarily the result of internationally agreed definitions and calibrations. For example, the NSFR is generally calibrated such that longer-term liabilities are assumed to be more stable than short-term liabilities and that short-term retail deposits are more stable than wholesale funding of the same maturity from other counterparties.

The NSFR became a minimum standard applicable to all internationally active banks on a consolidated basis on 1 January 2018, although national supervisors may also apply it to

[9] The updated definitions of HQLA and LCR can be found in BCBS (2019c) 'LCR liquidity coverage ratio LCR30: High-quality liquid assets', Version effective as of 15 December 2019.

any subset of entities of large internationally active banks or to all other banks (BIS, 2018). Banks must meet the NSFR requirement on an ongoing basis and report on a quarterly basis. Because of its impact on maturity transformation, and since its implementation may have unintended consequences, the NSFR is subject to an observation period which started in 2011. Following this agreement, there has been some discussion – both among policy makers and academics – on whether the two requirements are indeed complementary, and whether both of them are needed to ensure sound liquidity profiles and management (Cecchetti and Kashyap, 2018; Behn *et al*., 2019).

7.11.3 Basel III leverage ratio

In addition to the solvency ratio, Basel III introduced a 'simple, transparent, non-risk-based' leverage ratio. This measure intends to restrict the build-up of leverage in the banking sector and reinforce the risk-based requirements with a simple, non-risk-based 'backstop' measure (BIS, 2017). The main theoretical justification for the leverage ratio lies in the fact that risk-based ratios cannot completely prevent the undervaluation of certain risks in the denominator. It must be noted that the leverage ratio remains controversial and there remains ambiguity about certain aspects of the exact mechanics. According to the BIS, a leverage ratio is intended to:

- restrict the build-up of leverage in the banking sector to avoid destabilising deleveraging processes that can damage the broader financial system and the economy; and
- reinforce the risk-based requirements with a simple, non-risk-based 'backstop' measure.

The Basel Committee is of the view that a simple leverage ratio framework is critical and complementary to the risk-based capital framework and that a credible leverage ratio is one that ensures broad and adequate capture of both the on- and off-balance-sheet leverage of banks. The proposed leverage ratio, expressed as a percentage, is defined as:

$$\text{Leverage ratio} = \frac{\text{Capital measure}}{\text{Exposure measure}}$$

The capital measure is the Tier 1 capital as defined by Basel III. The exposure measure, in addition to on-balance-sheet exposures; will consider derivative exposures, securities financing transaction (SFT) exposures and other off-balance-sheet exposures. The minimum requirement is set at 3 per cent, where it will remain until the BCBS finalises the calibration and makes any necessary adjustments to the definition of the exposure measure. The related public disclosure requirements have been in effect since 1 January 2015.

7.11.4 Basel III and G-SIFIs

The Basel III regulations affect all banks; however, the impact may differ across bank type and size. Most banks will be impacted by the increase in quantity and quality of capital, liquidity and leverage ratios, amended Pillar 2 and capital preservation. The more sophisticated banks will be affected by the amended treatment of counterparty credit risk, more robust market risk framework and, to some extent, the amended treatment of securitisations. **Systemically important financial institutions (SIFIs)** and global systemically important financial institutions (**G-SIFIs**) will have to cope with higher capital requirements or be subject to additional

supervision. The terms SIFI, G-SIFI and **G-SIBs** (global systemically important banks) are used to define banks or financial institutions that are deemed too big to fail. The Financial Stability Board has provided a tentative definition as well as a list of the financial institutions considered SIFIs.

G-SIFIs are defined as:

> Financial institutions whose distress or disorderly failure, because of their size, complexity and systemic interconnectedness, would cause significant disruption to the wider financial system and economic activity. To avoid this outcome, authorities have all too frequently had no choice but to forestall the failure of such institutions through public solvency support. As underscored by this crisis, this has deleterious consequences for private incentives and for public finances.
>
> (Financial Stability Board, 2011b)

The FSB and BCBS identified an initial group of 29 G-SIBs in 2011 (Financial Stability Board, 2011b). The bucket approach was updated by the Basel Committee document 'Global systemically important banks: Updated assessment methodology and the higher loss absorbency requirement' in 2013. The additional loss-absorbency requirements will initially apply to those banks identified in November 2014 as globally systemically important by the FSB using the BCBS methodology. The methodology used to define the buckets is based on an 'indicator-based' measurement approach. The selected indicators (which include the size of banks, their interconnectdness, lack of readily available substitutes or financial institution infrastructure for the services they provide, their global (cross-border) activity and their complexity) are chosen to reflect the different aspects of what generates negative externalities and makes a bank critical for the stability of the financial system.

In July 2018, the BCBS published a revised version of its assessment methodology, replacing the July 2013 version. The revised assessment methodology will take effect in 2022, and the resulting higher capital buffer requirement will be applied in January 2024.[10] The group of G-SIFIs is updated annually and published by the FSB each November – Table 7.8 illustrates the 2012 and 2020 list. There are a few changes from the original list: compared with the initial group of G-SIBs published, EU banks have either moved to a lower bucket or have been removed from the list. Meanwhile, Chinese banks have either moved to a higher bucket or joined the G-SIB list in more recent years, together with the two largest Canadian banks (Royal Bank of Canada and Toronto Dominion). No bank was allocated to the first two buckets in 2020. The changes in the allocation of the institutions to buckets reflect the effects of changes in underlying activity of banks.

The G-SIBs are subject to more intensive supervision, including stronger supervisory mandates, resources and powers, and higher supervisory expectations for risk management functions, data aggregation capabilities, risk governance and internal controls. Capital requirements for G-SIFIs and G-SIBs will need to have additional loss-absorption capacity tailored to the impact of their default, rising from 1 per cent to 2.5 per cent of risk-weighted assets (with an empty bucket of 3.5 per cent to discourage, in the words of the FSB, further '*systemicness*' which is how much the failure of one bank can impact on the rest of the financial system), to be met with common equity.

[10] Details of the indicator-based measurement approach can be found in BCBS (2011c) 'Global systemically important banks: Assessment methodology and the additional loss absorbency requirement'. The revised framework can be found in BCBS (2018b) 'Global systemically important banks: Revised assessment methodology and higher loss absorbency requirement'.

Table 7.10 G-SIBs and additional capital requirements

Bucket		G-SIBs in alphabetical order within each bucket	
		2012	2020
5	3.50%	(empty)	(empty)
4	2.50%	Citigroup Deutsche Bank HSBC JPMorgan Chase	(empty)
3	2.00%	Barclays BNP Paribas	Citigroup HSBC JPMorgan Chase
2	1.50%	Bank of America Bank of New York Mellon Credit Suisse Goldman Sachs Mitsubishi UFJ FG Morgan Stanley Royal Bank of Scotland UBS	Bank of America Bank of China Barclays BNP Paribas China Construction Bank Deutsche Bank Industrial and Commercial Bank of China Limited Mitsubishi UFJ FG
1	1.00%	Bank of China BBVA Groupe BPCE Group Crédit Agricole ING Bank Mizuho FG Nordea Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG Unicredit Group Wells Fargo	Agricultural Bank of China Bank of New York Mellon Credit Suisse Goldman Sachs Groupe BPCE Group Credit Agricole ING Bank Mizuho FG Morgan Stanley Royal Bank of Canada Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG Toronto Dominion UBS Unicredit Group Wells Fargo

FSB member authorities apply the following requirements to G-SIBs:

- *Higher capital buffer*: since the November 2012 update, G-SIBs have been allocated to buckets corresponding to higher capital buffers than they are required to hold by national authorities in accordance with international standards.
- *Total Loss-Absorbing Capacity (TLAC)*: G-SIBs are required to meet the TLAC standard, alongside the regulatory capital requirements set out in the Basel III framework. The TLAC standard has begun being phased-in from 1 January 2019 for G-SIBs identified in the 2015 list that continued to be designated as G-SIBs.
- *Resolvability*: these include group-wide resolution planning and regular resolvability assessments. The resolvability of each G-SIB is also reviewed in a high-level FSB

resolvability assessment process (RAP) by senior regulators within the firms' crisis management groups.

- *Higher supervisory expectations*: these include supervisory expectations for risk management functions, risk data aggregation capabilities, risk governance and internal controls.

7.12 Finalising Basel III

In December 2017, the BCBS published the final instalments of its reforms for the calculation of risk-weighted assets (RWA) and capital floors. While Basel III focused on the reform of regulatory capital, Basel IV changes the approaches for the calculation of RWA, regardless of risk type and irrespective of whether standardised approaches or internal models are used. The 2017 reforms aim to restore credibility in the calculation of RWA and improve the comparability of banks' capital ratios (BIS, 2017). According to the BIS, the reforms were necessary to address any remaining weaknesses in the regulatory framework and increase its credibility. They should also allow for the use of internal models while minimising regulatory arbitrage. The reforms introduce constraints on the estimates banks make when they use their internal models for regulatory capital purposes and, in some cases, remove the use of internal models. The 2017 reforms also introduce a streamlined treatment of operational risk, replacing the existing four approaches with a single standardised approach. Finally, the 2017 reforms introduce a leverage ratio surcharge for the largest banks (G-SIBs), set at 50 per cent of their risk-based capital buffer. For example, a bank with a 2 per cent risk-based buffer will have a 1 per cent leverage ratio buffer and therefore it will be expected to maintain a leverage ratio of at least 4 per cent. The BIS argues that the leverage ratio buffer is necessary to make sure that the leverage ratio continues to act as an appropriate backstop to the risk-based requirements for G-SIBs. The implementation of the next-generation of reforms creates a remarkable challenge for the banking sector, but banks will have some time to

Table 7.11 Finalising Basel III: a roadmap

2017 reforms	Implementation date
Revised standardised approach for credit risk	1 January 2022
Revised internal ratings-based framework for credit risk	1 January 2022
Revised credit-valuation adjustment framework	1 January 2022
Revised operational risk framework	1 January 2022
Revised market risk framework	1 January 2022
Leverage ratio	Revised exposure definition: 1 January 2022
	G-SIBs buffer: 1 January 2022
Output floor	1 January 2022: 50%
	1 January 2023: 55%
	1 January 2024: 60%
	1 January 2025: 65%
	1 January 2026: 70%
	1 January 2027: 72.5% (steady-state calibration)

prepare. Table 7.11 summarises the key changes introduced by the 2017 reforms, as well as their implementation timetable. It is worth noting that, at the time of writing (May 2021), the Covid-19 pandemic might cause delays and postponements.

To summarise, the 2017 reforms aim to enhance risk capture by revising the standardised approaches for calculating credit and market risk, credit valuation adjustment and operation risk. The aim is to achieve greater risk sensitivity and greater comparability across banks. Constraints on using internal models aim to reduce unwarranted variability in banks' calculations of RWAs. Output floors aim to limit the benefits that banks can derive from using internal models to calculate minimum capital requirements. Finally, the 2017 reforms aim to constrain bank leverage, by introducing a leverage surcharge for G-SIBs.

7.13 Conclusion

In this chapter we have reviewed the issue of financial regulation. The chapter began with a review of the rationale for regulation, introducing the reader to different types of regulation. The limitations of regulation were also analysed, in particular the moral hazard issue connected with the government safety net arrangements such as deposit insurance and the lender of last resort function. The chapter also focused on the Basel Capital Accord and the effort of the Basel Committee to provide common regulatory standards for internationally active banks. Bank regulation cannot prevent financial crises, but the regulatory framework that is currently being shaped will influence the development of the banking system for many years to come. Measures by governments to purchase impaired assets, recapitalise troubled banks and inject liquidity into the system have commanded support among many banking academics and practitioners.

Key terms

Agency capture
Bank runs
Bank Recovery and Resolution Directive (BRRD)
Capital adequacy
Compliance costs
Consumer protection
Contagion
Deposit insurance
Financial safety net
G-SIBs
G-SIFIs
Government safety net
High-quality liquid assets (HQLA)
Lender of last resort
Macro-prudential regulation
Micro-prudential regulation
Monitoring
Regulation
Regulatory forbearance
SIFIs
Supervision
Systemic risk
Systemic stability
Too big to fail/Too important to fail

Key reading

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Basel Committee on Banking Supervision (2011b) 'Basel III: A global regulatory framework for more resilient banks and banking systems', Bank for International Settlements, December, **www.bis.org/publ/bcbs189.pdf**

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REVISION QUESTIONS AND PROBLEMS

7.1 Is there a rationale for the regulation of financial intermediaries and financial markets?
7.2 What is a bank run?
7.3 What are the main types of financial regulation?
7.4 Why are the 'safety net' arrangements said to increase moral hazard in financial markets?
7.5 What are the main limitations of financial regulation?
7.6 What is regulatory forbearance? Describe the main costs and benefits of engaging in forbearance.
7.7 What is the financial safety net? Why is deposit insurance the central element of a well functioning financial safety net?
7.8 What are the main drivers of regulatory reforms?
7.9 Discuss the 'too big to fail' hypothesis. Can you give some recent examples?
7.10 Illustrate the main features of the Basel Capital Accords, with a focus on the reforms introduced by Basel III.

Chapter 8

Bank failures and banking crises

Learning objectives

- To define bank and financial failures
- Evaluate strategies to identify problem banks
- Identify successful bank restructuring procedures
- Identify the main causes of banking crises
- Evaluate the costs of banking and financial crises
- Understand the different approaches taken to resolve a banking crisis
- Identify the key regulatory initiatives to reduce systemic risk

8.1 Introduction

Banks are profit-maximising firms and bank management is all about seeking profits and managing risks. Bank managers routinely deal with risk management issues and strategic planning. On occasions, bank managers take on excessive risks or implement value destroying strategies, therefore causing the bank to run into trouble. Like any other firm, banks do fail. The reasons why banks fail are numerous and often interlinked. Managerial deficiencies are often an important reason behind the failure of financial institutions. For this reason, bank risk management is also the focus of regulatory concerns. In addition, because of the potential for systemic risk arising from bank failures, regulators tend to intervene in the banking sector.

Before we discuss the determinants of bank failure and the strategies adopted by regulators to identify problem banks, it is useful to introduce a definition of bank failure. A bank, as a profit-maximising firm, is considered insolvent when its liabilities exceed its assets and its net worth becomes negative. A bank is deemed to have failed if it is liquidated, merged with a healthy bank under government supervision/pressure, or rescued with state financial support. Whereas some think that failing banks should be treated as any other failing firms, the potential for systemic effects arising from bank failures has entailed a varying degree of intervention in the banking system (ranging from deposit insurance to lender of last resort functions of the central bank, to direct state intervention and financing).

How to deal with bank failures is a controversial issue. Banks play such a critical role in the economy that they are subject to more intense regulation than other sectors. As we discussed in Chapter 7, regulation of the banking system is justified by market failures, which can be caused by asymmetric information and negative externalities. Bank regulation can take a number of forms, from deposit insurance to capital requirements (namely, the Basel Capital Adequacy Accords), bank licensing and regular examinations of banks. The main concern of regulators is that the failure of one bank can have a contagious domino effect, leading to the failure of other banks, and this, therefore, can adversely affect the whole financial system. In reality, the transition from the failure of an individual bank to the collapse of a country's banking system is rare (although possible, an example is the collapse of Icelandic banks in 2008). Nonetheless, there have been frequent systemic crises in developed and emerging economies in recent years. These will be analysed in more detail later on in this chapter. We first discuss the determinants of bank failure in Section 8.2. The main strategies used to identify problem banks are explained in Section 8.3, with a focus on early warning systems for bank soundness and the recently introduced stress tests. Section 8.4 presents the key issues of bank restructuring and will discuss the regulatory toolkit. Section 8.5 discusses the causes and consequences of banking and financial crises and Section 8.6 concludes the chapter.

8.2 The determinants of bank failure

It is rare to find a single reason for a bank's failure; rather there are often a number of contributing factors. Nevertheless, a clear understanding of the main reasons as to why a financial institution has run into trouble is necessary to enable regulators to use appropriate tools and ensure success of the proposed solutions. To give a very simple example, if a bank is facing a temporary liquidity problem, the extension of a liquidity line by the central bank (or access to the discount window) might help in solving the bank's problem. However, if the bank faces solvency rather than liquidity problems, then allowing the bank to access the discount window is unlikely to solve the bank's problems and it can have costly consequences for the taxpayers.

The academic and policy literature identifies the key determinants of bank failure as follows:

- poor management;
- fraud;
- regulatory forbearance;
- too big to fail;
- clustering;
- macroeconomic and systemic factors.

8.2.1 Poor management

Deficiencies in the management of banks are a contributing factor in virtually all cases of bank troubles. In most bank failure cases, the bank senior management will appear as the culprit. For example, in the case of Barings in 1995, even though the bank was eventually brought down by a '*rogue trader*', the underlying problem was bad senior management.

Indeed, head office allowed Nick Leeson to run both the front and the back office of the Singapore branch simultaneously, despite an internal audit report recommending that the trader should stop managing the back office. This allowed Mr Leeson to hide huge losses. More recently, the trading incident at Société Générale in January 2008, which involved the trader Jerome Kerviel and resulted in a loss of €4.9 billion – the largest in banking history, also calls Société Générale's management into question (see Box 8.2).

A 2011 report by the UK Financial Services Authority (FSA), which aimed to identify the multiple factors resulting in the failure of the Royal Bank of Scotland (RBS) in October 2008 identifies:

> errors of judgement and execution made by RBS executive and management, which in combination, resulted in RBS being one of the banks that failed amid the general crisis. These were decisions for whose commercial consequences RBS executive and Board were ultimately responsible.
>
> (Financial Services Authority, 2011a)

The FSA report concludes that, even taking into account deficiencies in regulation and the macroeconomic conditions at the time, RBS's failure ultimately resulted from poor decisions made by the management and Board of Directors (see also Box 13.2 on the failure of RBS).

Beside these extreme examples, poor management can cause asset-side problems (e.g. bad loans, investment losses), liability-side problems (e.g. liquidity problems, deposit withdrawals, bank runs) and off-balance-sheet problems (e.g. derivative losses). Poor asset management, or a weak loan portfolio because of excessive exposure in one or more sectors, can eventually lead to failure.

The IMF identifies five types of loan performance categories for external reporting purposes:

1. *Standard*. Credit is sound and payments current.
2. *Watch*. Subject to conditions that if uncorrected, could raise concerns about full repayment.
3. *Substandard*. Full repayment is in doubt due to inadequate protection. Interest or principal overdue (90 days +).
4. *Doubtful*. Assets for which collection is considered improbable. Interest or principal overdue (180 days +).
5. *Loss*. Virtually uncollectible. Interest or principal overdue (1 year +).

Substandard, doubtful and loss are considered as **non-performing loans (NPLs)** and remain so until either the loan is written off or until principal and interest payments are received. More specifically, the IMF (2004) defines non-performing loans as loans on which debtors have failed to make contractual payments for a predetermined time.[1]

It should be noted that a loan classified as non-performing does not necessarily lead to losses. If there is adequate collateral, losses might not occur. Conversely, loans may be lost even though they were never classified as non-performing.

[1] The International Monetary Fund posted on its website a 'Guide' ('Compilation guide on financial soundness indicators') in 2004 (and then published it in 2006 and revised in 2007 and in subsequent years) with the purpose of providing information and advice on concepts and definitions, as well as sources and techniques, for the compilation and dissemination of financial soundness indicators. See IMF (2007, 2019).

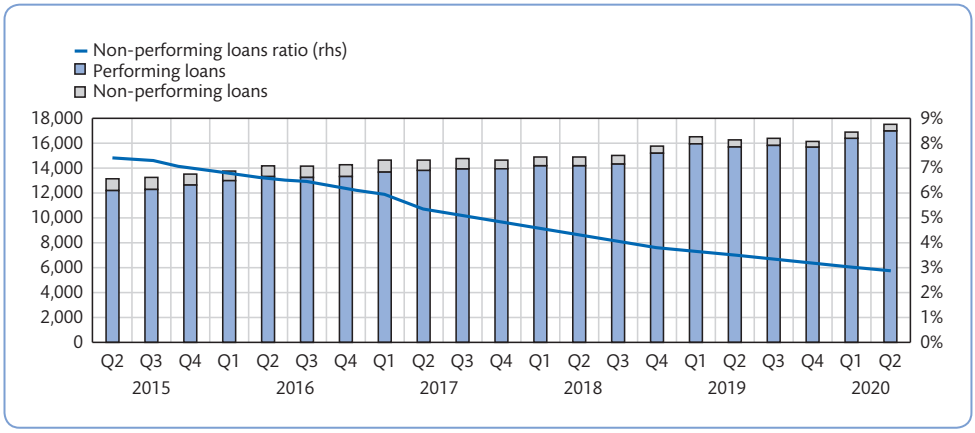


Figure 8.1 Eurozone banks' NPLs 2015Q2–2020Q2 (€bn, %)

Source: ECB (2020) Supervisory Banking Statistics. Available at https://www.bankingsupervision.europa.eu/banking/statistics/html/index.en.html

Not all countries adopt the same definition of NPLs, and there may even be different definitions in use within a single country depending on the sector involved (financial institutions, quoted corporations, small enterprises, government entities and so forth). In addition, international accounting and banking standards refer to loans being *impaired* rather than non-performing.[2] Proper recognition and provisioning for NPL are essential for crises management and prevention. However, while there is broad consensus on the need for more rigorous loan classification rules, there is some controversy over the timing and tightening of rules. The fear is that markets might overreact to the full disclosure of NPLs, particularly in emerging markets or in markets where the existing economic conditions are difficult. Yet suspicions that the true scale of the problem is being hidden can hurt market confidence. Figure 8.1 illustrates the trend in NPLs in the EU following the sovereign debt crisis.

From Figure 8.1, we can see that the credit quality of loan portfolios improved: the aggregate NPL declined to stand at 2.94 per cent, the lowest level since in 2015. This improvement in NPLs was remarkable as the NPL to total assets ratios of EU banks had remained relatively stable at around 4 per cent of total loans since the global financial crisis. It is worth mentioning, though, that the average EU-level statistics mask some substantial cross-country differences, with NPL ratios varying between 0.70 per cent in Luxemburg and 30.31 per cent in Greece (Q2, 2020). These encouraging results are likely to be reversed by the impact of the Covid-19 pandemic, as regulators are implementing various measures to help the banking sector (see Box 8.1).

An essential step in any bank restructuring programme is to measure correctly the amount of non-performing loans. This is a major task, due to the varying practices of loan classification and different regulatory environments. Some regulatory authorities use quantitative criteria, such as the number of days loan repayments are overdue; others rely on qualitative norms such as the clients' financial status, or on management judgement about future loan repayments.

[2] Impairment is a specific term used in the International Accounting Standard 39 (IAS 39) and by the Basel Committee on Banking Supervision (BCBS).

BOX 8.1 EU BANKS URGED TO PREPARE FOR BAD LOANS AS PANDEMIC HITS ECONOMY

Head of body responsible for winding down failing lenders issues warning

European banks need to prepare their balance sheets for the risk of pandemic-induced non-performing loans hitting them in the new year, the head of the EU agency tasked with winding down failing lenders has said.

Elke König, chair of the Single Resolution Board, rejected suggestions from the European Central Bank that the EU needs to set up a network of "bad banks" to handle higher non-performing loans (NPLs), but she warned banks needed to do intensive work to sort out viable loans from unviable ones.

In an interview with the *Financial Times* she also urged the EU to properly harmonise its state aid rules for handling embattled banks with its "resolution" regime, which intervenes to ward off systemic financial crises. Ms König argued that as things stand there was a "misalignment" in the system.

The SRB was set up following the eurozone sovereign debt crisis to wind down stricken banks while securing financial stability and consistent treatment of the region's lenders. But with regulators now weighing the risks of a surge in NPLs, the agency is still working with an incomplete system of EU bank-crisis rules which must operate over a patchwork of different national arrangements.

Last month, the ECB's top bank supervisor Andrea Enria wrote in the FT that, in a "severe but plausible" scenario, non-performing loans at eurozone banks could reach €1.4tn, well above the levels of the 2008 financial crisis and the ensuing EU sovereign debt crisis.

Ms König said it was too soon to know how bad the situation with NPLs would get, because this would depend on the nature of the downturn and recovery. Current actions by governments, such as state guarantee schemes, were "shielding" the lenders, she added.

But she said that non-performing loans could start coming through in the first and second quarters of next year. In light of this, her message to banks was "be aware NPLs are coming and the best thing to do is address them early … That is the best thing we can do for the time being, and then it is steering through the fog."

The European Commission will next month set out its own proposals for handling what Valdis Dombrovskis, executive vice-president overseeing economic policy, has said will be a "likely rise" in NPLs. These include further developing secondary markets in which NPLs are bought and sold, and reforms to insolvency and debt-recovery frameworks.

The ECB's Mr Enria has separately advocated the creation of either a European "asset management company", or a network of them, to take on NPLs. Ms König said that she was cautioning against this idea, and that banks doing their "homework" was the easier way forward.

"The entire debate … always lacks one component: who is footing the bill," she said. Ms König added that "it feels sometimes as if this is the magic system," one where losses are supposed to evaporate, something "that is not going to happen".

Banks need to "get the full transparency" of these portfolios, she said. "They need to be able to separate a portfolio and to set out how they would like to service it, what would be their idea, how would they deal with it."

She added that in the current crisis there was still a market for bad real estate and corporate loans. When it comes to loans to small and medium-sized enterprises and retail customers, these are traditionally "professionally managed by a bank as an ongoing relationship".

Ms König underlined the extensive work that has been done since the dark days of the eurozone crisis to strengthen the resilience of banks, and to ensure that they can be safely wound down if they fail. This work has included making sure money can be raised by wiping out bank bondholders, so shielding taxpayers from footing the bill.

She noted that one of the tools available to her agency was an "asset separation" power to strip bad loans out of broken banks' balance sheets.

Box 8.1 EU banks urged to prepare for bad loans as pandemic hits economy (*continued*)

But she emphasised that the EU system for handling failing banks was still a work in progress. One step she has called for is the creation of a "pre-liquidation tool" allowing her agency to intervene earlier in a crisis to save the good part of a bank, preventing needless destruction of value.

The SRB and the broader system it oversees has been fully up and running since 2016, and in that time has handled one bank failure: Spain's Banco Popular.

One ongoing problem, she said, was that the conditions attached to banks put through national insolvency proceedings differed from those attached to interventions by her agency. This issue flared up in 2017 when two regional Italian banks received state aid as part of bankruptcy proceedings while their senior creditors were shielded from losses.

This prompted complaints at the time from Berlin and some other capitals that the measures amounted to a loophole allowing nervous governments to get around the principle adopted by the EU in the wake of the financial crisis that investors, including senior creditors, should face losses before the taxpayer.

The European Commission is set to review the bank resolution system next year.

Source: Fleming, S. and Brunsden, J. (2020) 'EU banks urged to prepare for bad loans as pandemic hits economy', *Financial Times*, 11 November.
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An area of concern during bank restructuring is the valuation of **collateral**. In theory, most bank loans are collateralised (typically on real estate) and this should provide available resources to any restructuring agency. In practice, collateral is often worth considerably less than book value and can only be recovered if bankruptcy procedures operate efficiently. As aggregate demand weakens during banking crises, collateral values (such as property prices) drop steeply. Moreover, a large number of simultaneous 'fire sales' may force the value of collateral to drop even further. This raises the question of how long a restructuring agency should hold the assets of distressed banks. Finally, the value of the collateral depends also on the credibility of the legal process to enforce repayments.

8.2.2 Fraud

Fraud has long being recognised as a key cause of bank failure. A 1986 study commissioned by the American Bankers Association to identify the main reasons for US bank failure noted (Benston *et al.*, 1996): 'Because fraud has been the single most important cause of bank failures, both in the past and in the present, it is distinguished from excessive risk-taking.'

Along similar lines, Barker and Holdsworth (1993) reported a study by the US House Committee on Government Operations that found about 50 per cent of bank failures and 25 per cent of thrift failures in the 1980s were principally due to fraud. However, it is often difficult to secure a conviction because of the fine line between fraud and bad management. Box 8.2 revises some of the largest episodes of fraud in financial institutions.

8.2.3 Regulatory forbearance

When financial intermediaries run into trouble, regulators may be under pressure to not apply existing regulations too strictly. As discussed in Section 7.5, this is known as regulatory forbearance and it arises when applying regulations (for example, imposing compliance with

BOX 8.2 ROGUE TRADERS AND BANK LOSSES

In 1995 Mr Nick Leeson was the rogue trader who brought down Barings Brothers, a British merchant bank, by uncovered exposures in the derivatives market. He went into the red by $1.2bn by trading on Asian markets, after what he claimed was a well-intentioned attempt to cover up losses in a client's account. He was jailed for fraud.

Also in 1995, Mr Toshihide Iguchi at Daiwa Bank in Japan lost around $1.1bn (after more than 10 years of illicit trading) while dealing in US Treasury bonds. Daiwa Bank did not fail because it sold its assets and had considerable reserves; however, it was a massive hit for its reputation. Mr Iguchi was fined $2.6m and sentenced to four years in prison.

In 2002 Mr John Rusnack caused losses of some $750m to Allied Irish Bank, Ireland's largest bank, in unauthorised foreign exchange dealing at its American subsidiary, Allfirst. Mr Rusnak expected the yen to strengthen against the dollar but this did not occur. The bank thought that options contracts were purchased as the internal system showed. Instead they weren't actually bought. Therefore, there was no insurance against the loss. The bank's solvency was not threatened but the bank absorbed the losses at a price of a significant reduction in earnings and capital.

Another rogue trader, Mr Peter Young, a fund manager of investment bank Morgan Grenfell Asset Management, a Deutsche Bank company, lost some $380m from the funds he ran, after hiding a series of unauthorised investments. Deutsche Bank had to inject $300m in cash to replace the fund; however they incurred huge losses after a third of the investors left the fund within a few weeks.

In 2002 Central Europe had its own rogue trader in Mr Eduard Nodilo, a dealer at Rijecka Banka, Croatia's third-biggest bank, which accumulated $98m in foreign exchange losses wiping out the bank's capital.

In January 2004, Australia's biggest bank, the National Australian Bank, revealed that some of its foreign currency options traders in Melbourne and London had engaged in unauthorised trading. Losses have been estimated at $445m.

In January 2008, the trading incident at Société Générale, involving the trader Jerome Kerviel, resulted in a loss of €4.9bn. This event sparked the question as to whether it was a case of an isolated rogue trader or a more complex case of a 'rogue business model':

> Société Généralé uncovered a fraud, exceptional in its size and nature: one trader had taken massive fraudulent directional positions in 2007 and 2008, beyond its limited authority. Aided by its knowledge of control procedures, he managed to conceal these positions through a scheme of elaborate fictitious transactions [...] which eventually resulted in the largest trading loss in banking history. (*Financial Times*, 24 January 2008)

A similar question was raised in 2011 in the case of Kweku Adoboli's actions at UBS:

> UBS has discovered a loss due to unauthorized trading by a trader in its Investment Bank. The matter is still being investigated, but UBS's current estimate of the loss on the trades is in the range of USD 2 billion. It is possible that this could lead UBS to report a loss for the third quarter of 2011. No client positions were affected. (*Financial Times*, 15 September 2011)

In November 2012, Adoboli was jailed for the UK's biggest bank fraud, while UBS was fined £29.7 million over its conduct in the case.

The worlds of securities and derivatives trading have seen increased risks brought about by high-frequency trading and automated trading strategies, and institutions are bracing themselves for the next scandal. While individual 'rogue traders' have not hit the headlines recently, between 2008 and 2018 a larger than ever number of scandals and fraud episodes led to the world's largest banks being hit with an unprecedented number of misconduct fines, amounting to around £380 billion (Centre for Banking Research, 2020).

capital adequacy ratios) could worsen the institution's problems and could result in failure, possibly triggering a run on other financial institutions. Regulatory forbearance itself may even cause a banking crisis as bank regulators may become locked into an ever-worsening spiral, resulting in a loss of public confidence in how banks and the financial system in general are being regulated. Regulatory forbearance for poorly managed banks may result in damage to the regulator's credibility and authority. In addition, the moral hazard risk associated with regulatory forbearance could provide incentives for excessive risk taking.

In the context of bank failures, when bank auditors and regulators 'miss' important signals from the distressed bank, or they put the interests of the regulated bank ahead of taxpayers, they are 'guilty' of forbearance. In many cases of failures, subsequent investigations show that exposure limits were exceeded with the knowledge of the regulators – suggestive of widespread forbearance in dealing with troubled banks.

8.2.4 Too big to fail (TBTF)

'*Too big to fail*' refers to the viewpoint whereby the largest banks in a banking system are viewed as being too big to be allowed to fail and therefore they have guaranteed access to the lender of last resort. The idea of the TBTF is not new – the term became used in the 1980s following the bailout of the US bank Continental Illinois. Since the 1980s though, financial institutions have grown much larger and more interconnected. Indeed it is often argued that size by itself is not the relevant criteria for bailing out troubled banks – rather it is the significance or importance of banks in specific markets and the expected scale/impact of potential failure. This is what prompted the rescue of US investment bank Bear Stearns (in March 2008) and the government bailout of American International Group (AIG) (in September 2008), once the world's largest insurer. This has prompted the use of other acronyms, such as too systemic to fail (TSTF) or too interconnected to fail (TITF).

While no financial regulatory authority will ever provide guaranteed access to lender of last resort financing, history does tell us that (for systemic and other reasons) large banks are likely to be bailed out more than small banks. The policy of the TBTF applies, to a certain degree, in all countries. Critics argue that the implicit government guarantees for the biggest banks prompt them to take excessive risks and therefore make them more likely to fail.

Following the 2007–2009 global financial crisis, the concept of TBTF has emerged from the regulatory and academic debate and has moved into the public arena and there have been calls for breaking up big banks. For example, the 2010 Dodd–Frank Wall Street Reform and Consumer Protection Act (Dodd–Frank) is the US government's attempt to resolve the TBTF problem for US banks. At the global level, in 2011 the Financial Stability Board identified an initial group of 29 banks as systemically important financial institutions (SIFIs), to be subjected to more stringent prudential standards. The G-SIBs group is revised annually and included 30 institutions in 2020 (see also Chapter 7). Similarly, the BCBS set forth an additional capital requirement for global systemically important banks (G-SIBs).

8.2.5 Clustering

Clustering refers to the fact that bank failures in a country tend to be clustered around a few years rather than being spread evenly over time. The presence of a so-called 'herd instinct' or 'contagion effect' among depositors and investors may help explain a run on several banks

over a short period of time. However, macroeconomic factors are also important in explaining clustering effects.

Another reason for clustering may relate to the failure of timely intervention by the government or regulatory authorities. The Japanese banking crisis of the 1990s offers an example of the interaction of macroeconomic factors and badly timed regulatory intervention.

8.2.6 Macroeconomic and systemic factors

There are a number of factors that do not slot easily in any of the previous categories. There is a vast literature on the causes of bank failures and banking crises; this literature is fairly divided between advocates of microeconomic factors and supporters of macroeconomic reasons and systemic factors. These are discussed in more detail in Section 8.5.3.

Qualitative reviews of bank failure, as the ones described in this section, provide some insight into what causes a bank to fail. Quantitative models provide econometric models of bank failure, borrowing from the literature on corporate bankruptcy. These models aim to measure bank soundness and provide early warning indicators of trouble. These early warning systems (EWS) are discussed in Section 8.3.

8.3 Early warning systems for bank soundness

Recent episodes of turmoil in the international financial markets have called attention to the need for better tools to monitor bank risk taking as well as the vulnerabilities in the financial system. From a regulator's perspective, the key is to anticipate the next bank failure by identifying those institutions that display underlying vulnerabilities, taking into account potential triggers in the wider economic environment (for example, contagion from other banks/countries, trade shocks, political instability, etc.).

Put simply, **early warning systems (ESW)** are models designed to draw regulators' attention to certain key variables associated with past crisis. These variables can reflect the risk of a single financial institution (micro-prudential approach) or the risk of the financial system as a whole (macro-prudential approach).

Bank supervisors have traditionally concentrated on assessing the risk profile and soundness of individual financial institutions. This micro-prudential approach has focused mainly on:

1. Standard balance sheet and income statement financial ratios. This includes the so-called CAMEL variables.
2. Market prices of financial instruments, such as bank stocks and subordinated debt.
3. Measures of bank risk and financial strength, such as deposit rates.

In addition, regulators also collect key macroeconomic indicators. However, critics say that the emphasis on micro surveillance prior to 2007 failed to spot the risk arising from the growing interconnectedness of financial institutions, both domestically and across borders.

Although the use of EWS is not new in policymaking, the 2007–2009 financial crises prompted national regulatory authorities and international organisations, such as the IMF and the FSB, to work together to revise the existing tools to anticipate systemic problems.

Among these initiatives are the ongoing efforts to develop and use macro-prudential indicators, defined broadly as indicators of the health and stability of financial systems.

EWS can be generally divided in models based on financial ratio analysis or peer group analysis and statistical models (for example, models predicting failure or survival rates, models estimating ratings and the probability of rating downgrades, and models estimating expected losses).

8.3.1 Financial ratio analysis based models

Financial ratio analysis is an important tool for bank management and it is used both internally and externally to evaluate bank performance – it investigates areas such as profitability, asset quality, liquidity, solvency and capital adequacy (see Section 9.4 for details on bank financial ratio analysis).

In terms of EWS, a bank financial condition is related to a set of key financial ratios, which should be within a certain range for the bank to be operating in a safe and sound manner. If one or more of these key financial ratios exceeds a predetermined critical level or lies within a set interval, then the EWS generates a warning signal, a 'red flag' that indicates that more attention should be paid to that particular bank.

In this context, a bank's performance is benchmarked both against its past performance (i.e. checking whether a particular ratio – or set of ratios – is an outlier with respect to the bank past performance) and/or against the performance of a *peer group* of banks. A peer group is normally defined based on some common characteristics, such as bank size (large banks vs. small banks), bank specialisation (co-operative banks, saving banks, commercial banks, investment banks) or other characteristics that might be relevant in some countries (domestic vs. foreign banks; listed banks vs. non-listed banks; state owned vs. privately owned banks).

Peer group analysis is undertaken on the basis of financial ratios for a group of banks together. This is then used to establish whether an individual bank is performing in a significantly different manner from its peers, with a view to identifying the reasons for such significant difference, which may or may not imply supervisory concerns. Within each peer group, a first step of peer analysis is a simple identification of the best/worst performers compared with the peer average. In addition, financial ratios are ranked from best to worst, and percentile rankings are calculated with the aim of providing regulators an overall view of a bank performance compared to similar institutions. Individual banks whose financial ratios have deteriorated relative to the averages of their respective peer group can then be identified and action taken if necessary. Some regulators follow a formalised procedure for the use of financial ratio analysis for regulatory purposes. The best known of these models is the CAMELS rating, adopted by the US Federal Reserve.

8.3.2 CAMELS rating

In the US, bank supervisors rate an individual bank's overall safety and soundness to produce what are commonly referred to as **CAMELS** ratings. CAMELS is the abbreviation for the components of a bank's condition that are assessed: **C**apital adequacy; **A**sset quality; **M**anagement quality; **E**arnings; **L**iquidity; **S**ensitivity to market risk.

Table 8.1 summarises the key financial ratios used to evaluate a bank's financial condition. The Fed uses a mix of publicly available information (from bank financial statements) and

Table 8.1 CAMELS rating

CAMELS	Variables
Capital adequacy	Total risk-based capital ratio; Tier 1 ratio; charge offs to loan loss reserves
Asset quality	NPLs/total assets; non-current loan ratio; loans secured by commercial real estate/total assets; other loans/total assets
Management quality	Non-interest expenses to revenue (net interest income plus non-interest income)
Earnings	Return on assets (ROA), net interest margin (NIM)
Liquidity	Core deposits/total assets; volatile liabilities ratio (long-term assets/short-term liabilities)
Sensitivity to market risk	Non-interest income/total assets (proxy returns on risky assets)

private information supplied by bank management to assign a composite rating. CAMELS ratings range from 1 (best rating) to 5 (worse rating). These ratings are disclosed only to bank senior management and are not made public, except in the event of a bank's failure.

Figure 8.2 illustrates the average and distribution of CAMELS ratings of US banks over the past 20 years. Strong banks have a CAMELS rating of 1 or 2, while weak banks have ratings of 3, 4 and 5.[3] The data show that bank average ratings were low during the credit crunch of the early 1990s, then recovered during the late 1990s and early 2000s, only to deteriorate quickly from 2007 onwards.

Figure 8.3 shows how the pattern in the average rating reflects the changes in the number of banks rated in each of the five CAMELS rating categories. More specifically, the data show a larger decrease in 'strong banks' (particularly banks achieving the highest rating of 1) mirrored by an increase in banks rated worse with a rating of 5. Also worrying for regulators is the steady increase in the percentage of weak banks with a rating of 3, which may indicate a worsening of financial condition for banks across the system.

Since the global financial crisis, US regulators have also introduced **stress testing** as a supervisory tool. The first stress testing exercise, known as the Supervisory Capital Assessment Programme (SCAP) was conducted in 2009. After the SCAP, US regulators introduced two distinct but related supervisory programmes that rely on stress testing: (i) DFAST – the so-called Dodd–Frank Act stress tests, which aims to quantitatively assess how bank capital levels would fare in stressful economic and financial scenarios; and (ii) CCAR (Comprehensive Capital Analysis and Review), which combines the quantitative results from the stress tests with more qualitative assessments of the capital planning processes used by banks.

The use of stress testing has become a popular regulatory tool in many countries, as the global financial crises shifted the focus of regulation from the risks faced by individual financial institutions to systemic risk.

[3] More specifically, a composite CAMELS rating of 1 means that the bank is basically sound in every respect. A CAMELS rating of 2 means that the bank is fundamentally sound, but may have modest weaknesses correctable in the normal course of business. A CAMELS rating of 3 means that a bank has a combination of financial, operational, or compliance weaknesses ranging from moderately severe to unsatisfactory. A CAMELS rating of 4 means that a bank has a immoderate volume of serious financial weaknesses or a combination of other conditions that are unsatisfactory to supervisors. Finally, a CAMELS rating of 5 means that the bank has an extremely high immediate or near-term probability of failure (Bassett *et al*., 2012).

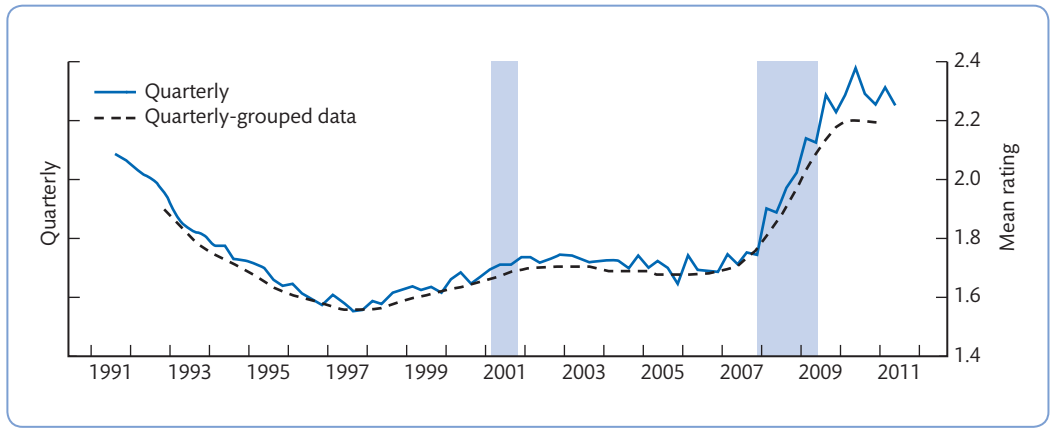


Figure 8.2 Average and distribution of CAMELS rating, 1990–2011

Source: Bassett *et al*. (2012), p. 8.

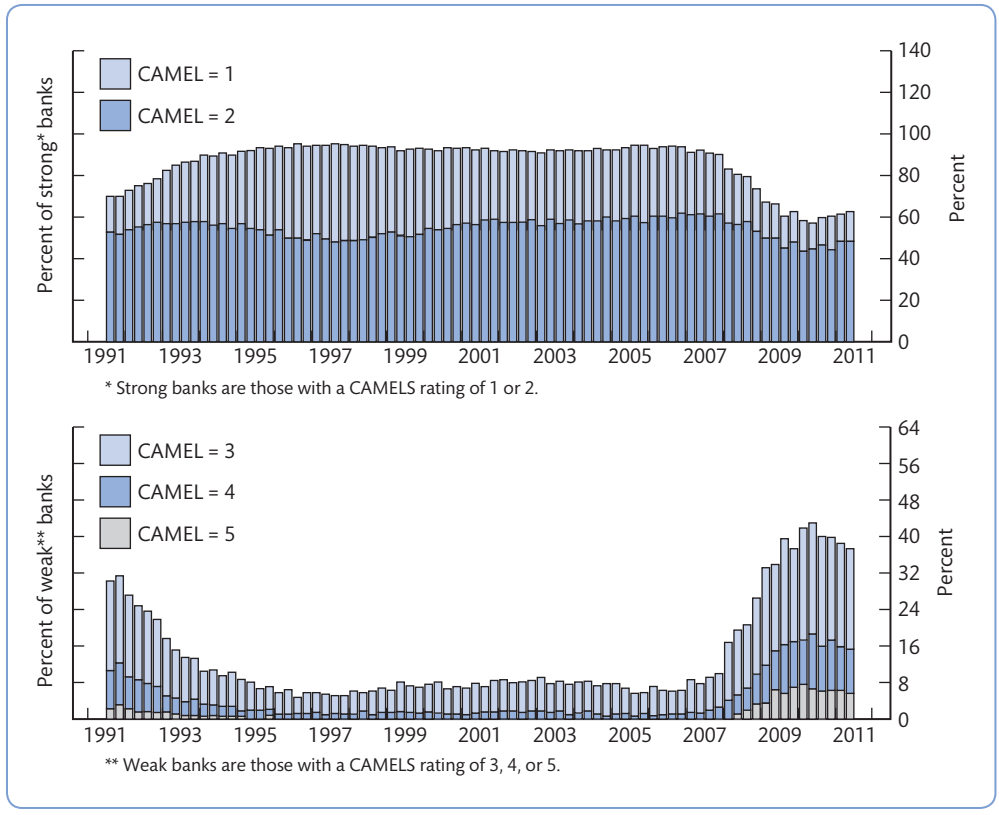


Figure 8.3 Percentage of strong and weak banks, 1990–2011

Source: Bassett *et al*. (2012), p. 8.

8.3.3 Stress testing

In recent years, stress testing has grown in importance, due to increased regulatory requirements and an uncertain economic environment in many countries.

In general terms, stress testing is designed to complement standard Basel capital ratios by adding a more forward-looking perspective and by helping to ensure that banks will have enough capital to keep lending even under highly adverse circumstances. In addition, the disclosures of stress test results can help promote market discipline by providing consistent and comparable information about banks' financial conditions. The Basel Committee on Banking Supervision introduced stronger testing guidelines in 2009 with the objective of ensuring that financial institutions are able to meet capital and liquidity requirements under stressed conditions. These guidelines have been followed by those from the CEBS (Committee of European Banking Supervisors) now European Banking Authority (EBA) in 2010, as discussed in Box 8.3.

BOX 8.3 THE EUROPEAN BANKING AUTHORITY AND EU-WIDE STRESS TESTS

The European Banking Authority (EBA) is an independent EU Authority that works to ensure effective and consistent prudential regulation and supervision across the European banking sector. Its overall objectives are to maintain financial stability in the EU and to safeguard the integrity, efficiency and orderly functioning of the banking sector (see **www.eba.europa.eu/**).

The EBA was established in November 2010 (Regulation Number 1093/2010 of the European Parliament and of the Council of 24 November 2010) and officially come into being on 1 January 2011. It took over all existing and ongoing tasks and responsibilities from the Committee of European Banking Supervisors (CEBS).

The EBA has some broad competences, including strengthening international supervisory co-ordination, promoting supervisory convergence and providing advice to the EU institutions in the areas of banking, payments and e-money regulation. Its main task is to contribute to the creation of the *European Single Rulebook* in banking, which provides a single set of harmonised prudential rules for financial institutions throughout the EU.

The EBA is part of the *European System of Financial Supervision* (ESFS), which comprises three supervisory authorities: the European Securities and Markets Authorities (ESMA), the European Banking Authority (EBA) and the European Insurance and Occupational Pensions Authority (EIOPA). The ESFS also comprises the European Systemic Risk Board (ESRB) and the Joint Committee of the European Supervisory Authorities as well as the national supervisory authorities of EU member states.

The main decision-making body of the EBA is the Board of Supervisors. It is currently chaired by Mr Jose-Manuel Campa; EU member states are represented by officials of the national central bank. The Board of Supervisors also includes observers from the European Commission (EC), the European Systemic Risk Board (ESRB), the European Central Bank (ECB) and other regulatory authorities that are part of the ESFS. The EBA is headquartered in the City of London.

The EBA main competencies are in three broad areas: (i) regulation; (ii) oversight; (iii) consumer protection.

Within its main competencies, one of the responsibilities of the EBA is to ensure the stability of the financial system in the EU. To this end, the EBA is mandated to monitor and assess

Box 8.3 The European Banking Authority (*continued*)

market developments as well as to identify trends, potential risks and vulnerabilities stemming from the micro-prudential level. One of the EBA's primary supervisory tools is the EU-wide stress test exercise.

In co-operation with the European Systemic Risk Board (ESRB), the EBA conducts EU-wide stress tests in a bottom-up fashion, using methodologies, scenarios and key assumptions developed by the EBA in co-operation with the ESRB, the European Central Bank (ECB) and the EU Commission.

The aim of such tests is to assess the resilience of financial institutions to adverse market developments, as well as to contribute to the overall assessment of systemic risk in the EU financial system. In the first EU-wide stress test exercise in 2011 they tested 90 banks in 21 countries, covering 65 per cent of banking assets and at least 50 per cent of banking assets in each country. The results of the exercise were made public and provided an unprecedented level of transparency on banks' exposures and capital composition.

The results of stress tests exercises are made publicly available on the EBA website.

EBA announces the 2021 EU stress-test exercise

Following the postponement of the 2020 exercise, due to the Covid-19 pandemic, the 2021 EU-wide stress test will provide valuable input for assessing the resilience of the European banking sector. The EU-wide stress test will be conducted on a sample of 50 EU banks – 38 from countries under the jurisdiction of the Single Supervisory Mechanism (SSM) – covering roughly 70 per cent of total banking sector assets in the EU and Norway, as expressed in terms of total consolidated assets as of end 2019. Given the specific macroeconomic conditions caused by the Covid-19 pandemic coupled with a high degree of uncertainty this year, the focus on the different objectives will depend on the conditions closer to the publication date.

Accordingly, the adverse scenario is based on a narrative of a prolonged Covid-19 scenario in a 'lower for longer' interest rate environment, in which negative confidence shocks would prolong the economic contraction. The EBA expects to publish the results of the exercise by 31 July 2021 (**www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing**).

Despite their growing popularity, stress tests also raise a number of issues, including problems with data collection, the use of different methodologies and need to reconcile internal expert judgement and external benchmarks as well as national and international regulatory requirements. From a bank's point of view, stress testing can be a very expensive and time-consuming exercise; banks criticise both the methodologies and data used. The long-term aim of regulators is to embed stress testing in bank risk management practices rather than it simply being a regulatory tool.

8.3.3.1 Different approaches to stress testing

There are different approaches to stress testing, the main ones being:

1. the bottom-up approach (BU);
2. the top-down approach (TD);
3. the reverse approach.

In a *bottom-up* approach, banks conduct regular evaluations of their positions relative to a set of common scenarios (provided by the authorities). This is the approach followed by the EBA. One of the advantages of the BU tests is their use of extremely granular information

on individual banks' trading portfolios and overall exposures. This permits a more detailed insight into how an individual bank might be affected by worsening macroeconomic and market conditions. On the flip side of the coin, BU tests are institution-specific and therefore it is difficult to compare results across banks.

In the *top-down* approach, the regulatory authorities set the macroeconomic scenarios and conditions under which the test should be run, and calculate the results without the involvement of the banks themselves. The focus with top-down tests is as much on the banking system as a whole as it is on individual institutions. A TD stress test fist draws on macroeconomic scenarios and on statistical estimates of the impact of adverse economic conditions on credit and market exposures. Second, it builds formal 'maps' of transmission of economic shocks onto the financial system. By applying the same scenario, on the same model, with the same assumptions and at the same time, TD tests allow for comparisons across banks, as well as offering a framework for understanding and identifying particular areas of vulnerability in the banking system as a whole. In addition, TD models lack the balance sheet granularity of the BU models. The TD approach is favoured by many central banks, including the Bank of England, whose RAMSI model (Risk Assessment Model of Systemic Institutions) is an example of a top-down stress testing model and is one part of the Bank's risk assessment toolkit.[4]

Reverse stress tests require a bank to assess scenarios and circumstances that would render its business model unviable, thereby identifying potential business vulnerabilities. Reverse stress testing starts from an outcome of business failure and identifies circumstances where this might occur. This is different to general stress and scenario testing which tests for outcomes arising from changes in circumstances. Reverse stress tests were introduced by the UK Financial Services Authority in December 2012 and are now the remit of the Prudential Regulatory Authority (PRA) within the Bank of England. Reverse stress tests are to be used by banks as a risk management tool to help managers to overcome 'disaster myopia' and improve contingency planning.

8.4 Bank restructuring

Despite regulators' efforts to identify vulnerabilities in the financial systems, bank failures do happen. A crucial question on regulators' mind is 'What is the best policy option for rescuing a troubled bank?' In this section we are going to discuss the tools in the regulatory toolkit to deal with bank failure.

Bank restructuring has many (sometimes conflicting) aims and as a consequence, there is no universally accepted way to carry out a successful restructuring exercise. The ultimate goal of bank restructuring is assumed to be a lower probability of the bank's default with a minimal taxpayer burden (Landier and Ueda, 2009).

Before we start discussing the bank resolution mechanisms available to policy makers, we need to introduce some basic bank resolution terminology. Some terms related to bank resolution have a range of meanings and different terms are used in different countries. The terminology presented in Table 8.2 is used in most of the IMF literature on banking crises and resolution.

[4] For more details on the Bank of England RAMSI model see Burrows *et al.* (2012).

Table 8.2 Bank resolution terminology

Intervened bank	An insolvent or non-viable bank where the authorities have taken over the powers of management and shareholders. Such a bank may be closed or may stay open under the control of the authorities while its financial condition is better defined and decisions are made on an appropriate resolution strategy.
Resolved bank	A bank undergoing a resolution strategy, including liquidation, merger or sale, transfer to a bridge bank, recapitalisation by the government, and sales or transfers of blocks of assets or liabilities.
Bank closure	When a bank ceases to carry on its business as a legal entity. Withdrawal of the banking license typically accompanies a closure. A closure may be part of a legal process of achieving the orderly exit of a weak bank through a range of resolution options, including liquidation or a complete or partial transfer of its assets and liabilities to other institutions.
Bank liquidation	The legal process whereby the assets of an institution are sold and its liabilities are settled to the extent possible. It can be voluntary or forced, within or outside general bankruptcy procedures, and with or without court involvement. In liquidation, assets are sold to pay off the creditors in the order prescribed by the law. Liquidation can take place under a country's bankruptcy or company laws or pursuant to a *special resolution regime (SRR)* for banks.
Merger (or **sale**)	When all the assets and liabilities of the firm are transferred to and absorbed into another institution. Mergers can be voluntary or government assisted.
Purchase and assumption (P&A)	When a solvent bank purchases all or a portion of the assets of a failing bank, including its customer base and goodwill, together with all or part of its liabilities. In a P&A operation, the government typically will pay with securities to the purchasing bank the difference between the value of the assets and liabilities. The process usually involves the withdrawal or cancellation of the licence of the troubled bank, the termination of the owners' rights in the bank, the assumption of the troubled bank's deposits and good assets, and the takeover of the bank's problem assets by the resolution authority. In the UK as similar procedure is known as *private sector purchaser (PSP)*.
Bridge bank	A form of P&A, it involves the use of a temporary financial institution to receive and manage the good assets of one or several failed institutions. A bridge bank may be allowed to undertake some banking business, such as providing new credit and restructuring existing credits. A bridge bank does not require the authorities or state to acquire the shares of a failed bank, merely part or all of its property.
Deposit payoff	When the deposit insurer makes sure that customers of a failed bank receive the full amount of their insured deposits.
Open bank assistance	Open bank assistance (OBA) occurs when a distressed financial institution remains open with government financial assistance. This operation is similar to *temporary public ownership (TPO)* in the UK (although the TPO tool involves the UK Government acquiring all the shares of the failing bank.
Good bank/bad bank	When a troubled bank is split into a 'good bank', which continues to operate and it is typically acquired by a healthy bank, and a 'bad bank', which goes into administration. Insured deposits usually go with the 'good bank'. All other creditors typically travel with the 'bad bank' and become claimants in the insolvency procedure. This is also known as *partial property transfers (PPT)*.
Nationalisation	Nationalisation occurs when the government assumes ownership of an institution.
Bail-out	When a troubled bank receives financial help or liquidity from outside investors or from public funds in order to avoid bankruptcy.
Bail-in	A resolution mechanism that gives regulators the ability to impose losses on bondholders while ensuring the critical parts of the bank can keep running.

Source: Hoelscher and Quintyn (2003); Brierley (2009); McGuire (2012).

The toolkits designed to assist authorities in resolving troubled banks are generally country-specific, as are the various steps in the resolution of a troubled bank. Within each country, the legal framework defines the organisations that must be involved in the restructuring operations, their roles and their powers.

It is a generally accepted principle that the resolution should be carried out in a manner that minimises the cost for the resolution authority or the government (**least-cost resolution**). To determine the least-cost resolution, authorities will have to compare the different resolution mechanisms, taking into account the macroeconomic and market conditions at the time, which may render some of the options unfeasible. The Financial Stability Board (2011a) has issued 'Key attributes of effective resolution regimes for financial institutions' to promote effective and consistent implementation across countries and to support regulatory authorities to resolve financial institutions 'in an orderly manner without taxpayer exposure to loss from solvency support, while maintaining continuity of their vital economic functions'. The implementation of the 'Key attributes' is particularly relevant for cross-border bank resolution and the resolution of SIFIs (see Section 8.4.2). Box 8.4 outlines the aims of an effective bank resolution regime.

BOX 8.4 AIMS OF AN EFFECTIVE BANK RESOLUTION REGIME

An effective resolution regime (interacting with applicable schemes and arrangements for the protection of depositors, insurance policy holders and retail investors) should:

(i) ensure continuity of systemically important financial services, and payment, clearing and settlement functions;

(ii) protect, where applicable and in co-ordination with the relevant insurance schemes and arrangements such depositors, insurance policy holders and investors as are covered by such schemes and arrangements, and ensure the rapid return of segregated client assets;

(iii) allocate losses to firm owners (shareholders) and unsecured and uninsured creditors in a manner that respects the hierarchy of claims;

(iv) not rely on public solvency support and not create an expectation that such support will be available;

(v) avoid unnecessary destruction of value, and therefore seek to minimise the overall costs of resolution in home and host jurisdictions and, where consistent with the other objectives, losses for creditors;

(vi) provide for speed and transparency and as much predictability as possible through legal and procedural clarity and advanced planning for orderly resolution;

(vii) provide a mandate in law for co-operation, information exchange and co-ordination domestically and with relevant foreign resolution authorities before and during a resolution;

(viii) ensure that non-viable firms can exit the market in an orderly way; and

(ix) be credible, and thereby enhance market discipline and provide incentives for market-based solutions.

Source: Financial Stability Board (2011a).

8.4.1 Bank resolution techniques

A resolution procedure is initiated when a bank is no longer viable (or likely to be no longer viable). A number of techniques can be used for dealing with problem banks; these tools may in some cases be alternatives and in other cases complementary. These are:

- liquidation (bank insolvency procedure);
- mergers and acquisitions (M&As);
- purchase and assumption (P&A);
- bridge bank;
- open bank assistance (OBA).

8.4.1.1 Liquidation (bank insolvency procedure)

When a bank is no longer viable, if a rescue is not possible or there is no prospect of restoring its longer-term viability, the bank may have to be liquidated under the country's general insolvency framework or a bank **special resolution regime (SRR)**. Depositors are likely to be paid off and creditors will be paid according to the hierarchy of claims. The resolution authority will dispose of all of the failed bank's assets, which can be a costly and time-consuming process. In addition, assets sold in a fire sale will yield less than their fair market value. A liquidation or bank bankruptcy procedure is most likely to be used for a bank whose failure is unlikely to have adverse systemic consequences and for which there is unlikely to be a buyer.

8.4.1.2 Mergers and acquisitions (M&As)

In the context of bank resolution, a merger of a troubled bank occurs when all the assets and liabilities of the firm are transferred and absorbed into another (healthy) institution. Mergers can be unassisted (voluntary) or government assisted. In an *unassisted merger*, regulators encourage the deal without providing any financial assistance. The plus side of this strategy is that there is no cost for regulators. A drawback is that the acquisition of a weak bank results in the weakening of an initially strong acquirer bank and therefore may leave regulators with a much larger weak bank to resolve.

In *government assisted mergers*, the government will offer some form of direct financial assistance in order to find a buyer for the troubled bank. The provision of direct financial assistance needs to be carefully structured so as not to benefit stockholders of the acquired institution at the expenses of taxpayers.

8.4.1.3 Purchase and assumption (P&A)

Purchase and assumptions are one of the most efficient methods for resolving troubled banks. A P&A involves healthy financial institution 'purchasing' some or all of a failed institution's assets and 'assuming' some or all of the institution's liabilities, usually insured deposits (where there is explicit deposit insurance) and potentially all deposits and even other liabilities (McGuire, 2012).

There are many types of P&A transactions. In a basic P&A transaction, the assuming institution generally takes on only limited assets, usually cash and cash equivalents. The liabilities are then matched to the assets taken and consist of either all or some of the deposits. In a 'whole bank P&A' the acquirer purchases the entire portfolio of the failed bank on an 'as-is' basis with no guarantees. P&A operations can also include some form of put option, entitling

the acquiring bank to return certain assets within a specified time period, or a contractual profit- or loss-sharing agreement related to some or all of the assets.

8.4.1.4 Bridge Bank

A **bridge bank** is a variation of P&A. In this scenario, the resolution authority acts as the acquirer by creating a new, temporary, full-service bank that is designed to bridge the gap between the failure of a bank and the time when the resolution authority can implement a satisfactory acquisition by a third party (McGuire, 2012). This resolution is used when the failure of a bank is unexpected (for example, in the case of the discovery of a fraud or the onset of a liquidity crisis). The bridge bank is designed to provide an immediate change in ownership and it is usually operational for a limited period of time (normally one or two years).

Transfer to a bridge bank may be the best option if a private sector solution requires more time to arrange, for example because potential **private sector purchasers** (PSPs) need to carry out further due diligence on the bank's books.

8.4.1.5 Open bank assistance (OBA)

Under certain circumstances, the government or the resolution authority may provide direct financial assistance to a bank in danger of failing. This 'assistance' may take the form of a loan, an asset purchase, a capital injection or the purchase of other debt instruments. In some circumstances the regulatory authorities might opt to exercise regulatory forbearance, particularly with respect to capital adequacy. In some specific circumstances, it may be necessary to take a bank into **temporary public ownership (TPO)** if there is no reasonable prospect of selling it to a PSP (either directly or through a bridge bank) and in the short run the bank's failure could represent a serious threat to financial stability. Table 8.3 summarises the pros and cons of the different resolution tools. Regulators will have to make decisions based on the bank financial condition, the reasons behind the financial troubles, market conditions at the time and the risk to systemic stability posed by the event of bank failure.

8.4.2 Resolution of large and complex financial institutions

The resolution methods discussed in Section 8.4.1 are not designed to cope with the failure of large and complex financial institutions (LCFIs). LCFIs (also called systemically important financial institutions – SIFIs) are large financial institutions that operate across borders and in many business areas; they have complex capital structures and can be funded by multiple types of liabilities (the definition of SIFIs was discussed in Chapter 7).

The first issue concerning the resolution of a LCFI is that it is likely to stretch government skills and resources. The second crucial issue is how to handle the resolution of large and internationally active banks. LCFIs are usually cross-border banking groups, whose resolution can be hampered by the fact that countries have their own SRRs, and SRR tools cannot automatically be applied extraterritorially.

A third problem is that existing SRRs are not designed to cope with the failure of investment banks (for example, a standard SSR could not effectively and orderly run down massive, complex derivatives or trading portfolios). As demonstrated by the Lehman Brothers and AIG episodes, unwinding a derivatives book is particularly complicated, as it requires dynamic hedging to preserve value, and that is very difficult to achieve in liquidation proceedings when counterparties take flight and funding dries up.

Table 8.3 Bank resolution methods

Resolution methods	Benefits	Costs
Liquidation (bank insolvency procedure – BIP)	• Customers with insured deposits receive money quickly from the deposit insurance fund	• Customers with uninsured deposits and creditors have to wait for the (often lengthy) proceeds of the liquidation • Customers with uninsured deposits may not be paid the full uninsured amount • Customers must find a new bank • It is usually considered a 'last resort' because of high costs involved
Mergers and acquisitions (M&As)	• Unassisted mergers come at no cost to the authorities • There is no interruption to banking services	• Healthy banks can become over burdened with the problems of the troubled bank
Purchase and assumption (P&A)	• Customers with insured deposits suffer no losses • Acquiring bank has the opportunity for new customers	• The majority of the assets might need to be liquidated • Uninsured depositors may suffer losses
Bridge bank	• Gives regulators time to arrange a permanent transaction • Gives purchaser time to assess the bank's condition	• Duplicates part of the resolution process • Regulator becomes responsible for the operation of the bridge bank, which can be labour intensive and time consuming • May require ongoing liquidity support from the government • Difficult to retain best employees and customers • If a subsequent sale is not made, operating a bridge bank may exceed the costs of liquidation
Open bank assistance (OBA)	• Can be implemented relatively quickly • Could prevent systemic issues • Assets are kept in the private sector	• Promote a belief in the TBTF • Government funds could benefit private shareholders

Major reforms are currently being considered domestically and internationally to address these problems, in order to safeguard the stability of the financial system in the case of a LCFI failure. Key regulatory reforms are designed to reduce the systemic risk contribution of LCFIs and include proposals to impose additional capital charges on SIFIs (see Section 7.11.4); as well as proposals to facilitate the resolution of cross-border institutions. Regulatory measures that affect the structure, organisation or scope of the activities of LCFIs are also being discussed. Table 8.4 summarises these key regulatory initiatives at the national and international level, and the proposed timeline to implementation.

The measures illustrated in Table 8.4 aim to reduce the systemic risk contribution of SIFIs and to introduce measures to improve regulators' capacity to resolve SIFIs.

Table 8.4 Regulatory initiatives

Key reforms	Aim	Timeline
Global reforms		
Basel IV (finalising Basel III)	• A standardised floor	2023
	• A reduction in standardised risk weights	2023
	• A higher leverage ratio G-SIBs	2023
Basel III capital standards	• Changes the definition of capital	2019
Basel III capital charges	• Better valuation of risk	2019
	• Incremental risk charge for trading book activity	
	• Higher capital charges for counterparty exposures in derivatives and repo trading	
	• Additional capital surcharge for G-SIFIs	
	• Capital charge assessed on (clearing member) banks' central counterparty default fund exposures	
G-SIBs surcharge	• Additional amount of common equity for systemically important banks	2019
Basel III liquidity requirements	• Liquidity coverage ratio: requires high-quality liquid assets sufficient to meet 10 days' outflows	2015
	• Net stable funding ratio: requires better maturity matching of assets and liabilities	2018
Basel III leverage ratio	• Sets a ceiling on the measure of exposures (regardless of risk weighting) against capital (3 per cent of Tier 1 capital over total exposure)	2019
FBS compensation guidelines	• Responsibility of boards for compensation policies	Implemented
	• Compensation should be aligned with risks and time horizons	
	• Supervisors should monitor compensation policies	
Corporate governance	• Emphasis on robust corporate governance, including the role of banks' board	
Resolution of G-SIFIs	• Reduce the likelihood that G-SIFIs will need to use public funds when they fail	
National reforms		
Volker Rule (Dodd–Frank Act) (US)	• Deposit-taking institutions restricted from trading activities, ownership of private equity and hedge funds	Implemented
Vickers Report (UK)	• Ring-fencing of UK retail banks from investment banking activities	2019
	• Additional capital for ring-fenced entity	
Bank Recovery and Resolution Directive (2014/59/EU)	• Establishing a common framework for the recovery and resolution of credit institutions and investment firms	Implemented
	• Institutions required to draw up recovery plans	
	• Resolution authorities to prepare resolution plans for each institution	
	• Enables resolution authorities to use the bail-in tool	
	• Member states, to set up *ex-ante* resolution funds	

Source: Adapted from IMF (2012c) and authors' updates.

8.5 Banking crises

When the default or failure of a bank brings about a loss of confidence in the banking system that leads to a run on banks, as individuals and companies withdraw their deposits, authorities are faced with a banking crisis. In the past 20 years, several countries suffered systemic banking crises of different severity. Leaven and Valencia (2012) identify 147 banking crises over the period 1970–2011. They also count 218 currency crises and 66 sovereign crises over the same time period.

During the period 1980–1993, liberalisation and deregulation led to the failure of 1,300 US 'thrifts' and 1,500 commercial banks (the so-called savings and loan crisis). During the mid-1990s, the Swedish, Norwegian and Finnish banking systems went from deregulated boom to bust, rescued by the state by means of varying forms of government indemnity, and final recovery. There were no bank defaults but the cost to taxpayers was high. Altogether the banking crises and the consequent support measures had a profound impact on the three countries' economies, more particularly for Finland and Norway than for Sweden.

The French crisis of the early 1990s was centred mainly on real estate, causing the failure of seven rated banks. From the mid-1990s onwards the Japanese banking system also experienced a period of crisis, with no bank defaults. The enormous inflation and subsequent crash (in the early 1990s) in Japanese real estate prices severely damaged the major banks. At no period in their post-Second World War history have the Japanese banks needed government support more than from the mid-1990s to the present day (see also Chapter 16 for more details on the Japanese banking crisis).

Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia experienced banking crises during the 1990s, particularly during the period of transition from communism to capitalism and prior to the EU accession.

In 1997, a number of emerging economies in South East Asia were affected by a severe financial crisis, which started in Thailand and then spread to Indonesia, Malaysia, South Korea and Vietnam.

In more recent times, the US and UK experienced a banking crisis in 2007, which then spread to a number of other countries between 2008 and 2009.

The literature indicates that banking crises happen in waves, often preceded by a credit boom. Figure 8.4 illustrates the cycles of banking crises over the past 40 years.

Governments, central banks and external agencies have dealt with banking crises in a number of ways, often according to the circumstances, as described in Section 8.4. Although there is no unique recipe, there are some common ingredients to successful crisis management:

- governments must be willing to recognise the scale of the problem as soon as possible;
- governments should support supervisory authorities who want to close insolvent banks;
- governments should be willing to commit substantial fiscal resources to the banking system;
- transparent actions with regards to NPLs should be adopted at an early stage;
- improved regulatory and supervisory frameworks are often necessary.

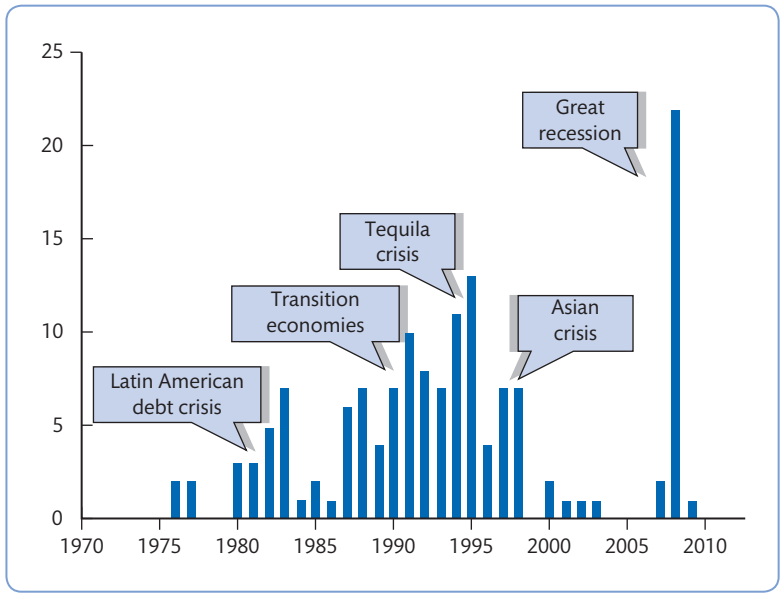


Figure 8.4 Banking crises

Source: Laeven and Valencia (2012), p. 10.

8.5.1 Systemic banking crises

The success of crisis management and bank restructuring depends, ultimately, on a favourable macroeconomic environment and the wherewithal of the authorities to make hard (often politically unpopular) decisions regarding banking system restructuring. Sometimes though, things do not go according to the regulators' plans and the failure of one or more banks triggers a number of defaults with profound consequences on the economy. The failure of a key bank can prompt runs on other banks as bank customers withdraw their savings, unable to distinguish between sound and troubled institutions. Further, because of the interconnectedness of banks, the failure of one institution can immediately affect others. This is known as *bank contagion* and may lead to *bank runs*.

Banking systems are vulnerable to *system risk*, which is the risk that problems in one bank will spread through the whole sector, and crises can become 'systemic'. This vulnerability to systemic risk is one of the main reasons for bank regulation (see Chapter 7).

Systemic banking crises are rare events, according to Boissay *et al.* (2013), who estimate that they occur on average every 40 years. However, they cause recessions that are deeper and last longer than other recessions.

According to Laeven and Valencia (2012), banking crises can be defined as 'systemic' if there are: (1) significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system and/or bank liquidations); or (2) significant banking policy intervention measures in response to major losses in the banking system. More specifically, Laeven and Valencia (2012) consider a crisis episode to be systemic if at least three out of the following six measures have been used by regulators: (i) extensive liquidity support (5 per cent of deposits and liabilities to non-residents); (ii) bank restructuring costs (at least 3 per cent of GDP); (iii) significant bank nationalisations; (iv) significant guarantees put in place; (v) significant asset purchases (at least 5 per cent of GDP); and (vi)

deposit freezes and/or bank holidays. Using these metrics, they identify 17 countries that experienced a systemic banking crisis between 2007 and 2011; with eight more countries experiencing a borderline case (i.e. less than three of the above measures were used). In the past, however, some countries intervened in their financial sectors using a combination of less than three of these measures listed above, but on a large scale (for example, by nationalising all major banks in the country). Therefore, a banking crisis can be considered systemic if: (i) a country's banking system exhibits significant losses resulting in a share of NPLs above 20 per cent; (ii) bank closures of at least 20 per cent of banking system assets; or (iii) fiscal restructuring costs of the banking sector are sufficiently high, exceeding 5 per cent of GDP.

Over the past 20 years, a number of economies have suffered systemic banking crises, with far-reaching negative economic implications. These crises resulted in substantial losses in terms of wealth, output and jobs. For example, the average cumulative output losses in Argentina (2001–2002), Indonesia (1998) and Turkey (1999–2001) have been estimated in the range of 12–15 per cent of GDP. The economic cost of the new crises is on average much larger than that of past crises, both in terms of output losses and increases in public debt, as illustrated in Table 8.5. These differences in part reflect an increase in the size of financial systems and the fact that the 2007–2009 crises was concentrated in high-income countries, whereas previously banking crises seemed to affect mainly developing and transition economies (with some notable exceptions, such as the Japanese banking crisis).

Table 8.6 compares the costs, in terms of output losses and fiscal costs, of the two largest and most recent crises, the 1997 Asian crisis and the 2007–2009 crisis. In 1997, a number of South East Asian economies suffered a severe financial crisis causing substantial output losses. The 2007–2009 financial crisis, or global financial crisis, triggered the deepest recession since the Second World War and has become known as '*The Great Recession*'. The consequences of the Covid-19 pandemic on the global economy are still unknown – as countries are focusing resources on vaccination programmes, the economic cost will only become clear once the pandemic is over.

8.5.2 Financial crises

These recent crises episodes have not been confined to the banking sector, but have involved other financial markets. As a consequence, some economists broaden the definition of financial crisis to include features of financial fragility, bank panics and contagion, when financial

Table 8.5 The costs of banking crises

	Direct fiscal costs	Increase in public debt	Output losses
Previous crises (1970–2006)		**Medians (% of GDP)**	
Advanced economies	3.7	36.2	32.9
Emerging markets	11.5	12.7	29.4
All	10.0	16.3	19.5
Recent crises (2007–2009)		**Medians (% of GDP)**	
Advanced economies	5.9	25.1	24.9
Emerging markets	4.8	23.9	4.7
All	4.9	23.9	24.5

Source: Adapted from Laeven and Valencia (2014).

Table 8.6 Comparing the costs of the Asian and global crises

	Country	Year start	Year end	Output loss	Fiscal costs (% of GDP)	Fiscal cost (% of financial sector assets)	Peak NPLs
Asian crisis	Indonesia	1997	2001	69.0	56.8	105.4	32.5
	Malaysia	1997	1999	31.4	16.4	12.7	30.0
	Thailand	1997	2000	109.3	43.8	30.6	33.0
	Overall			**69.9**	**39.0**	**49.6**	**31.8**
Global financial crisis	United Kingdom	2007	2011	25.3	8.8	5.8	4.0
	United States	2007	2011	31.0	4.5	2.2	5.0
	Benelux	2008	2012	26.0	8.8	1.7	2.5
	Germany	2008	2009	12.3	2.7	0.9	3.7
	Greece	2008	2012	64.9	28.7	17.1	37.1
	Iceland	2008	2012	34.5	37.6	14.3	61.2
	Ireland	2008	2012	107.7	37.6	4.5	25.7
	Spain	2008	2012	38.8	5.4	2.0	9.4
	Overall			**42.6**	**16.8**	**6.1**	**18.6**

Notes: Output loss in % of GDP. Output losses are computed as the cumulative sum of the differences between actual and trend real GDP over the period [T, $T + 3$], expressed as a percentage of trend real GDP, with T the starting year of the crisis. Fiscal costs are defined as the component of gross fiscal outlays related to the restructuring of the financial sector. They include fiscal costs associated with bank recapitalisations but exclude asset purchases and direct liquidity assistance from the treasury. NPL as expressed in % of total loans. NPLs data come from IMF Staff reports and Financial Soundness Indicators. The duration of crises is truncated at 5 years, starting with the first crisis year.

Source: Authors' calculations. Database made available by Laeven and Valencia (2020) 'Systemic banking crises database II'.

markets experience volatility and financial firms suffer illiquidity and insolvency. In addition to banking crises, financial crises can come in many forms. Reinhart and Rogoff (2009) distinguish two types of crises: (*i*) *currency* and *sudden stop* crises and (*ii*) *debt* and *banking* crises.

A **currency crisis** involves a speculative attack on the currency, resulting in a devaluation or sharp depreciation. This will force the authorities to defend the currency by selling foreign exchange reserves, raising domestic interest rates or imposing capital controls.

Currency crises have been relatively common in the past; the most remarkable episodes include the crisis of the British pound in 1976 and the European Exchange Rate Mechanism (ERM) crisis in 1992–1993. A sharp depreciation from a fixed exchange rate was also central to the Mexican peso crisis (which became known as the Latin American Tequila Crisis) in 1994–1995 and the Thai crisis of 1997, which marked the beginning of the Asian financial crisis of 1997–1998.

A **sudden stop** (also known as a capital account or balance of payments crisis) can be defined as a sudden (and often large) decrease in international capital inflows or a sharp reversal in aggregate capital flows to a country, likely taking place in conjunction with a sharp rise in its credit spreads. Sudden stops are usually followed by a sharp decrease in output, private spending and credit to the private sector, and real exchange rate appreciation. Sudden stops hit many emerging economies, particularly in the aftermath of financial crisis.

Claessens and Kose (2013) define a *foreign debt crisis* as an episode of financial turbulence that takes place when a country cannot (or does not want to) service its foreign debt. It can take the form of a *sovereign debt crisis* or *private debt crisis* (or both in some cases). The most recent episode is the European sovereign debt crisis, which started in 2008 with the collapse of Icelandic banks (see Box 8.5), and spread to Greece, Ireland and Portugal and

BOX 8.5 THE ICELANDIC MELTDOWN

Relative to the size of its economy – Iceland's population is just over 300,000 – the collapse of Iceland's banking system in autumn 2008 has been adjudged the largest of all time by the IMF. Following financial deregulation in 2001, Iceland's three major banks, Landsbanki, Kaupthing and Glitnir, developed a business model that circumvented the constraints on growth implied by the small size of the Icelandic economy, by attracting funding from international capital markets. Between 2006 and 2008 Landsbanki and Kaupthing set up online banking operations offering high-interest internet accounts to depositors in the UK and the Netherlands in the case of Landsbanki's Icesave brand, and through subsidiaries trading under the Kaupthing Edge brand in nine European countries.

Prior to the banking crisis, Iceland's current account deficit was clearly unsustainable, having reached 25% of GDP in 2006, and 15% in 2007. Between January and September 2008, consumer price inflation was running at around 14%, and domestic interest rates reached 15.5%. Despite a 35% decline in value against the euro during the first nine months of 2008, the krona was still significantly overvalued, bolstered by short-term capital inflows attracted by the high domestic interest rate. When liquidity in the interbank markets dried up in mid-September 2008 following the liquidation of Lehman Brothers in the US, the Central Bank of Iceland had inadequate reserves to be able to guarantee the banks' debts as lender of last resort. The European Central Bank, US Federal Reserve, Bank of England and the three Nordic central banks collectively declined to provide sufficient assistance to avert the imminent crisis.

On 29 September 2008 it was announced that the Icelandic government was to acquire a 75% stake in Glitnir. This part-nationalization was not completed, however, and a few days later Glitnir was placed into receivership. Reports in the British press over the weekend of 4–5 October 2008 appear to have triggered a run on savings in Icesave by UK and Dutch online depositors, and Landsbanki was placed into receivership on 7 October. Since Icesave was a branch of Landsbanki, its UK depositors were not protected under UK deposit insurance; however, on 8 October the UK government froze Landsbanki's UK assets, and announced it would compensate UK retail depositors in full. A number of UK local authorities and other governmental organisations, which had deposited spare funds with Icelandic banks, would not be guaranteed reimbursement. Meanwhile, on 8 October the UK's Financial Services Authority placed Kaupthing's UK subsidiary into administration and sold its internet bank Kaupthing Edge to the Dutch group ING Direct. In Iceland Kaupthing followed into receivership on 9 October, and over the next few days Kaupthing's other subsidiaries were either wound up or taken into public ownership by the respective national authorities.

With the Krona continuing to fall precipitously against the euro, the Icelandic government applied for IMF assistance in late-October 2008. In November the IMF agreed to provide a $2.1bn standby programme over two years, supplemented by assistance in the form of loans and currency swaps from the governments of the Nordic countries, Russia, Poland, the UK, the Netherlands and Germany, which brought the headline value of the full package to over $10bn. The terms of the IMF package impose obligations on the Icelandic government in the areas of currency stabilisation and inflationary control, bank restructuring and fiscal retrenchment. A sharp fall in GDP was anticipated in 2009, projected at around 10% at the time of writing. Several years of austerity appeared inevitable.

A new Icelandic government elected in April 2009 was committed to applying for full EU membership and adoption of the euro as soon as possible. Membership of a global reserve currency was viewed as offering future protection against the exposure that destroyed the Icelandic banking system in 2008, and may alleviate the banks' difficulties in raising short-term foreign funds to cover their foreign debts. Iceland applied to join the EU on 16 July 2009. However, contentious issues, particularly relating to fisheries, remained unresolved. On 13 September 2013 the Icelandic government dissolved its accession team and suspended its application to join the EU.

By 2014, around £1 billion of cash tied up in the failed Icelandic banks had been recovered by UK local authorities. Following the sale of the remaining claims against Landsbanki (LBI), Glitnir, Heritable and Kaupthing Singer & Friedlander, UK councils hoped to recover 90p for every pound invested.

Source: Adapted from Goddard *et al*. (2009). Authors' own updates.

subsequently to Italy and Spain, leading to a crisis for the eurozone (the eurozone troubles will be discussed in more detail in Chapter 14).

Crises episodes often occur together, currency crises followed by banking crises (for example in the case of the Asian crises), or banking crises followed by sovereign debt crises like in the case of the eurozone crisis. These occurrences are defined as **twin crises**. Rarer are episodes of '*triplet crises*' (i.e. the simultaneous occurrence of three or more crises). Since the early 1970 to date, Leaven and Valencia (2020) have identified 151 episodes of banking crises, 91 debts crises and 236 episodes of currency crises. They also identified 54 episodes of twin crises, of which 31 were the result of the simultaneous occurrence of currency and banking crises, 20 currency and debt crises, and only 3 banking and debt crises. Finally, they identified only 11 episodes of triplet crises since 1970.

8.5.3 Identifying the causes of banking and financial crises

The identification of the causes of banking and financial crises is important in terms of crisis management and effectiveness of the proposed solutions. The nature of the underlying causes may have important bearings in the optimal official response. There is a vast literature on the causes of banking crises; this literature is fairly divided between advocates of microeconomic factors and supporters of macroeconomic reasons.

The often-cited microeconomic reasons include:

- poor banking practices (inadequate capital, inadequate credit risk assessment resulting in non-performing loans, insufficient diversification of the lending portfolio, excessive mismatching of maturity and currency);
- principal–agent incentive problems (particularly when loan officers are rewarded on the volumes of loans granted);
- over-staffing (particularly in state-owned banks);
- restrictive labour practices (sometimes delaying the adoption of IT).

Macroeconomic reasons, although not relieving bank management of their responsibilities, are often seen as a catalyst of crises. Macroeconomic shocks, such as the oil crisis in the 1970s, can strain even properly managed banks.

A third set of causes is the so-called system-related, in the sense that the environment is not conducive to the development of an efficient banking sector. For example:

- large state ownership in the banking sector can distort the industry. If state-owned banks enjoy special privileges, this may distort competition and limit banks' diversification possibilities;
- government direction of credit may prevent banks from developing credit risk management skills;
- restrictions on foreign banks entry;
- poor market discipline (due to moral hazard and excessive deposit insurance);
- weak corporate governance;
- poor supervision;
- an inadequate legal framework may limit the effectiveness of the banking system;

- an underdeveloped securities market may concentrate too much risk on the banking system;
- high market power of incumbent banks, leading to lack of competition.

Banking crises may result from rapid changes in the environment in which banks operate. For example, in the early 1990s Mexico experienced a rapid privatisation process of its commercial banks, coupled with financial liberalisation measures and sudden reduction of the borrowing requirement of the public sector. The rapid expansion of credit that followed these changes, coupled with weak supervision, led to a financial sector crisis in 1994.

Much has been written on the causes of the 2007–2009 global financial crises. While academics and policy makers' views may differ on the importance of different factors, most list the following as the key reasons (Claessens and Kose, 2013):

1. asset price increases that turned out to be unsustainable;
2. credit booms that led to excessive debt burdens;
3. build-up of marginal loans and systemic risk; and
4. the failure of regulation and supervision to keep up with financial innovation.

These triggers have been present even in previous crises. However, the 2007–2009 global financial crises was also brought about by new factors, including: (1) the widespread use of complex and opaque financial instruments; (2) the increased interconnectedness of financial markets, nationally and internationally; (3) the high degree of leverage of financial institutions; (4) the central role of the household sector; and (5) the emergence of an unregulated 'shadow banking' sector. These factors, in combination with the ones common to previous crises, led to the worst financial crisis since the Great Recession, the consequences of which are still being felt in many countries.

8.5.4 Crises management

Crisis management can be summarised in three distinct phases:

1. the containment phase;
2. the resolution phase;
3. the structural reform phase.

Crisis management starts with the *containment phase*, when the crisis is unfolding and a speedy regulatory response is critical. The first step is the control of liquidity pressures on the banking sector, via emergency liquidity lines to troubled financial institutions. In this phase, the main aim is to stabilise the markets, which sometimes entails government blanket guarantees to financial institutions.

In the *resolution phase* a broad range of measures (such as those described in Section 8.4.1) are taken to restructure banks. The final phase is the *reform phase*, when fundamental changes to the regulation and supervision of the financial sectors are enacted.

The specific actions taken by domestic and international regulatory bodies in response to the global financial crises are discussed elsewhere in this textbook. In general terms, the policy responses during the 2007–2009 crises were similar to those used in the past. The first

actions of many national central banks and governments were to ease liquidity pressures, through liquidity support and guarantees on bank liabilities. During the bank resolution phase, a broad array of resolution techniques was used, including asset purchases, asset guarantees and equity injections. All these methods, to some extent, have been used in the past. Some of the measures put in place have been more innovative (see, for example, the discussion of unconventional measures of monetary policy in Section 6.4.5). The current phase is the structural reforms phase, and the key reforms are summarised in Table 8.4.

One key feature of the 2007–2009 global financial crisis was that it predominantly affected advanced economies with large, internationally integrated financial institutions that were deemed too big and/or interconnected to fail. The large international networks and cross-border exposures of these financial institutions helped propagate the crisis to other countries. Failure of any of these large financial institutions could have resulted in the failure of other systemically important institutions, either directly by imposing large losses through counterparty exposures or indirectly by causing a panic that could have generated bank runs. This prompted unprecedented large-scale government interventions in the financial sector in many countries.

How successful have these interventions been? This a difficult question to answer, as it is difficult to compare the success of crisis resolution policies given differences across countries and time in the size of the initial shock to the financial system, the size of the financial system, the quality of institutions, and the intensity and scope of policy interventions. As the Covid-19 pandemic continues to influence the economic outlook in many countries, the implications for financial stability are unclear. Prior to the pandemic, there was a consensus that banks were in a better position relative to 2008, due to the extensive regulatory changes following the global financial crisis. Many now fear a surge of non-performing loans, once moratoria and other support measures are unwound as economies start to re-open (Kasinger *et al.*, 2021).

8.6 Conclusion

Bank regulation cannot prevent financial crises, but the regulatory framework that is currently being shaped will influence the development of the banking system for many years to come. Bank resolution measures recently implemented by governments (including the purchase of impaired assets, the recapitalisation of troubled banks and liquidity injections into the financial system) have possibly avoided even more serious consequences, despite concerns that publicly funded bank bailouts sent the wrong signals to bank investors and executives who caused the problems. At the time of writing, the global economy is suffering due to the Covid-19 pandemic and the roadmap to recovery in Europe, the US and the rest of the world remains uncertain. There are fears that many EU banks still have to recover fully from the consequences of the 2007–2009 global financial and eurozone crises to withstand an increase in non-performing loans. Many predict that banks will become leaner, more capitalised, less leveraged and more heavily regulated than they have been in the past. If the banking system that emerges from the recent period of severe instability is more reliable and efficient, then the lessons of the 2007–2009 crises may have been learned.

Going forward, banks will have to face new challenges, due to the consequences of the Covid-19 pandemic and the risks posed by climate change.

Key terms

Bridge bank
CAMELS
Collateral
Currency crisis
Early warning system (EWS)
Least-cost resolution
Non-performing loans (NPLs)
Peer group analysis
Private sector purchaser
Special resolution regime (SRR)
Stress testing
Sudden stops
Temporary public ownership (TPO)
Twin crises

Key reading

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REVISION QUESTIONS AND PROBLEMS

8.1 The reasons why banks fail are numerous and often interlinked. Managerial deficiencies are often important and there is a very fine line between bad management and fraud. Discuss.

8.2 Discuss the different approaches to the resolution of a failed bank. Discuss the principle of 'least-cost resolution' and how it applies to the choice of regulatory tool.

8.3 Discuss the use of EWS in the context of the anticipation and prevention of banking problems. How useful are stress tests?

8.4 What are non-performing loans? Discuss the relevance of NPLs in the context of bank failure and bank restructuring.

8.5 Discuss the pros and cons of bank resolution tools, giving examples of successful and not so successful outcomes.

8.6 Discuss the different problems posed by the failure of a purely domestic bank and of an internationally active bank. What are the main issues associated with cross-border bank supervision?

8.7 Define the process of crisis management. What elements influence the success of crisis management and bank restructuring?

8.8 Briefly discuss major regulatory developments that have impacted LCFIs since 2007.

PART 3

Issues in bank management

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Chapter 9

Banks' balance sheet and income structure

Learning objectives

- To understand the importance of banks' financial statements
- To identify the main assets and liabilities of commercial and investment banks
- To understand the sources of revenue for commercial and investment banks
- To understand the importance of economic capital
- To describe the concept of shareholder value creation and the cost of equity capital
- To become familiar with the most commonly used bank financial ratios
- To understand the growing importance of non-financial performance

9.1 Introduction

Traditionally, the business of banks is to intermediate funds between surplus units and deficit units thereby linking depositors with borrowers. Banks also provide pooling of risk, liquidity services and undertake delegated monitoring. Financial intermediaries can be classified according to their different **balance sheet** structures. For deposit-taking institutions, the main source of funding (customer deposits) are reported on the liabilities side of the balance sheet, while the allocation of these funds (cash, loans, investments and fixed assets) is detailed on the assets side. Banks' profits are derived from the **income statement (profit and loss account)**, a document that reports data on costs and revenues and measures bank performance over two balance sheet periods. This chapter focuses on understanding commercial and investment banks' financial statements and describes the main characteristics of their balance sheet and income statements. The last part of the chapter investigates the most common bank financial ratios such as **return-on-assets**, **return-on-equity**, **net interest margin** and the **cost–income ratio**. It also discusses the growing importance of banks' **non-financial performance**, particularly in relation to the management of social and environmental challenges.

9.2 Retail banks' balance sheet structure

The **balance sheet** is a financial statement of the wealth of a business or other organisation on a given date. This is usually at the end of the financial year. For commercial banks the balance sheet (also known as *Report of Condition* in the US) lists all the stock values of sources and uses of banks' funds. Banks' funds come from:

(a) the general public (retail deposits);
(b) companies (small, medium and large corporate deposits);
(c) other banks (interbank deposits);
(d) equity issues (share issues, conferring ownership rights on holders);
(e) debt issues (bond issues and loans); and
(f) saving past profits (retained earnings).

The above is generally classified as banks' **liabilities** (debt) and **capital** (equity). These funds are then transformed into financial and, to a lesser extent, real **assets**:

(a) cash;
(b) liquid assets (securities);
(c) short-term money market instruments such as Treasury bills, which banks can sell (liquidate) quickly if they have a cash shortage;
(d) loans;
(e) other investments; and
(f) fixed assets (branch network, computers, premises).

Table 9.1 summarises the assets and liabilities in a simplified commercial bank balance sheet.

Bank liabilities (e.g. retail deposits) tend to have shorter maturities than assets (e.g. mortgage loans). This mismatch derives from the different requirements of depositors and borrowers: typically, the majority of depositors want to lend their assets for short periods of time and for the highest possible return. In contrast, the majority of borrowers require loans that are cheap and for long periods. The asset transformation function of banks is derived from these characteristics. To recap, banks have the primary function of being asset transformers because they intermediate between depositors and borrowers by changing the characteristics of their liabilities as they move from one side of the balance sheet to the other.

Table 9.1 Simplified commercial bank balance sheet

Assets	Liabilities
Cash	Deposits: retail
Liquid assets	Deposits: wholesale
Loans	
Other investments	
Fixed assets	
	Equity
	Other capital terms
Total assets	**Total liabilities and equity**

Capital (see also Section 9.2.1.3) is sometimes referred to as equity capital or net worth and is equal to the difference between assets and liabilities.

9.2.1 Assets and liabilities of commercial banks: main components

The balance sheet provides information about the bank's financial position at the end of the accounting period. It comprises three principal components: (a) the assets the bank controls; (b) the liabilities the bank is obliged to meet; and (c) the equity interests of the bank's owners.

Tables 9.2 and 9.3 exhibit the combined balance sheet for UK banks as reported by the Bank of England. The tables show aggregate assets and liabilities of all financial institutions recognised by the Bank of England as UK banks for statistical purposes.

9.2.1.1 The assets side

On the asset side, banks store a relatively small amount (about 0.3 per cent of total assets in 2019) of cash in the form of *notes and coins* to meet daily commitments. In the United Kingdom, according to the current regulation, both banks and building societies with average eligible liabilities of £600 million or more are required to hold non-operational, non-interest-bearing deposits with the Bank of England of 0.18 per cent. The purpose of these deposits (known as *cash ratio deposits*) is to ensure banks' liquidity. Banks can also keep *other balances* with the Bank of England (i.e. other than cash ratio deposit); these deposits give the central bank a source of income.

In case of cash shortage, banks can ask for a loan in the interbank market. The interbank market constitutes an important portion of the money markets and it is the place where banks meet each day to exchange liquidity. Therefore, the item *market loans* in the asset side of a bank balance sheet includes wholesale loans that are typically very short-term (i.e. overnight or 'call' loans), very liquid (they allow banks to lend money and call them back at short notice) and characterised by large volumes (typically $>$£1 million).

Bankers' acceptances are negotiable time drafts, or bills of exchange, that have been accepted by a bank that, by accepting, assumes the obligation to pay the holder of the draft the face amount of the instrument on the maturity date specified. They are used primarily to finance the export, import, shipment or storage of goods. *Acceptances granted* comprise a claim on the party whose bill the banks have accepted, except for bills both accepted and discounted by the same bank that are included as lending (unless subsequently rediscounted).

Another important source of liquidity is provided by *bills*. As shown in Table 9.2, the main bills held by UK banks are *Treasury bills* (or *T-bills*), which are essentially a form of short-term government borrowing; *bank bills* (usually eligible for rediscounting at the Bank of England) and other short-term bills including *local government bills* and *public corporation bills*.

Further liquidity is provided by the item claims under *sale and repurchase agreements*. This item comprises cash claims arising from the purchase of securities for a finite period with a commitment to re-sell.

By far the most important item on the asset side, *advances*, includes all balances with, and lending to, customers not included elsewhere. Despite the dramatic changes that have characterised the banking sector in recent years, loans are still the primary earning assets of banks, and account for a relatively large proportion of total assets. As reported in Table 9.2, in 2019 loans were the largest items on the balance sheet: sterling advances held on the asset side of banks in the United Kingdom totalled over £2.1 trillion, which was over 55 per cent of total sterling assets. Typically, UK banks lend to individuals, financial and non-financial firms. The

Table 9.2 Bank of England aggregate assets of UK banks (end-year 2019, £bn amounts)

	£bn end-year 2019	% over total sterling assets
Notes and coin	11.1	0.28%
With UK central bank	**455.6**	**11.44%**
– Cash ratio deposit	8.8	0.22%
– Other	446.8	11.22%
Market loans	**373.1**	**9.37%**
– UK banks	277.16	6.96%
– UK banks' CDs and commercial paper	2.41	0.06%
– Non-residents	93.52	2.35%
Acceptances granted	**0.2**	**0.00%**
– UK banks	–	–
– UK public sector	–	–
– Other UK residents	0.14	0.00%
– Non-residents	0.03	0.00%
Bills	**13.2**	**0.33%**
– Treasury bills	14.14	0.35%
– UK bank bills	0.00	0.00%
– Other UK	0.51	0.01%
– Non-residents	0.24	0.01%
Sales and repurchase agreements	**431.6**	**10.84%**
– UK banks	31.09	0.78%
– UK public sector	0.41	0.01%
– Other UK residents	276.82	6.95%
– Non-residents	123.32	3.10%
Advances	**2,195.39**	**55.12%**
– UK public sector	7.16	0.18%
– Other UK residents	2,092.03	52.52%
– Non-residents	96.19	2.42%
Investments	**437.5**	**10.98%**
– UK government bonds	115.76	2.91%
– Other UK public sector	0.45	0.01%
– UK banks	46.73	1.17%
– Other UK residents	200.61	5.04%
– Non-residents	73.96	1.86%
Items in suspense and collection	18.9	0.47%
Accrued amounts receivable	15.6	0.39%
Other assets	29.3	0.74%
Total sterling assets	**3,983.2**	**100%**
Total foreign currency assets	4,002.1	
– Of which total euro assets	1,422.9	
Total assets	**7,985.2**	

Note: Figures may not add due to rounding.

Source: Bank of England, Monetary and Financial Statistics interactive database, Table B1.4, **www.bankofengland.co.uk/statistics/tables**, and authors' calculations.

major categories of loans are *commercial loans* (such as short-term loans to businesses), *consumer loans* (for example, overdrafts and credit card loans), *mortgage lending* and *real estate loans* (such as long-term loans to finance commercial real estate such as office buildings).

The next item on the asset side of the balance sheet is *investments*. These include all longer-term securities beneficially owned by the reporting institution and include securities that the reporting institution has sold for a finite period, but with a commitment to repurchase (i.e. repos), but exclude securities that have been bought for a finite period, but with a commitment to resell (i.e. reverse repos). Securities are defined as marketable or potentially marketable income-yielding instruments including bonds, floating rate notes (FRNs), preference shares and other debt instruments, but excluding certificates of deposit and commercial paper that are shown as market loans.

The remaining assets include the following:

- *Items in suspense and collection*, which include, for example, debit balances awaiting transfer to customers' accounts and balances awaiting settlement of securities transactions. Collections comprise cheques drawn, and in course of collection, on other UK banks and building societies.
- *Accrued amounts receivable* are gross amounts receivable, but have not yet been received, and include interest and other revenues.
- *Other assets* include holdings of gold bullion and gold coin, other commodities, together with land, premises, plant and equipment and other physical assets owned, or recorded as such, including assets leased out under operating leases. Assets leased out under finance leases are included as loans.
- *Eligible banks' total sterling acceptances* comprise all bills accepted by a reporting institution whose bills are eligible for rediscount at the Bank of England including those that the reporting institution has itself discounted.

Finally, in 2019, UK banks had about £4,002 billion in foreign currency assets (e.g. foreign currency loans), of which approximately 36 per cent were euro-denominated. As shown in Table 9.2, foreign currency assets and liabilities account for a significant proportion of total bank assets.

9.2.1.2 The liability side

On the liabilities side, as illustrated in Table 9.3, the first item reported is *notes outstanding and cash-loaded cards*. This includes all notes and cash held by banks, including the sterling notes issued by Scottish and Northern Irish banks and cash-loaded cards issued by banks (these are electronic cards, smart cards, etc.).

The largest proportion of bank liabilities is in the form of deposits that are typically made by individuals and firms, including deposits by other UK banks. The majority of deposits are represented by sight and time deposits (55 and 31 per cent, respectively), as shown in Figure 9.1.

Sight deposits comprise those deposits where the entire balance is accessible without penalty, either on demand or by close of business on the day following the one on which the deposit was made. *Time deposits* comprise all other deposits and they include, for example, 30- and 60-day savings bank deposits and ISA deposits.[1]

[1] ISAs (Individual Savings Accounts) were introduced in the United Kingdom in 1999. These are tax-free savings and investment accounts that can be used to save cash, or invest in stocks and shares.

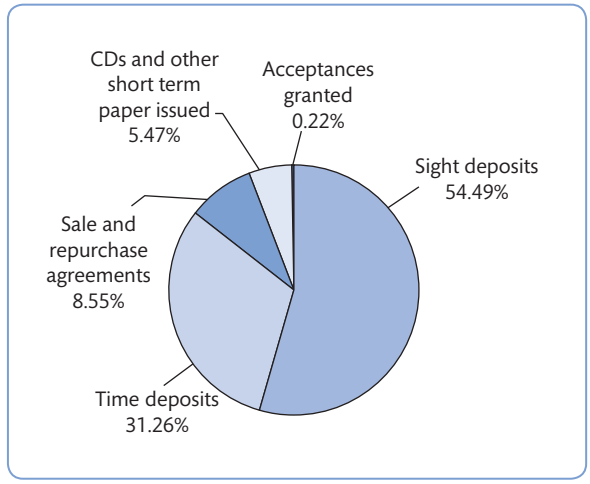


Figure 9.1 Breakdown of UK banks' sterling deposits, end-year 2019

Source: Bank of England, Monetary and Financial Statistics Interactive Database and authors' calculations.

As shown in Figure 9.1, deposits encompass all credit balances on customers' accounts, including acceptances granted, liabilities under sale and repurchase agreements and certificates of deposit.

Acceptances granted represent the banks' liabilities to the owners of bills. *Liabilities under sale and repurchase agreements* comprise cash receipts arising from the sale of securities or other assets that the bank has sold temporarily with a commitment to repurchase.

CDs and other short-term paper issued: certificates of deposits (CDs) are certificates given to depositors in return for a (wholesale) deposit. The holder of the CD receives interest at a fixed or floating rate. CDs are short-term securities and are re-saleable in the market. This item also contains promissory notes issued by the reporting institutions, unsubordinated capital market instruments (except debentures and secured loan stocks) of any maturity and subordinated loan stocks with a maturity of five years or less. Other subordinated loan stocks and debentures are included in capital and other funds (see below for the details on the capital item).

The remaining non-deposit liabilities, as reported in Table 9.3, include the following:

- *Items in suspense and transmission*, such as balances awaiting settlement of securities transactions, standing orders and credit transfers debited to customers' accounts, and other items for which the corresponding payment has not yet been made by the reporting institution.
- *Net derivatives*, which comprise the overall net derivatives position of contracts that are included within the trading and banking books of the reporting institutions.
- *Accrued amounts payable*, which are gross amounts payable that have not yet been paid or credited to accounts.
- *Capital and other internal funds*, which consist primarily of shareholders' funds, reserves and long-term debt.

Finally, Table 9.3 shows that in 2019 UK banks had over £4 trillion in foreign currency liabilities (e.g. foreign currency sight and time deposits), of which approximately 42 per cent were euro-denominated.

Table 9.3 Bank of England aggregate liabilities of UK banks (end-year 2019, £bn amounts)

Liabilities	£bn end-year 2019	% over total sterling assets
Notes outstanding and cash-loaded cards	**7.7**	**0.20%**
Sight deposits	**1,867.12**	**47.9%**
– UK banks	156.4	4.0%
– UK public sector	18.7	0.5%
– Other UK residents	1,512.6	38.8%
– Non-residents	179.4	4.6%
Time deposits	**1,071.09**	**27.5%**
– UK banks	230.9	5.9%
– UK public sector	14.7	0.4%
– Other UK residents	669.0	17.2%
– Non-residents	156.5	4.0%
Sale and repurchase agreements	**293.1**	**7.5%**
– UK banks	39.8	1.0%
– UK public sector	0.1	0.0%
– Other UK residents	141.6	3.6%
– Non-residents	111.5	2.9%
Acceptances granted	**0.2**	**0.00%**
CDs and other short term paper issued	**187.5**	**4.8%**
Total sterling deposits	**3,418.90**	**87.8%**
Items in suspense and transmission	17.5	0.4%
Net derivatives	4.1	0.1%
Accrued amounts payable	14.8	0.4%
Capital and other internal funds	431.3	11.1%
Total sterling liabilities	**3,894.30**	**100.0%**
Total foreign currency liabilities	4,090.93	
– Of which total euro liabilities	1,446.16	
TOTAL LIABILITIES	**7,985.2**	

Source: Bank of England, Monetary and Financial Statistics Interactive database, Table B1.4, **www.bankofengland.co.uk/statistics/tables** and authors' calculations.

The assets and liabilities side of a major UK bank

Tables 9.4 and 9.5 illustrate the consolidated financial data over 2013–2017 for a major UK credit institution, Barclays Bank. Figures 9.2 and 9.3 illustrate the breakdown of the major components of Barclays Bank's assets and liabilities in 2017.

A few remarks about Barclays' recent past are necessary before commenting on these financial results. Due to the ringfencing rules that apply to all large UK banks with a 3-year average of more than £25 billion 'core deposits' (in 2018 Barclays had to isolate core retail banking operations from the rest of the business (i.e. investment banking and international banking). 'Barclays Bank UK PLC' officially became the first UK bank to deliver a ring-fenced banking structure, which includes personal and business banking and Barclaycard consumer UK businesses. New governance arrangements mean that the bank has its own separately

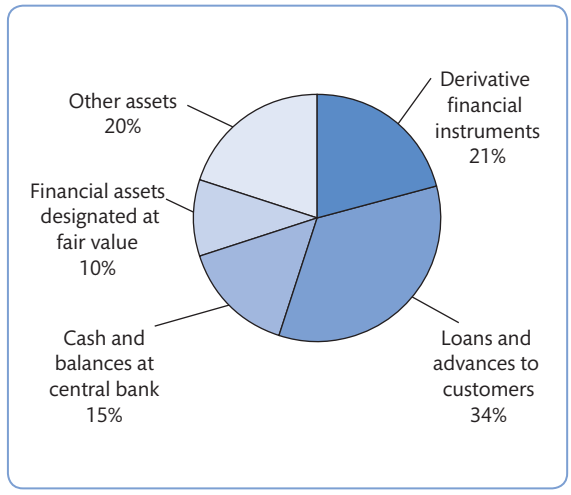


Figure 9.2 Barclays Bank main assets (%), end-year 2017

Source: Data from **www.investorrelations.barclays.co.uk** and authors' calculations.

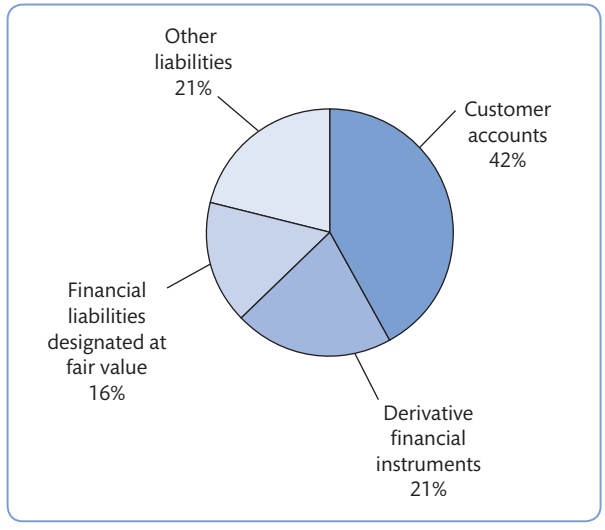


Figure 9.3 Barclays Bank main liabilities (%), end-year 2017

Source: Data from **www.investorrelations.barclays.co.uk** and authors' calculations.

constituted board of directors and financial reporting. This explains why the tables and figures that follow are updated to end-year 2017.

Figure 9.2 shows the breakdown of Barclays' asset side of the balance sheet in 2017. About 35 per cent of the bank's assets derive from loans to retail and corporate customers (compared to 64 per cent at end-year 2004, according to Barclays' 2004 *Annual Report*). Specifically, these items include home loans, credit cards, unsecured and other retail lending (about 40 per cent of the item total loans and advances to customers) and corporate loans (60 per cent). Derivative financial instruments represent the second largest item in Barclays' assets

Table 9.4 Barclays Bank assets, 2013–2017 (£mil)

Assets	2013	2014	2015	2016	2017
Cash and balances at central banks	42,139	35,469	43,669	97,466	165,713
Items in course of collection from other banks	992	801	596	1,010	1,011
Trading portfolio assets	66,212	49,076	33,057	36,527	79,836
Financial assets designated at fair value	80,621	40,867	71,987	80,865	117,182
Derivative financial instruments	345,434	426,565	316,252	327,202	232,288
Financial investments	82,272	78,590	83,608	61,599	54,583
Loans and advances to banks	51,650	57,438	62,201	36,391	37,255
Loans and advances to customers	462,583	429,814	395,207	423,124	388,960
Reverse repurchase agreements and other similar secured lending	142,695	102,824	28,803	22,941	22,964
Prepayments, accrued income and other assets	16,685	16,529	9,103	4,730	3,429
Investments in associates and joint ventures	182	193	127	164	165
Investments in subsidiaries	14,374	18,345	17,782	14,399	14,614
Property, plant and equipment	1,724	1,601	1,502	1,454	565
Goodwill and intangible assets	4,806	4,945	5,340	5,651	3,498
Current and deferred tax assets	84	2,079	2,096	2,764	1,978
Retirement benefit assets	2,736	–	807	7	959
Assets included as disposal groups classified as held for sale	–	620	5,180	3,453	–
Total assets	**1,315,189**	**1,265,756**	**1,077,317**	**1,119,747**	**1,125,000**

Source: **www.investorrelations.barclays.co.uk**

side of the balance sheet (21 per cent of total assets). Approximately 10 per cent of total assets is represented by financial assets designated at fair value. It is useful to note that Barclays switched to the new financial reporting standards that were approved by the EU Commission with effect from 1 January 2005 and are compulsory for all listed companies. Accordingly, the valuation of some assets and liabilities and the format of the income statements were subject to significant modifications. For instance, trading and financial assets and liabilities are now designated at **fair value**. Box 9.1 explains the meaning of adopting fair value compared to book value.

Tables 9.4 and 9.5 show that the total size of the bank's balance sheet at end-year 2017 is over £1.1 trillion; over 2013–2017 the size of the balance sheet has decreased by 14.5 per cent. This has been brought about mainly by a reduction in derivatives (−33 per cent) and loans (−16 per cent).

On the liability side, customer deposits account for nearly 42 per cent of the total. Only 5 per cent of total liabilities are represented by short- and long-term debt securities (e.g. commercial paper, CDs and bonds). As for the asset side, the relative importance of derivative financial instruments is again large (around 21 per cent). Table 9.5 also shows details on shareholders' equity (see Chapter 7 on bank capital regulation).

Table 9.5 Barclays Bank liabilities, 2003–2017 (£mil)

Liabilities	2013	2014	2015	2016	2017
Deposits from banks	64,667	70,342	63,682	50,464	38,364
Items in the course of collection due to other banks	1,168	911	758	636	446
Customer accounts	497,259	425,134	411,791	431,001	448,079
Repurchase agreements and cash collateral on securities lent	148,545	95,373	26,164	29,226	49,883
Trading portfolio liabilities	28,990	25,910	23,567	31,999	41,542
Financial liabilities designated at fair value	77,926	62,716	90,198	101,330	169,044
Derivative financial instruments	335,223	419,605	310,025	317,874	229,227
Debt securities in issue	62,812	63,771	45,720	60,864	55,874
Subordinated liabilities	20,982	20,851	21,411	23,878	24,203
Accruals, deferred income and other liabilities	19,042	18,649	17,779	7,853	6,885
Provisions	3,313	3,790	3,681	3,515	3,028
Current tax liabilities	696	408	701	767	242
Retirement benefit liabilities	1,588	1,309	213	207	149
Liabilities included in disposal groups classified as held for sale	–	275	4,103	2,135	–
Total liabilities	**1,262,211**	**1,209,044**	**1,019,793**	**1,061,749**	**1,066,966**
Shareholders' equity					
Shareholders' equity excluding non-controlling interests	52,978	56,712	57,524	57,998	58,034
Non-controlling interests	–	–	–	–	–
Total shareholders' equity	52,978	56,712	57,524	57,998	58,034
Total liabilities and shareholders' equity	**1,315,189**	**1,265,756**	**1,077,317**	**1,119,747**	**1,125,000**

Source: **www.investorrelations.barclays.co.uk**

BOX 9.1 ASSETS AND LIABILITIES VALUATION IN BANKING

Fair value is an accounting term that indicates how a bank values certain assets and liabilities. Under fair value these are stated in the bank's accounts at the current market values and if an active market is unavailable the bank will use estimates. Historical cost accounting is the main alternative to fair value and it refers to the original purchase price paid by the bank to acquire an asset (or received for a liability). However, historical cost also implies that the amount recorded in the financial statements should not exceed the amount expected to be recovered from either its use or its sale.

To understand these principles, it is useful to provide a simple example. Take Bank ABC, which in 2020 buys 1000 shares in a listed bank for €12 per share.

Table 9.6 Bank ABC: shares fair value vs historical cost

Balance sheet	Shares' fair value	Shares' historical cost
End-year 2019	€20,000	€12,000
End-year 2020	€5,000	€5,000

Source: Adapted from ICAEW.

BOX 9.1 Assets and liabilities valuation in banking (*continued*)

Assume that at the end of the year the price per share has increased to €20 and that at the end of 2019, due to a sharp recession, the price drops to €5. Under the two accounting principles, Bank ABC would report the figures in its balance sheet shown in Table 9.6.

The recent shift towards the use of fair value accounting in banking has been driven by several factors including a greater involvement in capital markets activity, rapid financial innovation and the embrace of market-based risk management. Regulatory developments have been led by the US Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB), responsible for two distinct sets of accounting standards: the US GAAP and the IAS/IFRS, respectively. Under both the International Financial Reporting Standards (IAS39) and the US Generally Accepted Accounting Principles (FAS159), banks held a range of financial instruments valued using either fair values or historical value. Assets that banks intend to hold to maturity are valued at historic cost. In contrast, assets for sale or trading assets are valued at market prices (fair value). Any gains or losses relative to sale or trading assets are reported in accumulated other comprehensive income. Fair values are established using level 1 inputs (observable prices in active markets); level 2 inputs (using prices for similar assets in active or inactive markets); and level 3 inputs (using modelling assumptions based on assumed prices, otherwise referred to as 'mark-to-model').

As shown in the table above, in contrast to historic cost, fair value reporting allows increases in value above cost. Vice versa losses can be overstated when values fall. This implies that one of the major drawbacks often attributed to fair value accounting principles is that financial statements become pro-cyclical as they follow market swings. This is particularly relevant for banks compared to other industries because they hold proportionally higher amounts of financial assets and liabilities on their balance sheets.

(For more information, see The Institute of Chartered Accountants in England and Wales (ICAEW), **www.icaew.com**.)

9.2.1.3 Bank equity capital

Defined as the value of assets minus the value of liabilities, the capital (or 'net worth' or 'equity capital') represents the ownership interest in a firm:

$$\text{Capital} = \text{Assets} - \text{Liabilities}$$

Bank capital and liabilities represent the specific sources of funds (see Figure 9.3). However, compared to manufacturing firms, typically banks are highly **leveraged** and thus hold a lower proportion of equity to assets (see Box 9.2). If a relatively small amount of loans are not repaid, this can seriously affect the level of equity and leave the bank technically insolvent. This is because if loans are not repaid then losses have to be borne by the capital cushion that banks hold to protect against such losses. The greater the level of capital relative to the losses incurred, then the greater protection the bank will have. If losses exceed the level of capital then a bank will become technically insolvent because even if it could liquidate all its assets there would not be sufficient funds to cover deposits. In such circumstances, the need to ensure depositors' confidence (a major issue for the banking sector) may result in one of the following:

1. other banks can engage in a rescue package to pump new capital into the troubled bank; or
2. the authorities can decide to rescue the troubled bank using taxpayers' money. The potential repercussions on the whole banking sector are such that regulatory authorities monitor bank behaviour and try to ensure that banks have adequate capital and that they are run in a safe and sound manner (see also Section 7.7).[2]

[2] Adequate capital corresponds to the 'C' in the CAMELS structure that includes also Asset quality, Management quality, Earnings, Liquidity and Sensitivity to market risk. For more details see Section 8.3.2.

In general, the primary function of capital is to reduce the risk of failure by providing protection against operating and any other losses. It does this in five ways by:

1. providing a cushion for firms to absorb unanticipated losses with enough margin to inspire confidence and enable the bank to remain solvent;
2. protecting uninsured depositors (depositors not protected by a deposit insurance scheme that covers small depositors) in the event of insolvency and liquidation;
3. protecting bank insurance funds and taxpayers;
4. providing ready access to financial markets and thus guarding against liquidity problems caused by deposit outflows; and
5. limiting risk taking.

Capital is also needed to acquire plant and other real investments that are necessary to provide financial services. For example, a bank will need capital for its technological investments, branching network and for the management of the payment systems. A bank can also use its capital resources to finance acquisitions.

Capital and risk are strictly connected. Generally speaking, more risk requires more capital so capital adequacy should be a function of risk exposure, all other things being equal. Today banks are exposed to many different financial risks; this is because their activities are increasingly taking place in markets that can be affected by changes in interest and exchange rates as well as variations in credit conditions that can affect both on- and off-balance-sheet

BOX 9.2 TYPICAL CAPITAL STRUCTURE OF A MANUFACTURING FIRM VERSUS A RETAIL BANK

Table 9.7 illustrates the typical balance sheet composition of a bank versus a manufacturing firm. Banks have a higher proportion of short-term assets over total assets and a smaller proportion of fixed assets. On the liability side, banks, on average, have a higher proportion of short-term liabilities (deposits). One major difference relates to the amount of leverage. Manufacturing firms hold a much higher proportion of capital to asset compared to banks.

Table 9.7 Banks vs. manufacturing firms – balance sheet composition

Manufacturing firm	%	Bank	%
Assets		**Assets**	
Short-term assets	55	Short-term assets	70
Fixed assets	45	Long-term and fixed assets	30
Total assets	100	Total assets	100
Liabilities		**Liabilities**	
Short-term liabilities	25	Short-term liabilities	80
Long-term debt	35	Long-term debt	12
Shareholders' equity	40	Shareholders' equity	8
Total liabilities	100	Total liabilities	100

BOX 9.2 Typical capital structure of a manufacturing firm versus a retail bank (*continued*)

The value of the manufacturing firm would have to decline by more than 40 per cent before the firms would become insolvent while a decline of only 8 per cent would make the bank insolvent.

The debt/equity ratio (or financial leverage) of the manufacturing firm is 60/40 = 1.5 and the debt/equity ratio of the bank is 92/8 = 11.5.

The structure of the balance sheet is extremely important for all firms. It is obvious that the way it is leveraged affects the value of the firm; it is an objective for financial managers to achieve a level of debt/equity that maximises the value of the company.

Source: Adapted from Koch and MacDonald (2014), p. 458.

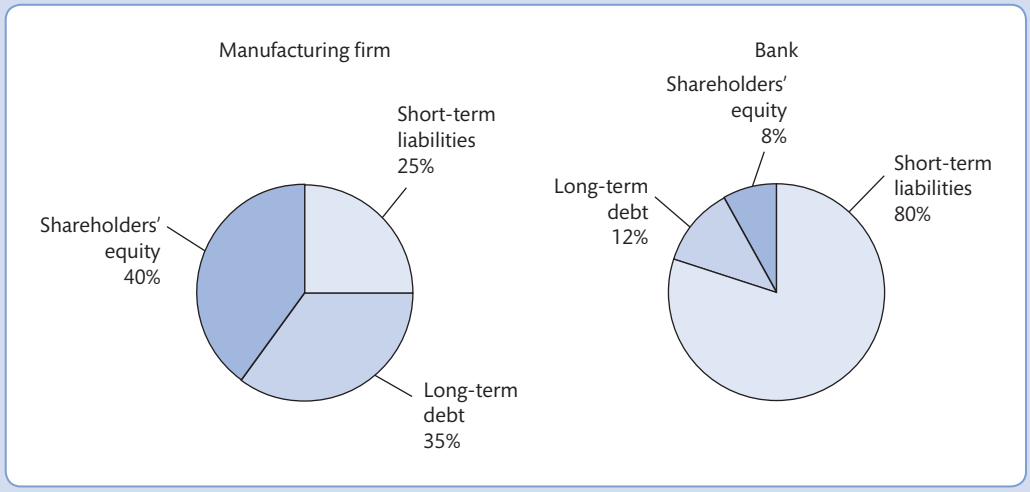


Figure 9.4 Banks vs. manufacturing firms – balance sheet composition

positions. In such a context banks' need for capital is much higher compared to the past. The recent turmoil in the global marketplace has prompted regulatory authorities and policy makers to revise the capital rules so that banks' financial statements reflect more adequately the level of risks undertaken (see Section 7.7).

9.2.1.4 Banks' income structure

The profitability of a bank can be derived from its income statement. Also known as its **profit and loss account** (or *Report of Income* in the US), this measures bank performance between two year-end balance sheets. The relationship between the balance sheet and income statement relates to the fact that the balance sheet reports stock values (e.g. the amount of outstanding loans), whereas the income statement represents cash flow values for a particular year (e.g. the interest received on outstanding loans). Therefore, the income statement reflects the revenue sources in banking as well as the costs.

The **costs**, derived from the liabilities side of the balance sheet, relate to the payments that banks have to undertake such as payment of interest on deposits, dividends to shareholders, interest on debt, provision for loan losses and taxes. The **revenues**, generated by the assets, include interest earned on loans and investments, and fees and commissions (interest and

non-interest revenue). Then as any other firm, banks also incur staffing and other operating costs.

$$\text{Bank profits} = \text{Income} - \text{Costs}$$

In the relationship above, income is equal to interest and non-interest income; costs are the sum of interest costs, staff costs and other operating costs. Table 9.8 shows a simplified income statement and how **profits** are calculated for a retail bank.

The *interest income* is the income generated on all banks' assets, such as loans, securities and deposits lent out to other institutions, households and other borrowers. *Interest expense* is the sum of interest paid on all interest-bearing liabilities such as all deposit accounts, CDs, short-term borrowing and long-term debt. The difference between interest income (revenues) and interest expenses (costs) is the *net interest income* (NII).

Provision for loan losses (PLL) is the amount charged against earnings to establish a reserve sufficient to absorb expected loan losses. It can be subtracted from net interest income in recognition that some of the reported interest income overstates what will actually be received after loan defaults. Thus, *net interest income after provisions for loan losses* is calculated as the difference between NII and PLL.

Non-interest income is the income generated by fee income, commissions and trading income and has become important due to increased emphasis on this source of revenue in recent years. It includes, for example, fees and deposit service charges, such as fees paid on safe-deposit boxes; commissions (e.g. from insurance sales) and gains/losses from trading in securities; and other non-interest income sources such as gains/losses on foreign transactions and from undertaking other OBS activities (such as securities underwriting).

Non-interest expenses include salaries and fringe benefits paid to employees, property and equipment expenses, and other non-interest expenses (such as deposit insurance premiums and depreciation). *Net non-interest income* will be the difference between non-interest income and non-interest expenses.

Table 9.8 A simplified bank income statement

a	Interest income
b	Interest expense
$c\ (= a - b)$	Net interest income (or 'spread')
d	Provision for loan losses (PLL)
$e\ (= c - d)$	Net interest income after PLL
f	Non-interest income
g	Non-interest expense
$h\ (= f - g)$	Net non-interest income
$i\ (= e + h)$	Pre-tax net operating profit
l	Securities gains (losses)
$m\ (= i \pm l)$	Profit before taxes
n	Taxes
o	Extraordinary items (net)
$P\ (= m - n - o)$	Net profit
q	Cash dividends
$r\ (= p - q)$	Retained profit

As we move down Table 9.8 we find the item *pre-tax net operating profit*, which is the sum of interest income minus PLL plus net non-interest income. *Profit before taxes* will be equal to *Pre-tax net operating profit* ± the *securities gains* (*losses*) that may occur when the bank sells securities from its portfolio at prices above the initial cost to the bank. By deducting taxes and other net extraordinary items (which are unusual or infrequent events that can include, for example, the net revenue from the sale of real assets), it is possible to obtain the *net profit*, which is the profit after tax. Finally, *retained profits* will be equal to net profit minus dividends.

Table 9.9 shows a profit and loss account for Barclays over 2013–2017.

Table 9.9 Barclays Bank PLC profit and loss account, 2013–2017 (£mil)

	2013	2014	2015	2016	2017
Interest income	18,315	14,194	13,953	14,423	13,631
Interest expense	(6,715)	(4,108)	(3,345)	(2,966)	(3,883)
Net interest income	**11,600**	**10,086**	**10,608**	**11,457**	**9,748**
Fee and commission income	10,479	8,622	8,470	8,625	8,775
Fee and commission expense	(1,748)	(1,500)	(1,611)	(1,789)	(1,901)
Net fee and commission income	**8,731**	**7,122**	**6,859**	**6,836**	**6,874**
Net trading income	**6,553**	**3,086**	**3,426**	**2,795**	**3,387**
Net investment income	**680**	**1,309**	**1,097**	**1,324**	**859**
Net premiums from insurance contracts	732	–	–	–	–
Other income	148	160	50	57	69
Total income	**28,444**	**21,763**	**22,040**	**22,469**	**20,937**
Net claims and benefits incurred on insurance contracts	(509)	–	–	–	–
Total income net of insurance claims	**27,935**	**21,763**	**22,040**	**22,469**	**20,937**
Credit impairment charges and other credit provisions	(3,071)	(1,821)	(1,762)	(2,373)	(2,336)
Net operating income	**24,864**	**19,942**	**20,278**	**20,096**	**18,601**
Employment costs	(12,155)	(9,860)	(8,853)	(9,211)	(6,445)
Infrastructure costs	(3,531)	(2,895)	(2,691)	(2,937)	(2,068)
Administration and general expenses	(4,113)	(3,069)	(2,983)	(3,200)	(6,476)
Other expenses	(2,173)	(2,360)	(4,009)	(1,000)	(700)
Operating expenses	**21,972**	**18,184**	**18,536**	**16,348**	**15,689**
Share of post-tax results of associates and joint ventures	(56)	28	41	70	70
Loss/Profit on disposal of subsidiaries, associates and joint ventures	6	(473)	(637)	565	184
Gains on acquisitions	26	–	–	–	–
Profit before tax	**2,868**	**1,313**	**1,146**	**4,383**	**3,166**
Tax	(1,571)	(1,121)	(1,149)	(1,245)	(2,125)
Loss/Profit after tax from continued operations	–	192	3	3,138	1,041
Loss/Profit after tax from discontinued operations	–	653	626	591	(2,195)
Loss/Profit after tax	**1,297**	**845**	**623**	**3,729**	**(1,154)**

At year-end 2017 Barclays Bank had total income, of over £20.9 billion, a decrease by about 26 per cent from 2013. The decrease had been brought about by a sharp drop in fee and commission income (−21 per cent) and net trading income (−48 per cent). This latter was already visible in 2014 and was primarily reflecting lower volatility and subdued trading activity, combined with tighter spreads and fair value reductions.

While the income statement gives a good indication of the profitability of a commercial bank, **bank performance** over time is usually measured in relation to ratio analysis that uses the information contained in both the balance sheet and the income statements. Section 9.4 focuses on the importance of ratio analysis and how to interpret the most common financial ratios.

Before moving on to ratio analysis, Section 9.3 illustrates the main characteristics of investment banks' financial statements and how they compare with commercial banks.

9.3 Investment banks' financial statements

We saw in Chapter 3 that large-scale wholesale financing activities are typically carried out by investment banks. Moreover, investment banks offer a range of services such as securities underwriting (including the issue of commercial paper, Eurobonds and other securities) and provide corporate advisory services on mergers and acquisition (M&As) and other types of corporate restructuring. In a nutshell, investment banks mainly deal with corporations and other large institutions and they typically do not deal with retail customers, apart from the provision of upmarket private banking services. As a result of the global financial crisis of 2007–2009, US investment banks have converted to Bank Holding Companies (BHC) to qualify for government assistance (as did Goldman Sachs and Morgan Stanley), or they have been acquired by commercial banks (as in the Merrill Lynch acquisition by Bank of America). In the remainder of this Section, we use the term investment bank to describe a financial institution that engages mainly in the business typical of investments bank, either as a stand-alone institution or as part of a group. As per 2019, the world largest investment bank (by share of revenues) is JPMorgan Chase, followed by Goldman Sachs. In the UK, one of the most successful investment banks is Barclays, as the bank has a large investment bank division (Barclays Investment Bank, formerly known as Barclays Capital).

To understand in some detail the nature of investment banks' business, it is useful to examine the composition of their statements. This is relatively straightforward when looking at the annual reports of investment banks that have converted to BHCs after the crisis (such as Goldman Sachs, see Box 9.3). It becomes slightly more complicated for banks that have been acquired by BHCs, since their business has been deconstructed across various business segments, as in the case of Merrill Lynch, whose original bank name is only used for the private banking/wealth management of Bank of America, but the investment banking business has been allocated to two business lines: *Global Banking* and *Global Markets*.[3]

[3] In addition to Global Banking and Global Markets, Bank of America currently has another two business segments: Consumer and Business Banking and Global Wealth and Investment Management, with the remaining operations recorded in 'All Other'. The most profitable in terms of net income in 2019 was *Consumer and Business Banking*, which is comprised of deposits to consumers and small businesses, credit and debit card services, and business banking, and offers a diversified range of credit, banking and investment products and services to consumers and businesses.

9.3.1 Investment banks' balance sheet

Table 9.10 exhibits a simplified investment bank balance sheet.

Assets side

On the asset side investment banks keep *cash and other non-earning assets*. These assets include, for example, short-term highly liquid securities along with assets set aside for regulatory purposes.

Another key item is *trading assets*. These are the banks' trading activities that consist primarily of securities brokerage, trading and underwriting, and derivatives dealing and brokerage. Generally, trading assets include cash instruments (e.g. securities) and derivatives instruments used for trading purposes to manage risk exposures. Other cash instruments can include, for instance, loans held for trading purposes (i.e. loans that can be traded in the secondary market).

Investment banks enter into secured lending in order to meet customer needs, and obtain securities for settlement. Under these transactions, they can receive collateral from resale agreements and securities borrowed transactions, customer margin loans and other loans. *Securities financing transactions* are collateralised securities that the bank can sell or re-pledge.

Securities owned for non-trading purposes are classified as *investment securities*. They are marketable investment securities and other financial instruments the bank owns, and can include highly liquid debt securities such as those held for liquidity management purposes, equity securities and other investments such as long-term ones held for strategic purposes. Investment banks' lending and related activities such as loan originations, syndications and securitisations (see Chapter 18) are reported under *loans, notes and mortgages*.

Other investments include other receivables such as amounts due from customers on cash and margin transactions. *Fixed assets* consist of equipment and facilities. Typical examples are technology hardware and software and owned facilities (e.g. premises). *Other assets* consist of intangible assets and goodwill as well as assets generated from any unrealised gains on derivatives used to hedge the bank's borrowing and investing activities. It can also include prepaid expenses and real estate purchased for investment purposes.

Table 9.10 A simplified investment bank balance sheet

Assets	Liabilities
Cash and other non-earning assets	Short-term borrowings
Trading assets	Trading liabilities
Securities financing transactions (receivable)	Collateralised securities
Investment securities	Long-term borrowing
Loans, notes and mortgages	Deposits
Other investments	Other payables
Fixed assets	
Other assets	
	Equity
	Other capital terms
Total assets	**Total liabilities and shareholders' equity**

Liabilities and equity

As shown in Table 9.10, funding of investment banks derives from various sources. The main items are as follows:

- *Collateralised securities* – derived from the bank entering secured borrowing transactions and securities sold under agreement to repurchase; this includes payables under repurchase agreements and payables under securities loaned transactions. (This item corresponds to securities financing transactions on the asset side.)
- *Trading liabilities* – include activities that the investment bank undertakes based on future expectations such as trading securities and derivatives dealing and brokerage.
- *Short-term borrowings* – consists of notes payable and any other short-term borrowings.

The investment bank can issue *other short-term debt instruments* – which may be linked to the performance of equity or other indices – and *medium- and long-term debt instruments*.

Another liability is *deposits* (savings and time deposits), which are typically high-volume corporate deposits, followed by *other liabilities* to customers, brokers and dealers, etc., and finally, *shareholders' equity*.

9.3.2 Investment banks' income statements

Investment banks, like commercial banks, are required to publish their profit and loss accounts (or 'statement of earnings'), which report all costs, revenues and net profits for the financial year. Investment banks' revenues derive from the following four sources:

- trading and principal investments;
- investment banking;
- asset management, portfolio service fees and commissions; and
- interest income.

The first components of *trading and principal investments* relate to income generated from trading in equities and equity derivatives, corporate debt, debt derivatives, mortgage and municipals, government and agency obligations, and foreign exchange. *Principal investments* are those securities held over time for general investment purposes. *Investment banking* (in the US) generally includes underwriting and financial advisory services (e.g. M&As advice). *Asset management and portfolio services* can originate revenues in the form of commissions (e.g. agency transactions for clients on main stock and futures exchanges). More specifically, asset management is a source of fees for investment banks generated by providing investment management (e.g. managing company pension funds and other investments) and advisory services to both individuals and institutions.

Securities services can also generate fees from various activities such as brokerage, financing services and securities lending, and matched book businesses. Finally, *interest income* derives primarily from wholesale lending activity of the bank.

On the cost side, interest expenses can be relatively high due to investment banks obligations on borrowings as well as bond and short-term paper instruments (compared to commercial banks), while the bulk of operating expenses relates to staff costs. Other costs include, among others:

- communication and technology;
- occupancy and related depreciation;

- brokerage, clearing and exchange fees;
- professional fees;
- marketing;
- other expenses.

Box 9.3 illustrates the financial statement composition of Goldman Sachs.

BOX 9.3 GOLDMAN SACHS FINANCIAL STATEMENTS (2019)

Founded in 1869 by a German immigrant, Marcus Goldman, and headquartered in New York, Goldman Sachs today 'is a leading global investment banking, securities and investment management firm that provides a wide range of financial services to a substantial and diversified client base that includes corporations, financial institutions, governments and high-net-worth individuals' (**www.goldmansachs.com**). As of 31 December 2019 the company had 38,300 staff members throughout the world and net revenues of US$36.55 billion. Goldman Sachs provides a variety of services, from capital markets services, investment banking and advisory services, wealth management, asset management, banking and related products and services. In 2008 Goldman Sachs converted into Bank Holding Company and thus is subject to consolidated regulatory capital requirements administered by the Fed.

Figure 9.5 illustrates the assets and liabilities composition for Goldman Sachs in 2019.

On the asset side, relevant items are trading assets at fair value that comprise, for example, securities and financial derivatives held by the bank for trading purposes. These constitute the bulk of total assets (36 per cent). Other relevant items are collateralised agreements, i.e. securities borrowed and securities purchased under agreement to resell, amounting to 22 per cent overall. It is also worth noting that Goldman Sachs holds a relatively high proportion of liquid assets (around 13 per cent).

The assets and liabilities structure of investment banks usually indicates shorter-maturity characteristics on the assets side of the balance sheet compared with a traditional commercial bank. Looking at the liabilities and shareholders' equity side, Goldman Sachs's funding sources derive mainly from deposits

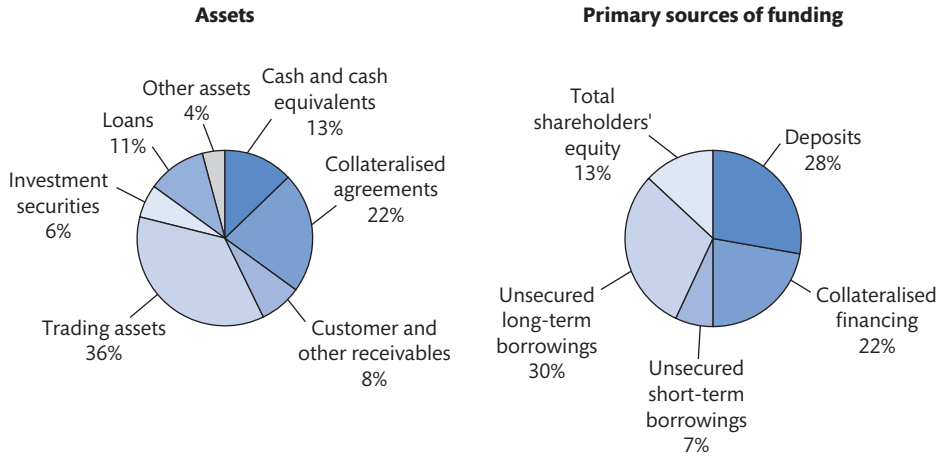


Figure 9.5 Goldman Sachs: asset composition and primary sources of funding, 2019

Source: Goldman Sachs (2019) *Annual Report* and authors' calculations.

BOX 9.3 Goldman Sachs' financial statements (2019) (*continued*)

(28 per cent of total funding sources), long-term borrowing (30 per cent) and collateralised financing (22 per cent).

The revenue sources and cost characteristics of Goldman Sachs for 2019 are shown in Figure 9.6.

The figures show that most revenues derive from market making and other principal transactions (44 per cent), asset management and commissions (25 per cent) and investment banking activities (19 per cent). It is notable that Goldman Sachs earns 40 per cent of its net revenues from its Global Markets business segment and over 60 per cent of its net revenues in the Americas. Operations in Europe, the Middle East and Africa account for 32 per cent (Figure 9.7).

On the operating costs side, staff expenses (in the form of employee compensation and benefits) are prevalent (50 per cent). It is worth noting that on the cost side the proportion of compensation and benefits is about 25:75 of total costs (Figure 9.9).

Source: Goldman Sachs (2019) *Annual Report*.

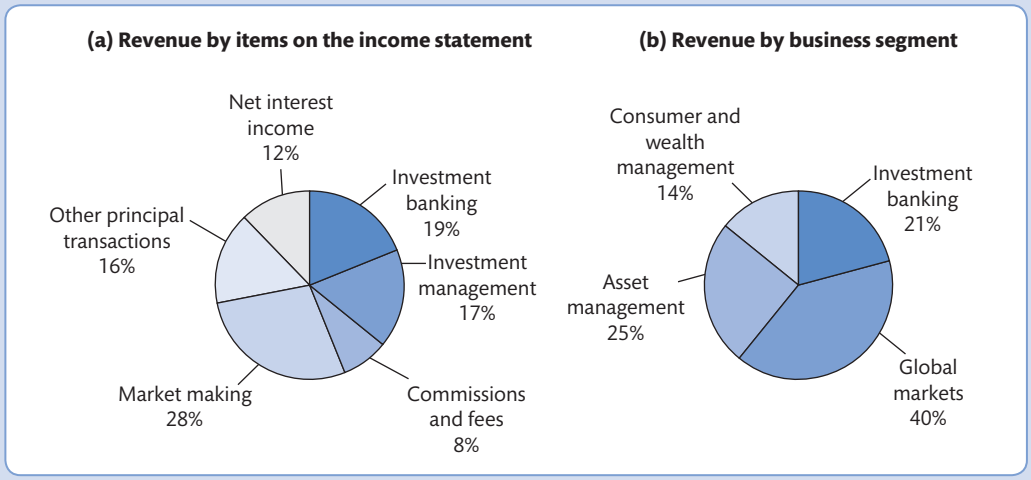


Figure 9.6 Goldman Sachs: sources of revenue, 2019.

Source: Goldman Sachs (2019) *Annual Report* and authors' calculations.

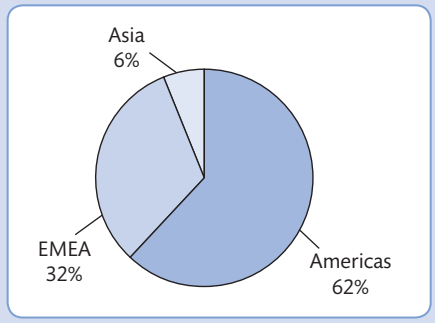


Figure 9.7 Goldman Sachs: net revenues by geographic regions, 2019

Source: Goldman Sachs (2019) *Annual Report* and authors' calculations.

BOX 9.3 Goldman Sachs' financial statements (2019) (*continued*)

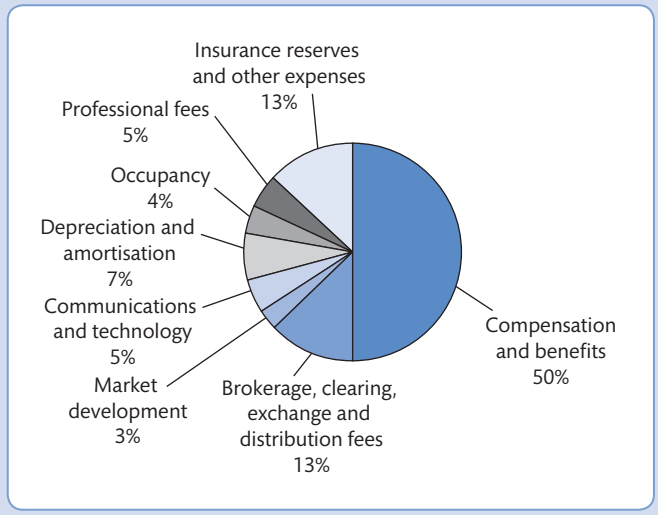


Figure 9.8 Goldman Sachs: non-interest expenses, 2019

Source: Goldman Sachs (2019) *Annual Report* and authors' calculations.

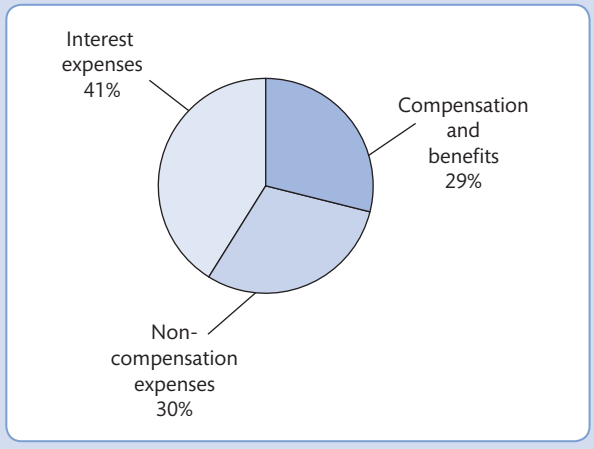


Figure 9.9 Goldman Sachs: breakdown of costs, 2019

Source: Goldman Sachs (2019) *Annual Report* and authors' calculations.

9.4 Bank performance and financial ratio analysis

The significant changes that have occurred in the financial sector in all advanced economies have increased the importance of performance analysis for banking institutions. The current operating environment is characterised by more intense competition, greater pressures for banks to control costs, manage risks while at the same time maximise revenues. For publicly

listed banks, the objective of shareholders' wealth maximisation (maximising the returns to investors holding equity shares in the bank) is still a priority restrained by increased regulatory constraints (forcing banks to hold more capital reduces returns on capital). It is not surprising that the 2007–2009 financial crisis and the recession that followed have increased the demand for prudential regulation (see Chapter 7). In addition, a broader and more balanced concept of performance has emerged, which is more inclusive and transparent and respects the environment and social challenges. Financial performance analysis is an important tool used by various agents operating either internally to the bank (e.g. managers) or who form part of the bank's external operating environment (e.g. regulators), as shown in Figure 9.10.

- *Shareholders, bondholders*: investors in shares and in bonds issued by the bank, and bank managers and other employees have an obvious economic and strategic interest in the current and future prospects of the banking firm.
- *Direct competitors*: peer group analyses compare the profitability of similar banking institutions operating in similar operating environments; in some cases the homogeneity of the groups being analysed allows for the use of sophisticated statistical techniques.
- *Other market participants*: competitors (or other firms) that represent potential takeover or merger possibilities will rely on **financial ratio analysis** to assess the viability of potential M&A activity and to evaluate potential economic synergies.
- *Financial markets*: capital and money market participants use ratio analysis to monitor the performance of banks. Money market participants, especially those involved with lending in the interbank market will need to assess the credit-worthiness of the banks they are lending to. Deterioration in bank performance may increase credit risk and therefore interbank lenders will require higher returns on their loans. Banks with higher capital ratios will more likely be able to achieve cheaper finance in the interbank markets (as such banks will be perceived as being less risky). Capital market participants and analysts also use ratio analysis to assess the performance of banks as a change in bank performance can alter the valuation of long-term bonds and shares issued by banks. For example, potential bondholders will rely on performance trends as a guide to their investments.

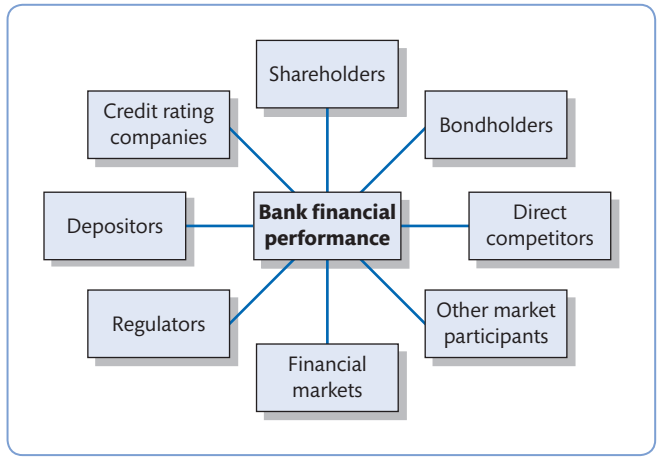


Figure 9.10 Who is interested in bank performance?

- *Regulators*: domestic and international regulatory authorities will also be concerned about the performance of banking institutions. For example, financial regulators need to evaluate the solvency, liquidity and overall performance of banking firms to gauge the likelihood of potential problems. Competition authorities also investigate bank performance indicators to analyse whether banks are making excess profits and behaving in an uncompetitive manner.
- *Depositors*: the smooth performance of banks is valuable for depositors who trust their bank will remain profitable and not expose itself to too much risk.
- Finally, *credit rating companies* – such as Moody's, Standard & Poor's and Fitch IBCA – analyse performance information to compile analyses and ratings of banks operating in a certain country or group of countries.

Bank performance is calculated using ratio analysis and assessed with the aim of (1) looking at past and current trends, and (2) determining future estimates of bank performance. Financial ratio analysis investigates different areas of bank performance, such as profitability, asset quality and solvency.

In addition, over recent years a greater emphasis has been placed on **key performance indicators (KPIs)**. These are 'factors by reference to which the development, performance or position of the business of the company can be measured effectively' (UK Companies Act 2006, Section 417: 6). This definition implies that KPIs can be financial (e.g. cost efficiency, capital adequacy) and non-financial (e.g. customer satisfaction, diversity and sustainability), as described in Box 9.4, and should be monitored and reviewed by management in light of the bank's strategic objectives, operating plan targets and historical performance.

BOX 9.4 WHAT ARE KEY PERFORMANCE INDICATORS (KPIs)?

A report by PwC (2007) stresses the importance of financial and non-financial KPIs for *narrative reporting* to ensure corporate transparency and clarifies their main features and scope, as shown in Table 9.11.

With reference to the specific banking industry, the key strategic drivers rotate around the following six critical aspects: customer retention, customer penetration, capital adequacy, assets under management, asset quality and loan losses.

Recent years have witnessed an increased emphasis on non-financial corporate performance (Schoenmaker and Schramade, 2019). In the European Union,

Table 9.11 Key performance indicators (KPIs)

1 How many KPIs should be reported?	Typically there are likely to be between four and ten measures. However, in order to aid corporate transparency, KPIs should reflect the company-specific business and its strategy so there is no 'one size fits all'.
2 Segmental or group KPIs?	In some cases, it may be more useful to report separate KPIs by business segments (e.g. retail banking, commercial banking, asset management, insurance etc.). For example, in diversified organisations reporting the KPIs only at the group level may be meaningless.
3 How rigid is the choice of KPIs?	Since strategies and objectives evolve over time, it may be appropriate to allow the KPIs to adapt to these changes so there is no requirement to continue reporting the KPIs identified in previous periods.
4 Does reliability matter in choosing KPIs?	Particularly for non-traditional and less well known indicators, it is important that management ensure the reliability and clarity of the information so any limitations should be stated and, if possible, explained to the reader.

BOX 9.4 What are key performance indicators (KPIs)? (*continued*)

all large public interest entities with over 500 employees (listed companies, banks and insurance companies) must comply with Directive 2014/95/EU on non-financial reporting (NFRD), which requires them to disclose in their annual reports details about their commitment to sustainable development. Detailed non-binding guidelines on the disclosure of non-financial information have also been adopted by the European Commission in 2017 (2017/C 215/01) to enhance business transparency on social and environmental matters and ensure consistency and comparability across companies. The guidelines clarify that companies have to disclose 'relevant information on policies, risks, and results as regards environmental matters, social and employee-related aspects, as well as respect for human rights, anti-corruption, and bribery issues, and diversity on the board of directors'. An important role in this context is that of the Global Reporting Initiative or GRI (**www.globalreporting.org/**), which offers support to governments and regulators in the development of sustainability reporting policies and regulations. Sustainability reporting is also central to the so-called 'European Green Deal', which is an action plan of the European Commission to advance sustainable development and tackle climate change so that Europe will be climate neutral by 2050.

Search on the web for the latest non-financial report by Deutsche Bank and answer these questions:

(i) who are the main **stakeholder** groups that the bank has committed to engage with and how does the engagement take place?

(ii) what are the main sustainability ratings used by the bank?

(iii) what is a 'materiality assessment'?

(iv) why are culture and integrity important for a bank?

(v) what can a bank do to protect the environment and human rights when lending?

Source: Adapted from PwC (2007); Schoenmaker and Schramade (2020).

The traditional financial ratios for measuring bank performance are discussed below. The tools that can be used to calculate performance are derived from the information revealed by periodic financial reports produced by the accounting system: the balance sheet and the income statement.

9.4.1 Profitability ratios

Profitability ratios traditionally used in banking are return on equity (ROE), return on assets (ROA), net interest margin (NIM) and C/I (cost-to-income) ratio.

ROA is the return-on-assets calculated as net income/total assets (or alternatively *average* assets over two financial years); this ratio indicates how much net income is generated per £ of assets:

$$\text{ROA} = \text{Net income/Total assets} \tag{9.1}$$

ROE is probably the most important indicator of a bank's profitability and growth potential. It is the rate of return to shareholders or the percentage return on each £ of equity invested in the bank:

$$\text{ROE} = \text{Net income/Total equity} \tag{9.2}$$

Box 9.5 shows the decomposition of ROE into return on assets and equity multiplier. It also summarises briefly the key points of a report by the European Central Bank (2010a) on the shortcomings of this widely used ratio.

BOX 9.5 THE ROE DECOMPOSITION

ROE can be decomposed using a traditional method in corporate finance known as 'Du Pont Model', from the name of the US Corporation that first applied it in the 1920s. This decomposition is important because it allows financial analysts to understand the interrelationship between various ratios and helps banks to invest in areas where the risk-adjusted returns are greater.

We specified in equation (9.2) that accounting ROE is equal to net income divided by total (or, alternative, average) equity. By multiplying ROE by total assets, it is possible to decompose it into two parts: the ROA (= net income/total assets), which measures average profit generated relative to the bank's assets, and the so-called equity multiplier (EM), i.e. a measure of bank's leverage. Specifically:

$$\text{ROE} = \left(\frac{\text{Net income}}{\text{Total assets}}\right) \times \left(\frac{\text{Total assets}}{\text{Total equity}}\right) \tag{9.3}$$

where

$$\text{EM} = \text{Total assets} / \text{Total equity} \tag{9.4}$$

so that

$$\text{ROE} = \text{ROA} \times \text{EM} \tag{9.5}$$

ROA can also be split into two parts: **profit margin** (= Net income / Total revenue) and total revenue over total assets, which can be defined as the asset yield or asset 'utilisation' ratio. By multiplying ROA by the bank's total revenue, we obtain:

$$\text{ROA} = \left(\frac{\text{Net income}}{\text{Total revenue}}\right) \times \left(\frac{\text{Total revenue}}{\text{Total assets}}\right) \tag{9.6}$$

Substituting:

$$\text{ROE} = \left(\frac{\text{Net income}}{\text{Total revenue}}\right) \times \left(\frac{\text{Total revenue}}{\text{Total assets}}\right) \times \left(\frac{\text{Total assets}}{\text{Total equity}}\right) \tag{9.7}$$

It is possible to depict the ROE decomposition graphically, as shown in Figure 9.11.

During the 2007–2009 financial crisis, banks that had previously generated high ROE performed rather poorly. An ECB report (2010a) acknowledges the need to better understand the potential trade-off between risk and return in bank performance analysis and discusses the reliability of using ROE as a benchmark particularly in periods of high volatility and weak economic conditions. The major shortcomings of ROE identified by the report can be summarised as follows:

1. There are unbalances in the drivers of ROE (namely ROA and leverage); in particular ROE is not risk-sensitive.
2. Crucial risk elements are missing in ROE such as the proportion of risky assets and the level of solvency.
3. ROE fails to distinguish the best-performing banks from others because it is essentially a short-term indicator and thus cannot measure the potential for *sustainable* (long-term) results of the bank.

BOX 9.5 The ROE decomposition (*continued*)

4 Last but not least, like other accounting metrics ROE may be prone to manipulations from the markets since data are not always reliable and there are significant seasonal factors that can affect them.

Source: European Central Bank (2010a).

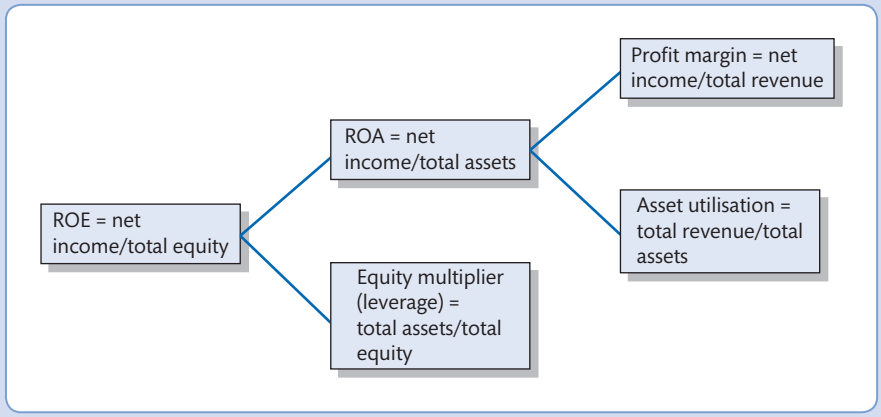


Figure 9.11 The ROE decomposition

Another key performance measure for institutions engaged in traditional banking activities is the NIM, or net interest margin, which measures the net interest income relative to the bank's total, average or earning assets:

$$\text{NIM} = [(\text{Interest income} - \text{Interest expense})/\text{Total earning assets}] \quad (9.8)$$

NIM reflects the difference between interest earned on assets minus interest costs per £ of assets. It measures the bank's *spread* per £ of assets. A high NIM suggests that the difference between deposit rates and loan (+ other interest earning assets) rates are high, and vice versa. As we have noted in earlier chapters, NIM has been falling in many banking markets reflecting increased competition in the deposits and loan markets – the difference between how much banks pay on deposits and how much they earn on loans is declining.

Finally, the cost-to-income ratio (C/I) is a quick test of efficiency that reflects bank non-interest costs as a proportion of income:

$$\text{C/I} = \text{Non-interest expenses} / (\text{Net interest income} + \text{Non-interest income}) \quad (9.9)$$

where non-interest expenses are considered as the main inputs to the production process of a bank and total operating income is the output.

If the bank is listed in the capital markets some additional useful measures of performance are EPS (earnings per share), price to book value (P/B) and credit default swaps (CDSs).

$$\text{EPS} = \text{Net income} / \text{Average shares outstanding} \tag{9.10}$$

EPS measures the portion of a bank's profit net of tax allocated to each share in issue of common stock. A higher EPS means better profitability for shareholders.

$$\text{P/B} = \text{Stock price} / \text{Book value of equity per share} \tag{9.11}$$

Price-to-book value (also known as market-to-book) is the ratio between the market prices of a bank's shares and the accounting value of shareholders' equity per share. The lower the number the better for investors because if, for example, the bank's current share price is £4 and shareholders' equity per share is £2, then investors are ready to pay for one share twice the book value!

Table 9.12 provides the financial highlights for Australia's four major banks: Australia and New Zealand Banking Group Ltd (ANZ), Commonwealth Bank of Australia (CBA), National Australia Bank (NAB) and Westpack Banking Corporation (WBC). As a background, banks' profits suffered a sharp decline due to various structural factors combined with the recession induced by the Covid-19 pandemic. It is possible to note that ROA ranges between 0.25 per cent and 0.75 per cent while ROE ranges between 3.8 and 10.3 per cent (the lowest level in the past 20 years) and NIM around 1.9 per cent.[4] Usually the benchmark for ROA level is around 1 per cent while ROE is considered good when over 10 per cent. High-performing banks typically adopt a target ROE figure of 15 per cent plus. Generally speaking, the higher these ratios the better from a bank's perspective, as higher NIM should

Table 9.12 Australian major banks' (the 'Majors') performance at a glance, 2020

	ANZ	CBA	NAB	WBC
Ranking				
Ranking by total assets	1	2	4	3
Ranking by market capitalisation	4	1	3	2
Performance measures				
Return on assets (%)	0.36	0.75	0.41	0.25
Return on equity (%)	6.2	10.3	6.5	3.8
Net interest margin (basis points)	163	207	177	208
Cost-to-income ratio (%)	52.9	45.9	52.4	61.6
Earnings per share (cents)	132.7	412.5	120.9	72.5
Asset quality				
Impaired loans to total loans	0.40	0.46	0.31	0.40
Capital adequacy ratios				
Tier 1	13.2	13.9	13.2	13.2
Total Capital	16.4	17.5	16.6	16.4

Source: KPMG (2020) and Yahoo finance.

[4] It is not unusual to find ratios expressed in basis points. One basis point is 1/100th or 0.01 per cent. For example, a ratio of 0.055 per cent is 5.5 basis points.

feed through into greater net income, thus boosting ROA and ROE. However, as highlighted in Box 9.5, very high ROE can also indicate high risk taking and unsustainable business models. Table 9.12 also illustrates that CBA is the best-performing bank in terms of cost-to-income ratios. The benchmark for the cost-to-income ratio is around 50–70 per cent, i.e. a low C/I ratio indicates that the bank is operating in an efficient way. Although the major banks in Australia have experienced a drop in profitability, they have continued to strengthen their balance sheets and maintain relatively high capital levels.

Table 9.13 reports the 2019 key profitability ratios for three large former investment banks. It is noticeable that Goldman Sachs' performance is not as strong as that of the other two banks. ROE and ROA exceed 10 per cent and 1 per cent (respectively) for both JPMorgan and Morgan Stanley. Typically, net interest margin has a secondary role for investment banks compared to commercial and retail banks. A more suitable measure of profitability for investment banks is *profit margin*, which is equal to earnings before income taxes to total operating income and takes into account both interest and non-interest income.

Table 9.13 also reports the two market-based measures of performance mentioned above (EPS and P/B). It seems clear that Goldman Sachs is the best bank at generating high EPS while keeping the level of equity in line with the other two banks. The ratio of liquid assets over total deposits and short-term funding appears significantly lower for JPMorgan (74.4 per cent) than its peers.

Finally, spreads on credit default swaps (CDSs) provide useful information, as they represent the cost of insuring an unsecured bond issued by the institution over a specific period of time. CDS spreads are considered a direct indicator of a firm's credit risk (Figure 9.12).

Table 9.13 Selected ratios for three former large US investment banks (%)

End-year 2020	JPMorgan	Goldman Sachs	Morgan Stanley
Return on assets	1.37	0.90	1.06
Return on equity	14.06	9.47	11.26
Net interest margin	2.86	0.85	1.24
Net interest income/Operating revenue	49.56	11.87	16.06
Cost to income ratio	56.99	67.88	72.49
Profit margin[a]	26.03	17.33	21.69
Liquid assets/Deposits	74.41	190.05	198.23
Gross loans/Deposits	63.59	77.26	90.70
Customer loans/Total assets	36.48	14.61	19.24
Impaired loans/Gross customer loans	0.77	3.95	0.85
Loan loss reserves/Impaired loans	171.97	24.92	23.89
Tier 1 ratio	14.15	15.16	18.63
Total capital ratio	16.00	17.81	20.98
Equity/Total assets	9.73	9.27	9.24
EPS (December 2020)[a]	7.67	17.35	5.92
P/B (December 2020)[a]	1.56	1.09	1.34

Note: [a]Data from Yahoo Finance at December 2020.

Source: BankFocus.

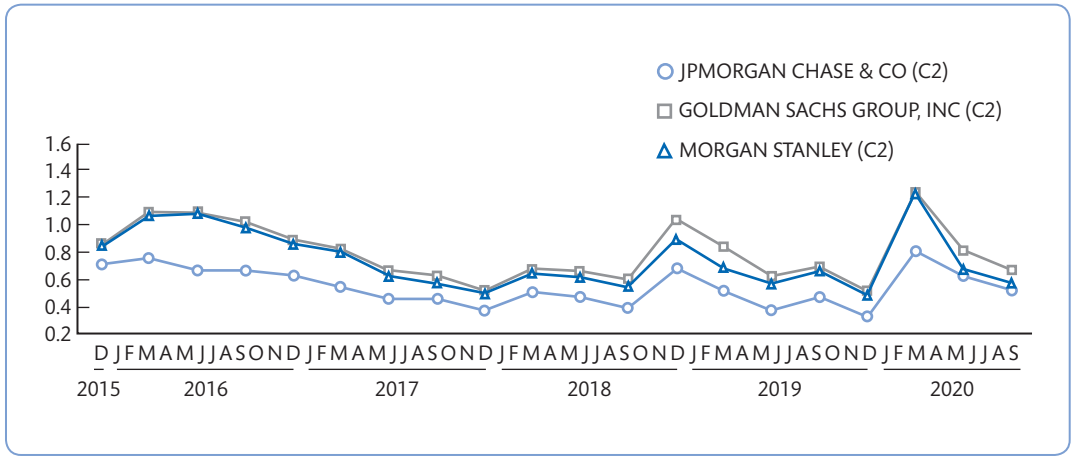


Figure 9.12 CDS spreads evolution for three former large US investment banks (%), 2015–2020

Source: BankFocus.

9.4.2 Asset quality

Lending is still one of the most important activities of banks. While it is expected that all banks will have to bear some positive levels of bad loans and loan losses, one of the key objectives of bank management is to minimise such losses. In the context of the income–expense statement, financial analysts can control the provisions for loan losses (PLL) to manipulate their accounting earnings. For example, more conservative bankers may understate their accounting earnings by building a large and above average loan-loss reserve, while more aggressive bankers may overstate their accounting earnings by keeping the loan-loss reserve low.

The drop in profitability that banks have experienced in recent years has often been due to a poor assets quality that has continued to worsen in a number of European countries as a consequence of the eurozone troubles (see Chapter 14 for a discussion). The European Banking Authority (2019) reports that between 2014 and 2019 in the EU the aggregate Texas ratio dropped by half from 47 per cent to 23 per cent. The Texas ratio is a metrics used for assessing the banks' riskiness and robustness against the problematic assets on the balance sheet. It is calculated as:

$$\text{Texas ratio} = \text{NPLs} / \text{Total tangible common equity capital} + \text{Loan loss reserves} \qquad (9.12)$$

Tangible common equity is the part of shareholders' equity that is not preferred equity and not intangible assets. The higher the Texas ratio, the more serious are the credit problems of the bank. Values >100 imply that problem assets are higher than the resources that the bank may need to cover potential losses on those assets. Figure 9.13 shows the Texas ratio by bank.

The Covid-19 pandemic has posed unprecedented challenges for banks all over the world and has resulted in large banks making substantial provisions for loan losses, as described in Box 9.6.

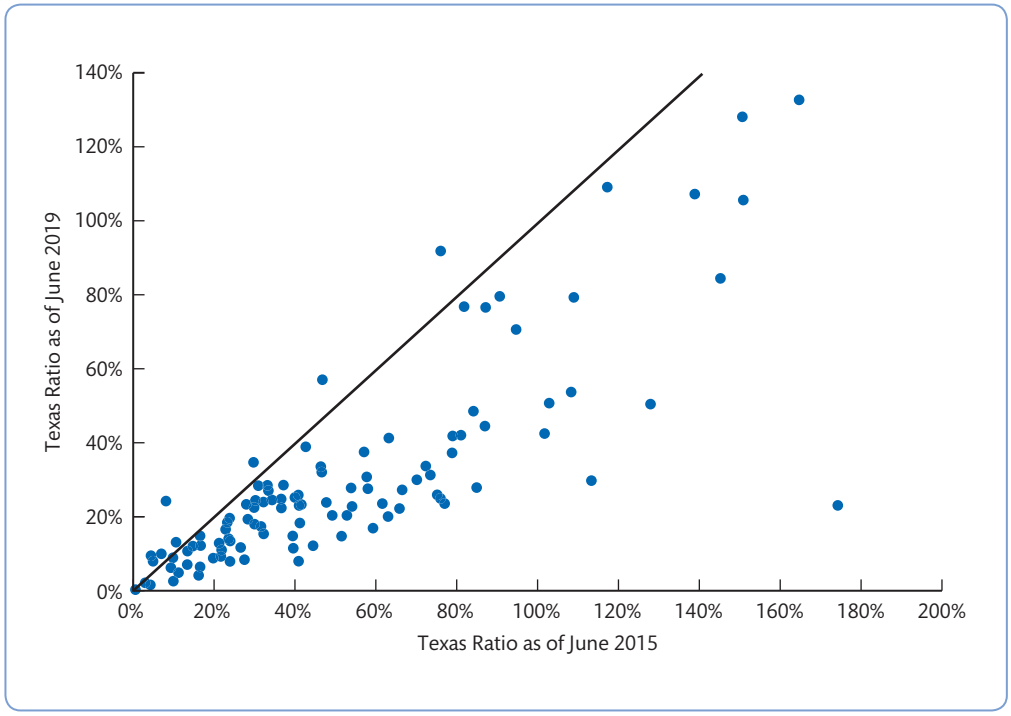


Figure 9.13 Texas ratios by bank, 2015–2019

Source: European Banking Authority (2019).

BOX 9.6 BANKS ACROSS EUROPE BRACED FOR FURTHER HEAVY LOAN LOSS CHARGES

Europe's biggest banks are set to unveil another huge round of provisions for loan losses, as they take stock of the damage wrought by Covid-19 around the globe. The largest UK, Swiss and eurozone lenders are expected to provision at least €23bn for the second quarter as they report earnings in coming days, according to analysts at Citigroup. That is on top of the €25bn of charges the same group took against potential defaults in the first three months of the year. When added to the $61bn already reserved by the five largest US banks over the first six months, the combined figure from the biggest western lenders could reach $117bn. That would be the highest net addition to reserves since the first half of 2009, in the aftermath of the collapse of Lehman Brothers, according to Citi. Few economists are projecting rapid "V-shaped" recoveries and more pain is expected when government support schemes wind down in the autumn. Oliver Wyman, the consulting firm, forecasts as much as €800bn of loan losses for European banks over the next three years if there is a second wave of infections.

"It's going to be another difficult one — several banks have flagged this could be the worst quarter of the year," said Jon Peace, an analyst at Credit Suisse. He noted that under new accounting rules, banks are required to "front-load" their provisions for likely losses, but added that at the end of the first quarter they were working off assumptions for GDP growth and employment "that were not as bleak as today". UBS, the first of the major European financial institutions to report last week, posted a 43 per cent surge in earnings at its investment banking arm, but also took another $272m of loan-loss charges. That brought its total for the first half to $540m — 16 times the same period in 2019. "The first

BOX 9.6 Banks across Europe braced for further heavy loan loss charges (*continued*)

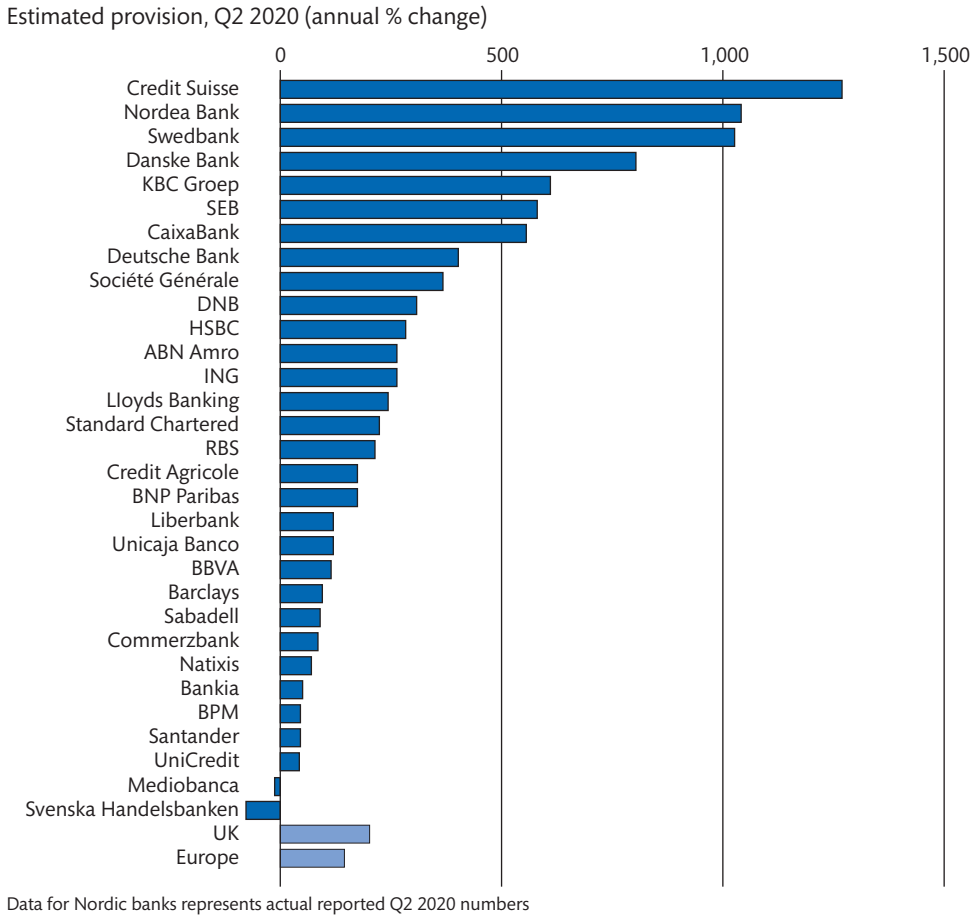


Figure 9.14 Investors braced for a rise in European bank loan losses

Source: Citigroup.

quarter was about whether you are resilient and, for some, able to survive," Sergio Ermotti, chief executive of UBS, told the FT. "The second quarter will be about whether you can demonstrate adaptation. We have already entered the 'lessons learned' phase of coronavirus." The European banking sector, still dogged by problems carried over from the financial crisis of 2007–09, has been punished in the stock market. Shares in European banks have dropped 31 per cent this year, on average, compared with a 10 per cent fall in the benchmark Stoxx 600 index. On average, the banks are trading at less than 40 per cent of the book value of their net assets. Barclays (€22bn), Deutsche Bank (€17bn) and Italy's UniCredit (€20bn) have a combined market capitalisation less than Zoom, the $74bn (€64bn) videoconferencing company that has prospered during the pandemic. "It is a universal consensus that given the headwinds, investing in banks is as stupid an activity as investing in oil majors," said Richard Buxton, head of UK Alpha strategy at Jupiter

BOX 9.6 Banks across Europe braced for further heavy loan loss charges (*continued*)

Asset Management. "It is unlikely that anything revelatory emerges from this reporting season to change that." "The economic downturn clearly means a big pick-up in bad debts," he added. However, "I am extremely confident that whatever the damage to [profit and loss accounts] from the crisis, it does not mean they need to raise additional equity capital."

In the first quarter there was a wide disparity between banks' accounting approaches to potential loan losses — a discrepancy described as "extraordinary" by Magdalena Stoklosa, head of European financials research at Morgan Stanley. An outlier so far is Deutsche, which provisioned just €500m in the first quarter, compared with £2.1bn at Barclays and $3bn at HSBC. The German bank has already said loan-loss provisions would rise to €800m in the second quarter, the highest level in a decade. For European lenders that have significant investment banking arms, a surge in trading revenues should cushion the blow. US banks reported an average 69 per cent increase in revenues from trading stocks, bonds and other assets, benefiting from market volatility and a slew of emergency fundraisings from big companies. Most of those gains came from fixed income, where revenues more than doubled at JPMorgan, Goldman Sachs and Morgan Stanley. While European banks on the whole have smaller debt-trading businesses, Barclays, Deutsche, Credit Suisse and BNP Paribas are positioned to profit the most. On average, analysts expect them to post trading revenues up between 40 to 50 per cent.

The spoils will not be spread evenly, according to Berenberg's Eoin Mullany. While Barclays and UBS have increased their share of global revenues in the past year, "by contrast, the loss of European banks' market share came almost exclusively from Deutsche and Société Générale," he said. Investors are also awaiting the results of the European Central Bank's Covid vulnerability exercise on Tuesday, and an associated decision on whether banks can resume the payment

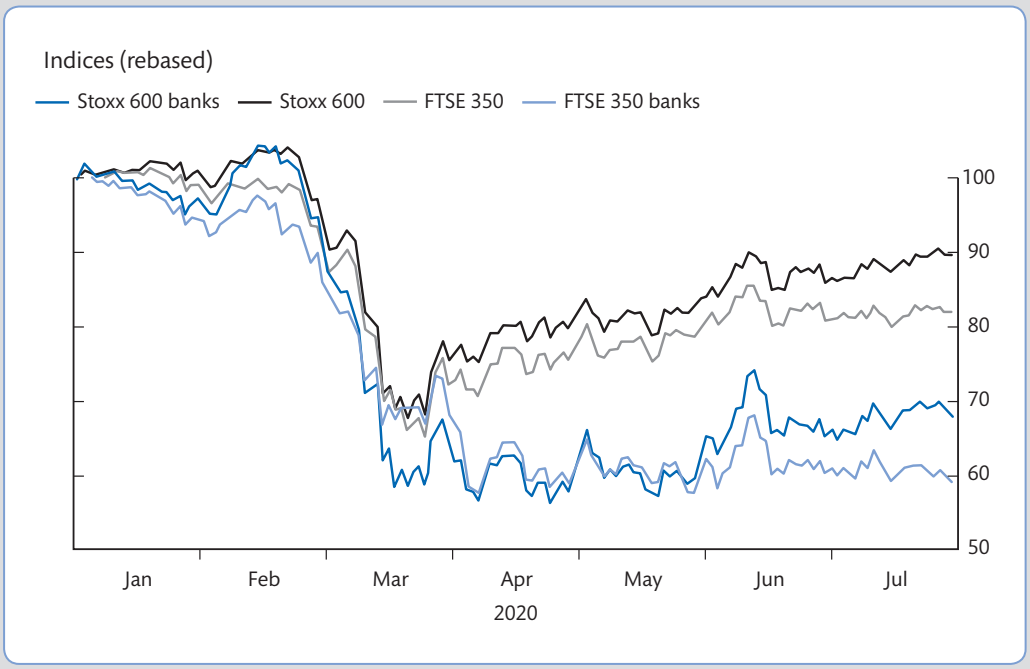


Figure 9.15 Bank stocks are underperforming the wider market

Source: Refinitiv.

BOX 9.6 Banks across Europe braced for further heavy loan loss charges (*continued*)

of dividends. European, Swiss and UK regulators banned payouts at the start of the crisis in mid-March to force banks to conserve capital and lending capacity. Stuart Graham, founder of Autonomous Research, said few investors were expecting the ECB to allow banks to return to normal payouts later this year, saying that January 2021 "is a more realistic date". However, clarity from the regulator will mean fund managers "know the rules of the game once again", he added. "It could attract back those investors for whom the sector had been rendered borderline uninvestable because of the zeroing of dividends."

FT *Source*: Morris, S. and Walter, O. (2020) 'Banks across Europe braced for further heavy loan loss charges', *Financial Times*, 26 July.
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9.4.3 Cost of capital and shareholder value creation in banking

While the above discussion of bank performance focuses on traditional and market-based measures, one important indicator that is now widely used by banks (and other companies) relates to what is known as 'shareholder value creation'. The main strategic objective of a profit-oriented bank is to generate *value* for its owners (shareholders) – see Box 9.7.

A bank can create **shareholder value** by pursuing a strategy that maximises the return on capital invested relative to the (opportunity) **cost of capital** (the cost of keeping equity shareholders and bondholders happy). In other words, if a bank invests in a project that generates greater returns than the cost to shareholders of financing the project then this should boost

BOX 9.7 VALUE MAXIMISATION FOR THE BANKING FIRM

As with any other commercial firms listed in the stock market, one of the main objectives of a banking firm is to maximise its value. This is because if the bank meets investors' expectations then it will be able to raise the capital it needs to sustain its future growth. It is well known that the value of the stock (V_0) for any firm will be equal to the present value of expected future stream of dividends $E(D)$ (see Appendix A1 on the concept of present value):

$$V_0 = \frac{E(D_t)}{(1+r)^t} + \frac{E(D_1)}{(1+r)^1} + \ldots + \frac{E(D_2)}{(1+r)^2} = \sum_{t=1}^{\infty} \frac{E(D_\infty)}{(1+r)^\infty} = = \sum_{t=1}^{\infty} \frac{E(D_t)}{(1+r)^t} \quad (9.13)$$

where r is the minimum acceptable – or required – rate of return on the stock, given the bank's riskiness and the returns available on other investments. The rate of return r is the bank's *cost of capital*.

The valuation model above is the well-known dividend discount model, which assumes that the amount of dividends paid in each period varies over time. It also implies that we need dividend forecasts for every year into the indefinite future. By assuming that dividends are trending upward at a stable growth rate that we call 'g', the model can be simplified as follows:

$$V_0 = \frac{D_0(1+g)}{r-g} = \frac{D_1}{r-g} \quad (9.14)$$

BOX 9.7 Value maximisation for the banking firm (*continued*)

This is known as the 'Gordon' model and essentially implies that a bank's stock is expected to grow at the same rate as dividends. For example, suppose the most recently paid dividend for Bank Delta was $D_0 = £5$, $g = 0.04$ and the appropriate discount rate is 12 per cent. By applying the formula, Bank Delta's current share value will be:

$$V_0 = £5 / (0.12 - 0.05) = £71 \text{ per share}$$

returns to holders of the banks' shares (in terms of capital appreciation of stock and higher dividends). The concept can be applied to an individual project, like a bank considering making a strategic investment in another country, or for the whole banks' performance overall.

So shareholder value is created when:

Return on capital invested in the project > Cost of capital to the firm

or

Return on capital (ROC) > Cost of capital

In order to add shareholder value, firms must invest in projects that generate returns exceeding their cost of capital. A common measure of shareholder value is economic value added, as described in Box 9.8.

To calculate the cost of capital we can use the capital asset pricing model (CAPM), where:

$$R_i = R_f + \beta (R_m - R_f) \tag{9.15}$$

where:

R_i is the required rate of return on an investment

R_f is the risk-free rate

R_m refers to the market return

β is a measure of the volatility of the company's equity relative to the overall market.

The CAPM (see Appendix A2) states that investors require a return from holding a company's shares that exceeds the risk-free rate (R_f), to compensate them for holding equity over bonds (this is $R_m - R_f$, otherwise known as the equity risk premium) and for the riskiness of the company relative to the whole market (β).[5]

For example, if a company has a beta (β) of 1.5, and assuming a risk-free rate of 6 per cent (given by the US long-bond rate) and an equity premium of 5 per cent ($R_m - R_f$), then the cost of capital to the firm will be 13.5 per cent. In other words, to maintain shareholder value, this firm will have to invest in projects that generate returns greater than 13.5 per cent if they are to add to shareholder wealth. Investments that generate returns of less than 13.5 per cent will destroy shareholder value. The equity market premium (the difference between equity and bond returns) is usually calculated over a 20- or 25-year period and there is much debate as to how large this premium is, although the US equity market premiums are almost always found to be greater than those in the UK, and they are even lower in continental

[5] A beta of less than one indicates lower risk than the market; a beta of more than one indicates higher risk than the market.

BOX 9.8 WHAT IS EVA?

Bank shareholders rely on performance measures to evaluate how well they are doing in relation to their wealth-maximising objectives. However, profit-based measures ignore the cost of equity capital and are calculated based on accounting standards that do not reflect truly the amount of wealth created. Economic Value Added (EVA) is a performance measurement system that overcomes these two limitations.

EVA was developed by the US consulting firm Stern Stewart & Co and is now commonly used both by practitioners and academics to investigate shareholder value. To increase shareholder value the financial firm has to produce at least a positive equity spread which can be converted into EVA. Specifically, EVA expresses the surplus created by a banking firm (or division within a bank) in a given period, i.e. the firm's profit net of the cost of all capital. It is always a useful measure to calculate the value creation in a specific division or business segment within the bank.

Following Fiordelisi (2007), EVA can be calculated for each bank over the period t and $t-1$ using a procedure accounting for bank peculiarities, specifically:

$$EVA_{(t-1,\,t)} = NOPAT_{t-1,\,t} - (CI_{t-1} * K^{e}_{t-1,\,t}) \tag{9.16}$$

where NOPAT is net operating profits after tax, CI = bank's capital invested and K^{e} = shareholders' expected rate of return.

The calculation of EVA requires that NOPAT and capital invested (CI) are expressed on an economic (rather than accounting) basis. Normally, adjustments are carried out on accounting data, particularly relating to loan loss provision and loss reserves, R&D and training costs, taxes and so on.

Concerning capital invested (CI) and its cost, various studies suggest the use of equity capital, while for the cost of capital (I) it is possible to employ the book value of shareholder equity. Finally, the cost of equity is estimated using the capital asset pricing model (CAPM) and looking at investors' expected returns.

A bank pursuing a focused EVA strategy will have the following priorities:

1. raise the rate of return on assets via revenue-enhancing and cost containment (e.g. branch closures) strategies;
2. the development of capital-free business to raise the measured ROE (e.g. increasing in non-interest fee incomes that can be generated with low capital expenditure);
3. the removal of assets from the balance sheet if they do not meet the target ROE established as the bank's objective (e.g. via securitisation);
4. being prepared, if necessary, to radically change organisational structure (e.g. by outsourcing part of the business);
5. exiting business areas which do not generate a rate of return equal to the target set;
6. repaying capital to shareholders (e.g. by repurchasing stocks from its shareholders).

Source: CIMA (2004); Fiordelisi (2007).

Europe. Betas (β) should also be calculated over long periods as short-term estimates may yield unreliable cost of capital estimates.

Box 9.9 explains the calculation of the cost of capital. Cost of capital calculations can be done for the whole bank or divisions/business areas within a bank in order to determine the allocation of capital within the organisation. For example, if a bank's mortgage

business is generating returns greater than the cost of capital but credit card activities are making returns less than the cost of capital, the bank should consider dedicating more capital resources to the former and also should think of ways of boosting returns in (or divesting) its credit card business.

Note that this is just the equity cost of capital and we can extend the analysis to include the cost of debt to present what is known as a weighted cost of capital. Also, one should note that there is a variety of other approaches that can be used to calculate the cost of capital (including a wide range of various accounting and other adjustments) and it should

BOX 9.9 CALCULATING THE COST OF EQUITY CAPITAL

CAPM cost of equity capital

The standard model for the cost of equity capital is the CAPM. Despite some drawbacks, this model continues to be the most widely used tool for business decision making. The formula for calculating the cost of equity capital given its risk is as follows: $R_f + \beta$(Equity risk premium), where R_f is the risk-free rate and β is a measure of how much risk the investment will add to a portfolio that looks like the market. If a stock is riskier than the market, it will have a beta greater than one. If a stock has a beta of less than one, the formula assumes it will reduce the risk of a portfolio. Equity risk premium is the return expected from the market above the risk-free rate.

Risk-free rate

Risk-free rates vary from country to country and are dependent on the low-risk government instrument used as a proxy for the risk-free rate. In the following examples we will use the UK 10-year government bond rate, which was 0.72 per cent on 21 April 2021. For US examples we will use 10-year US Treasury, which stands at 1.61 per cent.[6]

Equity risk premium

A wide range of equity premiums can be quoted from the literature, ranging from 3 per cent to 9 per cent. For this analysis, we will use a rate of 5.31 per cent in the UK and 4.72 per cent in the US, as of January 2021.[7]

CAPM beta figures

Beta figures are obtained from Yahoo Finance. The cost of equity capital for the major UK banks for 2021 are shown in Table 9.14.

Table 9.14 Cost of equity capital for RBS, HSBC, Barclays and Lloyds in 2021

	RBS	Barclays
Risk-free rate	0.72%	0.72%
Equity risk premium (%)	5.31%	5.31%
Beta	1.65	1.52
CAPM 'standard' cost of equity capital (%)	**9.48%**	**8.79%**
	HSBC	**Lloyds**
Risk-free rate	0.72%	0.72%
Equity risk premium (%)	5.31%	5.31%
Beta	0.59	1.43
CAPM 'standard' cost of equity capital (%)	**3.85%**	**8.31%**

[6] https://tradingeconomics.com/bonds

[7] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

BOX 9.9 Calculating the cost of equity capital (*continued*)

Following the same methodology, we repeat the exercise and evaluate the cost of capital for some of the largest US and European banks in 2021. The results of this exercise are reported in Table 9.15.

Table 9.15 Cost of equity capital for selected US and EU banks in 2021

US banks					
	Goldman Sachs	**Morgan Stanley**	**JPMorgan Chase**	**Citigroup**	**Bank of America**
Risk-free rate (T-bill rate)	1.56%	1.56%	1.56%	1.56%	1.56%
Equity risk premium (%)	4.72%	4.72%	4.72%	4.72%	4.72%
Beta	1.50	1.56	1.21	1.95	1.58
CAPM 'standard' cost of equity capital (%)	**8.64%**	**8.92%**	**7.27%**	**10.76%**	**9.02%**
European banks					
	Deutsche Bank	**UBS**	**Santander**	**BNP Paribas**	**Credit Agricole**
Risk-free rate	−0.26%	−0.18%	0.40%	0.00%	0.00%
Equity risk premium (%)	4.72	4.72	3.1	4.3	4.3
Beta	1.40	1.20	1.79	2.05	2.11
CAPM 'standard' cost of equity capital (%)	**6.35%**	**5.48%**	**5.95%**	**8.82%**	**9.07%**

Source: Data on Risk free rates based on 10-year government bonds from https://tradingeconomics.com/bonds and equity premia from http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

be stressed that cost of capital calculations are never definitive – they vary according to the calculation method used.

9.4.4 Solvency ratios

The Basel III Accord (detailed in Chapter 7) requires banks to hold a minimum overall risk-weighted capital ratio of 8 per cent, of which Tier 1 capital should be at least 6 per cent. Total capital adequacy ratio measures Tier 1 capital + Tier 2 capital; this ratio should be at least 8 per cent. The addition of the capital conservation buffer increases the total amount of capital a bank must hold to 10.5 per cent of risk-weighted assets, of which 8.5 per cent must be Tier 1 capital.

The total capital adequacy ratio cannot be calculated simply by looking at the balance sheet of a bank, as the bank has to classify its assets and off-balance-sheet business according to certain risk categories and varying amounts of capital have to be held according to these risks. Recall from Section 7.8, for example, cash has a 0 per cent risk weighting requiring no capital backing, whereas unsecured loans require 8 per cent capital backing. Both Tier 1 and Tier 2 ratios can only be calculated internally by the bank. Banks have the option of publishing these ratios in their annual report. Financial ratios shown in Tables 9.12 and 9.13

illustrate that in 2019 banks in Australia and the US displayed a level of Tier 1 and total capital significantly above the 6 and 8 per cent minimum requirements.

Finally, we can say that, as equity is a cushion against asset malfunction, the simple equity/assets measure (which we can calculate from bank balance sheets) indicates the amount of protection afforded to the bank by the equity they invested in it. It follows that the higher this figure, the more protection there is. However, remember that this is a crude measure of a bank's financial strength because, unlike the Basel Tier 1 and Tier 2 measures, this ratio does not take into account the riskiness of banking business.

9.4.4.1 The trade-off between safety and the return to shareholders

The amount of capital affects the returns to equity holders and ROE is a good measure for shareholders to know how much profit the bank is generating on their equity investments. Indeed, as we discussed in Box 9.5, ROE is related directly with ROA, as follows:

$$\text{ROA} \times \text{EM} = \text{ROE} \tag{9.17}$$

rearranging:

$$\text{EM} = \text{ROE} \times \frac{1}{\text{ROA}} \tag{9.18}$$

substituting:

$$\text{EM} = \frac{\text{Total assets}}{\text{Total equity capital}} \tag{9.19}$$

where EM is the equity multiplier that measures the extent to which a bank's assets are funded with equity relative to debt. To understand the importance of EM, consider two banks, both having total assets (with the same risk features) equal to £50 million and earning a ROA of 1.5 per cent, as shown in Table 9.16.

Table 9.16 illustrates the trade-off between total capital and ROE. In particular, Bank Alpha displays the highest level of total capital and the lowest level of EM and ROE relative to Bank Beta. However, while the shareholders of Bank Beta will be earning twice as much as those of Bank Alpha, it is not necessarily true that Bank Beta is the most desirable for shareholders as Bank Beta is more risky as it has half the amount of capital backing the same amount of risky assets. There is clearly a trade-off between safety and returns to shareholders.

Table 9.16 An illustration of the trade-off between solvency and profitability

Bank	Total assets (a)	Total capital (b)	EM = (a)/(b)	ROA	ROE = EM × ROA
Bank Alpha	£50,000,000	£5,000,000	10	1.5%	15%
Bank Beta	£50,000,000	£2,500,000	20	1.5%	30%

9.4.5 Limitations of financial ratios

Financial ratios have their own limitations. First, generally one year's figures are insufficient to evaluate the performance of banks, and financial analysts typically look at trends to evaluate the ratios and their fluctuations over a timespan of at least five years. Second, precise comparisons between similar banks may be difficult as they often compete in different markets, have varying product features and customer bases, and so on. As such, ratio analysis may be misleading as it is often difficult to compare 'like with like'. Despite these problems, financial analysts often undertake *peer analysis of* similar banks and this involves the creation of peer groups (see also Section 8.3.1 on peer analysis). Third, ratios do not stand in isolation: they are interrelated. For example, poor profitability may affect liquidity and capital ratios. A bank that performs poorly may have to use its liquid assets (if it has an excess of such assets) to fund future lending thus reducing its liquidity ratios. Large losses may be written out of capital thus reducing capital ratios. Another important factor is that ratios relate to a particular point in time and there are seasonal factors that can distort them. Moreover, figures in the financial statements may be 'window-dressed' – that is, made to look *better than they really are* (as was the case mentioned earlier, referring to banks over- or under-provisioning for bad loans). Similarly, financial statements may be manipulated and may not reflect accepted accounting procedures. That is why both domestic and international regulatory authorities have pointed out the need for more transparency, disclosure and uniformity of bank accounts as the markets become increasingly global. For example, at the EU level all listed companies that are required to publish consolidated accounts are also required to prepare their accounts in accordance with adopted International Financial Reporting Standards (IFRS) for accounting periods beginning on or after 1 January 2005. Last but not least, particularly in cross-country analyses, the usefulness of some financial ratios (e.g. those having income net of tax as numerator like ROE and ROA) can be influenced by tax laws that may differ substantially from country to country.

9.5 Conclusion

This chapter examined the main items contained in banks' financial statements and introduced the key financial ratios used by banks to compare performance. It also highlighted the role of bank capital, simply defined as the difference between assets and liabilities. Typically, banks are highly leveraged compared to non-financial firms; therefore capital management techniques are vital to ensure the solvency of banking institutions. In the chapter we also briefly discussed the concept of shareholder value creation and the cost of equity capital.

Furthermore, the analysis of the income statement (or profit and loss) account has shown the various sources of income (interest and non-interest) and cost structure for banks and how to determine the profitability. The chapter also focused on the different activities that investment banks perform and how this is reflected in the structure of their financial statements. We noted that investment banks' balance sheet structure and income statements differ substantially from those of commercial banks.

Many different agents operating either internally or externally to the banks (from managers to regulators and credit-rating companies) will be interested in their performance, thus the last part of this chapter introduced a selection of key ratios used to gauge bank performance, focusing particularly on profitability, asset quality and solvency. There is also a growing emphasis on corporate responsibility and banks need to balance their short-term objectives with the need to create long-term value (Schoenmaker and Schramade, 2019), to satisfy all stakeholders in the transition to a more sustainable economy.

Key terms

Assets
Balance sheet
Bank performance
Capital
Cost of capital
Cost–income ratio
Costs
Fair value
Financial ratio analysis
Income statement (profit and loss account)
Key performance indicators (KPIs)
Leverage
Liabilities
Net interest margin
Non-financial performance
Profit and loss account (income statement)
Profit margin
Profits
Return-on-assets
Return-on-equity
Revenues
Shareholder value
Stakeholder
Stakeholder value

Key reading

European Central Bank (2010) 'Beyond ROE – how to measure bank performance', Appendix to the Report on EU Banking Structures, September.

Fiordelisi, F. (2007) 'Shareholder value efficiency in European banking', *Journal of Banking and Finance*, 31(7), 2151–2171, July.

Schoenmaker, D. and Schramade, W. (2019) 'Investing for long-term value creation', *Journal of Sustainable Finance & Investment*, 9(4), 356–377.

REVISION QUESTIONS AND PROBLEMS

9.1 What is a bank balance sheet? What are the main items in a commercial bank's balance sheet?

9.2 What is equity capital? What are the functions of capital?

9.3 What is a bank income statement?

9.4 What are the main differences between a bank balance sheet and income statement?

9.5 What are the main differences between commercial and investment banks' financial statements?

9.6 Using the information contained in Tables 9.4 and 9.5, calculate Barclays' ROA, ROE, NIM and C/I ratios.

9.7 Download the annual reports of two large banking groups and critically analyse the pages that describe the KPIs. During your seminar class, discuss in groups the KPIs reported by the two banking institutions and try to identify and explain PWC's six critical aspects described in Box 9.4 in light of the major strategies stated in the annual reports of the respective banks.

9.8 Explain how to calculate the cost of equity capital for a bank. Outline the main advantages of this approach to bank performance measurement compared to using standard profitability ratios.

9.9 Explain the trade-off between solvency and profitability.

9.10 What are the main limitations of bank financial ratios?

Chapter 10

Bank financial management

Learning objectives

- To understand the basics of asset–liability management
- To identify the main management concerns on the balance sheet
- To identify the main off-balance-sheet management concerns
- To describe the features of the most common derivative contracts

10.1 Introduction

The main objective of any private firm is the maximisation of profits and shareholders' wealth while considering the impact of its actions on the environment and its various stakeholders. In achieving these aims, the role of financial management is threefold: (1) to make investment decisions (how to allocate finance); (2) to undertake financing decisions (how to acquire finance); and (3) to control resources (how to conserve finance). Investment and financing decisions are vital elements used in the planning process to achieve the objectives of an organisation. For a manufacturing firm, for example, these objectives are measured in sales and profit goals that should be achieved in an ethical and socially responsible manner over a specific period, supported by financial targets. For banks, the goal is to manage assets and liabilities in a way that maximises profits while being generally 'safe and sound'. Prudence in banking is needed due to the special role that banks play in the economy and the potential 'domino' effects that a bank's failure may cause to the financial sector as a whole (see Chapter 8). More specifically, bank managers will have the following concerns:

- **Asset management**: the bank must make sure that its portfolio of assets (mainly loans) includes low-risk assets and it is well diversified.
- **Liability management**: the bank must acquire funds (raise deposits) at the lowest possible cost.
- **Liquidity management**: the bank must predict with the lowest possible margin of error the daily withdrawals and other payments by customers in order to keep enough cash and other liquid assets readily available.

- **Capital management**: the bank must keep an adequate level of capital to comply with regulatory requirements in order to maintain the appropriate level of solvency. Bank capital refers to funds that can be used as a cushion against losses – if loans are not repaid it is the capital that takes the loss. The more capital a bank has, in theory at least, the safer it is as it has a bigger cushion to absorb losses.
- **OBS management**: the bank must control and limit the exposures derived from off-balance-sheet transactions.

The function of financial management is to monitor actual performance against planned goals and targets. In doing so, managers rely on the information revealed by periodic financial reports produced by various accounting systems. As discussed in Chapter 9, these are the balance sheet and profit and loss account. As we will see throughout this chapter, bank financial management includes all five main points described above. In addition, managers need to consider investing and managing sustainably, as increasingly, investors expect banks to (i) invest in companies with high sustainability ratings and (ii) manage their assets sustainably. In recent years, the development of the financial systems in most advanced economies, together with the widespread use of technology, have meant that banks can now use a relatively large variety of negotiable financial instruments (for example, certificate of deposits or CDs) and processes (for example, securitisation) to manage their asset and liability positions. Most institutions nowadays employ a combined management on both sides of the balance sheet, involving a wide range of sophisticated risk-management instruments and procedures (see Section 10.7).

Other important aspects introduced in this chapter relate to banks' off-balance-sheet (OBS) commitments and derivative instruments. OBS activities are transactions that are not recorded on a bank's balance sheet, such as, for instance, letters of credit, unused overdraft facilities and guarantees. Bank managers' objectives of achieving relatively high levels of profitability and safety have induced them to increasingly engage in off-balance-sheet business that provides fee income; this includes derivatives business, securities underwriting and foreign exchange trading. These latter activities may expose the bank to new risks and, as discussed in Chapter 9, recent changes in the international accounting standards demand that they should appear *on* balance sheet at fair value.

10.2 Asset–liability management (ALM)

Over the past few decades, two sets of transformations have affected the composition of banks' balance sheets: on the one hand the growing importance of the liability side and on the other hand the significant expansion of the interbank markets, where banks can easily buy and sell excess liquidity, even overnight.

As a result of these major changes, modern banks have become more likely to undertake a co-ordinated management of both sides of the balance sheet rather than focusing on just the asset side. The main concerns and objectives of a bank manager on the asset and liability sides are summarised in Figure 10.1.

A bank manages its assets well when it maximises the returns on loans and securities, for example by increasing loan screening and monitoring activities and by choosing

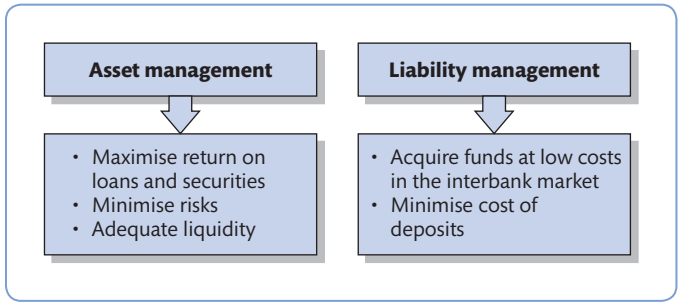


Figure 10.1 Forms of asset management versus liability management

low-credit-risk/high-return customers. Moreover, a bank will aim to diversify its portfolio of assets to avoid over-investing in a single sector. Another important objective of asset management involves decisions concerning the amount of liquid assets and reserves to keep on hand, taking into account the trade-off between profitability and liquidity. (Recall that liquid assets tend yield low returns, so a bank that holds a high proportion of liquid assets on its balance sheet is likely to have lower income and profits.) On the liability side, a bank manager will aim to acquire funds at low cost when operating in the money markets (by borrowing from other banks or by offering negotiable CDs) and at the same time minimising the interest paid on deposits.

The co-ordinated and simultaneous decision on financing and investing is the essence of **asset–liability management (ALM)**. ALM is typically associated with the management of interest rate risk and bank liquidity and its goals include controlling a bank's value and profits, subject to taking a certain level of risk and maintaining an appropriate level of safety, as shown in Figure 10.2. Box 10.1 illustrates the ALM process in practice.

Post 2007–2009 crisis, it has become apparent that banking institutions should take a more 'holistic' view of their balance sheet. A survey of 43 leading financial institutions carried

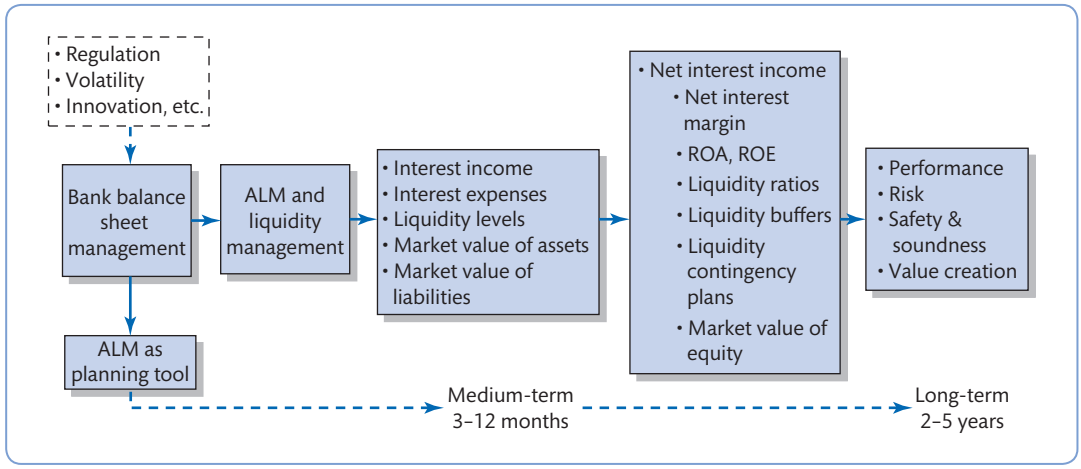


Figure 10.2 Goals of ALM and liquidity management

BOX 10.1 ASSET–LIABILITY MANAGEMENT IN PRACTICE

ALM is an intermediate-term planning function (3–12 months) designed to move the bank in the direction of its long-run plan (2–5 years) while maintaining the flexibility to adapt to short-run (monthly) changes. In addition to the planning aspect of ALM, direction and control of the levels, changes (flows) and mix of assets, liabilities and capital are integral parts of overall balance sheet management. From an accounting point of view, the key variables of ALM are NII (net interest income), ROA (return-on-assets) and ROE (return-on-equity). From an economic point of view the key variable is the MVE (market value of equity). Sinkey (2002) identifies a three-stage approach to balance-sheet co-ordinated management.

Stage I is a general approach that focuses on co-ordinated management of a bank's assets, liabilities and capital. Stage I requires co-ordination of the various specific functions that can be identified in Stage II.

Stage I: Global (or general) approach	
Asset management	Liability management Capital management

Stage II distinguishes between the various components of a bank's balance sheet used in co-ordinating its overall portfolio management. Stage II is based on planning, directing and controlling the levels, changes and mix of the various balance sheet accounts, which generate the bank's income–expense statement (Stage III).

Stage II: Identification of specific components	
Reserve-position management	Liability management
Liquidity management	Reserve-position liability management
Investment/securities management	Loan-position liability management
Loan management	Long-term debt management
Fixed-asset management	Capital management

Stage III illustrates a bank's profit and loss account as generated by its on- and off-balance-sheet items, given prices and interest rates.

Stage III: Balance sheet generates profit and loss account
Profit = Interest revenue − interest expenses − provision for loan losses + non-interest revenue − non-interest expense − taxes.

Policies to achieve objectives:

1. Spread management.
2. Loan quality.
3. Generating fee income and service charges.
4. Control of non-interest operating expenses.
5. Tax management.
6. Capital adequacy.

out by PwC (2009a) emphasised several key challenges to the way in which banks manage their balance sheet. Among the main concerns are that in recent years banks have evolved to become more silo-driven organisations, with an increased focus on lines of business as 'profit centres' (see Box 10.2). Equally, bank risk departments have become progressively more concerned about the measurement, management and monitoring of individual risk classes. One of the lessons from the global financial crisis has been the need for banking institutions to expand the scope of balance sheet management and to take a more corporate-wide strategic focus. A more recent survey of 33 leading central and eastern European Banks (of which seven are top EU universal banks with assets exceeding €20 billion) carried out by Deloitte (2019a) with the objective to assess current ALM practices, identified several challenges to the way in which modern banks manage their balance sheet. The prolonged low interest rate environment that has characterised most countries following the 2007–2009 crisis has affected significantly the profitability of banking books. One of the main concerns is regulatory compliance in relation to interest rate risk management (see EBA, 2018) and benchmark requirements, including the LIBOR transition to alternative reference rates (Bailey, 2017, 2018; Bank of England, 2018).

Typically, the ALM role is carried out by a bank's Asset and Liability Committee (ALCO). This committee can be considered the single most important management group and function in a bank. The committee should also consider the importance of the management of capital (see Section 10.4). Many banks have done so by either creating dedicated 'capital management committees' or by ensuring a broader mandate for the existing ALCO to focus on capital. The responsibility for the ALM unit is frequently split between the **Treasury** and

BOX 10.2 THE 'BANK WITHIN THE BANK' AND THE FUND TRANSFER PRICING (FTP) PROCESS

The Treasury division has a crucial role in the management of a bank as it has to ensure that it: (1) has a sufficient amount of cash (liquidity management); (2) holds an adequate level of capital (capital management); and (3) can raise funds as and if needed (funding management). The functions of the Treasury department are evolving rapidly mainly due to the post-crisis regulatory reforms that increased the liquidity constraints (i.e. Basel III) and the ongoing economic instability. Among the key challenges of modern banks are to raise margins and create shareholder value in a constrained environment: recent reports emphasise how the Treasury function is expected to play an increasingly critical role in shaping banks' strategies towards these goals.[1] A useful way to interpret the role of Treasury is as a 'bank within a bank', as well depicted in Figure 10.3. It shows that the FTP technique considers assets and liabilities simultaneously as they both are needed to produce the income of the bank. The focus on FTP has intensified because it is considered as a framework through which the Treasury function can become more of a strategic balance sheet management function that can significantly contribute to optimise the banks' risk/return profiles. This means that internal funds pricing governance and internal funding policy will increasingly have implications for liquidity risk management and the overall bank ALM. The Treasury has a central function in the FTP process because it acts as an intermediary between the asset profit centres and the liability profit centres within the bank; outside the bank the Treasury intermediates

[1] In addition to improving risk/return ratios the Treasury has other challenges such as the process of maximising capital efficiency and deleveraging banks' balance sheets.

BOX 10.2 The 'bank within the bank' and the fund transfer pricing (FTP) process (*continued*)

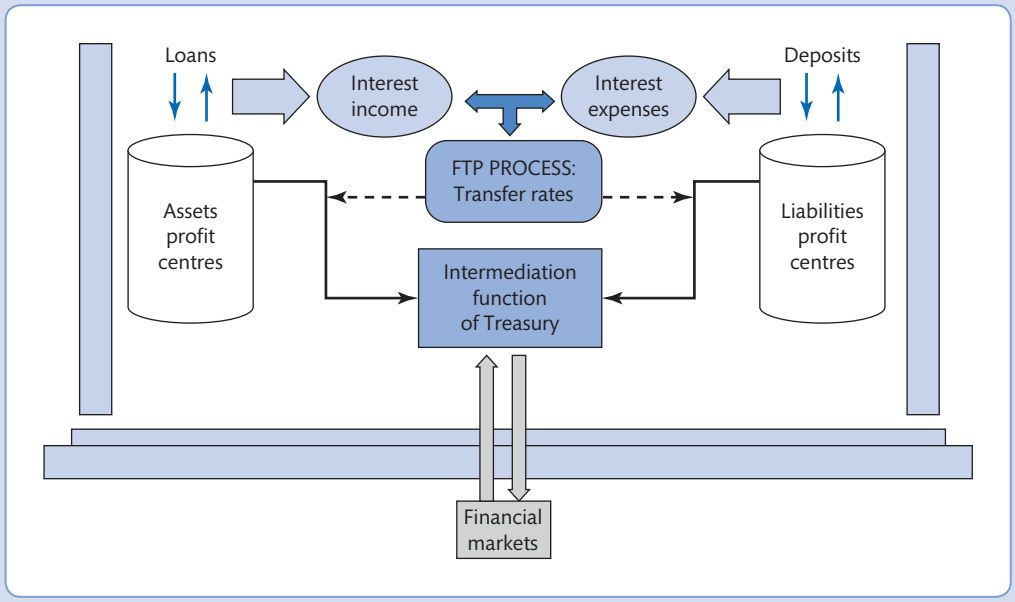


Figure 10.3 Profit centres and the FTP process

Source: Adapted from Brammertz *et al*. (2011).

with the markets. Brammertz *et al*. (2011) provide a useful example that helps understand how the Treasury makes margins and helps mitigate market risk thanks to the FTP framework.

Table 10.1 shows the case of a bank that at time *t* enters two transactions simultaneously at different rates with the respective margins.

The Treasury essentially acts as an intermediary between the asset profit centre and the liability profit centre because it finances the three-year loan at the current risk-free rate of 5.6 per cent and buys the one-year deposit at the risk-free rate of 5 per cent. FTP has the advantage of allocating profitability between profit centres, including the Treasury, which the end of the process gains a net margin of 0.6 per cent. This margin can be considered as its reward for acting as an intermediary and for mitigating market risk. This is because after one year the deposit has matured so if we assume that the liability profit centre will have to pay higher rates to new customers, to leave the margin relatively stable the Treasury will make fewer profits, while the asset and liability profit centres will not be affected by market changes. Of course, if after one year rates move in the opposite direction, the Treasury will make a profit (Brammertz *et al.*, 2011).

More generally, FTP can be defined as a complex 'internal measurement and allocation system that assigns a profit contribution to funds gathered, lent,

Table 10.1 Profit centres and FTP process: a simple example

	Transactions	Interest rate (received and paid)	Interest free market rate paid to Treasury	Margins
Asset profit centre	3-year loan	6%	5.6%	0.4%
Liability profit centre	1-year deposit	4.5%	5%	0.5%
Treasury			0.6%	

Source: Adapted from Brammertz *et al*. (2011).

BOX 10.2 The 'bank within the bank' and the fund transfer pricing (FTP) process (*continued*)

or invested by a bank'. Transfer pricing is a critical component of risk transfer, profitability measurement, capital allocation and specifying business unit incentives, as it allocates net interest income to the various products or business units of a bank. Most banking institutions utilise **funds transfer pricing** in different forms and to varying degrees of complexity. Accordingly, a wide range of practical application and sophistication exists across the banking industry. As a critical component of a bank's profitability measurement process, FTP allocates net interest income to various products or business units (Moody's Analytics, 2011b; see also Dermine, 2013).

Chief Financial Officer (CFO) functions (see Figure 10.4). Many believe that the treasurer's role is increasingly going to be key in the optimisation of banks' balance sheet for maximising profitability (Deloitte, 2018) The next section highlights the importance of ALM in the context of liquidity management.

10.3 Liquidity management and the importance of reserves

Liquidity in banking is a key factor because a bank needs to ensure that it keeps enough cash or other liquid assets to meet its obligations to depositors and to satisfy customer loan demand. Essentially, a bank must always be able to meet both normal and abnormal shortfalls in anticipated cash-flows. Two issues are particularly important in the context of bank liquidity. First, there is a trade-off between liquidity and profitability. This means that the bank should calculate the opportunity cost of the amount kept as liquid assets because these assets are typically either non-earning or low yielding. Second, banks' reserves are an insurance against the costs associated with deposit outflows. Normally there are two types of reserves: required and excess reserves. It is obvious that if the bank has only modest excess

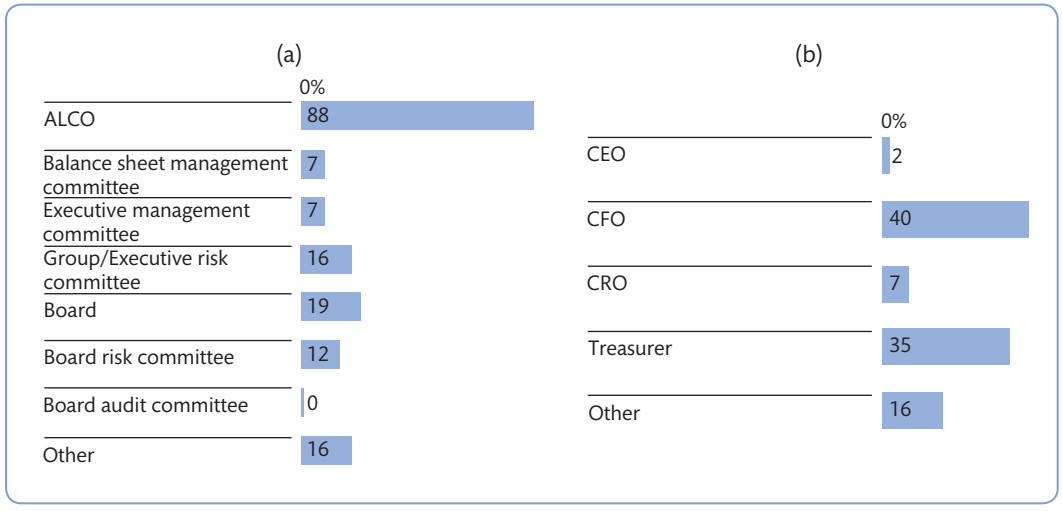


Figure 10.4 Body with primary oversight over balance sheet management (a) and ALM unit reporting line (b)

Source: PwC (2009a).

reserves, in case of a large deposit outflow it will need changes in other parts of the balance sheet and will require a co-ordinated ALM approach. In particular, in the event of a bank having to obtain liquidity it has four options:

- borrowing from other banks;
- selling some of its securities;
- selling some of its loans; or
- borrowing from the central bank.

A bank experiencing a liquidity problem normally has to act quickly and discreetly to meet any shortfalls. If other institutions or depositors were to become aware that the bank had a liquidity shortage, it could create a run on the bank and possibly lead to insolvency. That is why selling off or calling in loans may be problematic for the troubled bank and the option of borrowing funds from the central bank may be a last resort (see Chapter 5 on the LOLR function of the central bank). It follows that liquidity and solvency are inextricably linked.

10.4 Capital adequacy management

In Chapter 9, we illustrated a simple way to define bank capital as the value of assets minus the value of liabilities. Capital in banking is one of the major balance sheet concerns because it signals to what extent the bank is safe and sound, in other words 'solvent'. In contrast to bank liquidity, which is the ability of a bank to pay its obligations when they fall due, solvency is the ability of a bank to repay its obligations ultimately. As for bank liquidity, there is a trade-off between safety and returns because the higher the capital the lower the ROE.

However, from the point of view of the bank, capital is costly because higher capital means lower returns for equity holders. From the point of view of regulators capital is a necessary buffer to absorb possible losses.

The distinction between regulatory and economic capital is often made. *Regulatory capital* is the amount of capital required by regulators. (Recently the issue of how much capital is adequate has become an area of substantial discussion, due to the interest that domestic and international regulators have in ensuring a safe and sound financial sector. For details on recent developments on this issue see Chapter 7). *Economic capital* is the capital that a bank believes it should hold to cover the risks it is undertaking.

Banks manage their economic capital, directing capital resources to different areas of business that aim to generate the highest risk-adjusted returns. So if a bank feels there are two business areas that carry the same risk, say unsecured lending to consumers and unsecured lending to SMEs, but the former generates higher returns, more capital should be dedicated to the former to develop this business to boost returns as the risks are the same as in SMEs lending but returns are higher. Assuming that regulatory capital requirements are the same, the bank should reduce capital dedicated to SMEs lending and redirect it to unsecured consumer lending. The efficient allocation of capital throughout the bank is critical if the bank wishes to maximise performance. Banks will scrutinise all areas of their business, looking at where economic capital can best be employed to generate the best risk-adjusted returns.

10.5 Off-balance-sheet (OBS) business in banking

Banks do a considerable amount of OBS business. Typically these activities have no asset-backing and are sometimes referred to as contingent liabilities business. They generally refer to promises or commitments to undertake certain types of business in the future (by definition, *contingent* means 'dependent on something that may or may not occur'). For instance, an unused overdraft facility will be recorded as an OBS activity. In addition banks can transfer risk off balance sheet by underwriting business and various other commitments and guarantees.

For the bank, the earnings generated from OBS operations are fee-related and so long as the activity is contingent it would not (until recently at least see Box 10.5) be reported on the bank's balance sheet – as there is no asset or liability. However, when a contingent event occurs, the item or activity will be written in the asset (or liability) side of the balance sheet or a non-interest income item (or expense) will be generated in the income statement. Prior to the 1988 Basel Accord, no capital reserves or advancing were required for these types of operations. Moreover, OBS banking does not involve deposit funding (cash asset reserves are not needed).

In recent years, bank managers' increasing concerns about earnings and safety induced them to engage in OBS activities, securitisation and loan sales. Recall from Chapter 9 that a bank return on equity (ROE) is calculated as net income/total equity and can be decomposed into two parts: the ROA (net income/total assets), which measures average profit generated relative to the bank's assets, and the equity multiplier (EM = assets/equity), so that ROE = ROA × EM. If banks wish to increase their profitability, they can engage in OBS business so that they restrain asset growth and increase fee income. These effects tend to increase ROA and reduce EM, all other things being equal, and meet the regulators' requirements of improved profitability and stronger capital positions.[2]

10.5.1 Loan commitments, guarantees and letters of credit

There are a number of other OBS activities that banks undertake to generate fee income (some of which have been introduced in Chapter 4) including:

- loan commitments (including overdrafts);
- financial guarantees (including letters of credit);
- securities underwriting;
- other financial services.

Loan commitments are promises to lend up to a pre-specified amount to a pre-specified customer at pre-specified terms. Many business loans are made under loan commitments. For example, a bank may avail £20 million to GlaxoSmithKline Ltd over a period of two years for building a brand new chemical plant. Over the set period the borrower may decide to use only part (or even none) of the loan commitment. The terms of the contract will also specify how the interest rate will be computed and whether the rate is fixed or variable. Typically, loan commitments involve large amounts and generate relatively low bank margins. Banks

[2] The Basel Capital Accord, however, requires banks to convert the OBS activities into credit or asset equivalents in the calculation of risk-weighted assets. For more information, see Chapter 7.

are compensated by the fees charged for making such commitments. The bank generally receives compensation for a loan commitment in a variety of ways (Greenbaum *et al.*, 2019) including:

- a *commitment fee*: expressed as a percentage of the total commitment and paid up front by the borrower;
- a *usage fee*: levied on the unused portion of the credit line;
- *servicing fees*: on the borrowed amount to cover the bank's transactions costs; and
- *compensating balances requirements*: deposit balances the borrower must keep at the bank during the commitment, computed as a fraction of the total commitment and on which the bank pays below market interest rates.

It is also common to distinguish between the following types of loan commitments:

- *Revolving lines of credit*: where a bank gives a line of credit and commits for several years ahead.
- *Unused overdraft facility*: an agreed amount by which a bank account can be overdrawn; the bank, however, can withdraw the agreed facility under certain circumstances. Typically, the customer will be charged a set fee for the provision of an overdraft facility. This fee is often calculated as a fairly high percentage of the total value of the overdraft.
- *Note issuance facilities (NIF)*: essentially the bank (or a syndicate of banks if it is a large loan) arranges and guarantees the availability of funds from the issue of a succession of short-term notes (commonly three or six months). In the case of these notes not being taken up by the market, the bank will provide the funds.

Financial guarantees are instruments used to enhance the credit standing of a borrower to help ensure a lender against default and lower the cost of borrowing. They are designed to ensure the timely repayment of the principal and interest from a loan even if the borrower goes bankrupt or cannot perform a contractual obligation. With a financial guarantee a bank underwrites the obligations for a third party, thus relieving the counterparty from having to assess the ability of the customer to meet the terms of the contract. Common examples of financial guarantees are *letters of credit* and *banker's acceptances* (see also Section 4.7.2.1).

A **letter of credit (LOC)** is a document issued by a bank stating its commitment to pay someone a specific amount of money on behalf of a buyer as long as the seller meets certain terms and conditions. LOCs are used to facilitate trade where there is uncertainty, for instance in international dealings when an exporter based (say) in Canada has limited knowledge of the European importer's ability to pay and limited ability to enforce contracts across borders. The importer arranges an LOC to be issued by its bank guaranteeing payment in exchange for a fee for bearing the risk that the importer may default as shown in Figure 10.5. By reducing the default risk confronting the exporter, the issue of an LOC reduces the asymmetric information problems between the two parties. It should be noted that with a commercial LOC the importer's bank usually advances the payment and is repaid by its customer.

Upon presentation of the necessary documents, the importers' bank will issue either an immediate payment (a 'sight draft') or a 'time draft' promising payment at some future date. In the case of the latter, the instrument becomes a **banker's acceptance**, which is marketable and usually quite liquid. If the exporter decides to hold the acceptance, it essentially extends the loan to the importer. Alternatively, if the acceptance is sold in the secondary market, the holder of the acceptance will provide funding, but the bank guarantees payment.

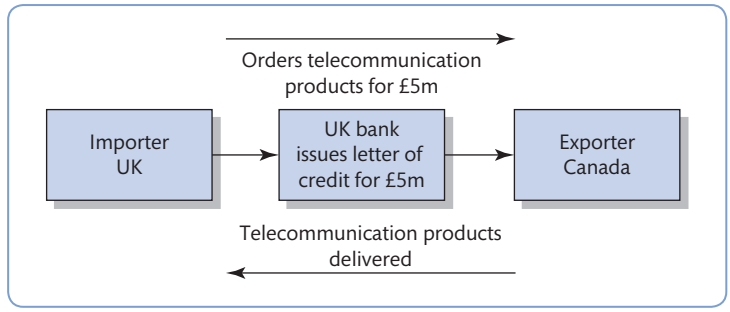


Figure 10.5 Simple example of a letter of credit

A **standby letter of credit** is similar to the commercial LOC in that it is a financial instrument that guarantees the performance of a party, say the importer as in the previous example, in a commercial or financial transaction. However, while a LOC always involves a funding transaction, in a standby LOC the importer's bank makes a payment only if its customer fails to fulfil their obligations (i.e. in case of default). Therefore, the standby LOCs issued by the importer's bank creates an obligation for the bank to compensate the exporter only in the event of a performance failure. The importer will obviously pay a fee for this service and will be liable to its bank for any payments made by the bank under the standby LOC.

Securities underwriting is a type of business typically undertaken by investment banks whereby a bank agrees to buy a set amount of the securities that are not taken up in an issue. For instance, investment banks charge a compensation fee for taking IPOs (Initial Public Offerings) to market (sometimes there is an underwriting syndicate as shown in Figure 10.6); they also issue stocks and bonds for established listed companies in the secondary market. This guarantees the issuer that the whole of the issue is taken up and a fee is paid to the banks providing the underwriting service (see Section 4.7.3 for details on syndicated lending).

Other financial services that generate fee income and do not lead to a balance sheet entry can include, for example, the advisory services that banks give to organisations that are planning to merge with other institutions or to acquire other firms. In Europe all commercial

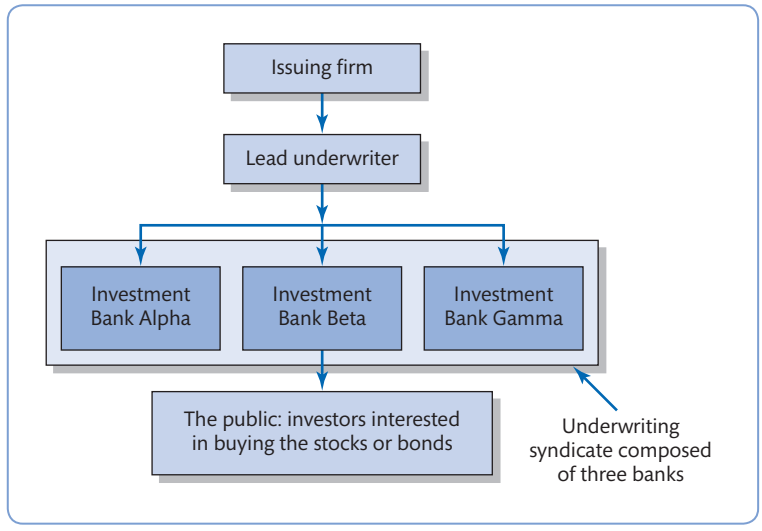


Figure 10.6 Securities underwriting syndicate

banks have been allowed by the Second Banking Co-Ordination Directive to provide these services that in the past were undertaken only by investment banks (as have US commercial banks by the Gramm–Leach–Bliley Act of 1999 and Japanese commercial banks by Japan's 'Big Bang' reforms of 1999).

Another example of a financial service that generates non-interest income is the case where the bank originates a loan in exchange for a fee and then transfers it to another bank, which will provide funding and servicing for the loan (see Box 10.3 on the **process of**

BOX 10.3 THE PROCESS OF DECONSTRUCTION OF LENDING ACTIVITY

Banks' lending activity has traditionally been composed of the following four main parts.

- Loan origination:
  - administration and processing of paperwork and documentation related to the loan application;
  - undertaking risk analysis (screening) and assessing the creditworthiness of the potential borrower;
  - design of loan contracts and loan pricing.
- Provision of funding to the borrower:
  - raising finance;
  - holding the asset on the balance sheet;
  - allocating capital to the risk.
- Servicing:
  - collecting loan payments;
  - bookkeeping.
- Undertaking monitoring activity:
  - post-lending monitoring to control for credit risk;
  - diversification to control default risk.

As a result of changes in regulation and financial innovation, modern banking institutions can specialise in providing only some of the component parts of the lending function described above. This process of 'deconstruction' of the lending function has two main effects. On the one hand, it allows individual parts of the process of providing loans to be transferred to highly specialised separate financial firms (not necessarily banks) that would have not been able to enter the banking market otherwise due to high barriers to entry. On the other hand, it encourages banks to sell individual loans or pool together a bundle of homogenous loans and securitise them for risk management and other purposes.

Over the past two decades, financial innovation has transformed intermediation from a process involving a single financial institution to a process now broken down in several steps, each step carried out by a different specialised institution. As pointed out by Adrian *et al*. (2013), with specialisation has come significant reductions in the cost of intermediation, together with improvements in the terms of liquidity offered to borrowers. However, the aim to reduce costs has also pushed this type of financial activity 'into the shadows', in order to reduce or eliminate the cost associated with prudential supervision and regulation, investor disclosure and taxes. This relatively recent development, the so-called shadow banking system, quickly grew to become equal in size to that of the traditional system. However, the process was not without problems, as it became apparent during the 2007–2009 global financial crisis.

deconstruction). Similarly a loan sale involves a contract whereby the bank that originated the loan removes it from its balance sheet by selling all or part of the cash streams to an outside buyer. An introduction to these activities is given in Section 10.6.

10.6 Loan sales and the process of securitisation

Loan sales have existed for many years. A loan sale occurs when a bank originates a loan and then decides to sell it to another legal entity, usually a financial intermediary. Where the bank is selling only part of the loan the operation is called loan participation or loan syndication (see also Chapter 4). As the loan is sold or transferred, it is removed from the bank's balance sheet. However, the risk may stay with the originating bank if the loan is sold *with recourse*. In this case, the buyer can put the loan back to the selling bank if it goes bad; thus the bank retains the contingent liability. If the loan is sold without recourse then the loan buyer bears all the risk. Table 10.2 shows a simplified bank balance sheet before and after the loan sale. If the loan is sold without recourse it is removed from the bank balance sheet, and the bank has no explicit liability if it eventually goes bad. This means that the buyer – and not the bank originating the loan – bears the credit risk in full. In the (less frequent) case of a loan sold with recourse the bank retains a contingent liability, which is written off balance sheet. Correspondingly, the buyer can put the loan back on the bank balance sheet.

It is possible to distinguish between three main types of loan sales contracts:

- *Participations in loans*: the loan purchaser is not a partner to the loan contract between the bank selling the loans and the borrower so that the initial contract between loan seller and borrower remains in place after the sale. The buyer of a participation in an existing

Table 10.2 Simplified bank balance sheet before and after loan sales (in £mil)

Balance sheet before loan sale (with or without recourse)			
Assets		**Liabilities**	
Cash assets	£5	Deposit	£45
Loans	£45	Equity	£5
Total	**£50**	**Total**	**£50**
Balance sheet after loan sale (with or without recourse)			
Assets		**Liabilities**	
Cash assets	£5	Deposit	£45
Loans	£35		
New investments	£10	Equity	£5
Total	**£50**	**Total**	**£50**
Off balance sheet (loan sale with recourse only)			
		Contingent credit risk liability	
		Loan sale	£10

Source: Adapted from Saunders and Cornett (2017).

loan can exercise only partial control over changes in the loan contract's terms and bears significant risks in case of failure of either the bank or the borrower.

- *Assignments*: refers to buying a share in a loan syndication with some contractual control and rights over the borrower. The ownership of the loan is transferred to the buyer, who thereby acquires a direct claim against the borrower. The borrower in some cases has to agree to the sale of the loan before an assignment can be made.
- *Loan strips*: a third and less common type of loan sale is a loan strip. These are short-dated pieces of a longer-term loan. The buyer of a strip is entitled to a fraction of the expected income from a loan while the bank retains the risk of borrower default.

From the point of view of a bank manager, selling loans to outside investors is an important method of funding bank operations for various reasons (Saunders and Cornett, 2017):

- they allow the replacement of lower-yielding assets with higher-yielding assets when market interest rates increase;
- they can increase the bank's liquidity if loans are replaced with more marketable assets such as government securities;
- they help in the management of credit and interest rate risk;
- they slow the growth of banks' assets, which helps maintain the balance between capital and credit risk;
- they help diversify the bank's assets and lower its cost of capital (on this last issue, see Section 9.4.3).

In particular, banks trying to comply with the Basel capital regulation will find it cheaper to boost their capital-to-asset ratio by reducing assets instead of increasing capital since equity capital is more costly than debt for tax reasons.

Deloitte (2019b) has recently reported details of how loan sales continue to be strategically used by European banks that are deleveraging (Box 10.4). Deal volumes have been driven by Italy and Spain, having each seen over €50 billion traded in both 2017 and 2018.

In contrast to loan sales the process of **securitisation** is more recent. The first issue took place in the United States in the 1970s, compared to 1985 in the United Kingdom (see Chapter 18 for more details on securitisation). Until the 2007–2009 crisis, securitisation markets were growing rapidly; however, the US market was significantly more developed compared to the UK and EU. Securitisation is a structured finance technique whereby a bank transforms its illiquid assets (traditionally held until maturity), into securities, which are then sold to investors. The bank achieves this by pooling the assets and selling them to a special purpose vehicle (SPV), which in turn finances the purchase of the assets via the issuance of securities (commonly known as asset-backed securities or ABS). As shown in Table 10.3, securitisation removes financial assets (in this example a pool of mortgage loans) from the balance sheet.

In Table 10.3, the commercial bank's long-term mortgages have been replaced on the balance sheet by the cash received, which can then be used to pay down liabilities. In the example below, the bank has increased its liquidity by £50 million. Therefore after securitisation the balance sheet shows fewer assets and liabilities (or at the margin does not add assets to it) than it would if the bank originating the mortgages had used a straight debt offering as a means of raising money. This improves ROE and the capital-to-assets ratio and prevents these from declining, all other things being equal.

BOX 10.4 EUROPEAN LOAN SALES ON COURSE FOR 30 PER CENT FALL IN 2019 TO €140.8 BILLION

Sales of non-performing loans (NPL) cooled in the first half of 2019, following a record €200bn in loan portfolio sales during 2018. According to new analysis from Deloitte, NPL sales are on course to end the year at €140.8 billion. Measures taken by European banks and regulators have brought total NPL stock levels down to €660bn and reduced the average NPL ratio to 3.0%, from 3.6% in mid-2018. The NPL ratio refers to the share of a bank's total assets (loans) which are non-performing (i.e. with no payment on the loan for 90+ days).

Beyond Europe, the US$640bn NPL stock currently held by Asian banks represents a 23% increase from the $520bn reported last year.

Alok Gahrotra, Global Head of Transactions of portfolio lead advisory services at Deloitte, comments: "Having reached a peak in 2018 of over €200bn, there has been a drop in loan portfolio sales this year and we expect volumes will land at €140bn. This aligns with the €100bn drop in reported NPL volumes in the last year. However, there is still a significant amount of capital already raised to invest in loan portfolios across the performance spectrum and across asset classes. While bidder appetite might ebb and flow depending on local market dynamics, there is still a wave of capital available which will keep demand high. We now see the total NPL stock in Asia at about $640 billion, not far behind where we are in Europe at €660 billion. That weight of opportunity is a draw for funds, although Europe still remains the core focus of the global loan portfolio opportunity set."

The European market for loan portfolios is now shifting to new asset classes and loan types, including the 'sub-performing' unlikely-to-pay (UTP) loans in Italy, real estate owned (REO) assets in Iberia, as well as in the ship finance sector.

Italy and Spain continue to drive European deal volumes, having each seen over €50bn traded in both 2017 and 2018. Portuguese and Aegean banks are still saddled with Europe's highest NPL ratios despite deal volumes in the countries more than doubling since 2017.

Gahrotra concludes: "Portfolio trades continue to play a significant role in European banks' deleveraging activities as they address the stock of NPLs held on their balance sheets. The measures set out by the European Commission in its 'Action Plan to Tackle Non Performing Loans in Europe' are maintaining pressure on banks and regulators to both address existing stocks of NPLs, and ensure measures are in place to avoid future build ups. This is more of a breather rather than a standstill in this market."

Source: Deloitte (2019b) and Press Release.

Table 10.3 Simplified bank balance sheet before and after securitisation (in £mil)

Balance sheet before securitisation			
Assets		**Liabilities**	
Cash reserves	£5.33	Deposits	£53.33
Long-term mortgages	£50.00	Capital	£2.00
Total	**£55.33**	**Total**	**£55.33**
Balance sheet after securitisation			
Assets		**Liabilities**	
Cash reserves	£5.33	Deposits	£53.33
Cash proceeds from mortgage securitisation	£50.00	Capital	£2.00
Total	**£55.33**	**Total**	**£55.33**

Source: Adapted from Saunders and Cornett (2017).

10.7 Derivative business in banking

Financial derivatives markets have continued to grow in recent years. Derivatives are contracts involving rights or obligations relating to purchases or sales of underlying real or financial assets (e.g. gold and shares respectively), or relating to payments to be made in respect of movements in indices (e.g. the London FTSE 100). These rights and obligations are related to – or derived from – the underlying transactions, so they have been given the general name of *derivatives*. The major types of derivatives are futures, forwards, options and swaps, and these are discussed in more detail in Sections 10.7.1 to 10.7.4. With these contracts a bank has the potential to generate a profit or suffer a loss on an asset that it currently does not own (and therefore these transactions were traditionally recorded as off-balance-sheet business). Developments in international accounting standards have brought radical changes to the way in which companies listed on the stock market present their financial instruments. As a result banks are required to report financial derivatives *on* balance sheet (see Box 10.5).

The rights and obligations associated with derivative contracts are relatively complex but these instruments often have the ability of being able to smooth out price changes in the underlying assets – on the *cash market* as it is often termed. Typically, for there to be a derivatives market, the associated cash market needs to be liquid – easy to trade in without moving the price of an asset (although prices can change for other reasons) – and volatile. 'Volatile' in this instance means 'changeable in price'. If the price cannot be moved then there is no opportunity to make a short-term profit by trading in that asset. The link between the cash market and the derivatives market is a process of buying and selling between the two, known as **arbitrage** – buying in one market and selling in another in order to exploit price differentials. If purchases are made in the lower price market and simultaneous sales are achieved in the higher price market, then as purchases will tend to raise prices and the sales will tend to lower them, the outcome will be that price differences will diminish.

Derivative products that are traded in organised exchanges are described as 'standard' contracts. However, banks may want to strengthen customer relationships by offering products that are tailored to customers. For example, forwards contracts can only be traded over the counter (OTC) (see Box 10.7 on the differences between trading derivatives in official exchanges and OTC).

Derivative products can be used by banks to manage positions or 'hedge' for risk management purposes. **Hedging** involves reducing the risk of exposure to changes in market prices or rates that may affect bank income and value, through taking an offsetting position. For instance, a bank will be hedging risk if it engages in a financial transaction that offsets a long position (that is, a market position in which a bank has bought an asset and thus owns it) by taking an additional short position at some future date (that is, the sale of an asset that will be delivered at a future date). Alternatively, the bank can offset a short position (the bank has sold an asset that will be delivered at a future date) by taking an additional long position (that is, to buy an asset) at some future date.

BOX 10.5 FINANCIAL DERIVATIVES FROM *OFF* TO *ON* THE BALANCE SHEET

Financial derivatives did not use to appear on listed banks' balance sheets. They were accounted for using historical cost accounting and presented in the *Notes* to their financial statements. In the mid-2000s the way in which listed banks account for their derivatives and other contracts was radically transformed.

The reasons for these changes in accounting requirements are linked to two main factors: (1) the urgency of international harmonisation of accounting standards in an increasingly global financial marketplace; and (2) the general need for more transparency in disclosing banks' real exposures particularly on derivative contracts that often do not attract an initial cost. As a result banks must report all derivatives, other held-for-trading financial assets/financial liabilities and available-for-sale financial assets *on* the balance sheet measured at fair value. As explained in Chapter 9, derivatives can represent a relatively large proportion of banks' total assets. Figures 9.2 and 9.3 show that in 2017 financial derivatives represent around 21 per cent both in terms of assets and liabilities.

In terms of accounting standards, the key requirements are set out in the 1998 US Financial Accounting Standards (FAS 133): *Accounting for Derivative Instruments and Hedging Activities*; and in the International Accounting Standards (IAS 39): *Financial Instruments: Recognition and Measurement*. These standards are quite complex and have been subject to a number of modifications and amendments over the last decade. In 2008, the work began to replace IAS 39. The first two instalments of the new standards deal with the classification and measurement of financial assets and liabilities and were issued as IFRS 9 *Financial Instruments* in November 2009 and October 2010, respectively. The IFRS 9 standards aim to provide an improved and simplified set of requirements for financial instruments and have required application since 1 January 2015 (**www.ifrs.org**).

Source: PwC (2009b).

Box 10.6 gives a brief overview of how credit derivative instruments can be used in bank financial management.

It is also common to distinguish between **micro-hedging**, which is when a bank hedges a transaction associated with an individual asset, liability or commitment, and **macro-hedging**, which is when a bank uses futures (or other derivatives) to hedge the entire balance sheet (e.g. the aggregate portfolio interest rate risk). It is obvious that the bank could also use derivatives to speculate (i.e. to take a position with the objective of making a profit) on anticipated price moves.

10.7.1 Financial futures

Financial futures are standardised contracts to deliver and pay for a real or financial asset on a pre-arranged date in the future for a specified price. Futures relate to a broad variety of financial instruments including: bonds, certificates of deposit (CDs), currencies and indexes. One of the most widely traded futures contract is that on government Treasury bonds (T-bonds). For example, say that on 1 December 2020 a bank sells one £100,000 March T-bond futures contract at a price of £115,000. The buyer of the contract agrees to pay £115,000 for a £100,000 face value of long-term bonds. At the end of March 2021, if

BOX 10.6 HOW CAN CREDIT DERIVATIVES BE USED IN BANK FINANCIAL MANAGEMENT?

Credit derivatives

Credit derivatives are swap, forward and option contracts that transfer risk and return from one counterparty to another without actually transferring the ownership of the underlying assets. Similar products have been around for centuries and include letters of credit, government export credit and mortgage guarantees.

Credit derivatives differ from their predecessors because they are traded separately from the underlying assets; in contrast, the earlier products were contracts between an issuer and a guarantor.

Credit derivatives are an ideal tool for lenders who want to reduce their exposure to a particular borrower but find themselves unwilling (say, for tax- or cost-related reasons) to sell outright their claims on that borrower.

Types of credit derivatives

The three major types of credit derivatives are credit default swaps, total-rate-of-return swaps, and credit-spread put options.

Credit default swaps (CDS) transfer the potential loss on a 'reference asset' that can result from specific credit 'events' such as default, bankruptcy, insolvency and credit-rating downgrades. Marketable bonds are the most popular form of reference asset because of their price transparency. While bank loans have the potential to become the dominant form of reference asset (because of their sheer quantity), this is impeded by the fact that loans are more heterogeneous and illiquid than bonds.

CDS involve a 'protection buyer', who pays a periodic or upfront fee to a 'protection seller' in exchange for a contingent payment if there is a credit event (Figure 10.7).

Some CDS swaps are based on a basket of assets and pay out on a first-to-default basis, whereby the contract terminates and pays out if any of the assets in the basket are in default. CDS are the largest component of the global credit derivatives market.

Total-return swaps (TRS) transfer the returns and risks on an underlying reference asset from one party to another. TRS involve a 'total return buyer', who pays a periodic fee to a 'total return seller' and receives the total economic performance of the underlying reference asset in return. 'Total return' includes all interest payments on the reference asset plus an amount based on the change in the asset's market value. If the price goes up, the total-return buyer gets an amount equal to the appreciation of the value, and if the price declines, the buyer pays an amount equal to the depreciation in value (Figure 10.8). If a credit event occurs prior to maturity, the TRS usually terminates, and a price settlement is made immediately.

Credit-spread put option contracts isolate and capture devaluations in a reference asset that are independent of shifts in the general yield curve. Essentially, they are default swaps that stipulate spread widening as an 'event' (Figure 10.9). The spread is usually calculated as the yield differential between the reference bond and an interest rate swap of the same maturity. Unlike default or total-rate-of-return swaps, counterparties do not have to define the specific credit events – the payout occurs regardless of the reasons for the credit spread movement. Spread puts usually involve the 'put buyer' paying

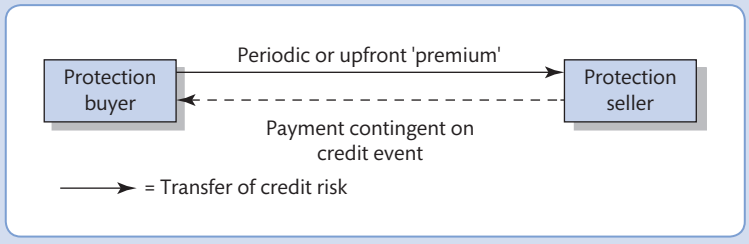


Figure 10.7 A default swap

BOX 10.6 How can credit derivatives be used in bank financial management? (*continued*)

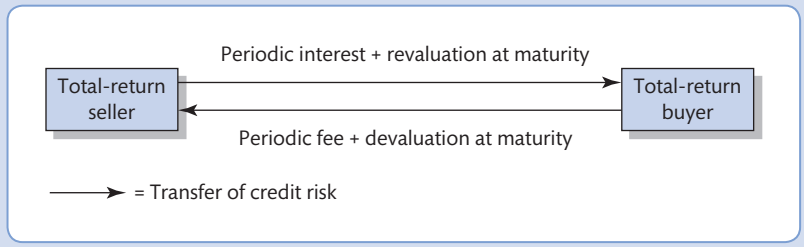


Figure 10.8 A total-rate-of-return swap

an upfront fee to a 'put seller' in exchange for a contingent payment if the spread widens beyond a pre-agreed threshold level. The advantage of the spread put's detachment from defined credit events became particularly apparent during the periods of turmoil in Asian, Latin American and Eastern European financial markets during the late 1990s, where spreads widened dramatically in the absence of any 'event' as defined in typical default-swap documentation. However, credit-spread derivatives can be difficult to hedge and very complicated to model and price, and most investors and hedgers can accomplish their objectives with cheaper CDS.

Source: Adapted from Kiff and Morrow (2000). For a more detailed treatment of how banks use a variety of derivatives to manage risk, see Bessis (2015).

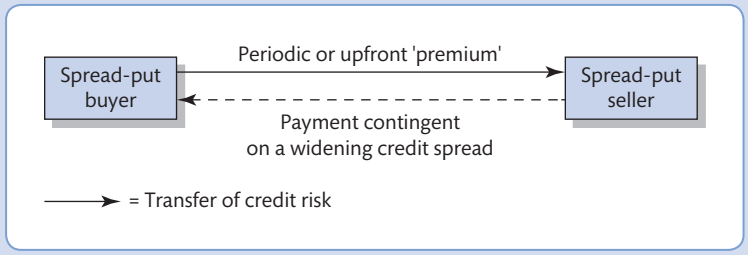


Figure 10.9 A credit-spread put option

BOX 10.7 DERIVATIVE PRODUCTS: OFFICIAL EXCHANGES AND OTC MARKETS

Derivatives can be traded either on an official exchange or OTC. Currently, the two largest exchanges in the world are the National Stock Exchange of India and the CME Group in the United States. This latter comprises four exchanges: CME (Chicago Mercantile Exchange), CBOT (Chicago Board of Trade), NYMEX (New York Mercantile Exchange) and COMEX (Commodity Exchange). In Europe the major derivative exchange is the Eurex Exchange (owned by Deutsche Börse). The UK remains the largest centre for OTC interest rate derivatives activity in the world (Goodacre and Razak, 2019).

The first derivatives markets to be developed were the exchange-based markets and clearing houses. These are highly organised markets regulated by their owners who are usually traders. It is the exchange that decides on the following:

- *Standard units* – currency, size, maturity – to be traded, and the times when trading begins and ceases each day.
- Rules of the *clearing house*, through which all deals are routed, with the result that a deal between (say) X who sells to Y becomes a deal between X selling

Box 10.7 Derivative products: official exchanges and OTC markets (*continued*)

to the clearing house which in turn sells to Y. Conversely, Y pays the clearing house who pays X (irrespective of whether Y pays the clearing house or X delivers to the clearing house). The clearing house interposes itself between all counterparties, thereby shouldering the burden of default and lessening the risk. In effect, it standardises the counterparty, just as deals are for standard products. It also facilitates delivery.

- *Margin* requirements, which all members have to deposit with the clearing house, to ensure that default is unlikely. In addition, all investors must maintain margins with their brokers who are, of course, members of the exchange. The initial margin required is usually 2–10 per cent of the value of the contract. However, if the contract involves a party making a loss that is greater than the initial margin, further deposits are required on a daily basis from the losing party. These are called 'variation margins'. So, as the price moves they (the current loser) must pay the counterparty each day a variation margin based on the day-end settlement price.
- *Marking to market* – a process by which all outstanding deals are re-valued daily, because prices may change frequently. In other words, historic pricing/costing is not used because prices may be volatile. Marking to market is done by the clearing house for all the exchange's members and, again, by members who act as brokers. The latter 'mark to market' all their transactions with their clients. As margin payments are adjusted according to the price changes in the underlying asset on a daily basis, the exposure to risk experienced by the exchange is limited.

Derivative products can also be traded OTC. These markets have no official membership, and banks, non-bank financial firms and (typically) large corporations deal with each other via telephone, fax and computer links. Regulation is undertaken by each country's regulator and co-ordinated by the Bank for International Settlements. Within these markets private contracts are established between sets of parties without any clearing house involvement.

OTC markets are characterised by the existence of *quote vendors*, providing real-time price information on computer screens. Firms providing this service include: Reuters; Bloomberg News Service and the McClatchy Company. Quote vendors also link into the exchange markets, thus providing a comprehensive price information service. They get their OTC prices from dealers in the markets.

To summarise, the main advantages of trading in an organised exchange versus OTC markets are:

Organised exchange	OTC market
● Guarantees every contract, meaning that counterparty risk of default is reduced	● Investors obtain a contract which is tailored exactly to their required quantity and maturity, unlike an exchange's standard contract
● Usually requires capital base and margins (initial and variation) to be taken	● The impact of deals on prices tends to be more gentle than on an exchange where liquidity is said to be more 'concentrated'
● Constantly monitors players and holds a clearing fund	● When the counterparty is a well-established commercial bank regulated by a competent regulatory body, the counterparty risk is believed to be minimal

However, trading OTC has a number of disadvantages that can be summarised as follows:

- There is no clearing house to eliminate counterparty risk, although banks are increasingly seeking security from counterparties.
- There is no daily margining, which increases the risk arising from counterparty default.
- There is a limited secondary market.
- Documentation can be more complex than on an exchange.

Box 10.7 Derivative products: official exchanges and OTC markets (*continued*)

- Prices can be less transparent than on an exchange, although quote vendors provide as much information as possible – at a price.

Figure 10.10 shows recent trends in the OTC derivative markets. A distinction is made between six types of derivative contracts: foreign exchange, interest rate, commodities, equity, credit derivatives and other. Gross market value is the cost of replacing all outstanding contracts at current market prices. It provides an estimation of 'market risk' in terms of potential for gains (or losses) from derivative operations. Gross market value has historically proved to be a quite volatile measure; in six months alone from end-year 2019 to June 2020 it declined by $3.9 trillion to $15.5 trillion. Gross credit exposure can be defined as the gross market values after legally enforceable bilateral netting but before collateral. In the first half of 2020 it increased by $0.8 trillion from $2.4 trillion at end-2019 to $3.2 trillion at end-June 2020, as shown in the chart on the left-hand side The notional amounts (right-hand chart) measure the overall size of the derivatives market and shows that at end-June 2020 it reached $607 trillion. Among all types of derivative contracts in the global OTC market, the interest rate contracts have the highest notional amounts totalling $449 trillion as at end-June 2020.

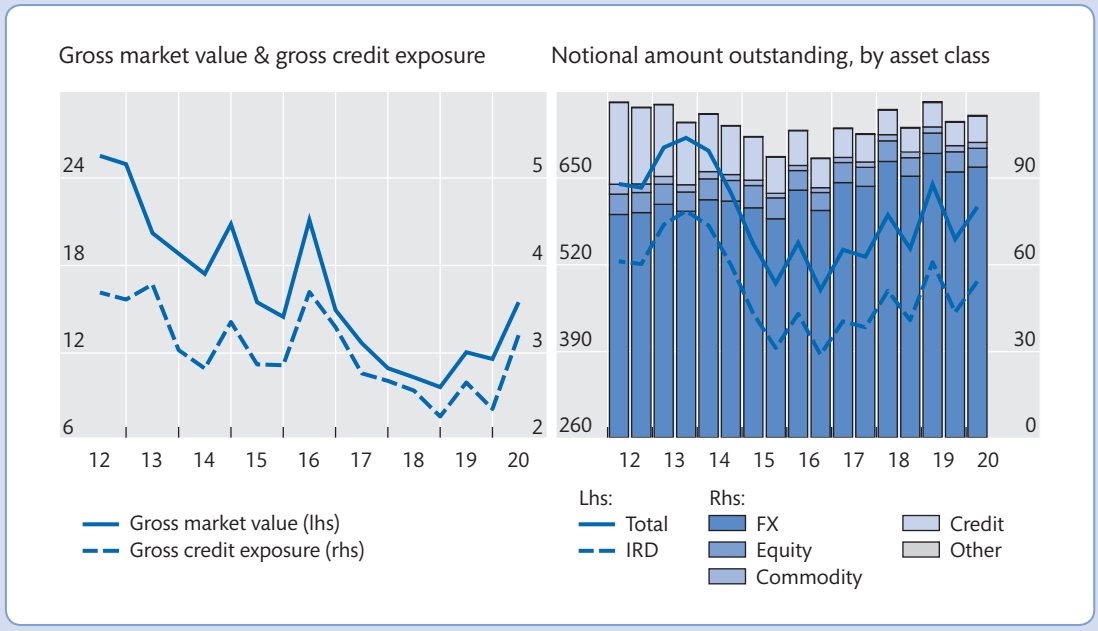


Figure 10.10 Global OTC derivatives market

Source: Bank for International Settlements (2020); Outstanding OTC derivatives, USD trillions; BIS OTC derivatives statistics (Tables D5.1 and D5.2).

interest rates go up the price of the bond will fall to, say, £110,000 (on the inverse relationship between bond prices and interest rates, see Appendix A1). So the buyer of the contract will have lost £5,000 because the bank can now sell the bonds to the buyer for £115,000 and have to pay only £110,000 in the market. Box 10.8 illustrates an example of three-month Eurodollar time deposit futures.

There are various points relating to futures:

- They are traded on organised markets (futures markets) so they carry standardised terms, amounts and maturities.
- They are also highly liquid because they can be sold and bought in the secondary market.
- They are not usually intended to result in the delivery of a commodity or currency.
- They are usually offset: e.g. a purchase offset by a sale, or vice versa, before delivery.
- The clearing house requires both parties to deposit cash against the transaction and this is known as the 'initial margin'.
- If the contract involves a party making a loss that is greater than the initial margin, further deposits are required on a daily basis from the losing party. These are called 'variation margins' – so, as the price moves the current loser must pay the counterparty each day a variation margin based on the day-end settlement price.[3]
- If a counterparty defaults on a futures contract, the exchange assumes the defaulting party's position and the payment obligations.

The following is an example of futures contracts employed by banks to manage positions or 'hedge' for interest rate risk management purposes. (Note that future contracts can also be used to hedge foreign exchange risk.)

BOX 10.8 EXAMPLE OF THREE-MONTH EURODOLLAR TIME DEPOSIT FUTURES

The Eurodollar time deposit future is a short-term interest rate contract traded on the International Money Market which has been part of the Chicago Mercantile Exchange (CME) since 1981. In Europe this product was launched in March 2004 by the former Euronext.liffe and soon established growing liquidity while providing trading opportunities to a wide variety of market participants. Total o*pen interest* for CME Eurodollar was $13 trillion in notional amount (or 13 million contracts), making this one of the most successful products in the derivatives industry. The symbol of Eurodollar futures is 'GE'. More than 80 per cent of the Eurodollar future trading occurs on the CME Globex.

The underlying asset is a $1 million Eurodollar time deposit with a 90-day maturity. 'Eurodollars' are US$-denominated bank deposits that are deposited in banks that are not subject to US banking regulations.[4] Therefore, Eurodollar time deposits generally pay a higher interest rate than US Bank CDs and T-Bills. The bet in such contracts concerns the changes in short-term interest rates relative to those rates at the time the contract is negotiated.

Table 10.4 reports the quotes for the three-month Eurodollar futures contracts from the *CME Group* (7 January 2021). In particular, it shows the following information: the delivery date; the opening and closing settlement price; and the change in settlement price from the previous day. The next two columns report the highest and lowest price reached for the contract on the day, followed by the estimated number of contracts

[3] The process of restating the value of an asset or contract to reflect the market value of the asset or the value of the underlying asset is called 'marking-to-market'.

[4] Originally, these deposits were held, almost exclusively, in Europe; hence the collective name: Eurodollars. However, Eurodollars are now used as a collective name for US dollars held anywhere other than in the United States.

BOX 10.8 Example of three-month Eurodollar time deposit futures (*continued*)

Table 10.4 Eurodollar interest rate futures

Month	Open	Sett.	Change	High	Low	Vol.
March	99.8	99.82	unchanged	99.825	99.82	7,183
June	99.825	99.825	unchanged	99.83	99.825	19,008
September	99.815	99.815	unchanged	99.82	99.81	18,687
December	99.775	99.775	unchanged	99.78	99.77	20,281

Source: CME Group (updated 8/1/2021), **www.cmegroup.com/trading/interest-rates/eurodollar.html**

entered into during the day; finally, the last column reports the open interest, which is the number of outstanding contracts at the end of the day.

The contract's main characteristics are:

- each Eurodollar futures contract represents $1 million of initial face value of Eurodollar deposits maturing 90 days after contract expiration;
- contracts expire in March, June, September and December;
- they are referenced to the ICE LIBOR for three-month sterling deposits at 11 a.m. on the last trading day (that is, the third Wednesday of the delivery month);
- they trade according to an index that equals 100 minus the rate of interest (an index of 95, for example, indicates a futures interest rate of 5 per cent);
- each basis point change in the futures rate equals a $25 change in the value of the contract (0.01 per cent × $1 million × 90/360). Note that the change in value of the contract of $25 is known as the 'tick value'. For example, a profit of 5 ticks will be equal to $25 × 5 = $125;[5]
- gains/losses are calculated by multiplying the profit/loss on the futures trade, times the number of contracts traded, times $1 million, times 90/360. For example, a buyer of 40 contracts at 94.50, offset at 96 will:
  - gain on each futures transaction = 1.5 (150 basis points);
  - gross profits = 40 × 150 × 25 = $150,000;
  - alternatively the profit can be calculated as follows: 40 × (0.96 − 0.945) × $1,000,000 × 90/360 = $150,000;
- Eurodollar contracts are cash settled, which means that the contracts are settled with the payment of the cash difference between the future and the market price;

As a general rule,

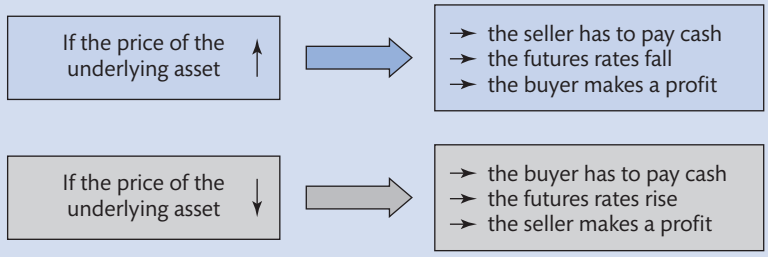


and vice versa. Specifically as a result of a Eurodollar time deposit future contract the buyer owns a commitment from the seller to pay cash if the price of the underlying asset rises; therefore the buyer expects futures

[5]However, trading can also occur, for example, in .0025 increments ($6.25/contract) or '1/4 tick' in the expiring front-month contract; and in .005 increments ($12.50/contract).

BOX 10.8 Example of three-month Eurodollar time deposit futures (*continued*)

rates to fall. In contrast, the seller owns a commitment from the buyer to pay cash if the asset price falls (thus the seller expects futures rates to increase). To recap:



Interest rate futures can be used to hedge against current or future interest rate risk. This is done by taking a position that will generate profits to cover (or offset) losses related to an adverse movement in interest rates. Moreover, participants can use futures to speculate. The trader will either buy or sell the future depending on whether the contract is perceived to be undervalued or overvalued. Typically, a borrower would sell futures to protect against a future increase in interest rates, whereas a lender would purchase futures to hedge against a fall in interest rates.

Take the following example of a long hedge:

Suppose that on 30 June 2020 HSBC expects to receive a $1 million payment on 9 November 2020 and anticipates investing the funds in three-month Eurodollar time deposits. If the bank had the cash available in June it would immediately buy Eurodollar deposits; however, it will not have access to the funds for five months and over this period interest rates may fall.

In order to hedge, HSBC should buy futures contracts such that if interest rates decline, futures rates will also typically fall and the long futures position will increase in value. Table 10.5 summarises the hedge results assuming that on 30 June HSBC buys one December Eurodollar futures contract (the first to expire after November 2020) at 4.24 per cent while current interest rates are 4.15 per cent (note the 0.09 per cent 'basis' difference in rates). On 9 November HSBC sells the December 2020 Eurodollar futures because it receives the $1 million payment and invests in three-month Eurodollars in the cash market. Over the period there is

Table 10.5 Example of long hedge using Eurodollar futures

Date	Cash Market	Futures Market	Basis
30/06/2020 (initial futures position)	Bank anticipates investing $1 million in Eurodollars in 5 months; current cash rate = 4.15%	Bank buys one December 2020 Eurodollar futures contract at 4.24%; price = 95.76	4.24% − 4.15% = 0.09%
09/11/2020 (close futures position)	Bank invests $1 million in 3-month Eurodollars at 3.90%	Bank sells one December 2020 Eurodollar futures contract at 4.05%; price = 95.95	4.05% − 3.90% = 0.15%
Net effect	Opportunity loss: 4.15% − 3.90% = 0.25%; 25 basis points worth $25 each = $625	Futures gain: 4.24% − 4.05% = 0.19%; 19 basis points worth $25 each = $475	Basis change: 0.15% − 0.09% = 0.06%

BOX 10.8 Example of three-month Eurodollar time deposit futures (*continued*)

effectively a decrease in interest rate by 0.25 per cent and the bank is obliged to invest at a rate of 3.90 per cent. However, the opportunity loss in the cash market ($625) is offset by a net gain in the futures market ($475) because the bank can sell the futures contract at a higher price. Overall, the bank has a cumulative income from the investment of $10,225 and its effective return is equal to 4.09 per cent.

Cumulative investment income:

Interest at 3.90% = $1,000,000 (.0390)(90/360) = $9,750

Profit from futures trade = $475

Total = $10,225

$$\text{Effective return} = \frac{\$10{,}225}{\$1{,}000{,}000} \times \frac{360}{90} = 4.09\%$$

Note: To learn more about Eurodollar futures and test your knowledge, go to **www.cmegroup.com/education/courses/introduction-to-eurodollars.html**

Source: Adapted from Koch and MacDonald (2010) and authors' updates.

Assume that a bank expects interest rates to rise in the next six months. In order to protect itself, the bank can decide today to sell interest rate future contracts, which are due for delivery in six months' time, that is, to promise to sell a set amount of Treasury bills at a specific price in the future. After six months the bank buys back the contracts from the exchange and thus agrees to take delivery of the same securities in the future at a specific price. As a result, the two contracts are closed out (i.e. cancelled out or 'reversed') by the futures exchange clearing house and if interest rates do not change the bank is clear of all commitments to buy or sell. If, as expected, interest rates rise in the first six months, this will imply that bond prices will decrease. The bank will make a profit, or at least will be able to offset all or part of the loss in value of the securities, because after six months these will be obtainable at a lower price. (More details on interest rate risk management can be found in Chapter 12.)

10.7.2 Forward contracts

In the case of **forward** contracts two parties directly agree to sell a real or financial asset on a pre-arranged date in the future for a specified price. They differ from financial futures contracts because they are tailor-made, privately traded over the counter and less regulated. An example of a forward contract from the foreign exchange market would be for a party to agree on 30 March to sell to another party £100,000 worth of US dollars on 31 December at a rate of (say) £1 to $1.67. The forwards:

- are non-standard contracts traded OTC (over-the-counter) entered bilaterally by two negotiating partners such as two banks;
- imply private agreements between two parties so they are customised to the specific needs of the parties;
- are highly illiquid: non-negotiable, there is no secondary market;
- are contracts where all cash flows are required to be paid at one time (on contract maturity);

- are such that if one party cannot deliver from stock, then it must buy the commodity or currency on the spot market in order to fulfil the forward contract; and
- the clearing house does not guarantee the operation so there is a risk of default by the counterparty.

One common type of forward contract is the **forward rate agreement (FRA)**, which gives the agents involved the opportunity to hedge against interest rate risk, thereby 'locking in' the future price of the assets. Therefore, FRAs can be used to manage interest rate risk in a way similar to that used for financial futures. Suppose that a bank has a long position in long-term bonds currently selling at par value. In order to remove the interest rate risk from the future price of the bonds the bank can decide to enter a forward contract and sell these bonds at a future date at the current price. (The buyer must have different expectations and worry that the rate on the bonds might decline in the same period.)

Other important types of forward contracts are **currency forwards** that allow both the buyer and the seller to hedge against the risk of future fluctuations in currencies. For example, the holder of a four months' long position in dollars can offset it by entering a forward contract that requires them to sell in four months the equivalent amount, in say euros, at the current exchange rate. This currency forward will ensure that the transaction is protected from exchange rate fluctuations that may occur over the four months.

An example of a forward rate agreement is discussed in Box 10.9.

BOX 10.9 EXAMPLE OF FORWARD RATE AGREEMENT

Assume that:

- Company X expects to have to borrow £1m in three months' time for a six-month period;
- short-term rates, say sixth-month LIBOR,[6] are at 6 per cent but Company X expects this to rise over the following three months;
- to protect against this expected rise in rates, Company X buys an FRA to cover the six-month period starting three months from now – known as a '3 against – 9 month' or 3 × 9 FRA;
- a bank quotes a rate of 6.25 per cent for such an FRA, and this would enable Company X to lock into the borrowing rate of 6.25 per cent in three months' time for six months, so Company X buys the FRA;
- six-month LIBOR increases to 7 per cent in three months' time. Despite having the FRA, Company X is still forced to borrow in the market and pay the going 7 per cent rate. Over a six-month period the borrower would have to pay approximately £35,000 interest in the underlying borrowing. This is the difference between 7 per cent LIBOR borrowing minus 6.25 per cent for the FRA divided by 2 (because the borrowing is for six months);
- under the FRA Company X would receive approximately £3,750 to compensate for the extra 0.75 per cent interest payable on the £1 million loan over the six-month period – this is known as the settlement sum that effectively offsets the higher borrowing costs. This is paid on the settlement date which is the date at which the contract starts.

Note that while the FRA has not guaranteed Company X the interest rate on the specific financing, it has managed to secure its finance at the 6.25 per cent fixed rate from the FRA.

[6] Note there are many different LIBOR rates: overnight, one week, two weeks, one month, two months and so on. Note that LIBOR rates might not be available after 2021. Replacements include the Secured Overnight Financing Rate (SOFR) and the Tokyo Overnight Average Rate (TOAR)

BOX 10.9 Example of forward rate agreement (*continued*)

The standard formula for calculating the payment or settlement sum can be shown as:

$$\text{Payment} = \text{notional principal}\left(\frac{(\text{reference rate} - \text{forward rate})\,(\text{days}/360)}{\text{reference rate}\,(\text{days}/360) + 1}\right)$$

where:

notional principal = notional amount of loan

reference rate for the period of the forward rate = LIBOR, EURIBOR or another floating rate underlying the agreement

forward rate = fixed rate agreed on the FRA

days = length of the contract period.

For further illustration if we take the aforementioned example, the formula is as follows:

$$\begin{aligned}\text{Payment or settlement amount} &= \\ \text{Numerator (interest saving)} &= (0.07 - 0.0625) \times (180/360) \\ &= 0.0075 \times 0.5 = 0.00375 \\ \text{Denominator (discount factor)} &= (0.07 \times (180/360)) + 1 = 1.035 \\ \text{Settlement amount} &= 1{,}000{,}000 \times (0.00375/1.035) = £3{,}623.10\end{aligned}$$

10.7.3 Options contracts

Options give holders the right but not the obligation to buy or sell an underlying security (a financial instrument or a commodity) at a specified price known as the exercise or strike price. The purchase price of an option is called its *premium*. A contract that gives the right to buy is known as a *call option*, a contract that gives the right to sell is a *put option*. It is common to distinguish between American options, which can be exercised at any time during their life, and European options, which can be exercised only at the end of their life, i.e. on the expiry date.

- Options can be OTC or exchange traded.
- Exchange-traded or listed options are standardised contracts with pre-determined exercise prices and expiry dates.
- If the options are traded on exchanges, such as bond options, a clearing house is responsible for the settlement of debits and credits for the members (so they are virtually default risk free).
- Options may be purchased that effectively give the right to borrow or to lend (deposit funds) at a specified rate of interest (the striking rate) for an agreed period at a future date, or to purchase/sell currencies at agreed exchange rates at agreed future dates.

An illustration of option contracts payoffs and profits profiles is provided in Box 10.10.

Options on assets other than stocks include:

- 'index options', which are calls or puts based on a stock market index such as the London FTSE 100;
- 'futures options', which give their holders the right to buy or sell a specified futures contract, using as futures price the exercise price of the option;

BOX 10.10 OPTION CONTRACTS: PAYOFF AND PROFIT PROFILES

The most common option contracts are options on individual stocks (stock options). For example, consider an April 2021 maturity call option on a share of Bank ABC with an exercise price of £50 per share selling on 3 January 2021 for £2. Until the expiration day (the third Friday of the expiration month, that is, 21 April), the purchaser of the calls is entitled to buy shares of Bank ABC for £50 and thus stands to gain from a *rise* in the price of the underlying share. If at expiration Bank ABC stock sells for a price above the exercise price, say £55, then the option holder could acquire the Bank ABC share at £50 under the terms of the option and sell it in the spot market at £55. In this case the profit to the call holder will be equal to £3. That is, the payoff (£5) minus the premium paid to purchase the option (£2).

The relationship between market and exercise price is as follows:

- In the money – exercise of the option would be profitable

  Call: market price $>$ exercise price ($S_T > x$)

  Put: exercise price $>$ market price ($x > S_T$)
- Out of the money – exercise of the option would not be profitable

  Call: market price $<$ exercise price ($S_T < x$)

  Put: exercise price $<$ market price ($x < S_T$)
- At the money – exercise price and asset price are equal ($x = S_T$)

Figure 10.11 shows the payoff and profits from the point of view of the holder of the call option. For example, if the exercise price is £50 and Bank ABC is now selling the shares at the market price of £60, the holder of the option will clear £10 per share. The profit will be equal to the payoff (£10) – the premium (£2) = £8. Yet if the shares sell any amount equal or below £50 the holder can sit on the option and do nothing, realising no further gain or loss. To summarise:

Payoff to call holder

$(S_T - x)$ if $S_T > x$

0 if $S_T = x$

Profit to call holder

Payoff − Purchase price (premium)

Figure 10.12 illustrates the payoffs and profits from the point of view of the holder of the put option. If the exercise price is £50 per share and Bank ABC is now selling at, say, £30, the holder of the put option will earn £20 per share (the profit will be £20 − 2 = £18). If the shares sell any amount equal or above £50 the holder can sit on the option and do nothing, realising no further gain or loss. To recap:

Payoff to put holder

0 if $S_T = x$

$(x - S_T)$ if $S_T < x$

Profit to put holder

Payoff − Premium

Bank ABC share value	£40	**£50**	£60	£70	£80
Option value	0	**0**	+£10	+£20	+£30

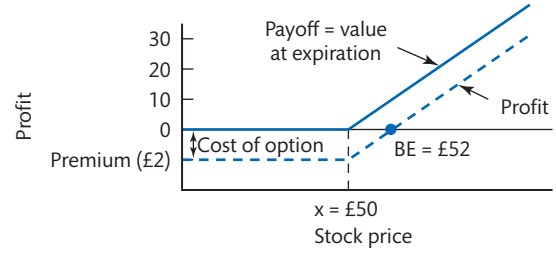


Figure 10.11 Payoffs and profits on call options at expiration (from the perspective of the buyer of the option)

BOX 10.10 Option contracts:payoff and profit profiles (*continued*)

Bank ABC share value	£20	£30	£40	**£50**	£60
Option value	+£30	+£20	+£10	**0**	0

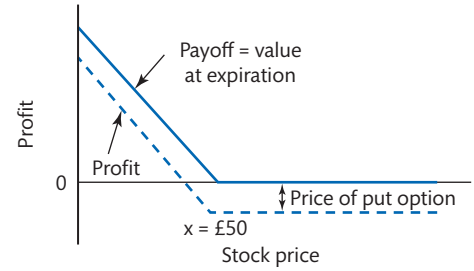


Figure 10.12 Payoffs and profits on put options at expiration (from the perspective of the buyer of the option)

- 'foreign currency options', which offer the right to buy or sell a quantity of foreign currency for a specified amount of domestic currency;
- 'interest rate options' – options that are also traded on T-bills, bonds and CDs.

One common application of option contracts relates to the protection of banks' bond portfolios against rising interest rates. The main advantage of using options to manage interest rate risk, as opposed to futures and forwards, is that there is no delivery obligation, so the bank can decide to keep its bonds if interest rates fall and bond prices rise. For example, in order to protect itself against rising interest rates (and falling market values of bank assets, rising borrowing rates and so on) a bank can decide to buy a put option on securities. The put option grants the bank the right to deliver the securities at a set price 'P'. If interest rates do rise, the market price of the securities will fall so the bank will be able to buy them at the current price and deliver them to the option writer at the (higher) price 'P'. The profit for the bank will be equal to P less the current price and the premium paid to exercise the option. Note that, typically, banks are buyers rather than sellers of puts and calls because of the considerable risks involved if interest rates move against the sellers.

10.7.3.1 Caps, floors and collars

Caps and **floors** are effectively types of options. They may be thought of as giving the holder a right to purchase a forward rate agreement (forward contract in interest rates) 'with hindsight'. **Collars** are hybrid products, being part forward contract and part option.

An interest rate cap may be purchased from a bank in order to protect the holder of an existing floating-rate loan from the interest rate moving upwards beyond the level specified by the cap contract. The holder (borrower) is still able to benefit if interest rates fall, but may claim any excess interest charge over the cap level from the seller of the cap.

An interest rate floor has the same characteristics as a cap, except that it protects an investor or depositor against a floating rate of interest falling below the specified floor level. The seller

of the floor will pay the purchaser any interest losses below the floor rate. The purchaser is still able to benefit from increases in interest rates.

An interest rate collar is effectively a combination of a cap and a floor. A collar may be purchased by a company wishing to protect itself against the interest rate on outstanding debt going beyond a capped level, but prepared to forgo the gain from the interest rate falling below a lower specified level in exchange for a lower premium on the cap.

10.7.4 Swaps

Swaps are agreements between two parties to exchange two differing forms of payment obligations. They can be thought of as exchanges of cash flows used to manage their asset–liability structure or to reduce their cost of borrowing. The most common types of swaps are interest rate swaps and currency swaps.

10.7.4.1 Interest rate swaps

Interest rate swaps occur between borrowers and swap dealers (normally banks). The swap dealer is the counterparty to the swap transaction with the borrower. It is important to understand that only debt servicing commitments are swapped not the underlying borrowed funds. Hence, swaps are used as a risk management instrument whereby a company can change the profile of its interest rate liabilities without disturbing the underlying borrowing. In addition, swaps can be used as a basis for speculation when they are taken out without any matching exposure in the cash market.

The main features of interest rate swaps are:

- only interest payments are swapped so there is no exchange of principal;
- interest payments are swapped at rates and for a term agreed at the outset based on a specified notional principal;
- transactions are usually governed by a standardised swap contract (but the amount and terms are not standardised);
- the rights and obligations under a swap contract are entirely separate from the rights or obligations associated with any underlying borrowing;
- interest swaps normally cover initial periods of anything from 1 to 10 years or more.

Among other applications, swaps give counterparties the ability to:

- convert floating-rate debt to fixed-rate or fixed-rate to floating-rate;
- lock in an attractive interest rate in advance of a future debt issue;
- position fixed-rate liabilities in anticipation of a decline in interest rates; and
- arbitrage or speculate on debt price differentials in the capital markets.

As stated above, swaps are normally arranged through a swap dealer, with the dealer acting as a principal rather than an agent. The dealer makes a return on this activity through the bid–ask spread.[7] Interest rate swap prices are quoted on a range of currencies for periods

[7] Most financial instruments traded in the market have a bid–ask spread. The bid price is the price at which you can sell the instrument. The ask price is the price you would have to pay to buy the instrument. Alternatively one can view the bid price as the highest price that somebody will pay for (say) a share at a particular point in time, whereas the ask price is the lowest price at which someone is willing to sell the share. The difference between the bid and the ask price is known as the bid–ask spread. Market makers that offer to buy and sell shares create the spread so they can earn income from trading.

of up to 30 years and are published in the *Financial Times*. The quotes will, in general, move in the same direction as changes in the yields on gilt-edged securities with a similar maturity to the swap. Since April 2018, Sterling Overnight Indexed Average (SONIA) has been measured and published by the Bank of England as an alternative to the LIBOR.

10.7.4.2 Currency swaps

Currency swaps transfer the obligation for payment in one currency to another party who, in turn, undertakes an obligation for payment in another currency.

Typically a currency swap involves:

- an initial exchange of principal amounts of two currencies at the spot exchange rate;
- the exchange of a stream of fixed or floating interest rate payments in their swapped currencies for the agreed period of the swap; and
- re-exchange of the principal amount at maturity at the initial spot exchange rate. Sometimes, the initial exchange of principal is omitted and instead a net amount or 'difference' is paid.

In a currency swap, counterparties agree to exchange an equivalent amount of two different currencies for a specified time. These can be negotiated for a wide range of maturities up to at least ten years. As in the case of other foreign exchange contracts, if the cost of borrowing in one currency is higher than it would be in another then a fee may be required to compensate for the interest differential.

The usual reason for a financial intermediary wishing to engage in a currency swap is so that it can replace cash flows in an undesired currency with flows in a desired currency. Global banks and other large financial intermediaries often raise finance in the international markets and may have to service debt in a variety of currencies.

A Japanese bank, for instance, may have to service most of its debt in fixed-rate yen, whereas a UK bank has to (say) service mainly fixed-rate British pound debt. If the Japanese bank has some fixed-rate British pound debt and the UK bank fixed-rate yen debt this could provide an opportunity for both banks to swap principal and interest payments – so the UK bank obtains an income stream paying fixed-rate yen and the Japanese firm fixed-rate British pounds. Put simply, both banks are swapping cash flows in different currencies.

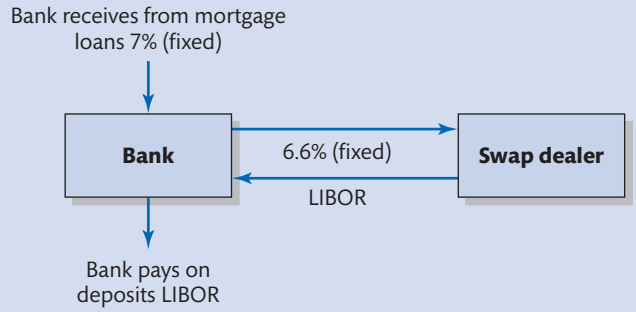
BOX 10.11 EXAMPLE OF INTEREST RATE SWAP

Suppose a UK-based bank has recently agreed a total of £100 million of mortgage loans at a rate that will remain fixed at 7 per cent per annum for the next five years. Also, suppose that the funding is in the form of wholesale deposits with three-month maturity paying interest at LIBOR that is currently 6.6 per cent. As long as its mortgage loans are at 7 per cent fixed, the bank will gain if LIBOR falls and it will lose out if LIBOR rises.

A swap dealer may offer the bank the following deal:

- Swap dealer to pay the bank each year, for the next five years, a sum of money calculated on the interest that would have been paid on £100 million at LIBOR.
- Bank to pay swap dealer each year, for the next five years, a sum of money calculated on the interest that would have been paid on £100 million at 6.6 per cent fixed.
- The bank may then use the swap to fix its interest rate margin between the mortgage loans and the three-month deposits for a five-year period.

BOX 10.11 Example of interest rate swap (*continued*)



As long as the notional principal and the maturity date of the swap match the amount and maturity of the fixed-rate mortgage loans, the interest margin is fixed at 0.4 per cent. Consequently, the bank's profit margin is insulated from the risk that LIBOR could rise. However, if LIBOR falls the margin will remain at 0.4 per cent and the bank will not be able to benefit from this fall in market rates. The interest margin is fixed, irrespective of the level of LIBOR.

A possible problem could arise for the bank if interest rates were to fall and this created pressure for early repayment of the fixed interest mortgage loans. If the mortgage loans were to be repaid early, the bank would cease to need the wholesale deposits. However, with the swap obligations still in force, a LIBOR rate of, say, 4 per cent, would lead to a loss for the bank of £2.6 million on the transaction. That is, the bank would still have to pay the swap dealer £6.6 million, but would receive only £4 million from the swap dealer. To prevent this problem, the bank could incorporate early repayment penalties in mortgage loan agreements, although it would need to ensure that it did not contravene any related consumer protection legislation. This example illustrates clearly the basic rule that derivatives can reduce risk if they match a position in the underlying cash markets, but they increase risk if there is no underlying obligation in the cash market or if the underlying obligation does not come to fruition for whatever reason.

BOX 10.12 EXAMPLE OF FIXED–FLOATING CURRENCY SWAP

Suppose that a US-based bank has partly financed its asset portfolio with a total of £60 million three-year note issue with fixed 10 per cent annual coupons denominated in sterling. Also, suppose that this US bank holds mostly floating-rate short-term US dollar-denominated assets.

- A UK-based bank has partly financed its asset portfolio with a total of $100 million short-term dollar-denominated Euro CDs whose rates reflect changes in one-year LIBOR + 1 per cent premium. Also, suppose that this UK bank holds mostly fixed-rate long-term sterling-denominated assets.

Both banks are faced with interest rate and foreign exchange exposure if the following situations occur:

- for the US bank if dollar short-term rates fall, and the dollar depreciates against the pound;
- for the UK bank if US interest rates rise, and the dollar appreciates against the pound.

Therefore the two banks may wish to engage in a fixed–floating currency swap whereby:

- the US bank transforms its fixed-rate sterling-denominated liabilities into variable rate dollar liabilities;

BOX 10.12 Example of fixed–floating currency swap (*continued*)

- the UK bank transforms its variable-rate short-term dollar-denominated liabilities into fixed-rate sterling liabilities.

Each year the two banks swap payments at some prearranged dollar/sterling exchange rate, assumed to be $2/£1. The UK bank sends fixed payments in pounds to cover the cost of the US bank's pound note issue, while the US bank sends floating payments in dollars to cover the UK bank's floating-rate dollar CD costs. Table 10.6 shows that the realised cash flows from the swap result in a net nominal payment of $3 million by the US bank to the UK bank over the life of the swap.

Table 10.6 Fixed–floating rate currency swap (millions)

Year	LIBOR %	LIBOR + 3%	Floating-rate payment by US bank ($mil)	Fixed-rate payment by UK bank		Net payment by US bank ($mil)
				($mil)	$mil (at $2/£1)	
1	8	11	11	6	12	−1
2	9	12	12	6	12	0
3	10	13	130	66	132	−2
Total net payment						−3

Source: Adapted from Saunders and Cornett (2017).

Currency swaps come in various forms:

- fixed-for-fixed currency swaps – where the interest rate payments on the two currencies that are swapped are fixed at the start of the swap agreement;
- fixed-for-floating swaps (cross-currency swaps) – where the interest rate on one currency is floating and usually linked to the London Interbank Offered Rate (LIBOR) (the average of interest rates that major international banks charge each other to borrow US dollars in the London money market) and the other is fixed; and
- floating-for-floating currency swaps – where both interest rates are floating.

The main reasons for the development of currency swaps business is that some financial and other firms have an advantage in generating cash flows in specific currencies and it is in the interest of these firms to trade these cash flows if they desire other currency streams. As business has become more international, and financing and investment requirements more diversified, the need to have access to a wider array of cash flows in different currencies has heightened.

10.8 Conclusion

Bank managers' role is to implement decisions that maximise the profitability of their institutions and shareholders' wealth, while balancing environmental and social responsibility in line with the stakeholders' expectations. In order to achieve these aims, bank managers should pursue strategies in several areas, such as asset and liability management, liquidity management and capital management. This chapter describes these on-balance-sheet

concerns of banks and then provides an account of the different types of off-balance-sheet business that modern banks undertake, such as loan sales and other contingent commitments. In the past, financial derivative products have been referred to as off-balance-sheet activities. In recent years, the need for more disclosure and transparency has implied changes in the way these items are recorded in banks' financial statements. In fact, there is an increasing focus in many countries to align the financial sector with sustainable development (Lannoo and Thomadakis, 2020). The trend in international accounting standards is to require banks to record derivatives at fair value on the balance sheet and to report any gain (loss) on hedged instruments in the income statement whenever derivatives are used as a hedge against underlying assets or liabilities. A related area of strategic decision that carries a high potential for affecting bank profits, value and safety is risk management. The following two chapters outline the main risks that banks have to face (Chapter 11) and discuss the techniques used by banks to measure and manage these risks (Chapter 12).

Key terms

Arbitrage
Asset management
Asset–liability management
Banker's acceptance
Capital management
Caps, floors and collars
Currency forward
Financial derivatives
Financial futures
Financial guarantees
Forward rate agreement
Forwards
Funds transfer pricing (FTP)
Hedging
Liability management
Liquidity management
Loan commitments
Loan sales
Macro-hedging
Micro-hedging
OBS management
Options
Process of deconstruction
Securities underwriting
Securitisation
Standby letter of credit
Swaps
Treasury

Key reading

Lannoo, A. and Thomadakis, A. (2020) 'Derivatives in sustainable finance: Enabling the green transition', European Capital Markets Institute, **www.isda.org/a/KOmTE/Derivatives-in-Sustainable-Finance.pdf**

PwC (2019) 'Digital treasury: It takes two to tango', Global Treasury Benchmarking Survey, **www.pwc.co.uk/audit-assurance/assets/pdf/global-corporate-treasury-benchmarking-survey-2019.pdf**

Saunders, A. and Cornett, M. (2017) *Financial Institutions Management: A Risk Management Approach*, New York: McGraw Hill.

REVISION QUESTIONS AND PROBLEMS

10.1 What is asset–liability management?

10.2 Why should banks be concerned that the LIBOR is no longer a sustainable benchmark? What are SONIA and SOFR?

10.3 Why is there a trade-off between liquidity and profitability?

10.4 What are the main functions of the Treasury division within the bank and what is the FTP process? Read the report by PwC (2019) on digital treasury. How can digital tools enable treasurers to better optimise financial assets and liabilities?

10.5 What are the main concerns in capital management?

10.6 Explain loan sales with and without recourse.

10.7 Explain the changes in a bank's balance sheet before and after securitisation.

10.8 Broadly describe what is meant by derivative products and explain the different implications of trading in organised exchanges versus OTC.

10.9 How can banks use futures and forwards for hedging an interest rate exposure?

10.10 What are the primary features of options contracts and how can they be used for risk management purposes?

10.11 What are the main differences between interest rate and currency swaps?

10.12 What is the role of derivatives in sustainable finance? (Refer to Lannoo and Thomadakis (2020)'s report to answer this question.)

Chapter 11

Banking risks

Learning objectives

- To define the most common risks in banking
- To distinguish between the various risks in banking
- To appreciate the relevance and urgency of sustainability risks
- To understand the importance of the interrelation among banking risks

11.1 Introduction

For any privately owned bank, management's goal is to maximise shareholders' value while ensuring that the bank is safe and sound. If the institution is publicly listed and markets are efficient, returns are proportional to the risks taken; if the bank is small and unlisted, managers will try to maximise the value of the owner's investments by seeking the highest returns for what they deem to be acceptable levels of risk. With increased pressure on banks to improve shareholders' returns, banks have had to assume higher risks and, at the same time, manage these risks to avoid losses. The processes of deregulation, globalisation and conglomeration have offered productive opportunities for banks in terms of profitability and value creation activities (see Chapter 9) but have also posed serious risk challenges. The financial crisis in the second half of the 2000s has demonstrated on one hand the fragilities of the banking sector globally and, on the other, the potential systemic risks associated with the interconnectedness of banking activities. In this chapter we describe the main types of risks modern banks have to face. We also discuss why bank managers are under increased pressure to identify the conditions that are linked directly or indirectly to sustainability issues and that pose risks that can materialise in the long term, such as climate change. An introduction to the prevailing risk management techniques will be provided in more detail in Chapter 12.

11.2 Credit risk

According to the Basel Committee on Banking Supervision (2000) **credit risk** is defined as 'the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms'. Generally credit risk is associated with the traditional lending

activity of banks and it is simply described as the risk of a loan not being repaid in part or in full. However, credit risk can also derive from holding bonds and other securities.

Credit risk is the risk of a decline in the credit-standing of a counterparty. Such deterioration does not imply default, but means that the probability of default increases. Capital markets value the credit-standing of firms through the rate of interest charged on bonds or other debt issues, changes in the value of shares, and ratings provided by the **credit-rating agencies** (such as Standard & Poor's, Moody's and Fitch). However, banks also face credit risk in a number of other financial instruments such as derivative products and guarantees. This particular type of credit risk is sometimes referred to as **counterparty risk**. Resti and Sironi (2007) define the risk associated with deterioration in the counterparty's creditworthiness as a 'migration' risk that becomes effectively a 'downgrading' risk if the rating agency that issued the public credit rating downgraded it. According to the authors, in the context of credit risk, it is also useful to distinguish between spread risk, recovery risk, pre-settlement (or substitution risk) and country risk (Section 11.7). Spread risk is the risk connected with an increase in the spreads required of borrowers, such as bond issuers, by the market. When risk aversion increases due for example to instability, crisis or shocks, the spread differential between good quality and bad quality bonds may rise (so-called 'flight to quality'). In the case of insolvent assets of the counterparty, there is also the recovery risk that can occur when the recovery rate is lower than initially predicted because of lower liquidation value or unexpected delays in cashing in bad assets. A bank also runs a pre-settlement or substitution risk, which is the risk that may occur when the bank counterparty in an over the counter derivative transaction becomes insolvent prior to maturity, forcing the bank to substitute it at less favourable conditions.

In general terms, bank managers should minimise credit losses by building a portfolio of assets (loans and securities) that diversifies the degree of risk. This is because very low default risk assets are associated with low credit risk and low expected return, while higher expected return assets have a higher probability of default (i.e. a higher credit risk). Focusing on loans that constitute the largest proportion of a bank's assets, in Chapter 10 we mentioned that the traditional lending function involves four different components (Sinkey, 2002; Greenbaum *et al*., 2019):

1. originating (the application process);
2. funding (approving the loan and availing funds);
3. servicing (collecting interest and principal payments);
4. monitoring (checking on borrowers' behaviour through the life of the loan).

Banks must investigate borrowers' ability to repay their loans before and after the loan has been made (these activities are known as screening and monitoring functions of banks) because of their aim to maximise value and the responsibility they have towards their depositors and deposit insurers to be safe and sound.

To recall, banks are said to act as *delegated monitors* on behalf of lenders and to this end they use technology and innovation in the design and enforcement of contracts. These contracts are costly for the banks but essential for the protection of both banks' owners and lenders. However, *agency problems* may arise as a result of functions (1) and (4). As shown in Chapter 1, agency problems imply potential contractual frictions between principals (lenders) and agents (borrowers) because of asymmetric information, moral hazard and adverse selection. Banks need to account for these problems while aiming to minimise losses in lending.

While it is accepted that all banks experience some loan losses, the degree of risk aversion varies significantly across institutions. All banks have their own **credit philosophy** established in a formal written **loan policy** that must be supported and communicated with an appropriate credit culture. The lending philosophy could reflect an emphasis on aggressive loan growth based on flexible underwriting standards. Alternatively, it could reflect the goals of a more conservative management aiming at achieving a consistent performance of a high-quality loan portfolio. Loan policies reflect the degree of risk bank management is ready to take and may change over time. A credit culture is successful when all employees in the bank are aligned with the management's lending priorities (Hempel and Simonson, 2008).

If internal data are available, credit risk can be monitored by looking at the changes in the ratio of medium-quality loans to total assets. The bank can choose to lower its credit risk by

BOX 11.1 CREDIT CULTURE AND EQUITY CULTURE IN BANKING

Credit culture refers to the fundamental principles that drive a bank's lending activity and the way management analyses risk. Credit culture relates specifically to the way management sets the values of a bank in relation to the credit risk management process and seeks to communicate with and influence the organisation. In this context, senior executives and particularly the CEO (chief executive officer) play a key role in determining a bank's credit culture and in setting the tone and direction of their organisations.

This special role of the CEO was also emphasised in an unpublished speech at Bangor Business School (September 2010) by Lord Mervyn Davies, former Government Minister and Chairperson of Standard Chartered Bank Plc. Lord Davies stressed the importance of the functions and responsibilities of a bank CEO in giving clear signals appropriate for the credit culture that they have decided to pursue. In line with the existing relevant literature, Lord Davies confirmed the role of the CEO as protector of a bank's value system, and in preserving prudent discipline, guidelines, and accountability.

In Mueller's (1994) words, credit culture can be defined as the true 'spirit behind the rules [...] with many moving parts embracing everything that has to do with credit extension. It is rooted in ideas, traditions, skills, attitude, philosophies and standards.' So credit culture not only relates to the tangible written policies and procedures, but also intangible. In addition, 'a credit culture is developed over time and communicated and passed on'. That is, a strong credit culture will permeate the organisation throughout and people will know intuitively what is acceptable and what is not.

The 2007–2009 financial turmoil demonstrated that an equity culture in banking took over from the credit culture in the run up to the collapse. Equity culture implies a bank's behaviour that encourages excessive risk taking and leverage and is characterised by short-term (and short-sighted) strategies. In a study published in the *OECD Financial Market Trends* paper series, Blundell-Wignall *et al*. (2009) attempt to identify the main factors that brought about a greater focus on equity culture at the expense of the credit culture. These include factors such as excess liquidity, poor regulation, competition and governance frameworks, structured products and derivative growth drivers, often motivated by tax considerations.

One way to 'diagnose' credit culture is to use the organisation behaviour approach, called the competing values framework (CVF). This conceptual model is based on four categories of activities that firms can use to create value, namely: (i) collaborate (investments in human capital); (ii) control (investments in internal processes); (iii) compete (activities to improve competitiveness); and (iv) create (organic innovation). More details on the CVF and how it can be employed to identify banks' credit culture can be found in Thakor (2016).

Sources: Blundell-Wignall *et al*. (2009); Davies (2010); Mueller (1994); Thakor (2016).

lowering this ratio. If the data on medium-quality loans are not available, traditional proxies for credit risk include, for instance:

- total loans/total assets;
- non-performing loans/total loans;
- loan losses/total loans;
- loan loss reserves/total assets.

These types of ratios can be calculated for different types of loans the bank holds on its balance sheet, for example, a bank may look at its mortgage loan book and see what proportion of such loans it holds relative to total assets, the amount on non-performing mortgage loans, loan losses on mortgage loans and so on.

However, Hempel and Simonson (2008) argue that these indicators can be subject to criticism because they lag in time behind the returns gained by taking higher risk. Therefore one should look at lead indicators such as:

- loan concentration in geographic areas or sectors;
- rapid loan growth;
- high lending rates;
- loan loss reserves/non-performing loans.

Another key credit-risk measure is the ratio of total loans to total deposits. The higher the ratio the greater the concerns of regulatory authorities, as loans are among the riskiest of bank assets. A greater level of non-performing loans to deposits could also generate greater risk for depositors.

Since in the presence of credit risk the mean return on the banks' asset portfolio is lower than if the loan portfolio was entirely risk-free, the bank will find it necessary to minimise the probability of bad outcomes in the portfolio by using a diversification strategy. Diversification will decrease **unsystematic (or firm-specific) credit risk**. This is derived from 'micro' factors and thus is the credit risk specific to the holding of loans or bonds of a particular firm. While diversification decreases firm-specific credit risk, banks remain exposed to **systematic credit risk**. This is the risk associated with the possibility that default of all firms may increase over a given period because of economic changes or other events that have an impact on large sections of the economy/market (e.g. in an economic recession firms are less likely to be able to repay their debts).

11.3 Interest rate risk

An interest rate is a *price* that relates to *present* claims on resources relative to *future* claims on resources. An interest rate is the price that a borrower pays in order to be able to consume resources now rather than at a point in the future. Correspondingly, it is the price that a *lender* receives to forgo current consumption. Like all prices in free markets, interest rates are established by the interaction of supply and demand; in this context, it is the supply of future claims on resources interacting with the demand for future claims on resources. An interest

rate may, therefore, be defined as *a price established by the interaction of the supply of, and the demand for, future claims on resources*. That price will usually be expressed as a proportion of the sum borrowed or lent over a given period.

Interest rates have a crucial role in the financial system. For example, they influence financial flows within the economy, the distribution of wealth, capital investment and the profitability of financial institutions. For banks, the exposure to interest rate risk, that is the risk associated with unexpected changes in interest rates, has grown sharply in recent years as a result of the increased volatility in market interest rates especially at the international level.[1]

However, not all banks' assets and liabilities are subject to **interest rate risk** in the same way. Important distinctions should be made between **fixed-rate assets and liabilities** and **rate-sensitive assets and liabilities**:

- Fixed-rate assets and liabilities carry rates that are constant throughout a certain period (e.g. 1 year) and their cash flows do not change unless there is a default, early withdrawal or an unanticipated pre-payment.
- Rate-sensitive assets and liabilities can be re-priced within a certain period (e.g. 90 days); therefore the cash flows associated with rate-sensitive contracts vary with changes in interest rates.

Other banks' assets and liabilities can be categorised into non-earning assets (i.e. assets that generate no explicit income such as cash) and non-paying liabilities (i.e. liabilities that pay no interest, such as current accounts or, as they are known in the United States, 'checking accounts').

A rise in market interest rates has the effect of increasing banks' funding costs because the cost of variable rate deposits and other variable rate financing increases. If loans have been made at fixed interest rates this obviously reduces the net returns on such loans. Meanwhile, banks will be vulnerable to falling rates if they hold an excess of fixed-rate liabilities. In the case of bonds, as interest rates increase this reduces the market value of a bond investment. Typically, long-term, fixed-income securities subject their holders to the greatest amount of interest rate risk (see Appendix A1 for more details on the relation between bond prices and interest rates). In contrast, short-term securities, such as Treasury bills (T-bills), are much less influenced by interest rate movements.

Recently, regulators and bankers have been assessing the impact on loan revenues and bank margins of persistently low interest rates and the prospect of it continuing at least until 2023, as shown in the article reported in Box 11.2.

Traditional interest rate risk analysis compares the sensitivity of interest income to changes in asset yields with the sensitivity of interest expenses to changes in interest costs of liabilities. In particular, it is common to refer to the ratio of *rate-sensitive assets* to *rate-sensitive liabilities*: when rate-sensitive assets exceed rate-sensitive liabilities (in a particular maturity range), a bank is vulnerable to losses from falling interest rates. Conversely, when rate-sensitive liabilities exceed rate-sensitive assets, losses are likely to be incurred if market interest rates rise. Typically, if a bank has a ratio above 1.0, the bank's returns will be lower if interest rates decline and higher if they increase. However, given the difficulty in forecasting interest rates, some banks conclude that they can minimise interest rate risk with an interest sensitivity ratio

[1] Note that interest rate risk is faced by both borrowers (who do not want to pay higher rates on loans) and lenders who may suffer losses if rates fall.

BOX 11.2 US BANKS TRIM EXPECTATIONS IN ERA OF LOW INTEREST RATES

US banks are preparing investors for a prolonged period in which low interest rates are a drag on their profits.

Speaking at an industry conference last week, most of the nation's biggest banks — including JPMorgan Chase, Wells Fargo, Citigroup, and Bank of America — trimmed their forecasts for net lending revenues for 2020, attributing the cuts to sustained low rates as well as waves of homeowners refinancing their mortgages at lower rates.

JPMorgan, for example, cut its net interest income forecast by $1bn, to $55bn — as compared to $57bn in 2019.

The US Federal Reserve projected last week that rates would remain at their current rock-bottom level until at least 2023, and that it would not tighten policy without first seeing a sustained period of inflation. This is bad news for banks' profit margins, as low interest rates depress loan yields and the cost of deposit funding cannot fall much further.

Worries about the impact of low rates drowned out more encouraging news delivered in the banks' updates. Most said that reserves for credit losses, after big increases in the first two quarters of the year, were unlikely to rise in the third, given solid credit performance. Almost every bank reported that the number of borrowers taking advantage of payment holidays continued to fall.

"We set our second-quarter reserves with a set of scenarios [and it] turned out that the actual data has been better ... charge-offs keep coming down, frankly, because of credit quality," said Bank of America chief executive Brian Moynihan. Wells Fargo chief financial officer John Shrewsberry noted that in commercial lending "we've actually seen some better realised outcomes than we imagined". Many other executives echoed that theme.

Banks' provisions for bad loans have risen by $111bn this year, to $223bn, close to the peak levels of the financial crisis, according to the Fed.

"The group is going down two different tracks — credit and rates," summed up Scott Siefers, bank analyst at Sandler O'Neill. While the rate environment is a drag, "the credit updates have been about as good as can be hoped. The big reserves are done, at least for now. The [loan payment] deferral updates were constructive too." Mr Siefers said the emerging consensus on Wall Street was that this would be a "confined" credit cycle, with certain industries hit hard, but most performing reasonably well.

Another piece of good news: banks' capital markets operations have continued to benefit from higher activity. Both JPMorgan, Citi and BofA for example, project double-digit year-over-year increases in trading revenues for the third quarter.

Yet markets continue to focus resolutely on the bad news. Banks' stocks have underperformed the wider market by 30 per cent since the Covid-19 crisis began and trade at whopping valuation discounts. The S&P 500 now has a price/earnings multiple of 24; many banks trade at 10 to 12 times earnings.

The low expectations continue into next year: analysts' estimates for the large banks' earnings per share in 2021 have not recovered at all from the lows they hit a few months ago, and are a third or more below where they were in February.

The pervasive pessimism has left bank investors scratching their heads. Eric Hagemann, of Pzena Investment Management — which manages $35bn and has substantial positions in banks including JPMorgan, Citi and Wells Fargo — said that banks' widening discount made little sense, given that low interest rates should support all stock valuations, by lowering the discount rate for future profits.

"Banks are underperforming because of low rates, but low rates should increase the multiple of all equities. Earnings-per-share estimates coming down makes sense — but multiple contraction, too? It seems like double punishment." He also noted the potential for some banks' heavy provisions for bad loans being released as the crisis abates. "If there are reserve releases, the earnings numbers these guys are going to put are going to be huge," he said.



Source: Armstrong, R. (2020) 'US banks trim expectations in era of low interest rates', *Financial Times*, 20 September.
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close to 1.0. Such a ratio may be difficult for some banks to achieve and often can be reached only at the cost of lower returns on assets.

These traditional measures of interest rate risk have a number of limitations. Bank managers nowadays use sophisticated measures of interest rate management such as the gap buckets analysis, maturity models and duration analysis. Details of these models are provided in Chapter 12. It is important to note that interest rate risk measurement and management will always imply an ALM approach (see Chapter 10).

Section 11.3.1 follows Saunders and Cornett's (2017) examples of the two types of interest rate risk that banks may have to face – **refinancing risk** and **reinvestment risk** – and also focuses on the impact on a bank's profitability.

11.3.1 Refinancing risk and reinvestment risk

Interest rate risk is the risk arising from the mismatching of the maturity and the volume of banks' assets and liabilities as part of their asset transformation function. As we saw in Chapter 1, one of the main functions of financial intermediaries is to act as asset transformers, e.g. they transform short-term deposits into long-term loans.

Typically the maturity of banks' assets (e.g. loans) is longer than the maturity of banks' liabilities (e.g. deposits). This means that banks can be viewed as 'short-funded' and have to run the risk of refinancing their assets at a rate that may be less advantageous than previous rates. Saunders and Cornett (2017) define refinancing risk as: 'the risk that (the) cost of rolling over or re-borrowing funds will rise above the returns being earned on asset investments'.

For example, assume the cost of funds (liabilities) for a bank is 7 per cent per annum and the interest return on an asset is 9 per cent. In year 1 by borrowing short (1 year) and lending long (2 years) the profit spread is equal to the difference between the lending and borrowing rates, i.e. 2 per cent, as in situation (a) in Figure 11.1. In year 2 profits are uncertain because if the interest rate does not change then the bank can refinance its liabilities at 7 per cent per annum and as in year 1 have a profit of 2 per cent. However, if interest rates increase as in situation (b), then the bank can borrow at 8 per cent and profits will be only 1 per cent.

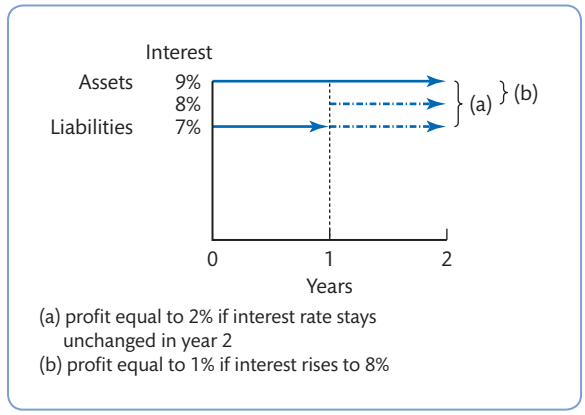


Figure 11.1 Refinancing risk

Source: Adapted from Saunders and Cornett (2017).

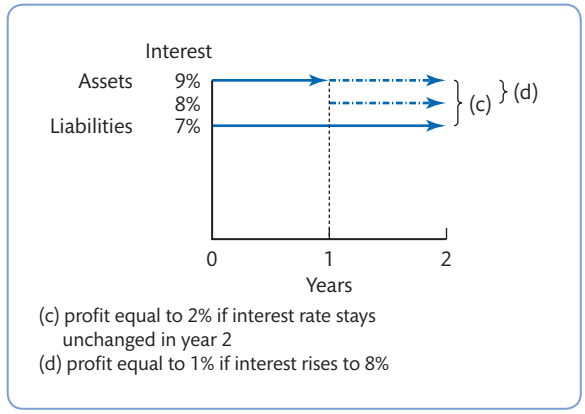


Figure 11.2 Reinvestment risk

Source: Adapted from Saunders and Cornett (2017).

Another type of mismatch could occur when the maturity of banks' liabilities is longer than the maturity of the assets. This means that banks can be viewed as 'long-funded', and have to run the risk of reinvesting their funds in the second period at a rate that may be less advantageous than the previous rate, and that they were unable to forecast in advance. Such a situation can often occur in banking within specific maturity buckets (i.e. intervals of consecutive maturities, such as a 3–6 months' maturity bucket). Accordingly, Saunders and Cornett (2017) define reinvestment risk as: 'the risk that the returns on funds to be reinvested will fall below the cost of funds'.

For example, assume the interest return on an asset for a bank is 9 per cent per annum and the cost of funds (liabilities) is 7 per cent. In year 1 by borrowing long (2 years) and lending short (1 year) the profit spread is equal to the difference between lending rate and borrowing rate, that is 2 per cent, as in situation (c) in Figure 11.2. In year 2 profits are uncertain because if the interest rate does not change then the bank can reinvest its assets at 9 per cent per annum and as in year 1 have a profit of 2 per cent. However, if interest rates go down as in situation (d), then the bank can lend at 8 per cent and profits will be only 1 per cent.

11.4 Liquidity (or funding) risk

A liquid asset may be defined as an asset that can be turned into cash quickly and without capital loss or interest penalty. Most bank deposits are therefore very liquid, but investment in, for example, property is highly illiquid. The liquidity that is required by a lender will depend on a number of factors, including in particular the range of liquidity inherent in other securities held. Moreover, a bank needs liquidity to cover a possible surge in operating expenses and to satisfy loan demand. All other things being equal, lenders will wish to have a high level of liquidity in their loans.

Liquidity risk is generated in the balance sheet by a mismatch between the size and maturity of assets and liabilities. It is the risk that the bank is holding insufficient liquid assets on its balance sheet and thus is unable to meet requirements without impairment to its financial or reputational capital. Banks have to manage their liquidity to ensure that both predictable

and unpredictable liquidity demands are met and taking into account that the immediate sale of assets at low or 'fire sale' prices could threaten the bank's returns.[2]

However, liquidity risk can also occur when the duration of the balance sheet is matched: consider the situation if some of the loans funded by deposits were to default. If loan defaults were so large as to leave insufficient liquidity for the bank to satisfy depositors' demands to withdraw these deposits, then the bank would need to find new deposits to fund the withdrawals. As illustrated in the example in Box 11.3, information asymmetries between the bank and the depositors can often originate liquidity risk.

If a bank cannot meet depositor demands there will be a bank run, as depositors lose confidence and rush to withdraw funds. This may then make it difficult for the bank to obtain funds in the interbank market and before long a **liquidity crisis** will turn into a solvency crisis and possible failure (on the distinction between liquidity and solvency see Chapter 5, Box 5.6). Hence it is common to distinguish two types of liquidity risk:

- Day-to-day liquidity risk relates to daily withdrawals. This is usually predictable (or 'normal') because only a small percentage of a bank's deposits will be withdrawn on a given day. Very few institutions ever actually run out of cash because it is relatively easy for the bank to cover any shortage of cash by borrowing funds from other banks in the interbank markets.
- A liquidity crisis occurs when depositors demand larger withdrawals than normal. In this situation banks are forced to borrow funds at an elevated interest rate, higher than the

BOX 11.3 LIQUIDITY RISK AND INFORMATION ASYMMETRIES

Consider a bank that has made loans of €1 million with three-year maturity financed with uninsured demand deposits. The bank has an informational advantage compared with outsiders on the credit risk and overall quality of its loan portfolio. Suppose that one year later €500,000 of deposits are withdrawn and the bank's stock of cash assets is only €100,000. The bank will need €400,000 to fund the deposit withdrawal. Two cases can occur: (1) potential new depositors have a good perception about the bank's loan portfolio and the bank will easily acquire the €400,000 in new deposits; (2) outsiders have received unfavourable information about the bank's loans despite the bank's belief that the quality is good. Here the bank will either not be able to acquire new deposits (in extreme cases it will lose all existing deposits!) or have to pay too high a price for the risk associated with the loan portfolio. Informational asymmetries about asset quality create liquidity risk. If outsiders knew as much as the bank does about the quality of the loan portfolio, then the bank would be able to acquire deposits at the appropriate price given the risk of the loan portfolio.

Information asymmetries can also affect interbank lending and indeed evidence has shown that the actions taken during the 2007–2009 financial turmoil did little to restart the frozen interbank markets. These measures included central bank monetary policy decisions to lower rates, quantitative easing and bank recapitalisations. Each day banks exchange liquidity in the interbank markets and this process is crucial to guarantee a smooth functioning of monetary policy and for the healthy management of bank liquidity.

Source: Adapted from Greenbaum *et al*. (2019).

[2] Greenbaum *et al*. (2019) point out that the most extreme manifestation of liquidity risk is that the seller of the asset is *unable* to sell the asset at any price. This is known as *credit rationing* and occurs when a bank refuses credit to a borrower irrespective of the price they are willing to pay.

market rate that other banks are paying for similar borrowings. This is usually unpredictable (or 'abnormal') and can be due to either a lack of confidence in the specific bank, or some unexpected need for cash. Liquidity crises can ultimately hinder the ability of a bank to repay its obligations and in the absence of central bank intervention or deposit insurance it could result in 'a run' and even the insolvency of the bank.

Typically banks can reduce their exposure to liquidity risk by increasing the proportion of funds committed to cash and readily marketable assets, such as T-bills and other government securities, or use longer-term liabilities to fund the bank's operations. The difficulty for banks, however, is that liquid assets tend to yield low returns so if a bank holds sub-optimal levels of such assets its profits will decline. This is the trade-off between liquidity and profitability: the opportunity cost of stored liquidity is high and holding low-yielding assets (and/or zero-yielding assets such as cash) on the balance sheet reduces bank profitability (this issue will be considered further in Chapter 12).

One measure banks can use to monitor liquidity risk relates to short-term securities, a proxy for a bank's liquidity sources, to total deposits – this provides an approximate measure of a bank's liquidity needs. Another traditional ratio of liquidity risk is the loan/deposits ratio. This ratio tends to focus on the liquidity of assets on the balance sheet. A high ratio of short-term securities/deposits and a low loan/deposits ratio indicate that the bank is less risky but also less profitable.

There are, however, other indicators that are more suited to proxy for a bank's liquidity needs, based on actual or potential cash flows. For example, a good indication of the bank's need for liquidity may be given by the amount a bank has in purchased or volatile funds and the amount the bank has used of its potential borrowing reserve.

Liquidity shortage can potentially cause a credit crunch (or credit squeeze) but usually actions are taken by central banks to avoid or limit the reduced availability of credit in the system. Recently, central banks around the world went long lengths to support the markets and keep them functioning during the Covid-19 outbreak. For example, in March 2020, when the US treasury bond market was dysfunctional and lost its depth and liquidity, the Fed launched a series of actions to stabilise the treasury markets and provided extraordinary liquidity support (see Box 11.4).

BOX 11.4 THE FEDERAL RESERVE HAS GONE WELL PAST THE POINT OF 'QE INFINITY'

The vast and currently dysfunctional markets for US Treasuries, mortgages and corporate credit now have the ultimate buyer of last resort — the Federal Reserve.

Ever since the big stock market crash of 1987, investors have grown to depend on the US central bank coming to the aid of financial markets when they hit the skids. Now the central bank is well and truly "all in", announcing a slew of new initiatives on Monday designed to buy time for an enfeebled financial system. Until now, the Fed implied, the system has been in no shape to withstand an escalating pandemic that has the US economy facing the biggest hit to growth since the 1930s.

Having failed to ease nerves over the past week with an expansion of its quantitative easing programme, the Fed has upped the ante to Buzz Lightyear territory. "QE infinity", in the form of unlimited buying of Treasury debt and

BOX 11.4 The Federal Reserve has gone well past the point of 'QE infinity' (*continued*)

mortgage-backed securities, is just one aspect of the new approach.

Another notable measure is the Fed's entry into the universe of investment-grade credit, with the central bank launching a facility that will enable the purchase of corporate debt that has already been sold with a maturity of less than five years, and also of exchange traded funds that track the sector. Yet another facility will support new sales of bonds and loans from companies with investment-grade credit ratings. One way of looking at this is to note that the Fed has joined the Bank of Japan, the European Central Bank and the Bank of England in supporting credit markets. Viewed another way, it complicates any future exit strategy and extends a long post-Lehman crisis legacy of distorted risk premia in markets.

But perhaps now is not the time to quibble over legacies, while the pandemic rages. The purchase of corporate debt by the Fed is designed to prevent a deeper and prolonged bust facing an economy that has been placed in suspended animation. A highly indebted US corporate sector, fuelled by Fed policy objectives since the last crisis, is being stripped of earnings growth and cash flows for an indeterminate period. This is led by companies operating in the travel, leisure, restaurant and retail sectors, and sets the stage for a deepening of the current macro-economic shock.

Credit risk premia have moved sharply wider in recent weeks, catching out many investors, while also preventing lower quality borrowers from refinancing their maturing debts in the form of commercial paper and corporate bonds. Losses for many fund managers are mounting, while exchange traded funds have become highly volatile and dysfunctional. In the US Treasuries market, meanwhile, when liquidity dries up, conditions for corporate credit become even more stressed, intensifying a fire-sale environment as investors rush for exits and seek to cash out at any price.

An aggressive expansion of QE by the Fed has loomed large since the eruption of market turmoil just over a month ago. Some have long argued that unlimited quantitative easing was a likely final step, after the policy appeared to become a permanent feature of the Fed's toolkit in the wake of the financial crisis.

The policy of suppressing long-dated Treasury yields — and by extension, broader market volatility — was billed as a temporary measure when introduced in 2009. But it has pretty much become business as usual since then for the Fed and other leading central banks. Efforts by the Fed to raise interest rates by modest amounts, and to trim the balance sheet, were terminated after severe market turmoil erupted in late 2018, casting a lengthy shadow over business and consumer confidence. A financial system replete with debt was in no fit state to handle even a slight rise in Treasury yields back then.

Now, an even more indebted corporate sector faces intense pressure — until a peak in the spread of infections allows the economy to start rebounding, unblocking cash flows and boosting earnings to some degree. The ultra-low borrowing costs of recent years provided companies with licence to tap credit markets to fund expansive share buyback programmes that benefited executives. The failure to save for a rainy day means many companies are now holding out for help from the taxpayer.

The Fed's new set of measures also means that the central bank's balance sheet will increase markedly in size as it becomes ensconced as the buyer of last resort across fixed-income markets. Investors should not expect any contraction any time soon, given the scale of the debt binge since 2009.

And they should not rule out further support measures, should markets remain treacherous and hard to trade. While the Fed's intervention boosted some areas of the US credit market on Monday, stocks were muted, reflecting the other game in town — negotiations over a $2tn fiscal response to the economic effects of the health crisis.

FT *Source*: Mackenzie, M. (2020) 'The Federal Reserve has gone well past the point of 'QE infinity', *Financial Times*, 23 March.

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11.5 Foreign exchange risk

As banking markets become more global, the importance of international activities in the form of foreign direct investment and foreign portfolio investments has increased sharply. However, the actual return banks earn on foreign investment may be altered by changes in exchange rates. Changes in the value of a country's currency relative to other currencies affect the foreign exchange rates. Like other prices, exchange rates (which essentially reflect the price of currencies) tend to vary under supply and demand pressure.

Foreign exchange relates to money denominated in the currency of another nation or group of nations. Any firm or individual that exchanges money denominated in the 'home' nation's currency for money denominated in another nation's currency can be said to be acquiring foreign exchange. This is the case whether the transaction is very small, involving, say, a few pounds, or whether it is a company changing a billion dollars for the purchase of a foreign company. In addition, the transaction is also viewed as acquiring foreign exchange if the type of money being acquired is in the form of foreign currency notes, foreign currency bank deposits, or any other claims that are denominated in foreign currency. Put simply, a foreign exchange transaction represents a movement of funds, or other short-term financial claims, from one country and currency to another.

Foreign exchange can take many forms. It can be in the form of cash, funds available on credit cards (credit card payments when on holiday overseas are usually made in the foreign currency, but the card is debited in home currency), bank deposits or various other short-term claims. In general, a financial claim can be regarded as foreign exchange if it is negotiable and denominated in a currency other than that in which it resides, for instance, a US dollar bank deposit in Paris. Box 11.5 provides a more formal definition and explanation of exchange rates and foreign exchange markets.

BOX 11.5 EXCHANGE RATES AND FOREIGN EXCHANGE MARKETS

What is an exchange rate?

The exchange rate is a *price* – the number of units of one nation's currency that need to be surrendered in order to acquire one unit of another nation's currency. There is a wide range of 'exchange rates', for example the US dollar, Japanese Yen, British pound and the Euro. In the spot market, there is an exchange rate for every other national currency traded in that market, as well as for a variety of composite currencies such as the International Monetary Fund's Special Drawing Rights 'SDRs'. There are also a variety of 'trade-weighted' or 'effective' rates designed to show a currency's movements against an average of various other currencies.

In addition to the spot rates, there is also a wide range of additional exchange rates for transactions that take place on other delivery dates, in the forward markets. While one can talk about, say, the Euro exchange rate in the market, it is important to note that there is no single, or unique Euro exchange rate in the market, as the rate depends on when the transaction is to take place, the spot rate being the current rate and forward rates being influenced by various factors most noticeably the Euro interest rate compared to the official interest rate in other currencies.

The market price is determined by supply and demand factors, namely, the interaction of buyers and sellers, and the market rate between two currencies is determined by the interaction of the official (mainly central banks) and private participants (banks, companies, investment firms, and so on) in the foreign exchange market. For a currency with an

BOX 11.5 Exchange rates and foreign exchange markets (*continued*)

exchange rate that is set by the monetary authorities, the central bank or another official body is the key participant, standing ready to buy or sell the currency as necessary to maintain the authorised rate.

What are the features of the foreign exchange markets?

While most people are familiar with the aforementioned features of foreign exchange they are less familiar with what is known as the foreign exchange market. The foreign exchange market represents an international network of major foreign exchange dealers (central banks, commercial banks, brokers and other operators) that undertake high-volume (wholesale) trading around the world. These transactions nearly always take the form of an exchange of bank deposits of different national currency denominations. If one bank agrees to sell euro for US dollars to another bank, there will be an exchange between the two parties of a euro bank deposit for a US dollar bank deposit.

There is no physical location for the foreign exchange market, and transactions are carried out via computer screens based in banks, large companies and various other organisations throughout the world. The majority of foreign exchange turnover takes place in the main financial centres of London, New York and Tokyo. The main market participants include banks, non-financial firms, individuals, official bodies and other private institutions that are buying and selling foreign exchange at any particular time. Some of the buyers and sellers of foreign exchange may be involved in physical goods transactions and need foreign exchange to make purchases (such as a UK importer of car parts from Japan that needs to make a purchase in yen). However, the proportion of foreign exchange transactions related to goods trade is generally believed to be very small – less than 5% of all foreign exchange transactions. Other participants in the market may wish to undertake foreign exchange transactions to undertake direct investment in plant and equipment, or in portfolio investment (dealing across borders in stocks and bonds and other financial assets), while others may operate in the money market (trading short-term debt instruments internationally).

Overall, the motives of participants in the foreign exchange market are wide and varied. Some participants are international investors or speculators while others may be financing foreign investments or trade. Many participants also use foreign exchange transactions for risk management purposes in order to hedge against the risks associated with adverse foreign exchange movements. Transactions may be very short-term or long-term, and can be conducted by official bodies (such as central banks) or by private institutions, the motives for conducting business can vary and the scale of activity can alter substantially over time. All these combined features make up the supply and demand characteristics of the global foreign exchange market.

Given the diverse make-up of the supply and demand features of the market, predicting the future course of exchange rates is a particularly complex and uncertain business. In addition, since exchange rates influence such an extensive array of participants and business decisions, it is a critically important price in an economy, influencing consumer prices, investment decisions, interest rates, economic growth, the location of industry, and much more. It should be clear that for a firm wishing to undertake international activity knowledge of the foreign exchange market, predictions about future exchange rates and the risks associated with foreign exchange are essential elements that senior managers must understand if they are to be successful in overseas expansion.

The foreign exchange market consists of a wholesale (or interbank) market and a retail market. Transactions in the wholesale market are dominated by bank-to-bank transactions that involve very large transactions, typically greater than $1 million. In contrast, the retail market, where clients obtain foreign exchange via their banks involves much smaller sums.

According to the 2019 Triennial Survey by the Bank for International Settlements (BIS), trading in foreign exchange market reached $6.6 trillion per day in April 2019 compared to $5.1 trillion in 2016. FX swaps were the most actively traded instruments in April 2019, at $3.2 trillion per day accounting for 49 per cent of total FX market turnover. The dominant currency status was the US dollar, being on one side of 88 per cent of all trades followed by the euro (32 per cent) and the Japanese yen (17 per cent).

Source: Bank for International Settlements (2019).

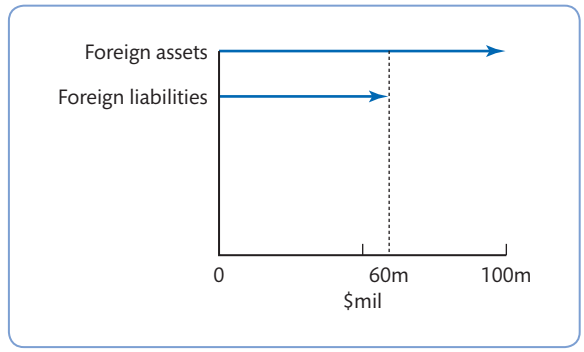


Figure 11.3 The foreign asset and liability position of a Spanish bank: a net long asset position in US$

Source: Adapted from Saunders and Cornett (2017).

Foreign exchange risk is the risk that exchange rate fluctuations affect the value of a bank's assets, liabilities and off-balance-sheet activities denominated in foreign currency. We have seen in Chapter 9 that UK banks have significant amounts of foreign currency assets and liabilities in their balance sheet – this is mainly from the assets and liabilities of foreign banks based in London that do predominantly wholesale foreign currency-related business (see Tables 9.2 and 9.3). A bank may be willing to take advantage of differing interest rates or margins in another country, or simply to invest abroad in a currency different from the domestic one. A bank that lends in a currency that depreciates more quickly than its home currency will be subject to foreign exchange risk.

Suppose a Spanish bank has a net 'long' assets position in dollars (e.g. a loan in dollars) of $100 million as illustrated in Figure 11.3. (If the bank is *net long* in foreign assets it means it holds more foreign assets than liabilities. Conversely, the bank would be holding a *net short* position in foreign assets if it had more foreign liabilities than assets.) On the liability side, the Spanish bank has $60 million in Spanish CDs. These CDs are denominated in euros. The Spanish bank will suffer losses if the exchange rate for dollars falls or depreciates against the euro over this period because the value of the US$ loan assets would decrease in value by more than the euro CDs.

To measure foreign exchange risk banks calculate measures of net exposure by each currency. It will be equal to the difference between the assets and liabilities denominated in the same currency. In the case above the bank is exposed to the risk that its net foreign assets may have to be liquidated at an exchange rate lower than the one that existed when the bank entered into the foreign asset/liability position.

11.6 Market (or trading) risk

Market risk is the risk of losses in on- and off-balance-sheet positions arising from movements in market prices. It pertains in particular to short-term trading in assets, liabilities and derivative products, and relates to changes in interest rates, exchange rates and other asset prices.

Modern conditions have led to an increase in market risk due to a decline in traditional sources of income and a greater reliance by banks on income from trading securities. This

process has increased the variability in banks' earnings due to the relatively frequent changes in market conditions. International regulators have acknowledged the importance of market risk since 1996 when the Basel Capital Accord was changed to incorporate capital requirements for market risk in its capital adequacy rules (see Chapter 7).

Heffernan (2005) distinguishes between:

- general or systematic market risk, caused by a movement in the prices of all market instruments due to macrofactors (e.g. a change in economic policy); and
- unsystematic or specific market risk, which arises in situations where the price of one instrument moves out of line with other similar instruments because of events related to the issuer of the instrument (e.g. an environmental law suit against a firm will reduce its share prices but is unlikely to cause a decline in the market index).

Market risk is the risk common to an entire class of assets or liabilities. It is the risk that the value of investments may decline over a given period simply because of economic changes or other events that affect large portions of the market. Typically, market risk relates to changes in interest rates, exchange rates and securities' prices driven by the market overall. In the case of bank lending, credit risk is the most important, but for banks lending to companies that are investing in securities (such as bank loans to hedge funds) then bank assessment of credit risk will be influenced by the hedge funds' exposure to market risk. (The banks' own investments and securities trading activity will also be subject to market risk.)

Bonds and shareholders' equity are especially sensitive to the movements in market interest rates and currency prices and this affects the investors' perception of a bank's risk exposure and earnings potential. Important indicators of market (or price) risk in banking are (Rose and Hudgins, 2010):

- book value of assets/estimated market value of those same assets;
- book value of equity capital/market value of equity capital;
- market value of bonds and other fixed-income assets/their value as recorded on a financial institution's book;
- market value of common and preferred stock per share, reflecting investor perceptions of a financial institution's risk exposure and earnings potential.

Large banks typically perform value-at-risk (VaR) analysis to assess the risk of loss on their portfolios of trading assets while small banks measure market risk by conducting sensitivity analysis. VaR is a technique that uses statistical analysis of historical market trends and volatilities to estimate the likely or expected maximum loss on a bank's portfolio or line of business over a set period, with a given probability. The aim is to get one figure that summarises the maximum loss faced by the bank within a statistical confidence interval. For instance, it can be estimated that 'there is a 0.5 per cent chance that a portfolio will lose £1 million in value over the next quarter'. Another measure described in the new framework (see Box 11.6) is expected shortfall (ES). It is calculated as the average of all potential losses exceeding the VaR at a given confidence level, which makes up for VaR's shortcomings in capturing the risk of extreme losses. In contrast, sensitivity analysis refers to the more traditional methods of assessing the price sensitivity of assets and liabilities to changes in interest or other rates and the corresponding impact on stockholders' equity.

BOX 11.6 A REVISED FRAMEWORK FOR MARKET RISK

Market risk emphasises the risks for banks that trade their assets, liabilities and derivative contracts actively and frequently in the markets. For regulatory purposes these highly liquid positions in different financial instruments (such as for example, bonds, equities and derivatives) typically belong to the **trading book** of the bank. In contrast, the **banking book** includes deposits, cash, loans and other illiquid assets as shown in Figure 11.4.

Although the nature of the activities reported in the trading and banking book is not fundamentally different, they are subject to separate regulatory treatment. In general, market-based activities are less *onerous* in terms of capital requirements and this has generated distortions in the system by incentivizing banks to move items from the banking book to the trading book thereby adding risks. In other words, the lack of precise boundaries between banks' *banking books* and *trading books* has resulted in regulatory arbitrage and inadequate capital levels with regards to the trading books.

In 2012 the Basel Committee started a review on the design of the trading book regime with the aim to address the shortcomings of both standardized and internal model approaches. The revised market risk framework was published in January 2019. In addition to the boundary of the banking book and the trading book, the new framework includes modifications concerning the internal models approach and the standardised approach for the management of market risk.

Source: Basel Committee on Banking Supervision (2019a).

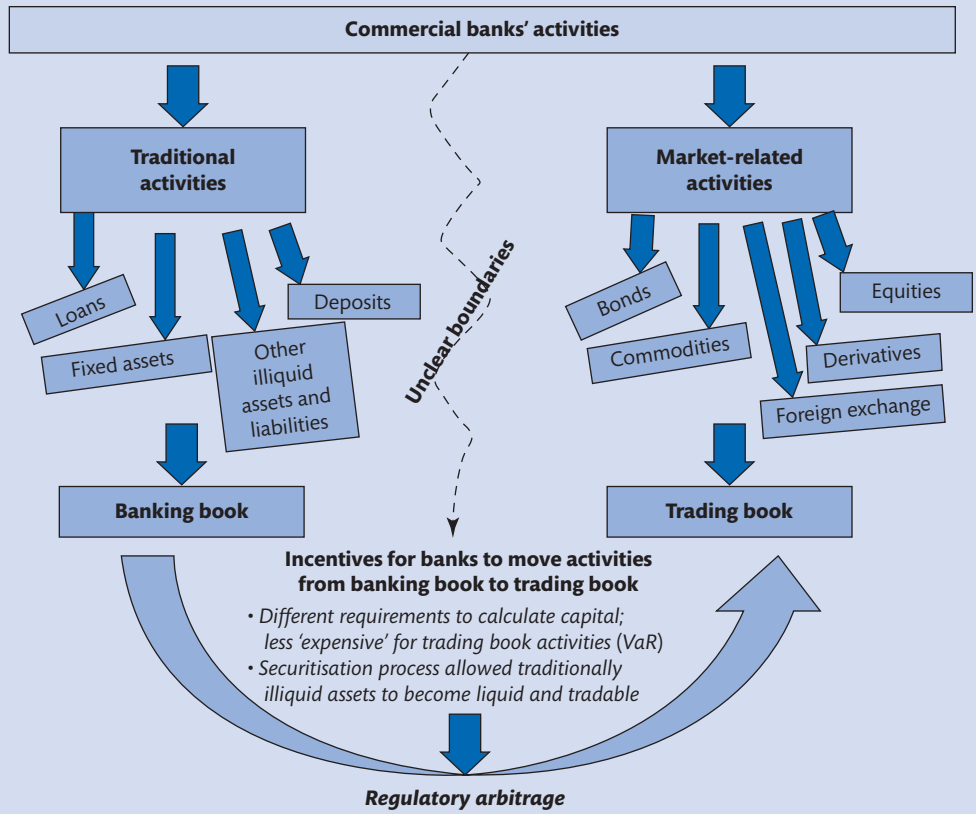


Figure 11.4 Banking vs. trading books

Source: Basel Committee on Banking Supervision (2013c).

11.7 Country and sovereign risk

Country risk is the risk that economic, social and political conditions of a foreign country will adversely affect a bank's commercial and financial interests. It relates to the adverse effect that deteriorating macroeconomic conditions and political and social instability may have on the returns generated from overseas investments. International lending always carries 'unusual' risks; however, it is generally accepted that a loan to a foreign government is safer than a loan to a private sector borrower (Hempel and Simonson, 2008).

Nonetheless, it is possible that even governments will default on debt owed to a bank or government agency. This is the **sovereign risk** and refers to the possibility that governments, as sovereign powers, may enforce their authority to declare debt to external lenders void or modify the movements of profits, interest and capital. Such situations typically arise when foreign governments experience some sort of economic or political pressures and decide to divert resources to the correction of their domestic problems. Clearly the fact that governments generally benefit from a particular 'immunity' from legal process makes international lending extremely risky for banking institutions that in case of default find it very difficult, if not impossible, to recover some of the debt by taking over some of the country's assets.

The Basel Committee (BCBS, 2018) identifies five sources of sovereign risk and five channels through which it can affect the banking system, either in isolation or in combination. The sources are (i) missed payments, (ii) debt restructuring or outright defaults, (iii) currency redenomination, (iii) currency devaluations, (iv) losses from unanticipated, higher inflation and (v) fluctuations in the value of sovereign exposures. The channels are:

- direct exposure ($\uparrow$ sovereign risk $=$ $\downarrow$ the value of banks' sovereign exposures);
- collateral ($\uparrow$ sovereign risk $=$ $\downarrow$ the value of sovereign collateral used by banks);
- sovereign credit rating downgrades ($\uparrow$ sovereign risk $=$ $\downarrow$ downgrades to the ratings of other entities in the economy);
- government support ($\uparrow$ sovereign risk $=$ $\downarrow$ funding benefits that banks derive from government guarantees);
- macroeconomic ($\uparrow$ sovereign risk $=$ $\uparrow$ credit tightening due to greater borrowers riskiness, banks' fragility and funding costs).

Sovereign risk can result in the re-scheduling and re-negotiation of the debt, with considerable losses for the lending banks. These types of new agreements are usually obtained with the intervention of international organisations (e.g. the International Monetary Fund and the World Bank). The extreme case for sovereign risk is *debt repudiation*, when the government simply repudiate their debts and no longer recognise their obligations to external creditors.

The channels listed above can increase banks' susceptibility to distress or even failure, and can also raise the risk of contagion to the rest of the banking sector. However, there can also be reverse causality running from the banking sector (e.g. a banking crisis) to sovereign fragility. This is because banks and sovereigns are highly interconnected (the so-called sovereign–bank nexus) and problems originating in one of the two sectors can cause an adverse

BOX 11.7 EUROPEAN BANKS LOAD UP ON GOVERNMENT BONDS, RAISING CONCERNS OVER 'DOOM LOOP'

European banks have loaded up on more than €200bn of their own governments' bonds since the start of the Covid-19 pandemic, in a move that could reawaken fears about the sector's growing stockpiles of risky sovereign debt.

According to research by S&P Global Ratings, banks had increased their holdings of home-country government bonds to nearly €1.6tn by the end of June, up 15 per cent from the end of February. The rating agency said the pace of purchases was seven times faster than in the same period in 2019.

S&P said banks in the eurozone's former crisis-hit "periphery" — such as Italy, Greece and Spain — have the highest exposure to their governments' debt, along with those outside the euro area in central and eastern Europe.

The figures are likely to revive concerns about the effect that wild swings in the price of government bonds could have on banks' balance sheets. During the eurozone crisis, sell-offs in sovereign debt repeatedly dragged down profits and share prices in the banking sector, in turn raising the prospect of a further hit to the economy — a dynamic labelled the "doom loop".

"The surge in home-government bond investment in Europe is a temporary response to excess market liquidity, in our view. We think this time is different than in the run-up to the European sovereign debt crisis starting about 2011," said Cihan Duran, a credit analyst at S&P Global Ratings.

"If this turns out not to be true and the trend persists in Europe, overlooking sovereign risks could unleash a new 'doom loop' in the distant future, particularly where banks have built up extremely large exposures to sovereign debt," he said.

The spread of the pandemic in March triggered a sell-off in global bond markets, which was particularly acute in the countries on the periphery of the eurozone. The European Central Bank helped to avert a new debt crisis with a €750bn emergency asset purchase programme, which was later expanded to €1.35tn in June. The central bank followed up with a fresh round of super-cheap loans to banks, resulting in a rush to borrow €1.3tn at negative rates.

While the injection of cash has increased the financial sectors' ability to lend to households and businesses, much of it has ended up parked in sovereign debt, according to S&P. Banks in the EU do not have to hold any capital against their own governments' bonds, which are considered a "risk-free" investment by regulators.

"We believe the central bank's policies are unintentionally acting as an incentive for banks to add to their sovereign debt holdings. The ECB may take additional accommodative measures that might accelerate this trend," the report said.

However S&P added that the huge run-up in government bond holdings is likely to unwind once the recovery from the Covid crisis kicks in.

FT *Source*: Stubbington, T. (2020) 'European banks load up on government bonds, raising concerns over "doom loop"', *Financial Times*, 21 September.
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'feedback loop' that tends to amplify the effects in both sectors. This feedback loop occurred during the European sovereign debt crisis and is again causing concern in European banks during the Covid-19 pandemic, as shown in Box 11.7.

To help investors measure country and sovereign risks, rating company agencies provide tables of sovereign (credit risk) ratings. These ratings typically act as a rating 'ceiling' for

Table 11.1 Selected sovereign foreign currency ratings

Country	Rating	Country	Rating	Country	Rating
Argentina	CCC+	Hungary	BBB	Poland	A−
Australia	AAA(−)	Iceland	A	Portugal	BBB
Austria	AA+	India	BBB−	Qatar	AA−
Belgium	AA	Indonesia	BBB(−)	Russia	BBB−
Brazil	BB−	Ireland	AA−	Singapore	AAA
Bulgaria	BBB(+)	Israel	AA−	Slovakia	A+
Canada	AAA	Italy	BBB−	South Africa	BB−
Chile	A+(−)	Japan	A+(+)	South Korea	AA
China	A+	Jordan	B+	Spain	A
Colombia	BBB−(−)	Kenya	B+	Sweden	AAA
Croatia	BBB−	Malaysia	A−	Switzerland	AAA
Cyprus	BBB−	Mexico	BBB(−)	Taiwan, China	AA−
Czech Rep.	AA−	Netherlands	AAA	Thailand	BBB+
Denmark	AAA	New Zealand	AA(+)	Turkey	B+
Finland	AA+	Norway	AAA	United Kingdom	AA
France	AA	Pakistan	B−	United States	AA+
Germany	AAA	Peru	BBB+	Venezuela	SD
Greece	BB−	Philippines	BBB+	Zambia	SD

Note: The best-quality credits are rated AAA ('prime'), followed by AA (high grade), A (upper medium grade), BBB (lower medium grade), BB (non-investment grade speculative), B (highly speculative), CCC (substantial risk), CC (extremely speculative), SD (selective default), D (default) and NR (not rated). The + and − signs just reflect a little fine-tuning, so BB+ has a higher credit rating than BB, but not as good as BBB, etc.

(+) and (−) indicate positive (negative) outlook according to S&P.

Source: Standard & Poor's (2020).

other credit ratings in their home country. This means that a corporate borrower will most likely be downgraded following a downgrade of its sovereign country debt.

Table 11.1 shows sovereign credit ratings as of December 2020 according to Standard & Poor's, for a selection of countries. It can be seen that over the period studied China (A+) had a higher sovereign risk rating than India (BBB−, with a negative outlook), suggesting that in the credit-rating agency's view the Indian government is a higher credit risk than China's. The governments of Venezuela and Zambia, with credit ratings of SD, should be viewed as worse credit risks (i.e. of the countries listed in Table 11.1, these are the governments most likely to default on interest and principal repayment on their bond issues). A country rated SD (selective default) or D is in default on one or more of its financial obligations. As per May 2021, Lebanon and Suriname are also rated SD.

11.8 Operational and cyber risks

Another important risk in banking is **operational risk**. The Risk Management Group of the Basel Committee on Banking Supervision (2001a) defines operational risk as 'the risk of loss resulting from inadequate or failed internal processes, people and systems or from external

events'. In general terms, this is the risk associated with the possible failure of a bank's systems, controls or other management failure (including human error).

The definition of operational risk given above includes **technology risk**; however, there are some differences between the two that are outlined below (Saunders and Cornett, 2017):

- Technology risk occurs when technological investments do not produce the anticipated cost savings in the form of either economies of scale or scope; this risk also refers to the risk of current delivery systems becoming inefficient because of the developments of new delivery systems.
- Operational risk occurs whenever existing technology malfunctions or back-office support systems break down.

Operational risk was one of the main innovations in Basel II, requiring banks to hold capital for such risks along with credit and market risk; previously operational risk was covered by capital provisions set aside for credit and market risk. Today it includes a considerable portion of banks' risk-weighted assets, second only to credit risk (Aldasoro *et al*. 2020). Table 11.2 shows a list of operational risk event types that the Basel Committee, in consultation with the industry, has identified as having the potential to result in substantial losses.

As shown in the table, operational risk includes a number of risk event types, from employee fraud to natural disaster that may damage a bank's physical assets and reduce its ability to communicate with its customers.

In 2020, **cyber risks** (or IT disruption) were identified as the highest operational risk concerns, followed by data compromise, and theft and fraud (Risk.net, 2020). Like operational risk, cyber risk can involve the failure of some process or technology that could damage a firm. Kashyap and Wetherilt (2019) present many reasons why cyber risks are 'special' and should be appropriately regulated. Specifically, the authors warn how cyber risks differ from

Table 11.2 Operational risk event types

Risk event types	Examples include
Internal fraud	Intentional misreporting of positions, employee theft, and insider trading on an employee's own account.
External fraud	Robbery, forgery, cheque kiting* and damage from computer hacking.
Employment practices and workplace safety	Workers' compensation claims, violation of employee health and safety rules, organised labour activities, discrimination claims and general liability.
Clients, products and business practices	Fiduciary breaches, misuse of confidential customer information, improper trading activities on the bank's account, money laundering and sale of unauthorised products.
Damage to physical assets	Terrorism, vandalism, earthquakes, fires and floods.
Business disruption and system failures	Hardware and software failures, telecommunication problems and utility outages.
Execution, delivery and process management	Data entry errors, collateral management failures, incomplete legal documentation, unapproved access given to client accounts, non-client counterparty mis-performance and vendor disputes.

Note: * 'Cheque kiting' is a fraudulent method to draw against uncollected bank funds.

other operational risks both in the form they take and the potential vast impact they can have. The authors also report that financial services firms spend about 12 per cent of their IT budget on cyber security.

11.9 Off-balance-sheet risk

So far, we have analysed banking risks that arise through on-balance-sheet activities. For example, bad loans on the asset side, and deposit withdrawals and bank runs on the liability side. But they can also derive from off-balance-sheet exposures that can potentially translate into significant losses.

Off-balance-sheet (OBS) risk relates to the risks incurred when banks deal in activities that imply the increase in contracts that obligate them to perform in various ways but do not appear in the bank balance sheet. Examples of such activities are financial guarantees and letters of credit (as described in Chapter 10) that involve the creation of contingent assets and liabilities. It is also reasonable to think that the volatility in market values and complexity of many derivative instruments implies that they carry a considerable degree of OBS risk. This may still occur despite new accounting standards requiring banks to disclose the fair value of their financial derivatives in their balance sheet.

Given the nature of OBS activities and the fact that they have become increasingly widespread, it can be difficult for investors and regulators to identify the actual level of risk a bank is taking in any given period. Paradoxically, derivative products were introduced to reduce the amount of risk taken by a business, but recent history has shown that while they can provide some protection against important risks like interest rate or currency risk, excessive OBS commitments can result in spectacular losses, due to mismanagement or speculative use of financial instruments. The Barings Bank failure in 1995 is an often-quoted example of insolvency of a British investment bank due to the misuse of derivatives activities. The Barings case as well as some other well-known examples of losses caused by 'rogue traders' in derivatives and other OBS items (foreign exchange trading and investment fund business) are discussed in Chapter 8 (Box 8.2).

Given the potential huge losses that can be derived from excessive OBS trading, the regulators' approach has been to incorporate OBS commitments (using an on-balance-sheet or credit equivalent) in calculating bank capital adequacy requirements (see Chapter 7). In addition, as mentioned above, the most recent approach to accounting standards has been to require banks to disclose the amount of derivative commitments in the balance sheet at fair value.

11.10 Sustainability (or ESG) risks

Sustainability risks are defined as meaning 'an environmental, social or governance event or condition that, if it occurs, could cause a negative material impact on the value of the investment'.[3] At the bank level, sustainability risks are associated with environmental, social

[3] Definition by the European Union's SFDR (Sustainable Finance Disclosure Regulation), also known as Disclosure Regulation, which came into effect in March 2021. SFDR imposes new transparency disclosures rules and periodic reporting requirements on asset managers.

and governance (ESG) factors, which can have adverse effects on a bank's assets, both financial and intangible, such as reputation, as well as the bank's performance. There is also a potential for systemic risk from environmental and social factors, which could pose a threat to global financial stability.

ESG factors include (European Banking Authority, 2020):

- Environmental factors that refer to climate change mitigation and adaptation, as well as the environment more broadly and related risks (e.g. natural disasters);
- Social factors that refer to issues of inequality, inclusiveness, labour relations, investment in human capital and communities;
- Governance factors relate to the governance of public and private institutions and include management structures, employee relations and executive remuneration.

Environmental and social considerations are often interconnected. For example, climate change can increase existing inequalities; in addition, the governance factor has a central role in including social and environmental concerns in firms' decision-making process.

Today bank managers are under increased pressure to identify conditions and events that are linked to sustainability issues and pose risks that can materialise over the long term, such as climate change.[4] The European Banking Authority (EBA, 2020) distinguishes between two types of risk that act as main transmission channels for environmental risks:

- **physical risks**, which arise from the physical effect of climate change (e.g. extreme weather events and gradually deteriorating conditions in climate); and
- **transition risks**, which arise from the transition to a low-carbon and climate resilient economy (such as regulatory restrictions or taxation, disruptive technologies and changing consumer preferences).

Figure 11.5 shows theoretical examples of the impact of environmental factors through physical and transition risks (a and b) and social risks (c) on an institution's balance sheet (EBA, 2020).

Banks have a crucial role in financing sustainable growth because they are the biggest providers of capital for countries all over the world, so recognising the risks associated with ESG factors are very important in the transition to a more sustainable economy. For example, their decisions not to lend to, or invest in, businesses that are unsustainable (e.g. the

[4] Larry Fink, the founder, chairperson and CEO of BlackRock wrote in the 2019 annual letter to CEOs: 'As we enter 2019, commitment to a long-term approach is more important than ever—the global landscape is increasingly fragile and, as a result, susceptible to short-term behaviour by corporations and governments alike.'

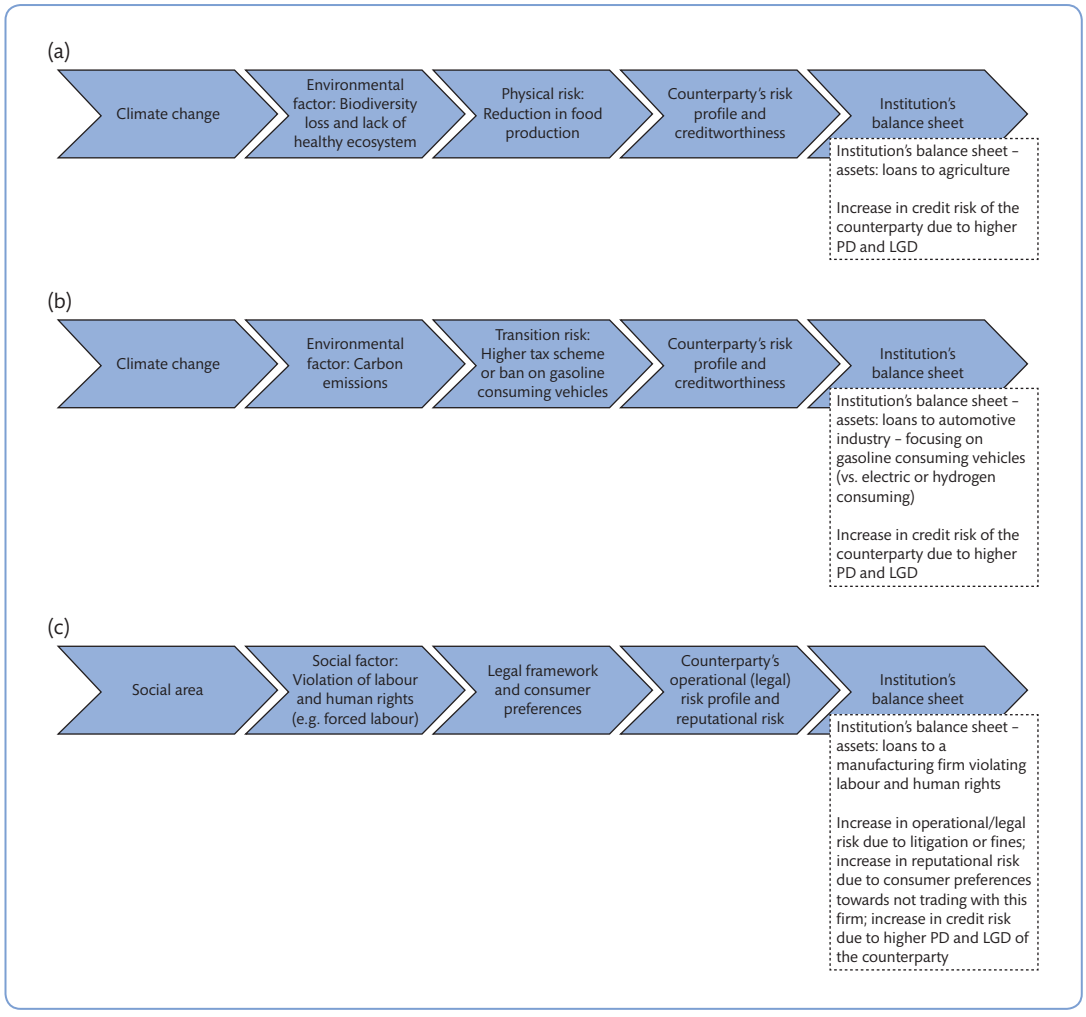


Figure 11.5 Theoretical examples on the ESG cycle – impact of environmental and social factors on an institution's risk profile: (a) impact through physical risk; (b) impact through transition risk; and (c) impact of social factors

Source: European Banking Authority (2020).

Note: PD= Probability of Default; LGD= Loss Given Default

fossil fuel industry) can support the switch to a low-carbon economy in line with the **Paris Agreement** (more details in Box 11.8). Figure 11.6 shows how **ESG risks** can be considered at the point of loan origination.

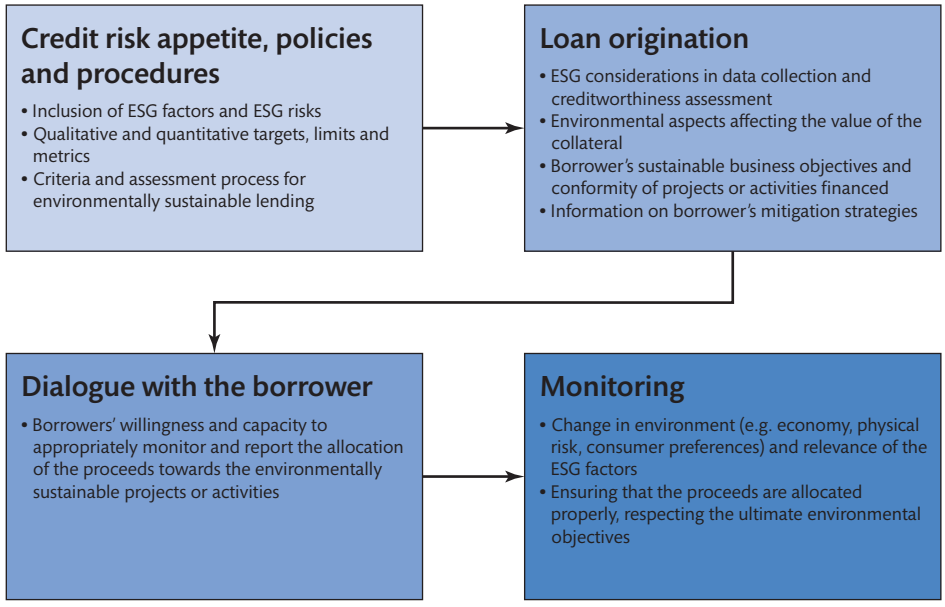


Figure 11.6 Incorporation of ESG risks at the point of loan origination

Source: European Banking Authority (2020).

BOX 11.8 THE VISION FOR SUSTAINABLE FINANCE IN THE EU

The Paris climate change agreement and the **United Nations 2030 Agenda for Sustainable Development**, which were finalised in 2015, represent universal visions and ambitious policy agendas to achieve the objectives of sustainability and climate change missions.

The United Nations **Sustainable Development Goals (SDGs)** list 17 targets as the blueprint for achieving a better and more sustainable future. These address challenges such as poverty, inequality, peace, justice and environmental issues.[5]

In line with these visions, since 2018 the European Commission has developed a comprehensive policy agenda on sustainable finance. Banks and other financial firms are expected to have a crucial role to play, specifically to:

- re-orient investments towards more sustainable technologies and businesses;
- finance growth in a sustainable manner over the long term;
- contribute to the creation of a low-carbon, climate-resilient and circular economy.

These principles are encapsulated in the 2018 Action Plan on Financing Sustainable Growth, which aims to reform the financial system in support of the EU's climate and sustainable development agenda (European Commission, 2018). The Action Plan is

[5] The United Nations SDGs are: (1) no poverty; (2) zero hunger; (3) good health and well-being; (4) quality education; (5) gender equality; (6) clean water and sanitation; (7) affordable and clean energy; (8) decent work and economic growth; (9) industry, innovation and infrastructure; (10) reduced inequalities; (11) sustainable cities and communities; (12) responsible consumption and production; (13) climate action; (14) life below water; (15) life on land; (16) peace, justice and strong institutions; and (17) partnerships (see **www.un.org/sustainabledevelopment/sustainable-development-goals/**).

BOX 11.8 The vision for sustainable finance in the EU (*continued*)

also linked to the Capital Markets Union (CMU)'s efforts to connect finance to the specific needs of the European economy to the benefit of the planet and our society. Figure 11.7 provides a visualisation of the actions towards the three objectives.

Sustainable finance and sustainable investment are also at the heart of the 2019 European Green Deal, which is a roadmap meant to foster the transition towards carbon neutrality by 2050.

The European Banking Authority (EBA) in December 2019 published an action plan specifically around sustainable finance to be completed by 2025. The plan outlines deliverables and activities on ESG factors and ESG risks. Its priorities include considerations on how ESG can be incorporated into the regulatory and supervisory framework of EU credit institutions. It also emphasises three areas where banks are encouraged to take actions: (1) strategy and risk management, (2) disclosure and (3) scenario analysis.

In the framework of the European Green Deal, the Commission also published a Renewed Sustainable Finance Strategy and implementation of the action plan (August 2020), which aims to provide the policy tools to ensure that the financial system supports the transition of businesses towards sustainability during the period of recovery from the impact of the Covid-19 pandemic.

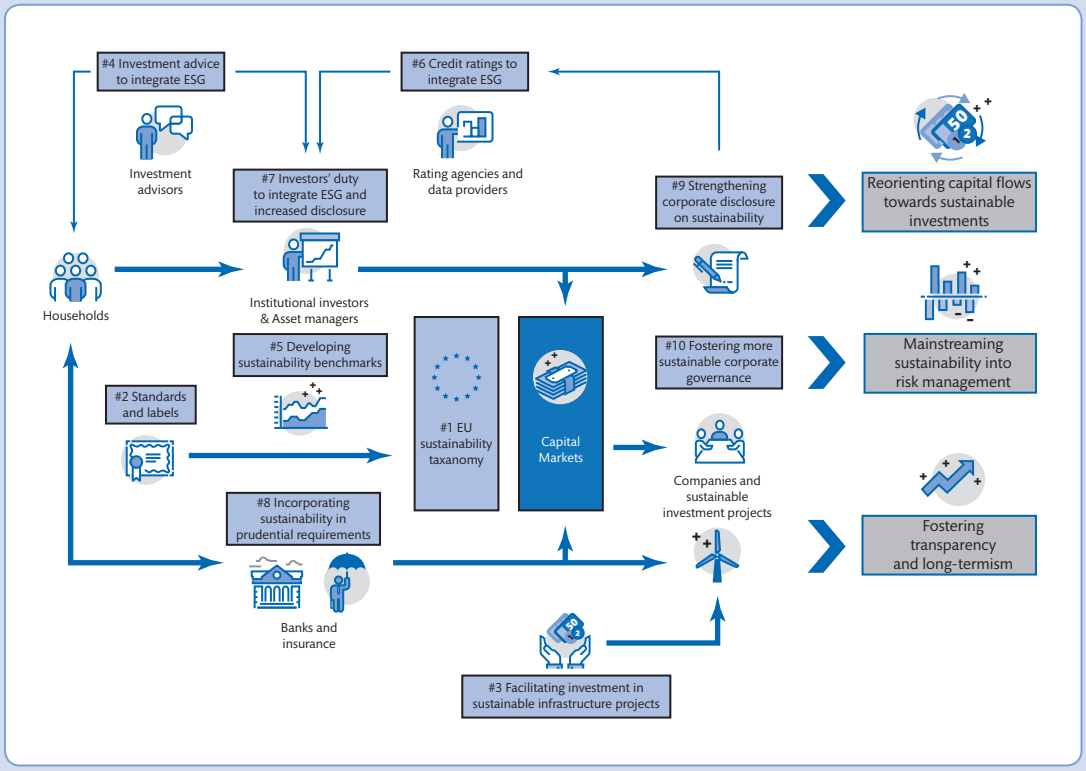


Figure 11.7 Visualisation of the 2018 EU action plan on financing sustainable growth

Source: European Commission (2018).

11.11 Other risks

There are a number of other risks that banks face. It is common to distinguish between macro- and micro-risks. Macro-risks are also known as environmental risks and some of them are common to all businesses. They can include the risk of an economic recession, a sudden change in taxation or an unexpected change in financial market conditions, due for example to war, revolution, stock market crashes or other factors. Additional examples include:

- **Inflation risk** – the probability that an increase in the price level for goods and services will unexpectedly erode the purchasing power of a bank's earnings and returns to shareholders.
- **Settlement or payment risk** – a risk typically faced in the interbank market; it refers to the situation where one party to a contract fails to pay money or deliver assets with another party at the time of settlement. It can include credit/default risk if one party fails to settle. It can also be associated with any timing differences in settlement between the two parties.
- **Regulatory risk** – the risk associated with a change in regulatory policy. For example, banks may be subject to certain new risks if deregulation takes place and barriers to lending or to entry of new firms are lifted. Changing rules relating to products and dealing with customers are other examples of potential regulatory risk.
- **Competitive risk** – the risk that arises as a consequence of changes in the competitive environment, as bank products and services become available from an increasing number of new entrants including non-bank financial firms and retailers.

Microeconomic risks are generally due to factors inside the bank, rather than external factors, such as:

- **Operating risk** – the possibility that operating expenses might vary significantly from what is expected, producing a decrease in income and the bank's value.
- **Legal risk** – the risk that contracts that are not legally enforceable or documented correctly could disrupt or negatively affect the operations, profitability or solvency of the bank.
- **Reputation risk** – the risk that strategic management's mistakes may have consequences for the reputation of a bank. It is also the risk that negative publicity, either true or untrue, adversely affects a bank's customer base or brings forth costly litigation thereby affecting profitability.
- **Portfolio risk** – the risk that the initial choice of lending opportunities will prove to be poor, in that some of the alternative opportunities that were rejected will turn out to yield higher returns than those selected.
- **Call risk** – the risk that arises when a borrower has the right to pay off a loan early, thus reducing the lender's expected rate of return.

Sometimes risks may be due to both internal and exogenous factors. *Earnings risk*, for example, is the risk that earnings may decline unexpectedly and this may be due to bad management or a change in laws and regulation.

Finally, it is worth mentioning **management risk**. This is the risk that management lacks the ability to make commercially profitable and other decisions consistently. It can also include the risk of dishonesty by employees and the risk that the bank will not have an effective organisation.

11.12 Capital risk and solvency

Capital risk should not be treated as a separate risk because all risks described in this chapter can potentially affect a bank's capital. In other words, excessive credit risk, interest rate risk, operational risk, liquidity risk, OBS risk, etc. could all result in a bank having insufficient capital to cover such losses. As noted in Chapter 8 (Box 8.2) in the case of Barings Bank, in such an instance the bank's solvency is impaired and failure can occur.

A bank will be insolvent when it has negative net worth of stockholders' equity. We learnt in Chapter 9 that this is the difference between the market value of its assets and liabilities. Therefore, capital risk refers to the decrease in market value of assets below the market value of its liabilities. In case of liquidation the bank would not be able to pay all its creditors and would be bankrupt.

Capital risk is closely tied to financial leverage (debt/equity) and banks are typically highly leveraged firms. It also depends on the asset quality and the overall risk profile of the institution. One should realise by now that the amount of capital a bank holds is positively related to the level of risk, that is, the more risk taken, the greater the amount of capital required. Banks with high capital risk (that is, banks that have low capital to assets ratios) also normally experience greater periodic fluctuations in earnings.

Capital risk, therefore, is the same as the risk of insolvency or the risk of failure. The following are some early indicators of failure risk (Rose and Hudgins, 2010, p. 187):

- The interest rate spread between market yields on bank debt issues and market yields on government securities of the same maturity: if the spread increases then investors believe that the bank in question is becoming more risky relative to government debt – investors in the market expect a higher risk of loss from purchasing and holding the bank's debt.
- The ratio of stock price per share to annual earnings per share: the ratio will often fall if investors come to believe that a bank is undercapitalised relative to the risks it has taken on.
- The ratio of equity capital to total assets: a low level of equity relative to assets may indicate higher risk exposure for debt holders and shareholders.
- The ratio of purchased funds to total liabilities: purchased funds usually include uninsured deposits and short-term borrowings in the money market.
- The equity capital to risk-weighted assets ratio: indicates how well a bank's capital covers potential losses from the assets that are most likely to decline in value.

11.13 Interrelation of risks

In this chapter we have presented the characteristics of the main risks that modern banks face. While we have described each risk independently, risks are often correlated. For example, an increase in interest rates may increase default risk because companies may find it more difficult to maintain the promised payments on their debt. It may also increase liquidity risk for the bank if the defaulted payments were important for liquidity management purposes. Ultimately, this will affect bank's earnings and capital. Similarly, environmental, social and governance risks are closely interrelated. Box 11.9 provides some examples of the social impact of Covid-19.

BOX 11.9 EXAMPLES OF THE SOCIAL IMPACTS OF THE COVID-19 PANDEMIC

The outbreak of the Covid-19 pandemic provides a good example of the interaction between environmental, social and governance factors. Several commentators have highlighted the importance of biodiversity loss in the origin and spread of new diseases with several health and social impacts (European Commission, 2020).

From a social perspective, the widespread containment measures introduced to limit the spread of the disease have severely impacted our way of life. In addition to the profound impact of the economic disruption and the associated unemployment, the term 'social distancing' suddenly became well known to billions of people, who were asked to stay at home, refrain from social contacts and observe strict rules for non-avoidable social interaction. Shortly after the outbreak, several studies have highlighted the social consequences of such containment measures.

The financial impact of the pandemic has already been visible on the balance sheets of institutions in the first quarter results of 2020. The risk driver of the impact has been widely associated with the increased credit risk of the counterparties, which suffered from the suppression of economic activity during the confinement and higher levels of unemployment. However, even after the lifting of the confinement measures, several companies continued to suffer from turnover below average, pointing to the role of social dynamics on economic behaviours. While a precise quantification of the financial impact of the social dynamics is still difficult, there are some areas where the impact for institutions of social distancing measures can be better assessed.

The sudden introduction of social distancing measures forced companies and businesses to either adjust the organisation of their workforce and processes or shut down. Sometimes overnight, a significant proportion of people started smart working, with also the most reluctant companies being forced to adjust. Months of mandatory 'work-from-home' provided a natural experiment to assess not only the impacts on productivity, but also on well-being, work–life balance and diversity. A number of companies have announced long-term plans to shift a significant share of their employees to long-term smart working. Another side effect of the Covid-19 pandemic is the necessary reorganisation of work processes to comply with distancing measures.

Source: Adapted from European Banking Authority (2020).

Note that banks face a plethora of risks and these risks are not mutually exclusive. They face credit risk when lending, market risk when trading in securities, interest rate risk in their funding operations, operational risks in undertaking all activities, and so on.

11.14 Conclusion

Risks are part of any economic activity. In financial services they assume a particular relevance because the business of banking is linked to uncertain future events and the risk of a bank failure is always a possibility in a system essentially run on confidence.

We have shown in this chapter that banks have to face a number of often interrelated risks, such as interest rate risk, credit risk and liquidity risk and that banks' attempts to cope with risks have often brought about other risks. One such case is derivative products that were designed to control risk through various hedging techniques, and have demonstrated, in certain cases, to be highly risky instruments. In this chapter we have also highlighted how banks today need to learn to recognise the risks associated with ESG factors in the transition to a more sustainable economy.

There are various ways for a well-managed bank to protect against risk. One way is through diversification, in all its forms (e.g. portfolio diversification and geographic diversification). In addition, a bank will have to carry out appropriate asset/liability management practices and hedging strategies. Finally, there is capital that can act as a financial buffer, thus minimising the likelihood of bank failure. The next chapter discusses these and other issues and focuses on the various approaches to managing the main risks in modern banking.

Key terms

Banking book
Call risk
Capital risk
Competitive risk
Counterparty risk
Country risk
Credit culture
Credit philosophy
Credit-rating agencies
Credit risk
Cyber risk
ESG risks
Fixed-rate assets and liabilities
Foreign exchange risk
Inflation risk
Interest rate risk
Legal risk
Liquidity crisis
Liquidity risk
Loan policy
Management risk
Market risk
Off-balance-sheet (OBS) risk
Operating risk
Operational risk
Paris Agreement
Physical risk
Portfolio risk
Rate-sensitive assets and liabilities
Refinancing risk
Regulatory risk
Reinvestment risk
Reputation risk
Settlement or payment risk
Sovereign risk
Sustainability risks
Sustainable Development Goals (SDGs)
Systematic/unsystematic credit risk
Technology risk
Trading book
Transition risk
United Nations 2030 Agenda for Sustainable Development

Key reading

European Banking Authority (2020) 'On management and supervision of ESG risks for credit institutions and investment firms', Discussion Paper, EBA/DP/2020/03, 30 October.

Fink, L. (2019) 'Purpose & profit', Larry Fink's annual letter to CEOs, BlackRock, **https://corpgov.law.harvard.edu/2019/01/23/purpose-profit/**

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Saunders, A. and Cornett, M.M. (2017) *Financial Institutions Management: A Risk Management Approach*, New York: McGraw Hill.

REVISION QUESTIONS AND PROBLEMS

11.1 What is credit risk and what is meant by credit culture?

11.2 Define interest rate risk and distinguish between reinvestment and refinancing risk.

11.3 What are rate-sensitive assets and liabilities?

11.4 Why is liquidity risk one of the most important concerns for bank management?

11.5 Is it correct to state that the root of liquidity risk lies on information asymmetries?

11.6 What is exchange rate risk? What are the main features of foreign exchange markets?

11.7 What is a commercial bank's banking book? Why should the boundaries between banking books and trading books be clearer?

11.8 What are the differences between country and sovereign risk?

11.9 What distinguishes operational risk from technology risk? What are cyber risks?

11.10 Explain the importance of capital risk.

11.11 What are sustainability risks? Can you give examples of ESG factors?

11.12 Read the articles 'Barclays pressed to stop financing some fossil fuel groups' (*Financial Times*, 8 January 2020) and 'HSBC targeted by shareholders over fossil fuel financing' (*Financial Times*, 10 January 2021). Discuss the role of banks in financing sustainable investments.

Chapter 12

Bank risk management

Learning objectives

- To define risk measurement and risk management
- To understand the role of corporate governance in determining banks' risk culture
- To understand the importance of risk management
- To identify the main risk management techniques

12.1 Introduction

This chapter focuses on risk management as a central management tool to ensure banks' soundness and profitability. Risk management is a complex and comprehensive process, which includes creating an appropriate environment, maintaining an efficient **risk measurement** structure, monitoring and mitigating risk-taking activities and establishing an adequate framework of internal controls. As we have noted in previous chapters, the management of banking risks became increasingly important in the light of the 2007–2009 global financial crisis, that many considered the result of a failure of **risk management** systems. The need for more effective risk management and stronger internal controls in banking is being discussed by policy makers globally. In particular, one issue that has come to the spotlight relates to the need to tackle the problem of excessive bank risks at its roots, by setting standards of good practice in relation to **corporate governance** and regulating bank managers' remuneration packages. In addition, the Basel Committee on Banking Supervision (BCBS) has proposed a series of capital and liquidity reforms to make banks safer (see also Chapter 7). Among the key objectives are raising the quality, consistency and transparency of the capital base; enhancing banking risk coverage; introducing a leverage ratio; promoting forward-looking provisioning and holding buffers above the minimum required. Accordingly, banks will not only be required to adopt more formal and quantitative risk measurement and risk management procedures and processes but will also have to make sure that they adopt appropriate risk practices and be more transparent in relation to their risk exposure. Another related crucial aspect concerns the financial instruments used for risk management purposes,

whose notional value may not be directly related to the extent of bank risk exposure. We have discussed derivative products extensively in Chapter 10 and, although not discussed in this chapter, the reader should be aware of their key role in the banks' risk management process.

It is not only regulators that have placed an increased emphasis on risk management in an attempt to foster financial stability and economic development, it is also all the more important for bankers to manage their capital more efficiently in order to maximise risk-adjusted returns from their business activities. An emerging role in risk management is that of sustainability, as recent research has found that it is associated not only with lower default risk but also systemic risk (Scholtens and van't Kooster, 2019). In addition, society and regulators' increased expectations about ESG matters mean that long-term strategies will have to be integrated into banks' business models and risk management.

There are several aspects of risk management in banking and this chapter does not aim to analyse them all in detail, but rather to highlight the main issues. While Section 12.2 introduces the general issues of risk management, Sections 12.3 to 12.6 outline the main techniques used by banks to manage risks including credit risk, interest rate risk and liquidity risk. Sections 12.7 and 12.8 illustrate the techniques that are used to manage market and operational risk. Finally, the management of country risk is discussed in Section 12.9.

12.2 General risk management

This section focuses on how the risk management function is handled within the banking organisation and highlights the importance given to this function by managers and the institutional environment influencing its effectiveness and efficiency. Here we aim to provide an overview of systems and practices that cut across the major types of risks faced by banks. These systems and processes include such items as the allocation of resources to risk management activities, governance issues, record-keeping, communications within the organisation and internal audit. As pointed out by Cumming and Hirtle (2001) the difference between risk measurement and risk management is that while risk measurement deals with the quantification of risk exposures, risk management deals with the overall process that a financial institution follows to define a business strategy, to identify the risks to which it is exposed, to quantify those risks and to understand and control the nature of risks. In Chapter 11 we reviewed the main risks faced by financial institutions; for each class of risk, banks need to estimate the expected losses and the probability of unexpected losses, so that an appropriate amount of capital may be held.

It is important to recall that the main objective of bank risk managers is that of shareholders' wealth maximisation and in pursuit of such an objective they have to manage carefully the trade-off between risk and returns. In order to increase shareholders' wealth a company has to generate returns greater than its opportunity cost of capital. The opportunity cost of capital is the perceived cost to the bank of raising equity and keeping shareholders happy (see also Section 9.4.3). For example, if a bank makes an acquisition that generates a ROE of 8 per cent, but the cost of obtaining the capital funds needed to undertake the acquisition is 10 per cent then this destroys shareholders' wealth. Alternatively, if returns exceed 10 per cent then the acquisition creates value for shareholders. Typically, higher returns (ROE) are reflected in higher market valuations of a company's shares – or to put it another way, investors rank profitable firms more highly and this is reflected in greater equity prices. The aim of bank managers therefore is to maximise ROE relative to its cost of capital and this will maximise

shareholders' wealth. Note that banks can do these sorts of calculations for all parts of their business in order to identify how capital is being used within the bank and what parts are generating the best or worst returns.

Investors, meanwhile, can expect a higher rate of return only by increasing the risk they are prepared to bear. Risk measures are therefore related to profitability measures, as banks must take risks to earn adequate returns. As Sinkey (2002) points out, the essence of modern banking is the measuring, managing and accepting of risk and the heart of bank financial management is risk management. The task then becomes: how to set appropriate targets for a bank's returns and the corresponding risks undertaken? Hempel and Simonson (2008), while cautioning that there is no exact answer, suggest three steps:

- assess how other similar individual banks and groups of banks have made their risk/return decisions;
- compare the bank's performance measure to those of similar banks;
- set reasonable objectives against the backdrop of a bank's historic performance, the performance of its peers and its external environment.

These steps, in turn, are essentially based on the following analysis:

- stock market expectations (if the bank is quoted);
- trend analysis of past performance;
- trend and comparative analysis of peers' performance allowing for factors such as business mix, available production technology and external environment (macroeconomic and regulatory).

One of the underlying issues in most banking systems is the fact that deregulation, globalisation and internationalisation have increased the (real or perceived) degree of competition in banking markets, requiring banks to take on more risk to achieve satisfactory returns.

Given their special role in any economy, banks should be run in a safe and sound manner. As discussed in Section 8.3.2, US regulatory authorities monitor banks' behaviour and try to ensure that they achieve a good CAMELS rating (adequate Capital, good Asset quality, competent Management, good Earnings, sufficient Liquidity and Sensitivity to market risk). Banks are rated 1 (essentially sound) to 5 (basically insolvent). Banks with ratings of 1 or 2 are considered to present few, if any, supervisory concerns, while banks with ratings of 3, 4 or 5 present moderate to extreme degrees of supervisory concern. A bank's CAMELS rating is highly confidential; it is evaluated by the bank's senior management and disclosed only to the appropriate supervisory staff. However, the public may infer such information based on subsequent bank actions or specific disclosures.

The main elements of modern risk management processes and strategies include identifying, measuring and monitoring risk exposures. The overall risk management process should be a comprehensive one, which creates a risk management culture in all departments of the financial institution. The specific asset–liability management (ALM) function (its coverage and functions) varies from bank to bank. However, as detailed in Chapter 10, the ALM function takes an overall risk management view of the bank. Specifically, ALM is concerned with explicit managerial and risk functions such as liquidity, capital management, funding and cost of funds, and managing the bank's security portfolio.

Interest rate risk management and lending and credit risk management are key components of a bank's overall risk management function, and are also part of the ALM function, but they are usually managed specifically by separate units or divisions within a bank. For

this reason, and because of the relative importance of such risks for financial institutions, we will analyse in detail their management processes. Before we move on to specific risk management techniques, let us outline the basic concepts of the risk management process.

Following the publication of the comprehensive set of 'core principles' for effective banking supervision in 1997 (BCBS, 1997a) and as part of an ongoing effort to enhance sound practices in banking organisations, the BCBS has issued a number of publications – in the form of core principles, standards and guidelines – to highlight the practices and criteria that should underpin the risk management process. The BCBS's response to the 2007–2009 crisis has resulted in the compilation of a set of documents to build more resilient banks and a safer financial system that form the basics of a new Accord (Basel III). In 2017 a document was published that sets out the Basel Committee's finalisation of Basel III (BCBS, 2017). Due to the Covid-19 pandemic, banks and supervisors have been granted a one-year deferral so these reforms will take effect from 1 January 2023 and will be phased in over five years. All global standards, including this one, and bank regulation and supervision, have been integrated in a new consolidated '**Basel Framework**' that links them in one place.[1]

It is noticeable that one of the most recent objectives of the Basel Committee is to evaluate the potential implications on individual banks' safety and soundness and systemic financial stability derived from emerging risks in the area of sustainable finance (see Chapter 11). Key findings from a recent report suggest that climate-related financial risk should be addressed in existing regulatory and supervisory frameworks. Publications in these areas include:

- 'Climate-related financial risks: A survey on current initiatives' (BCBS, 2020a);
- 'The green swan: Central banking and financial stability in the age of climate change' (Bolton *et al*., 2020).

As environmental challenges pose a potential strategic risk to banks, there is no doubt that corporate boards have a key role in the identification and management of these risk, as they do for other risks. Stiroh (2019, 2020) identifies several challenges in this context related to time horizon, data gaps and complexity, as the impact of climate change is uncertain, non-linear and hard to predict. The European Banking Authority (2019) highlights how the governance of both public and private institutions play a crucial role in considering social and environmental issues. This includes internal management structures, employee relations and executive pay.

More generally, corporate governance and remuneration policies are particularly sensitive topics in banking for two main reasons: first because the **risk culture** shared in any corporation is ultimately determined and monitored by corporate governance frameworks. Second, because performance-related managers' remuneration can potentially increase the risk-taking incentives and this can produce undesirable outcomes, particularly in a sector like banking that relies heavily on confidence. Box 12.1 looks into these issues in some detail; however, first it is useful for the reader to reflect on the concept of risk culture as defined in Table 12.1.

According to Power *et al*. (2016) the common thread that runs through almost all definitions of risk culture is that it concerns people's behaviour within an organisation in relation to risk management. Corporate governance and leadership should design, express and impart the company's propensity to risk. However, the governance implications in banks are different from other financial organisations for a number of reasons, as discussed in Box 12.1.

[1] The Basel framework is regularly updated (**www.bis.org/basel_framework/**). A full list of reports can be found at the Bank for International Settlements online publications archive at **www.bis.org/bcbs**.

Table 12.1 Selected definitions of risk culture

Definitions from the 'practice literature'	Source
A bank's norms, attitudes and behaviours related to risk awareness, risk-taking and risk management, and controls that shape decisions on risks. Risk culture influences the decisions of management and employees during the day to day activities and has an impact on the risks they assume.	Financial Stability Board (2014)
The values, beliefs, knowledge and understanding about risk shared by a group of people with a common purpose, in particular the employees of an organisation or of teams or groups within an organisation.	IRM (2012)
The combined set of individual and corporate values, attitudes, competencies and behaviour that determine a firm's commitment to and style of operational risk management.	BCBS (2011d)
The system of values and behaviour present throughout an organisation that shape risk decisions. Risk culture influences the decisions of management and employees, even if they are not consciously weighing risks and benefits.	KPMG (2010)
The norms and traditions of behaviour of individuals and of groups within an organisation that determine the way in which they identify, understand, discuss, and act on the risks the organisation confronts and the risks it takes.	IIF (2009)
Organisational behaviour and processes that enable the identification, assessment and management of risks relative to objectives ranging from compliance to operational, financial and strategic.	PwC (2009a)

Source: Adapted from Power *et al*. (2016).

BOX 12.1 THE CORPORATE GOVERNANCE OF BANKS

Since the financial crisis of 2007–2009, much has been said about the way in which banks are governed and how senior executives are remunerated. There is a general belief that some CEOs and other senior executives had perverse incentives that encouraged them to formulate strategies to pursue excessive risks (so as to boost their pay and other benefits) at the expense of the ultimate bank owners – the shareholders. There has also been criticism that some banks had too powerful CEOs that had undue influence on chairmen and boards resulting in little checks to their (sometimes) excessive risk-taking behaviour. Recent EU policy has been directed to limiting bank executive pay – by restricting bonus payments – and over the last decade or so there has been a general trend to improve the way in which publicly listed companies are governed. This section briefly highlights these topical issues relating to bank corporate governance.

How to define corporate governance?

There is no generally accepted definition of what corporate governance is, but typically it relates to the way outside investors and other stakeholders, such as employees and government, exercise control over senior management and other corporate insiders in order to protect their interests. The main focus of the academic literature, prompted by the seminal work of Jensen and Meckling (1976), has tended to focus on the tensions that arise between corporate insiders and shareholders and also between equity holders and other creditors (such as banks and bondholders) over the appropriate amount of risk that firms (including banks) should take. As shareholders own the residual claims in the firms they invest in (this is a formal way of saying that creditors, like banks and bondholders, are paid before shareholders when firms make any payout – in both the good and bad times), so this structure creates a strong incentive for shareholders to emphasise risk-taking – shareholders want firms to take on risks to earn higher returns so that other creditors are first paid off and then they can earn higher dividends. More risk and greater returns will also likely boost share prices, thus feeding capital gains for shareholders. Of course, excessive risk-taking can lead ultimately to bankruptcy and failure – an outcome that shareholders and other stakeholders are unlikely to be keen on. The key issue is how to balance insider and outsider interests so firms do not

BOX 12.1 The corporate governance of banks (*continued*)

take on too much risk and the benefits of all parties are optimised.

Is the governance of banks different from other firms?

The situation of governance in banking is more complicated than for other types of firms for three main reasons:

1 Banks are highly leveraged – they have much less capital than other industries.

2 Banks have opaque business models – some activities are particularly difficult to evaluate, such as the amount of non-performing loans, the value of derivatives and trading activities, and so on.

3 Safety net subsidies, such as deposit insurance, too-big-to-fail and lender-of-last-resort backstops, mean that senior executives of banks may be incentivised to take on excessive risk as the downside is not too bad/limited. To put it another way, if senior executives take on too much risk and the bank fails they may not be too concerned as they believe that most depositors will be protected by deposit insurance and/or the government will bailout the bank if it's too-big-to-fail. So the upside of taking more risk (big bonuses and higher pay for executives) and the limited downside resulting from safety net subsidies, creates skewed incentives – encouraging bankers to take on too much risk.

Despite these differences, and as pointed out by Hagendorff (2019), traditionally, the corporate governance codes for banks were not much different from those applied to non-banking firms.

What are the functions of the board of directors?

The board of directors of publicly listed firms is regarded as the main internal control mechanism that promotes and protects shareholder interests. Typically, the main role of the board should be to act as a check on managerial excess, to monitor senior manager behaviour and to support management if the board sees fit. Boards also evaluate the performance of senior executives, decide on remuneration packages and can fire poor performers. It is generally accepted that a board that has more outsiders (non-executive directors) with diverse backgrounds has the best chance of being independent in its actions. Typically, the more the board is insider controlled (for instance, if there is a high proportion of company senior managers on the board), the more likely it is to be captured by incumbents and the more likely it is to act on behalf of insiders (senior company managers). In contrast, the more independent the board, the more likely it is that the company will be run in the interests of shareholders. (There is a big consulting industry that advises Chairmen and CEOs on the make-up of their boards).

What are the key changes in respect of corporate governance since the banking crisis?

In February 2009, Sir David Walker was asked by the UK government to review the corporate governance of the UK Banking Industry (Walker, 2009). The report (which became known as the *Walker Review* and was published in November 2009) outlined the following key issues: role and constitution of the board; board size, composition and qualifications of board members; functioning of the board and evaluation of its performance; role of institutional shareholders; and the governance of risk and remuneration. Many of the recommendations emanating from the report have since been implemented – particularly those on pay and the qualifications of board members. Reviews of bank corporate governance have been carried out also in other countries. For example, in the Netherlands in 2010, new governance codes have been introduced to cover banks to complement those that apply to firms. A comprehensive survey of corporate governance of banks is provided by de Haan and Vlahu (2016).

Specifically on executive compensation, in 2010 the former FSA (now Prudential Regulation Authority) circulated the first version of a remuneration code that controls both level and structure of executive pay in all UK financial services firms (around 2,700 banks, building societies and some investment firms) (Financial Services Authority, 2010). The revised version of this code was issued in 2011 (Financial Services Authority, 2011b); however, although the UK is not part of the eurozone, as an EU member state it was subject to the CRD IV, the Fourth Capital Requirement Directive,

BOX 12.1 The corporate governance of banks (*continued*)

agreed in February 2013 by the European Parliament. This controversial legislative act was implemented in January 2014 and introduced a pay cap on bankers' bonuses throughout the EU. This is impacting a big chunk of the industry and has implications for centres that seek to attract highly paid financial sector employees, like the City of London. It should be noted that the decision to limit top bankers' pay has not been imitated in the US thus could lead to either movement of activity to the detriment of the City or to regulatory avoidance via an increase in fixed pay 'allowances' on top of salaries for top bankers, with both treated as fixed pay. With Brexit, it became possible for the cap to be scrapped in the UK. However, since allowances are fixed pay (rather than variable like annual bonuses), they may have become attractive to staff, especially in light of the current economic uncertainty. Related to bankers' pay, an important issue concerns inequality and in particular the magnitude of gender pay gaps in the finance industry, as shown in the *FT* article reproduced below.

Trading floor culture remains a barrier for senior female staff (Article from the *FT*)

After her best year trading currencies, a female trader on a large US investment bank's foreign exchange desk was expecting good news at the bonus meeting. It was, after all, the late 1990s, the heyday of currency trading. But when her boss told her the sum, which was a fraction of what male members of the team were awarded, she stood up and went back to her desk in silence. When she later told her boss she was disappointed, he turned around and snarled: "And how much does a nurse get?!" Incidents such as this have hampered a growing push to get more women into senior trading roles. In June this year, Mark Carney, governor of the Bank of England, said "finance offers so much, but it still doesn't offer enough for women", calling the lack of female representation in senior roles "an enormous missed opportunity". Andrew Hauser, the BoE's executive director for markets, said "diversity is not an option in

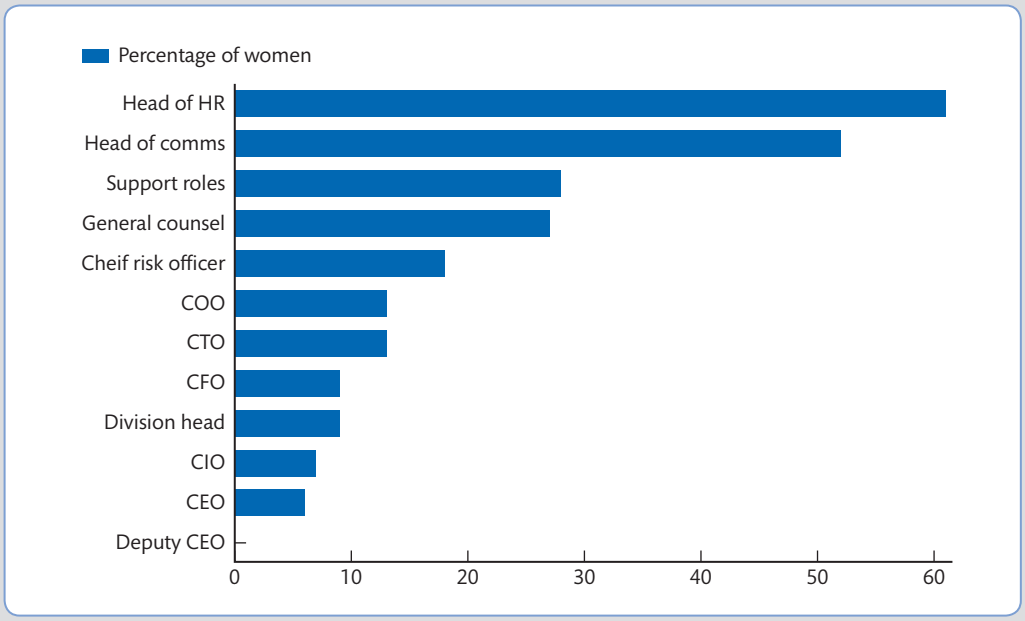


Figure 12.1 Gender breakdown of executive functions in UK financial services

Source: Szalay (2019).

BOX 12.1 The corporate governance of banks (*continued*)

FX — it's an imperative". Despite those efforts, only 13 per cent of individuals approved by the UK's Financial Conduct Authority for trading roles last year were female. Women foreign exchange traders have always been rare. Many have been put off by an aggressive and testosterone-fuelled atmosphere on the trading floor. As a result, few can boast careers that span decades. In trading and broking, fewer than 1 per cent of staff were historically female, according to an industry veteran.

The dangers of the overwhelmingly male culture in trading rooms have been exposed by the global probe into improper practices in currency markets, which focused on chat rooms with revealing names such as "Semi Grumpy Old Men". None of the chat rooms had female members and not a single woman faced criminal charges for the alleged failings. "Perhaps the most depressing aspect of past FX abuse was the light it threw on historic behaviour in parts of the market, called a 'bro-culture' by some," said Mr Hauser. An IMF study last year suggested that having more female traders "would foster greater stability in the banking system and enhance economic growth". It called the fewer than 2 per cent female representation in chief executive positions "shocking". A paper by the University of Leicester suggests that female traders outperform males on average, and that more women on the trading floor would reduce crash events. Companies say recruiting women is tough. In the UK last year fewer than 12 per cent of A-level candidates studying science, technology, engineering and mathematics were female. This is a huge restriction on the pool of talent that electronic trading groups look for, said Jessica Sohl, chair of Chicago-based computer trading specialist HC Technologies, where fewer than 5 per cent of employees are female. There is also a "legacy problem in retaining female talent in trading roles", said Simon Manwaring, global head of foreign exchange at NatWest Markets, who added that the industry is facing a supply-side problem. "If I want to hire a senior options trader I would like them to have 15 years of experience. There are simply not many women around who have that," he pointed out. The culture in the 1990s was "pretty horrible" and "rife with sexism", said Kevin Rodgers, a retired former Deutsche Bank currencies head, who noted that women "quite sensibly stayed away". Those who went into trading often left after having a child, because the pressure of "having the seat empty" meant that six weeks' maternity leave was seen as a luxury. One trader said that while working in Oslo he sat next to a "brilliant" female peer for years, until one day she stood up and said that she was going on maternity leave. "We couldn't believe it. She kept it a secret, wearing big jumpers because she was worried about her job," he said. She never came back.

Worries over pay have not helped. Mr Manwaring said he was confident that in his business everyone was paid equally for equivalent jobs. This has not always been the case in the industry. The anonymous female trader said that she used to sit next to a man who was paid multiples of her salary for the same role, which made him feel so guilty that every year he would splash out on a "really over-the-top Christmas gift" to compensate. Lowballing female candidates is still rife, she said, noting that last year she rejected a job offer on pay grounds. A few months later, the same role was offered to a male peer at a significantly higher salary band. The switch to electronic trading might have blunted the banter-driven boys' club image, but foreign exchange is still male-dominated. One recruiter who specialises in currency trading said some companies pay extra commission if the shortlist for a job contains a woman, while others specify that a third of candidates need to be female. And yet few get hired. "Yes, it's difficult to find female talent for senior roles but, even when I show them a brilliant female candidate, they rarely ever get hired," said the recruiter. "I've given up, to be honest."

BOX 12.1 The corporate governance of banks (*continued*)

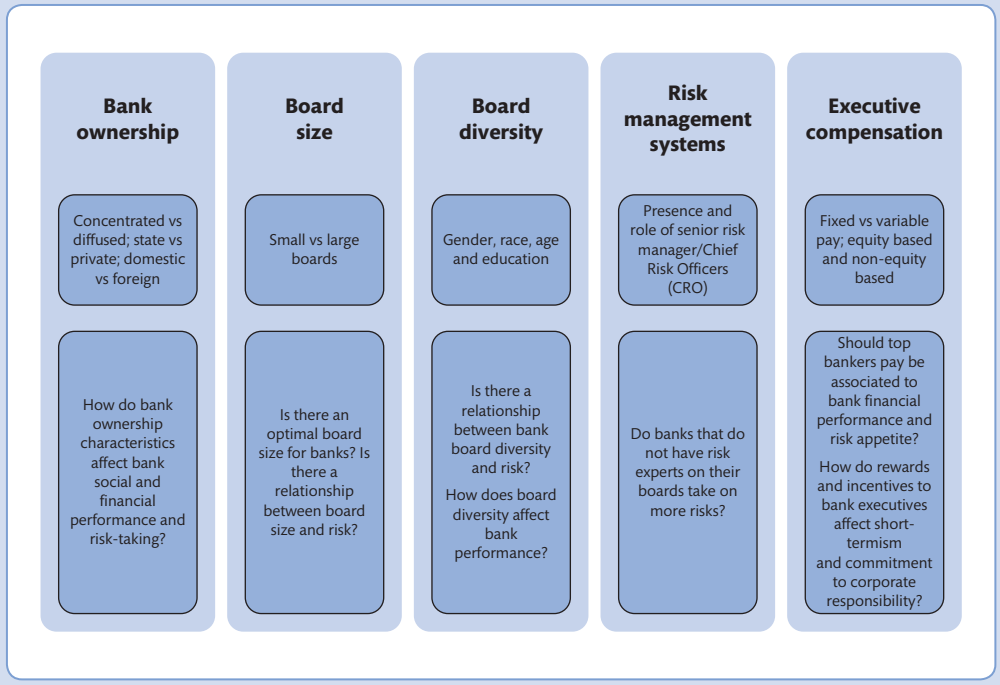


Figure 12.2 Corporate governance and risk in banking

In sum the corporate governance of banks remains a topical issue and over the last decade or so there has been an explosion of research looking at aspects relating to board features, the role of CEOs, executive pay and a whole host of related issues that can, directly or indirectly, affect risk. Figure 12.2 summarises some of the key areas investigated for banks.

Key references: De Haan and Vlahu (2016); Hagendorff (2019); Jensen and Meckling (1976); Walker (2009).

FT *Source: FT* article from Szalay, E. (2019) 'Trading floor culture remains a barrier for senior female staff', *Financial Times*, 9 August.
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As mentioned in Chapter 11, the total risk a financial institution faces can be assigned to different sources. In the next sections we detail the management process of specific risks.

12.3 Credit risk management

Credit risk, defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms, is the most familiar of banking risks (and it still remains the most difficult to quantify).

According to the BCBS (2000), the goal of credit risk management is 'to maximise a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters'. Banks need to manage the credit risk arising both from individual creditors and

individual transactions and the risk inherent in their entire portfolio. Furthermore, banks need to consider the relationships between credit risk and other risks. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long-term success of any banking organisation.

While financial institutions can face difficulties for a number of reasons, in normal times loans that are not repaid (referred to as non-performing loans, or bad debts, or loan-losses) are the most frequent cause of bank losses.

For most banks, loans are the largest and most obvious source of credit risk; however, other sources of credit risk exist throughout the activities of a bank, both on and off the balance sheet. Traditionally, banks have monitored credit risk through a number of standard procedures, such as ceilings placed on the amount lent to any one customer and/or customers within a single industry and/or customers in a given country. While such procedures have long been a central feature of bank lending, credit risk measurement does raise several important issues:

- The size of the loan is not sufficient to measure the risk because risk has two dimensions – the quantity of risk, or the amount that can be lost, plus the quality of the risk, which is the likelihood of default. The quality of risk is often appraised through some form of credit ratings. These ratings may be internal to a bank or external when they come from a credit-rating agency. Measuring the quality of risk ultimately leads to quantifying the default probability of customers, plus the likelihood of any recovery (how much of the loan or other debt can be recovered) in the event of default. The probability of default is obviously not easy to quantify. Historical data on defaults by credit-rating class and/or by industry are available, but often they cannot be easily assigned to individual customers. The extent of recoveries is also unknown. Losses may depend upon guarantees, either from third parties or from any posted collateral, of recovery after bankruptcy and the liquidation of assets.
- The cumulated credit risk over a portfolio of transactions, either loans or market instruments, is difficult to quantify because of diversification effects. If the defaults of all customers tend to occur at the same time, the risk is much more significant than if those default events are not related (or independent). All banks, of course, protect themselves against risk through diversification, which makes simultaneous defaults very unlikely. However, the quantitative measurement of the impact of diversification still remains a modelling challenge.

Banks are increasingly facing credit risk (or counterparty risk) in various financial instruments other than loans, including acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds, equities, options, in the extension of commitments and guarantees, and the settlement of transactions.

Market transactions also generate credit risk. For instance, the inability of a company to service a swap, futures or options agreement, or make dividend repayments on bonds is also regarded as a credit risk. The loss in the event of default depends on the value of these instruments and their liquidity. If the default is totally unexpected, the loss is the market value of the instruments at the time of default. If the credit standing of the counterparty falls, for example Standard & Poor's reduces the credit rating of a counterparty from AAA to AA, it will still be possible to sell their instruments in the market at a discount. For financial instruments with more limited marketability such as over-the-counter (OTC) transactions, for example, as swaps and options, sale is not usually feasible. The credit risk of these types of instruments changes constantly with market movements during their lifespan. Therefore, the potential values of the transactions during the period of the contracts are at risk. Clearly,

there is a relationship between credit risk and market risk during this period because values depend on market movements.

Over the last decade banks have been seeking ways to measure credit risk more accurately, a need that has recently been strongly driven by a variety of factors:

- the growth of securitised loans and the secondary loan trading market (see also Chapter 18);
- the evolution of credit derivatives business;
- the increased emphasis on risk-adjusted performance measurement systems (where performance for different parts of the firm/bank is assessed relative to the risk taken and capital backing) and the desire to transfer credit risk;
- the desire of companies to manage the risk/return characteristics of their debt funding more effectively.

These factors have all contributed to the development of an increasingly more liquid and transparent market in tradable bank loans and other credit instruments. Such a market enables banks and large firms to trade their credit risk more effectively and therefore improve returns. It also provides banks with greater flexibility in meeting client needs as loan portfolios can be restructured in a more efficient manner, thereby releasing resources to be directed to higher-demand (and more profitable) areas. The growth in credit market instruments and the demand from banks to better assess the risks associated with their credit business has led to the development of various modelling techniques, similar in many respects to those previously developed to calculate market risk (such as JP Morgan's CreditMetrics™ or Credit Suisse First Boston Credit Risk+™).[2]

Undoubtedly the 2007–2009 financial crisis has proved that these developments, particularly the growth in securitised lending, off-balance-sheet business and the increased reliance on external assessments by rating agencies in managing credit risk, resulted in banks' exposures being seriously understated. Typically, banks used complex quantitative modelling techniques to assess the risks associated with their credit business and indeed for their trading strategies too. One of the main problems, in this context, is that these models largely relied on 'normal' distributions which, although realistic in periods of prolonged stability and moderate growth (as in the *Great Moderation* era, between the late 1980s and 2007), can have devastating consequences in case of an unexpected (negative) shock to the system. It is possible that banks' over-reliance on sophisticated risk management processes increased moral hazard and encouraged banks to take on higher exposures as a result.

In a provocative speech, a former member of the executive Board of the ECB, Mr González-Páramo (2010), emphasised that one of the causes of the severity of the global financial crisis has been banks' deviation (or even abandonment in some cases) from some well-established rules in the management of risk, and particularly credit risk.[3] These are common-sense risk management practices such as 'know you counterparties', 'invest only in products you understand', 'do not outsource credit risk management by relying exclusively on external credit assessments', 'do not rely exclusively on quantitative models, however sophisticated'. Again, as we discussed in Box 11.1, the development of an appropriate credit culture within banks is crucial in ensuring a more stable and reliable banking sector.

[2] See Bessis (2015), for an overview of the main features of credit risk models.

[3] 'The challenges of credit risk management: Lessons learned from the crisis', speech available at **www.bis.org/review/r100528d.pdf**

The BCBS (2000) document 'Principles for the management of credit risk' still forms the backbone of present credit risk regulation. It identifies sound practices in the management of credit risk and specifically addresses the following areas:

1. establishing an appropriate credit risk environment;
2. operating under a sound credit-granting process;
3. maintaining an appropriate credit administration, measurement and monitoring process; and
4. ensuring adequate controls over credit risk.

Although specific credit risk management practices may differ among banks depending upon the nature and complexity of their credit activities, a comprehensive credit risk management programme will address these four areas. These practices should also be applied in conjunction with sound practices related to the assessment of asset quality, the adequacy of provisions and reserves, and the disclosure of credit risk.

12.4 Managing the lending function

Managing credit risk in retail banking, although based on the same broad principles, differs from wholesale banking in several ways. One first, obvious difference concerns the size of the loan commitments. Bad corporate loans can be very serious for banks because of the vast sums of money involved. Big corporate failures in the early 2000s have caused more than a serious headache to banks. High-profile failures such as Enron, WorldCom and a group of other big, mainly US telecoms and energy companies have left banks with a large amount of bad loans. Past crises in Latin America and Asia have also led to substantial write-offs. The global crisis of 2007–2009 has had major consequences on the balance sheets and performance of non-financial corporate businesses, and this affected significantly the cash flow and capital of the banking sector. Retail lending, however, while unlikely to create serious consequences for a bank in case of individual loan defaults (although it can still create problems if a large number of retail loans default, say, as a result of a bank being overexposed to a particular sector of the economy, particularly real estate), is more difficult to assess because of the lack of information on the creditworthiness of individual potential borrowers.

12.4.1 Retail lending

An accurate credit decision, given a bank's credit standards, is the one that maximises the value of the loan for the bank and minimises the risk of default. Consequently, gathering, processing and analysing information on potential borrowers are key steps in credit risk management.

Prior to making a lending decision, banks need to assess the risk–return trade-off of a loan; this process involves both an assessment of the risk of the applicant and the applicant's business, an analysis of the external environment, the purpose of the loan and the particular loan

structure requested by the applicant. One key step in this process is pricing the loan, where the 'price' (**loan rate**), assuming there are no other costs, should be:

$$R^L = \frac{1 + r}{1 - d} - 1 \tag{12.1}$$

where:

R^L = profitable loan rate
r = risk-free interest rate (i.e. the rate of return on a 'risk-free' investment, such as government bonds)
d = expected probability of default.

Equation (12.1) shows that the profitable loan rate increases with the borrower's expected probability of default. From a lenders' perspective, the gross return on the loan should take into account several key factors:

- interest rate on the loan;
- fees relating to the loan;
- credit risk premium on the loan;
- collateral backing of the loan; and
- other non-price terms (e.g. clauses and conditions on the use of the loan).

Following a general model along the lines developed by Saunders and Cornett (2017), the gross return on a loan is:

$$1 + k = 1 + \frac{f + (L + M)}{1 - [b(1 - R)]} \tag{12.2}$$

where:

k = contractually promised gross return on the loan per £ lent
f = administration fee
L = base lending rate
M = credit risk premium on the loan
b = compensating balance requirement (as a percentage of the loan)
R = reserve requirement.

L in formula (12.2) reflects the bank's marginal cost of funds (or the so-called prime lending rate in the United States – the interest rate a bank charges its best or 'prime' customers). Compensating balances (b) is the portion of a loan that a borrower may be required to hold as deposit at the bank. They are commonly used in corporate lending business. Reserve ratios (R) are effectively a tax on deposits, and can cause the loan price to rise as banks are not earning income for every £ of reserves. Finally, the loan price should include a credit risk premium (M) and an administration fee (f). The former should reflect the risk profile of the borrower: the riskier the borrower, the higher the premium. The latter should cover all the costs incurred in the origination and administration of the loan.

Another factor that influences the price of the loan is the presence of any collateral (assets backing the loan that can include such things as residential property, other real estate, securities, etc.): the rate charged should be lower than in the case of no collateral. However, in times of economic trouble the price of collateral can become very volatile and banks may have to raise either the loan price or the amount of collateral required. If collateral values fall dramatically there can be a banking sector collapse – as was the case in the Japanese banking system crises that occurred in 1997–1998 (discussed in Chapter 16). Obviously, if the value of the collateral is linked to the ability of the borrower to repay; a decrease in the value of the collateral will increase the probability of default. Box 12.2 illustrates how the fall in UK property prices in the early 1990s and in the aftermath of the 2007–2009 crises resulted in loan losses and negative equity.

BOX 12.2 MORTGAGE MARKET, EQUITY WITHDRAWAL AND NEGATIVE EQUITY

Over the past 40 years or so the UK housing market has experienced persistent volatility (rapid fluctuations in house prices) that resulted in major economic and social costs. During the late 1980s, UK house prices soared, boosting people's confidence in the housing market and prompting them to borrow against the value of their homes. Between 1980 and 1990, average mortgage debt in the UK more than doubled relative to income. A **mortgage equity withdrawal** relates to homeowners borrowing against the increased value of their property (capital gains) by taking out additional housing equity loans. The Bank of England's estimate of mortgage equity withdrawal (MEW) measures the part of consumer borrowing from mortgage lenders that is not invested in the housing market. Levels of mortgage equity withdrawal reached very high levels in the late 1980s; mortgage equity loans were a major factor behind the consumer boom of 1987–1988. However, the collapse in the housing market in the early 1990s led to over 1.5 million homeowners being in **negative equity** – a situation where the market value of their property was less than the outstanding mortgage loan. The slump in the UK housing market coincided with record increases in mortgage arrears and repossessions. Between 1989 and 1993, as both interest rates and unemployment rose, the number of households in mortgage arrears increased. Arrears peaked in 1992 when over 350,000 households owed six or more months' payments. Repossessions were highest in 1991 at 75,450, falling to 58,540 by 1993.

As shown in Figure 12.3, by the mid-2000s, following a period of sharp increases in housing prices repossessions were relatively low by historical standards. However, the financial turmoil that started in 2007, and the global credit crunch and recession that followed, profoundly affected the UK housing market and repossessions peaked in 2009 at nearly 49,000 homes.

The volatility of the early 1990s and late 2000s caused distorted housing choices and increased risks. From the lenders' point of view these housing market problems resulted in costly losses to banks and building societies. Falling nominal house prices reduced the amount of equity in housing and provided incentives for borrowers to accumulate arrears and for lenders to repossess property that had been used to secure loans.

In March 2020 the UK government adopted a package of support measures for individuals and businesses affected by the Covid-19 pandemic. These included job-protection schemes, provisional changes to the social security system to protect, at least partially, household incomes, and mortgage-support measures. These latter measures were supposed to assist homeowners to manage their repayments and avoid mortgage arrears and repossessions. Mortgage lenders essentially agreed to support customers experiencing difficulties through a payment 'holiday' or deferral of up to three months from their monthly payments. In May 2020, this holiday period extended for a further three months; however, with the second national lockdown in autumn 2020, new measures to protect homeowners from repossessions were announced, including a moratorium on the enforcement of lender repossessions (Wilson *et al*., 2020).

Box 12.2 Mortgage market, equity withdrawal and negative equity (*continued*)

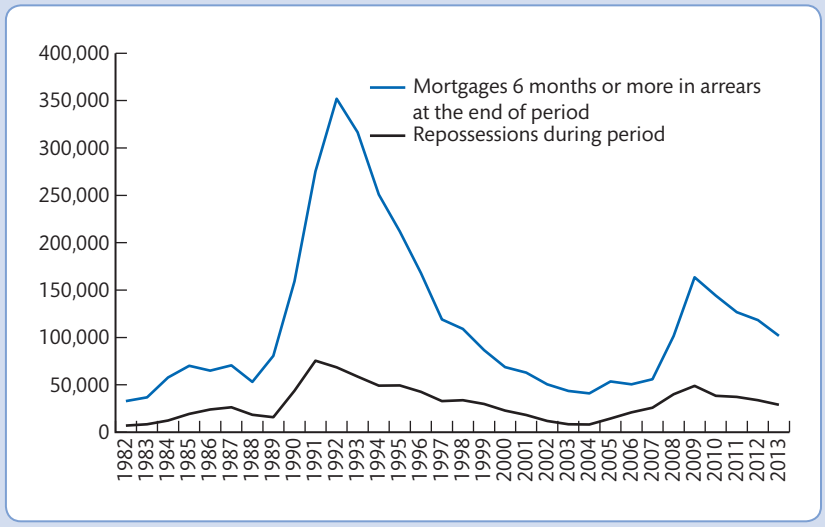


Figure 12.3 Home repossessions in the UK

Source: UK Ministry of Housing, Communities & Local Government. Data from live table 1300 (discontinued in 2014).

Loans availability in retail markets may not be linked simply to the loan price, but restricted to a selected category of borrowers. This is a method for managing credit risk (**credit rationing**) that attempts to minimise the problem of adverse selection in loan markets. To reduce risk exposure, banks can limit the amount of credit available to a certain class of borrowers; for example, think of the credit limit on your credit card. Although it is illegal to discriminate against borrowers for reasons such as race, gender, religion, sexual orientation and address, there is no automatic 'right' to credit and people can be refused credit for a number of different reasons.

As we have seen, a loan evaluation process focuses on evaluating the prospective risk and return on a loan. There are several techniques or models for assessing credit risk, but they can be broadly divided in qualitative models and quantitative models. Qualitative models are normally used when there is limited available information on a borrower. Bank managers have to gather information from private sources and the amount of information needed will be proportional to the size of the loan. Quantitative models are to assess borrowers' credit-worthiness based on the estimated probability of default.

12.4.2 Credit checking and credit scoring

Lenders want to minimise the information asymmetry problems in the retail loan market and therefore aim to ensure that potential borrowers are a good risk and do not have a history of bad debts and unpaid loans. To do this they will do two things: **credit checking** and **credit scoring**.

12.4.2.1 Credit checking

Lenders will check the applicant's entry on credit registers. **Credit reference agencies** in the UK such as Experian, Equifax and CallCredit hold factual information on retail customers and this allows a lender to check individuals' names and address and past credit history, including any county court judgments or defaults recorded against the individual.[4] This process will provide a person's so-called *credit reference*.

12.4.2.2 Credit scoring

To obtain information on a potential borrower, banks will initially adopt a qualitative approach, which involves asking the applicant a number of questions. They will then allocate points (weights) to the answers. Questions may concern the applicant's employment history, the length of time as a customer of the bank, the number and type of accounts held, the length of time at their present address and so on. Personal judgement on behalf of loan officers based on the 'five Cs' (character, capacity, capital, collateral and conditions) is now commonly replaced by a quantitative approach based on the use of the information provided by the applicant to calculate the probability of default.[5] Using statistical programmes, creditors compare the information to the credit performance of consumers with similar profiles. A credit-scoring system awards points for each factor that helps predict who is most likely to repay a debt. A total number of points – a credit score – helps predict how creditworthy the applicant is, that is, how likely it is that they will repay a loan and make the payments when due. Lenders will never divulge how their credit scoring works for fear of fraud and each lender will have their own system. The fact that your loan application has been turned down by one lender does not necessarily imply that it will also be declined by other lenders.

Although such a system may seem arbitrary or impersonal, when it is properly designed it can help make decisions faster, more accurately and more impartially than individuals. In marginal cases, applicants are referred to a credit manager who decides whether the company or lender will extend credit. This may allow for discussion and negotiation between the credit manager and the consumer. Box 12.3 illustrates how a credit-scoring system works in practice.

BOX 12.3 CREDIT SCORING: HOW TO SCORE HIGH

- Have you paid your bills on time?

Payment history typically is a significant factor. It is likely that your score will be affected negatively if you have paid bills late, had an account referred to collections, or declared bankrupt, if that history is reflected on your credit report.

[4] Experian and Equifax are also among the major national *credit bureaus* in the US, together with TransUnion.

[5] The so-called five Cs of a credit decision can be described as follows: (1) *character*, which refers to the willingness of the borrower to repay the loan; (2) *capacity*, which refers to the borrower's cash flow and the ability of that cash flow to service that debt; (3) *capital*, which refers to the strength of the borrower's balance sheet; (4) *collateral*, which refers to the security backing up the loan; and finally, (5) *conditions*, which refer to the borrower's sensitivity to external forces such as interest rate and business cycles and competitive pressures (Sinkey, 2002; Saunders and Cornett, 2017).

Box 12.3 Credit scoring: how to score high (*continued*)

- What is your outstanding debt?

Many scoring models evaluate the amount of debt you have compared to your credit limit. If the amount you owe is close to your credit limit, it is likely that it will have a negative effect on your score.

- How long is your credit history?

Generally, models consider the length of your credit track record. An insufficient credit history may have an effect on your score, but that can be offset by other factors, such as timely payments and low balances.

- Have you applied for new credit recently?

Many scoring models consider whether you have applied for credit recently by looking at 'inquiries' on your credit report when you apply for credit. If you have applied for too many new accounts recently, it is likely that it may negatively affect your score. However, not all inquiries are counted. Inquiries by creditors who are monitoring your account or looking at credit reports to make 'pre-screened' credit offers are not counted.

- How many and what types of credit accounts do you have?

Although it is generally good to have established credit accounts, too many credit card accounts may have a negative effect on your score. In addition, many models consider the type of credit accounts you have. For example, under some scoring models, loans from finance companies may negatively affect your credit score.

Source: Adapted from the Federal Trade Commission (**www.consumer.ftc.gov**).

Credit scoring can be applied both to individuals and to corporations; obviously the variables used to define the scoring system will differ. Sinkey (2002) and Saunders and Cornett (2017) provide detailed overviews of the main traditional credit-scoring models. In recent years, new lending models based on predictive machine learning techniques have emerged, such as credit scoring based on **digital footprint** data. These models use individuals' online behaviour to predict default and although they are gaining popularity, they give rise to other risks that have not yet been completely evaluated by society. For example, the algorithm used in these models could be biased and perpetuate inequalities if the data contains stereotypical concepts of gender and race.

12.4.2.3 Linear probability models

Loans are divided in two groups, those that defaulted ($Z_i = 1$) and those that did not ($Z_i = 0$). These observations are then regressed on a set of n variables reflecting quantitative information about the ith borrower:

$$Z_i = \sum_{j=1}^{n} \beta_j X_{ij} + \epsilon \tag{12.3}$$

Logit (and Probit) models

These constrain the cumulative probability of default on a loan between zero and one and assume the probability of default to be logistically distributed (or have a normal distribution in the Probit case).

Linear discriminant models

These models (which include the Altman Z-score model) divide borrowers according to their derived Z-scores into high or low default risk classes, contingent on their observed characteristics (X_j):

$$Z_i = \sum_{j=1}^{n} \alpha_i X_{ij} \tag{12.4}$$

12.4.3 Managing the loan portfolio

Moving from individual loans to a bank's loan portfolio, the first step in credit risk management is diversification. The principle behind portfolio diversification is the same as the one behind the old saying 'don't put all your eggs in one basket'. Bank managers should diversify their lending to different sectors of the economy, different geographical locations, different types of industry, different maturities and so on. By diversifying their loan portfolios, i.e. by owing assets whose returns are not statistically correlated, banks can reduce the impact of any failure by diversifying away the unsystematic risk. A heavy concentration of loans in one sector of the economy can cause serious trouble for banks. For example, in the UK, building societies have historically concentrated the majority of their lending to finance residential property purchase and have therefore suffered a high number of non-performing loans when the housing market collapsed (see Chapter 8 and Box 12.2). If loans are not correlated, banks can expect to increase the expected returns on their loan portfolio by diversifying across asset classes. In other words, it is possible to apply standard portfolio theory to obtain a measure of aggregate credit risk exposure.[6]

When assessing the credit risk of the aggregate loan portfolio, bank managers need to calculate the following:

- the expected loss, for each loan and for the whole portfolio, over a specific time horizon;
- the unexpected loss for each loan and for the whole portfolio (i.e. the volatility of loss);
- the probability distribution of credit loss for the portfolio and the capital requirement for a given confidence level and time horizon (see Figure 12.4).

There are three factors that drive expected and unexpected losses on a credit portfolio:

- customer default risk – determined by the risk-grade profile of the portfolio;
- exposure – the amount that is likely to be outstanding at the time of default;
- loss given default – determined by the level of security cover, the effectiveness of the recovery process and the credit cycle.

The calculation of the expected loss is based on the current risk profile of the portfolio, possibly ignoring historical loss rates. Banks that rely on their average loss experience to derive expected loss are assuming that the risk profile, business mix and risk management processes remain constant over time. However, the existing profile might be considerably better than the one that created the losses in the past.

[6] For an introduction to portfolio theory, see Appendix A2.

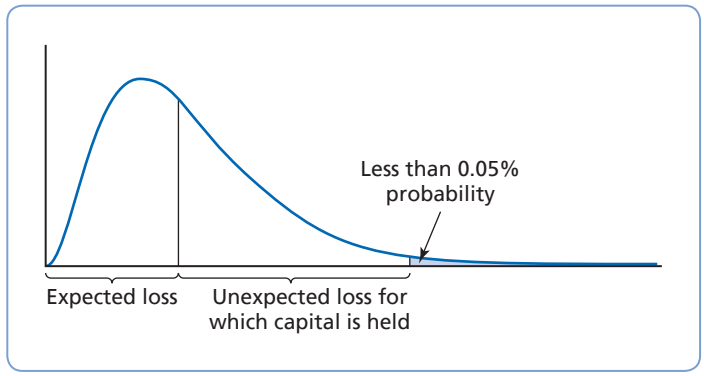


Figure 12.4 Probability distribution of portfolio losses

The main problem with applying portfolio theory to banks' loan portfolios is that, in the vast majority of cases, bank loans are non-tradable assets. As we noted earlier, there are several products in the market that attempt to deal with these issues. The best known are Credit Suisse First Boston (CSFB) Credit Risk+™, CreditPortfolioView™ by McKinsey and JPMorgan's CreditMetrics™. In addition, firms such as KMV[7] and KPMG are actively participating in the debate and are openly sharing many of their analytical engines. KMV was taken over by Moody's in 2002 and since then this portfolio model is called M-KMV. Moody's has several products on the market, including Credit Monitor™ and Porfolio Manager™. KPMG's contribution is the Loan Analysis System™.[8]

12.5 Managing interest rate risk

Interest rate risk can be defined as the exposure of a bank's financial condition to adverse movements in interest rates (BCBS, 2004). For banks, interest rate risk derives from mismatching the maturities of assets and liabilities, as part of their asset transformation function. Banks use funds raised in the form of short-term deposits to issue or buy longer-term assets (loans and bonds) but typically their prices and income react differently to interest rate fluctuations compared to short-term prices and interest expenses.

Interest rate risk management is concerned with the management of the interest rate exposure of a bank. Traditionally, it is managed within the ALM function but, given the increased volatility of interest rates, together with the increased interest rate risk arising from off-balance-sheet activities, it is now often managed by a dedicated department. As seen in Section 11.3, interest rate risk arises from potential variations in banks' returns that derive from unanticipated changes in interest rates. Changes in interest rates also affect a bank's underlying economic value. The value of a bank's assets, liabilities and off-balance-sheet business is affected by a change in rates because the present value of future cash flows, and in some cases the cash flows themselves, are altered.[9] A bank interest rate risk exposure refers

[7] KMV is the acronym for Kealhofer, McQuown and Vasicek, the originators of the KMV methodology.
[8] For more information on these products, see Credit Suisse First Boston (1997) and Bessis (2015).
[9] This occurs, for example, when the bank funds a one-year loan then reprices monthly based on the one-month T-bill rate, with a one-year deposit that reprices monthly based on one-month LIBOR. Interest rate changes can result in unexpected changes in the cash flows and earnings spreads between assets and liabilities. This type of interest rate risk is referred to as 'basis risk'.

to market value changes in its equity position as a result of unexpected changes in market interest rates. When attempting to measure and manage interest rate risk, it is important to note that the exposure to such risk concerns *future* losses (or gains) and therefore some uncertainty will always be present. Some interest rate management techniques involve a forecast of possible interest rate scenarios and, as in every attempt to forecast the future, there is no such thing as 100 per cent accuracy. In other words, managing interest rate risk is about identifying, measuring and controlling such risk, taking uncertainty into account.

There are two broad management approaches that are used to measure interest rate risk and these are known as 'gap' and 'duration' analysis.

12.5.1 Gap analysis

Gap analysis is possibly the best-known interest rate risk management technique. The 'gap' (Figure 12.5) refers to the difference between interest rate-sensitive assets and interest rate-sensitive liabilities over a specific time horizon. If the interest rate-sensitive liabilities are greater than the interest rate-sensitive assets, then an increase in interest rates will reduce a bank's profit and vice versa. In the basic gap analysis, the focus is on the maturity of the rate-sensitive assets and liabilities:

$$\text{GAP} = \text{RSA} - \text{RSL} \tag{12.5}$$

where:

RSA = rate-sensitive assets

RSL = rate-sensitive liabilities.

An asset or a liability is defined as rate sensitive if the cash flow from the asset or liability changes in the same direction as changes in interest rates. The gap ratio in equation (12.5) is also called the *interest-sensitivity ratio*. If this ratio is equal to one, then the rate

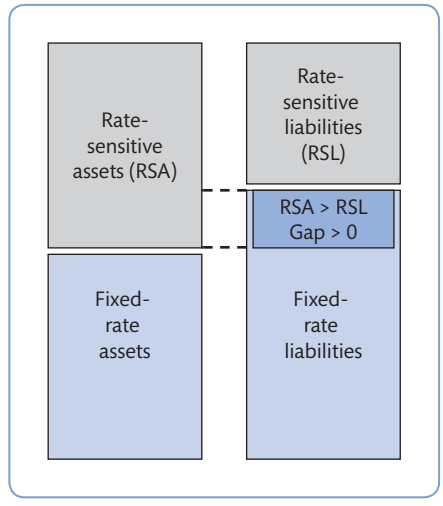


Figure 12.5 Rate sensitivity and positive gap

sensitivity of assets and liabilities is perfectly matched. However, most banks have a positive gap (RSA > RSL) since they borrow short and lend long, and therefore have assets that will mature later than liabilities. The main aim of gap analysis is to evaluate the impact of a change in interest rates on the bank net interest income (NII) and net interest margin (NIM). Ideally, the gap should be managed in such a way as to expand when interest rates are rising and contract when interest rates are declining. However, it is difficult for bank managers to know what phase of the interest rate cycle they are facing. Furthermore, bank customers may be seeking opposite interest rate positions compared to the bank.

Up to now, we have defined the gap as being related to (or a function of) a specified time horizon (for example, 90 days). However, this is rather arbitrary, as it does not clearly indicate what time period is appropriate for determining the interest rate sensitivity of assets and liabilities. For instance, focusing on a short-term gap may ignore reinvestment risk (the risk that loans are repaid early). One extension of the basic gap model is the *maturity bucket* approach. Each of the bank assets and liabilities is classified according to its maturity and placed into 'maturity buckets', for example overnight, 3 months, 3–6 months and so on. Analysts compute both incremental and cumulative gap results. An incremental gap is defined as RSA – RSL in each time bucket; the cumulative gap is the cumulative subtotal of the incremental gaps.

As illustrated in Table 12.2, as total assets equal total liabilities by definition, the incremental gaps must total to zero and therefore the last cumulative gap must be zero. The maturity bucket approach allows bank managers to concentrate on the cumulative gaps for the different time buckets.

One extension is the maturity gap (M Gap):

$$\text{M Gap} = W_A\text{RSA} - W_A\text{RSL} \tag{12.6}$$

where:

W_ARSA = weighted average rate-sensitive assets

W_ARSL = weighted average rate-sensitive liabilities.

This model better reflects the economic reality or the true value of assets and liabilities if the bank portfolio was liquidated at today's prices. If the maturity of a bank's assets is greater than the maturity of its liabilities, an increase in interest rates will cause the value of the assets to fall more than the value of the liabilities because the assets mature later. The bigger the maturity gap, the more a bank's net worth will suffer by an increase in interest rates.

Table 12.2 Maturity bucket gap (£mil)

	Assets	Liabilities	Gap	Cumulative gap
One day	40	30	+10	−10
More than 1 day less than 3 months	50	60	−10	0
More than 3 months less than 6 months	90	110	−20	−20
More than 6 months less than 12 months	110	120	−10	−30
More than one year less than 5 years	80	70	+10	−20
Over 5 years	30	10	+20	0
	400	400		

	Gap	Maturity
If interest rates ↑	RSA>RSL	Assets < Liabilities
If interest rates ↓	RSA<RSL	Assets > Liabilities

Figure 12.6 Strategic matrix for profit maximisation

Figure 12.6 reports a simple summary for gap and maturity models in the form of a strategic matrix to maximise banks' earnings (in terms of NII and NIM) when interest rates fluctuate.

Another extension is the so-called '*dynamic gap analysis*' approach, which involves forecasting interest rate changes and expected changes in the bank's balance sheet for several periods in the future. Software models provide bank managers with simulation tools to inform them of the way in which gaps are expected to be structured at certain times in the future.

Gap analysis was one of the first methods developed to measure a bank's interest rate risk exposure, and continues to be widely used by banks. Despite the extensions, the gap model has been defined as 'naïve' and has been subject to a number of criticisms as the approach:

- fails to take into account the market value effect (i.e. the new value of the asset given changes in interest rates);
- suffers from over aggregation, that is, it fails to consider for intra-bucket effects;
- fails to deal with run-offs, which is the periodic cash flow of interest and principal amortisation payments on long-term assets;
- ignores banks' exposure to pre-payment risk (the risk that loans will be repaid early);
- ignores differences in spreads between interest rates that could arise as the level of market interest rates changes (basis risk);
- does not take into account any changes in the timing of payments that might occur as a result of changes in the interest rate environment;
- generally oversimplifies the complexity of a bank's ALM.

For these reasons, gap analysis provides only a rough approximation of the actual impact of changes in interest rates.

12.5.2 Duration analysis

Duration is a measure of the average life of an asset's (or liability's) cash flow. **Duration analysis** takes into account the average life of an asset (or liability) rather than its maturity. It is a technique borrowed from bond portfolio management, where duration

is defined as a weighted average of the maturities of the individual coupon payments. In this context, duration may be different from maturity if, for example, an asset repayment schedule includes interest and principal. A three-year car loan that is repaid with monthly instalments will have duration different from its maturity. Maturity and duration are only ever equal in the case of single payment assets and zero coupon bonds. Higher duration implies that a given change in the level of interest rates will have a larger impact on economic value. The duration of a coupon bond is expressed by the formula (known as Macaulay duration):

$$D = 1^{*}\frac{C_1/(1+Y)^1}{V} + 2^{*}\frac{C_2/(1+Y)^2}{V} + \cdots + n^{*}\frac{(C_n + P_n)/(1+Y)^n}{V} \qquad (12.7)$$

where:

Y = the bond's internal yield or yield-to-maturity (YTM)
C_1 = annual coupon payment in year 1
P_n = principal payment
n = number of years to maturity
V = current market value of the bond.

The formula provides the weighted average payment stream, where the maturity of each payment is weighted by the fraction of the total value of the bond accounted for by the payment. As can be seen from the example in Box 12.4, the emphasis in duration analysis is on the market value rather than on the book value, as was the case in gap analysis.

Using formula (12.7) it is possible to compute the duration of the entire asset and liability portfolios of a bank. By matching the duration of assets and liabilities, movements in interest rates should have roughly the same effect on both sides of the balance sheet.

BOX 12.4 EXAMPLE OF MACAULAY DURATION

Consider a bond with the following characteristics:

- £100 annual coupon;
- 2 years to maturity;
- YTM = 10 per cent;
- market value £1,000.

The Macaulay duration for this bond is 1.909 years:

$$1.909 = 1^{*}\frac{£100/(1.1)}{£1000} + 2^{*}\frac{£1100/(1.1)^2}{£1000}$$

Duration gap (DG) measures the mismatch between the duration of a bank's assets and its liabilities:

$$\text{DG} = \left(D_{\text{A}} - \frac{L}{A}D_{\text{L}}\right) \tag{12.8}$$

where:

A = market value of assets
L = market value of liabilities
D_{A} = duration of assets
D_{L} = duration of liabilities
L/A = leverage or gearing ratio.

The impact of a change in interest rates on the value of a bank's equity can be calculated as follows:

$$\Delta E = -\text{DG}\left(\frac{\Delta r}{(1 + r)}\right)A \tag{12.9}$$

where:

ΔE = change in the value of bank equity
DG = duration gap
Δr = change in interest rate
A = market value of assets.

Estimates derived from a standard duration approach may provide an acceptable approximation of a bank's exposure to changes in economic value for relatively non-complex banks. However, there are a number of problems arising from the use of the duration measure:

BOX 12.5 EXAMPLE OF DURATION GAP

Consider a bank with the following characteristics:

- £500 million of assets;
- £400 million of liabilities;
- £100 million of own equity;
- the duration of assets is five years;
- the duration of liabilities is three years.

Let's suppose that bank management expect an interest rate increase of 0.25 per cent to 4.5 per cent following the next meeting of the Bank of England's Monetary Policy Committee (MPC).

$$\text{DG} = [5 - (400/500)3] = 2.6$$

$$\Delta E = -2.6\ [0.0025/(1 + 0.0425)]\ 500 = -3.12 \text{ million}$$

In this case, an increase in interest rates from 4.25 to 4.5 per cent will decrease the equity value by £3.12 million.

- Convexity – the duration formula implies a linear relationship between changes in interest rate and changes in bond price; in reality the relationship is convex. Duration is a good approximation for small changes but it becomes less accurate for larger changes.
- Data requirements – the calculation of the duration gap can be data demanding.
- Duration generally focuses on just one form of interest rate risk exposure – re-pricing risk – and ignores interest rate risk arising from changes in the relationship among interest rates within a time-band (basis risk).
- The simplifying assumptions that underlie the calculation of standard duration mean that the risk from off-balance-sheet activities may be underestimated.

12.5.3 Simulation approaches

Many large banks employ more sophisticated interest rate risk measurement systems than those based on simple maturity/re-pricing schedules. These simulation techniques typically involve detailed assessments of the potential effects of changes in interest rates on earnings and economic value by simulating the future path of interest rates and their impact on cash flows. Simulation approaches typically involve a more detailed breakdown of various categories of on- and off-balance-sheet positions, so that specific assumptions about the interest and principal payments and non-interest income and expense arising from each type of position can be incorporated. In addition, simulation techniques can incorporate more varied and refined changes in the interest rate environment, ranging from changes in the slope and shape of the yield curve to interest rate scenarios derived from (relatively complex) statistical approaches such as Monte Carlo simulations.[10]

We can distinguish between:

- *static simulations*, where only the cash flows arising from the bank's current on- and off-balance-sheet positions are assessed; and
- *dynamic simulations*, where the model builds in more detailed assumptions about the future course of interest rates and the expected changes in a bank's business activity over that time.

The usefulness of simulation-based interest rate risk measurement techniques depends on the validity of the underlying assumptions and the accuracy of the basic methodology. In its document 'Principles for the management of interest rate risk', the BCBS warns that the output of sophisticated simulations must be assessed in the light of the validity of the simulation's assumptions about future interest rates and the behaviour of the bank and its customers (BCBS, 1997b). One of the primary concerns of BCBS is that such simulations could become '*black boxes*' that lead to false confidence in the precision of the estimates.

Subsequent recommendations of the Federal Reserve Board (2010) included the need to run dynamic earning simulations together with static ones in order to have a complete profile of the bank's interest rate risk, as well as the use of economic value-based methodologies to broaden the assessment in quantifying interest rate risk exposures and overcome the limitations of static and dynamic models. Specifically, the economic-value approaches focus on a longer time horizon and capture all future cash flows expected from current assets and liabilities. They are also regarded as more effective in considering embedded options in a typical institution's portfolio.

[10] A Monte Carlo simulation is a computerised technique which is the basis for probabilistic risk analysis, and which replicates real-life occurrences by mathematically modelling a projected event.

To summarise:

- *Economic value of equity (EVE) models* measure the degree to which the economic values of a bank's positions change under different interest rate scenarios and can include dynamic technique to provide forward-looking estimates of economic value.

Overall, the most recent guidelines encourage banks to use a range of measurement approaches. The aim is to ensure that the interest rate risk measurement system captures all on- and off-balance-sheet positions and incorporates stress-testing processes to identify and quantify the institution's exposure and potential problem areas.

12.6 Managing liquidity risk

As defined in Section 11.4, a bank faces liquidity risk when, because of lack of confidence or unexpected need for cash, withdrawals are higher than normal and the bank is unable to meet its liabilities. Sound liquidity management can reduce the probability of serious problems. The importance of liquidity goes beyond the individual bank, since a liquidity shortfall at a single institution can have system-wide repercussions. Systemic risk and the problems of contagion and bank runs have been discussed already in Chapter 7 and elsewhere in this text.

If a bank experiences a temporary liquidity problem, and it is either unable or unwilling to borrow on the interbank market, the central bank can provide funds, in the form of loans and advances. However, central bank borrowing is costly not only in terms of the interest rates charged but also in terms of the bank's reputation.

Liquidity pressures can arise from both sides of the balance sheet. On the liability side, unexpectedly high cash withdrawals can cause solvent banks to have liquidity problems. On the asset side, liquidity problems can be caused by unexpectedly high loan defaults and by customers unexpectedly drawing down lines of credit. Liquidity pressures can arise from off-balance-sheet activities as well as from problems in the payment system. Contingent liabilities, such as letters of credit and financial guarantees, represent a potentially significant drain of funds for a bank, but are usually not dependent on a bank's liquidity position. Other potential sources of cash outflows include payments relating to transactions involving swaps, OTC options, other interest rate and forward foreign exchange rate contracts, margin calls and early termination agreements.

Liquidity management is an integral part of the ALM function. Liquidity risk management aims at protecting a bank against liquidity risk, that is, to avoid a situation of negative net liquid assets.

To avoid liquidity problems, a bank can hold liquid assets. However, increased liquidity comes at a cost. There is a trade-off between liquidity and profitability, as the more liquid the asset, the lower the rate of return. Instead of holding liquid funds, a bank could make more profitable loans. Despite the costs, however, the holding of liquid assets is necessary as it:

- reassures creditors that the bank is safe and able to meet its liabilities;
- signals to the market that the bank is prudent and well managed;
- ensures that all lending commitments can be met;
- avoids forced sale of the bank's assets;

- avoids having to pay excessive borrowing costs in the interbank markets; and
- avoids central bank borrowing.

Banks can minimise withdrawal risk by diversifying funding sources (liability management). Prudent banks will also seek to minimise their *volatility ratio*:

$$VR = (VL - LA)/(TA - LA) \tag{12.10}$$

where:

VL = volatile liabilities

LA = liquid assets

TA = total assets

Prudent banks will have a volatility ratio lower than zero.

In measuring and managing a bank's liquidity exposure, the following techniques may be used:

- cash flow projections of daily liquidity positions;
- cash flow projections of daily liquidity sources;
- scenario analysis and simulation models;
- liquidity gap analysis.

12.6.1 Liquidity gap analysis and financing gap

Liquidity gap analysis is the most widely used technique for managing a bank's liquidity position. As we have already discussed, liquidity risk is generated in the balance sheet by a mismatch between the size and maturity of assets and liabilities. It is the risk that the bank is holding insufficient liquid assets on its balance sheet to meet requirements. The liquidity gap is defined as the difference between net liquid assets and unpredictable (or volatile) liabilities. If a bank's net liquid assets are less than liabilities then the bank needs to purchase funds in the market to fill the shortfall in liquid assets. Banks typically will examine the maturity profile of their assets and liabilities to identify mismatches in liquidity that require funding.

$$\text{L Gap} = NLA - VL \tag{12.11}$$

where:

NLA = net liquid assets

VL = volatile liabilities

The liquidity gap analysis is similar to the *maturity bucket approach* we have discussed for interest rate risk management. In this case, balance sheet items are placed in a bucket according to the expected timing of cash flows. Net mismatched positions are accumulated over time to produce a cumulative net mismatch position. In this way, the bank can monitor the amount of cash that becomes available over time.

Another useful measure of bank liquidity is the financing gap (F Gap):

$$\text{F Gap} = \text{Average loans} - \text{Average deposits} \tag{12.12}$$

If the F Gap is positive, the bank needs cash and will have either to sell some assets or borrow on the interbank market. The bigger the F Gap, the more a bank needs to borrow and the greater its exposure to liquidity risk. However, technological and financial innovations have provided banks with new ways of funding their activities and managing their liquidity. A declining ability to rely on core deposits, together with increased reliance on wholesale funds, has changed the way banks view liquidity.

During the early stages of the sub-prime crisis in 2007 many banks, despite being adequately capitalised, suffered significant difficulties mainly due to the lack of prudent liquidity management. The crisis has shown that markets can become illiquid very quickly and that the illiquidity can last long periods. The Basel Committee responded by setting out key principles, detailed guidelines and a framework for effective liquidity risk management and supervision in banking and the related key documents have now been integrated into the consolidated Basel Framework. The two fundamental minimum standards of the most recent Basel liquidity framework are the liquidity coverage ratio and the net stable funding ratio, explained in detail in Chapter 7 (Section 7.11.2).

12.7 Managing market risk

Market risk is the risk resulting from adverse movements in the level or volatility of market prices of interest rate instruments, equities, commodities and currencies (see Section 11.6). Market risk is usually measured as the potential gain/loss in a position/portfolio that is associated with a price movement of a given probability over a specified time horizon.

Financial institutions have always faced market risk; however, the sharp increase in asset trading since the 1980s has increased the need to ensure that these institutions have the appropriate management systems to control (and the capital to absorb) the risks posed by market-related exposures. As a risk, market risk gained a high profile when the Basel Committee on Banking Supervision published 'The supervisory treatment of market risks' (1993), in which for the first time it was proposed that market risk, in addition to credit risk, needed to be taken into account for the calculation of bank capital requirements (this updated the 1988 Basel Capital Adequacy Accord).

The 1993 BCBS consultative document put forward a standardised measurement framework to calculate market risk for interest rates, equities and currencies which differentiates capital requirements for specific risk from those for general market risk. The BCBS (1996) document 'Amendment to the capital accord to incorporate market risks' provides the first framework for capital charges relative to market risk. It sets forth two approaches for calculating the capital charge to cover market risks: *the standardised approach* and *the internal models approach*. The methodology for banks using the standardised approach is based on a 'building blocks' approach, in which the specific risk and the general market risk arising from securities positions are measured separately. Meanwhile, the focus of many internal models is on the bank's general market risk exposure, leaving specific risk (i.e. exposures to specific issuers) to be measured largely through separate credit risk measurement systems.

The central component of market risk management is **value-at-risk** (VaR),which is discussed in Section 12.7.1. Although VaR was originally developed to manage market risk, it has been extended to incorporate other risks, including credit risk. Post 2007–2009 crisis, the market risk framework was revised by the Committee in 2009 and adopted a revised framework (BCBS, 2010c), which became known as Basel 2.5[11] and included the following main reforms in the calculation of market risk capital:

- the *stressed value-at risk* (SVaR), which takes better account of tail risk (losses that banks can suffer in stressed market conditions);
- the *incremental risk charge* (IRC) framework, which determines capital requirements both for default risk and ratings **migration risk** (for unsecuritised credit products with issuer risk like bonds, CDs, equities, etc.);
- the exclusion of most trading book *securitisation exposures* from the internal models approach.

More recently, the BCBS also carried out a fundamental review of the trading book with the aim to improve the design and coherence of the capital standard for market risk. This resulted in a revised framework for market risk introduced in January 2016 (BCBS, 2016a) that: (i) set detailed criteria for the assignment of instruments to the trading book; (ii) improved the internal models approach to better deal with risks that were detected during the crisis; (iii) strengthened the supervisory approval process related to the use of internal models; and (iv) advanced a novel and more risk-sensitive standardised approach. Table 12.3

Table 12.3 Selected elements of internal and standard models approaches in the January 2016 revised market risk framework

Internal models approach	Standard model approach
• Single **expected shortfall (ES)** metric (also known as 'conditional VaR' or 'tail loss') replaces VaR and stressed VaR. • ES captures the tail risks that are not accounted for in the VaR measures. It calculates the average loss above a certain confidence level. • ES accounts for market illiquidity risk and takes into account the different liquidity horizons of various instruments.	• More risk sensitive than Basel 2.5. • A 'sensitivity' is the change in the value of an instrument given a small movement in a risk factor that affects the instrument's value. For example, banks are required to calculate the change in value of their financial instruments if there was a 1 basis point move in interest rates. • Uses delta risk (potential loss due to a small change in price or rate); vega risk (potential loss due to a change in implied volatility of an option); and curvature risk (the potential incremental loss beyond delta risk when large movements occur in risk factors of instruments that have optionality).
Capital requirement is the sum of the capital requirement for each of three components:	Capital requirement is the sum of the capital requirement for each of three components:
1 an ES metric for modellable risk factors; **2** a non-modellable risk factor requirement for market risk factors which are not suitable for modelling; **3** a default risk capital requirement for credit and equity positions.	**1** sensitivities-based methods similar to a stress test; **2** residual risk add-on for any other risk not addressed in 1; **3** a default risk capital requirement with weights assigned that are based on credit rating.

Source: Adapted from Basel Committee on Banking Supervision (2019b).

[11] More information on this and subsequent reforms can be found in BCBS (2019a).

summarises the key elements of the internal and standard models approaches under the January 2016 market risk framework.

Bank internal models must also pass two validation tests on an ongoing basis, or else use the standard model. The tests determine if the internal model: (i) measures appropriately the risk that drives the daily profit and loss of the trading desk ('P&L attribution'); and (ii) estimates a risk that is sufficiently conservative to cover observed trading losses ('backtesting').

12.7.1 Value-at-risk (VaR)

VaR is the principal portfolio measure of market risk, and provides an estimate of the potential loss on the current portfolio from adverse market movements. It was originally developed by JPMorgan in the context of their RiskMetrics™ product and builds on modern portfolio theory. VaR is a statistical measure of potential trading revenue volatility, and a change in the general level of VaR would normally be expected to lead to a corresponding change in the volatility of daily trading revenues. The distinguishing feature of VaR is that it uses the volatility of assets.

The basic formula of VaR is as follows:[12]

$$\text{VaR}_x = \text{V}_x \, (\text{d}V/\text{d}P) \, \Delta P_t \tag{12.13}$$

where:

V_x = the market value of portfolio x

$\text{d}V/\text{d}P$ = the sensitivity to market prices movements per £ of market value

ΔP_t = the adverse price movement over a specific time horizon t (under the Basel Agreement, t = 10 days).

It expresses the 'maximum' amount a bank might lose, to a certain level of confidence (q), as a result of changes in risk factors (i.e. changes in interest rates, exchange rates, equity and commodity prices). The basic time period t and the confidence level q are the two major parameters that should be chosen in an appropriate way. The time horizon can differ from a few hours for an active trading desk to a year for a pension fund. In simple terms, the VaR approach aims to answer the following question: 'How much can I lose with x per cent probability over a pre-set horizon?'

Suppose that a bank portfolio manager has a daily VaR equal to £1 million at a 99 per cent confidence interval. This means that there is only one chance in 100 that a daily loss bigger than £1 million occurs under normal market conditions.

The calculation of VaR specified in equation (12.13) involves several assumptions:

- prices of financial instruments are assumed to be normally distributed;
- price changes are assumed to be statistically uncorrelated;
- the volatility (standard deviation) of the price or rate changes is stable over time;
- the interrelationship between two different price movements follows a joint normal distribution.

Box 12.6 gives an example of VaR.

[12] A general introduction to VaR can be found in Jorion (2007).

BOX 12.6 EXAMPLE OF VAR

Suppose a portfolio manager manages a portfolio that consists of a single asset. The return of the asset is normally distributed with annual mean return of 15 per cent and annual standard deviation of 25 per cent. The value of the portfolio today is £100 million. We want to answer various simple questions about the end-of-year distribution of the portfolio's value:

1. What is the probability of a loss of more than £20 million by year-end – i.e. what is the probability that the end-of-year value is less than £95 million (£115 million minus £20 million)?
2. With 1 per cent probability what is the maximum loss at the end of the year? This is the VaR at 1 per cent.

To answer these questions keeping in mind the assumptions made above, we need to employ a statistical package (for example, Microsoft Excel):

1. In Excel, you need to employ the formula giving standard normal cumulative distribution. In this example:

$$\text{NORMDIST (95, 115, 25, TRUE)} = 0.211855$$

The probability of a loss of more than £20 million is 21 per cent.

2. In Excel, you need to employ the formula giving the inverse of the normal cumulative distribution. In this example:

$$\text{NORMINV (0.01, 115, 25)} = 56.841325$$

There is 1 per cent probability that the end-of-year value will be less than £56.84 million, which means that the maximum loss is equal to:

$$£115 \text{ million} - £56.84 \text{ million} = £58.16 \text{ million}$$

Most VaR calculations, however, are not concerned with annual value-at-risk. The main regulatory and management concern is with the loss of portfolio value over a much shorter period (typically several days).

After the introduction of market risk measurement in the 1996 Amendment to the Basel I Capital Adequacy Accord, regulators have encouraged the use of VaR. The required VaR measure is for every ten days with a confidence interval of 99 per cent. However, the ten-day VaR measure takes no account of the mitigating action that can be taken in the event of adverse market moves, nor does it express the worst result that could occur as a result of extreme, unusual or unprecedented market conditions. The absolute level of VaR should not, therefore, be interpreted as the likely range of daily trading revenues.

As there is no general consensus as to the 'best way' to carry out a VaR analysis, the approach allows various options for the choice of the underlying frequency distributions:

- parametric methods (e.g. RiskMetrics™);
- non-parametric methods (historic approach);
- simulation approaches (such as using Monte Carlo techniques);
- hybrid models (e.g. historic simulation with parametric model).

Because of the different approaches that might be followed, i.e. financial institutions may use different confidence levels or holding periods, may have different sources of historical data or use longer or shorter time-series and may use approximate changes in individual risk factors following different distribution, direct comparisons between VaR numbers produced by different institutions can be misleading. A recent formal survey of US and international commercial banks suggests that the most popular VaR estimation methodology is *by far* historical simulation, followed by the Monte Carlo-based method (Perignon and Smith, 2010).

In order to determine the overall or net position, a portfolio can be divided according to its sensitivity to certain risk (the so-called Greeks):

(a) Delta risk (absolute price risk): the risk that the price of the underlying asset will change.

(b) Gamma risk (convexity risk): allows for the existence of a non-linear relationship between the change in the price of the underlying asset and the change in the value of the portfolio.

(c) Vega risk (volatility risk): the risk arising from a change in the expected volatility in the price of the underlying instrument.

(d) Theta risk (time-decay risk): the risk of a change in the value of the portfolio simply connected with the passing of time.

(e) Rho risk (discount risk): the risk associated with a change in the risk-free rate.

To arrive at a VaR, the portfolio components are disaggregated according to the above risk factors, netted out and then re-aggregated.

To illustrate how VaR is reported by banks, Table 12.4 reports the figures from UBS's 2019 annual report by business division and corporate centre. It shows that UBS group's average management VaR (1-day, 95 per cent confidence level) decreased to US$11 million from US$12 million in the previous year.

Some authors (Taleb, 1997; Daniellson, 2000, 2002) have expressed the following concerns over the use of VaR:

- VaR does not give the precise amount that will be lost.
- The assumption that financial returns are normally distributed and uncorrelated may not hold.

Table 12.4 Value-at-risk at UBS (1-day, 95% confidence, 5 years of historical data)

	Year ended 31 December 19				Year ended 31 December 18			
(US$ million)	Min	Max	Avg.	31 December	Min	Max	Avg.	31 December
Global Wealth Management	0	1	1	1	0	2	1	1
Personal and Corporate Banking	0	0	0	0	0	0	0	0
Asset Management	0	0	0	0	0	0	0	0
Investment Bank	4	17	9	7	4	25	11	10
Corporate centre	4	8	5	5	4	7	5	6
Diversification effect			(5)	(4)			(5)	(5)
Total management VaR, Group	**6**	**18**	**11**	**9**	**5**	**26**	**12**	**12**

Source: UBS (2019).

- VaR measures are seemingly easy to manipulate.
- It does not provide an indication of the probability of a bank failure.
- If all traders are using the same approach to minimise market risk, this can result in increased liquidity risk.

One of the main concerns of prudential regulators is the fact that VaR fails to capture tail risks, hence giving perverse incentives to banks. In fact, the reputation of VaR was seriously damaged in the 2007–2009 financial crises as banks and policy makers realised that markets under stress can generate losses well above the maximum predicted by VaR. The crisis demonstrated that providing insurance against certain tail events was not a 'risk-less' strategy as when these tail events occur, they can result in very large unexpected losses.

For these reasons, **backtesting** (that is, an *ex-post* comparison of the risk measure generated by the model against actual daily changes in portfolio value) has been always advocated by the BCBS. Given the limitations of VaR highlighted above, most banks also employ scenario analysis and stress testing. In simple terms, backtesting compares actual revenues arising from closing positions (i.e. excluding intra-day revenues, fees and commissions) with the VaR calculated on these positions, and is used to monitor the quality of the VaR model.

Figure 12.7 shows these daily revenues and the corresponding 1-day 99 per cent confidence level regulatory VaR for UBS over 12 months of 2019.

As illustrated in Figure 12.7, the revenue volatility over 2019 was within the range predicted by the VaR model. If we focus on the exceptions, these occur when backtesting revenues are negative and the absolute value of those revenues is greater than the previous day's VaR. The figure shows that there were no backtesting exceptions in the second half of 2019. The total number of negative backtesting exceptions within the most recent 250-business-day window decreased from 1 to 0 by the end of the year.

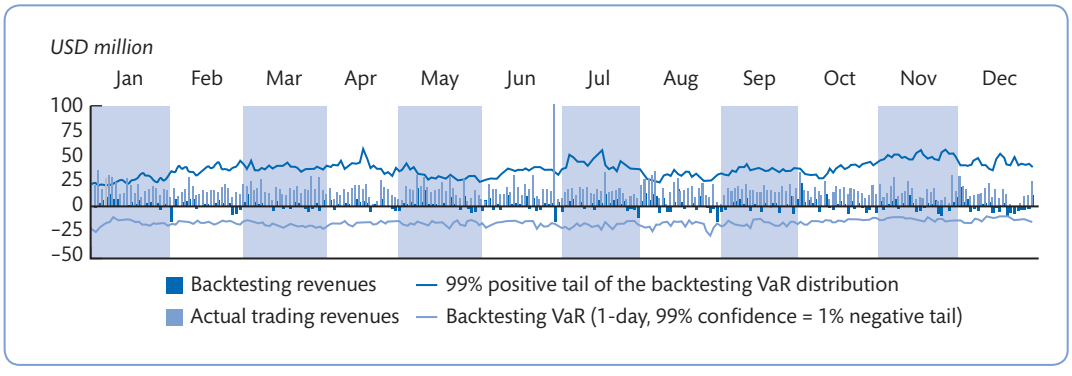


Figure 12.7 Backtesting VaR (UBS), 1 January 2019–31 December 2019

Notes: Excludes non-trading revenues, such as valuation reserves, commissions and fees, and revenues from intraday trading. Includes backtesting revenues from intraday trading. Based on Basel III regulatory VaR, excluded CVA positions and their eligible hedges that are subject to the standalone CVA charge. CVA = Credit Valuation Adjustment.

Source: UBS (2019), p. 141.

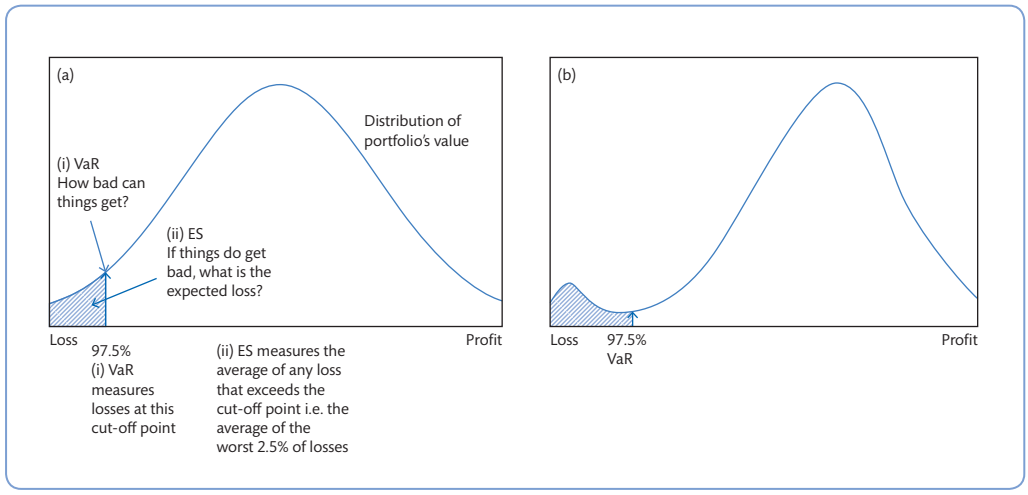


Figure 12.8 Comparison between value-at-risk and expected shortfall

Source: Adapted from Basel Committee on Banking Supervision (2019b) and **Risk.net**

Scenario analysis and stress-testing practices are based on simulated forecasts of plausible unfavourable scenarios to compute how much a bank would lose in the event of a 'worst-case scenario' and tests the bank's ability to withstand possible shocks. As discussed in the previous section, the revised internal model approach under the January 2016 market risk framework replaces the reliance on VaR with ES. What are the differences between the two? Essentially, the VaR answers the question 'how bad can things get?' and represents the maximum risk losses that could potentially be realised at an established level of confidence over a set time horizon (e.g. a 97.5 per cent VaR measures a loss that is expected to be exceeded only 2.5 per cent of time). Conversely, ES answers the question 'if the things get bad, what is the expected loss?' Therefore, it calculates the average loss above a certain confidence interval (e.g. a 97.5 per cent ES measures the average of the worst 2.5 per cent of losses). Figure 12.8(a) helps to visualise these differences.

Assume that Figure 12.8(a) and (b) show the probability distribution for the profits and losses of two different portfolios over a certain time period. The two portfolios have the same VaR but the portfolio in Figure 12.8(b) is significantly riskier than the one in Figure 12.8(a). This means that the ES will be much higher for the portfolio in Figure 12.8(b) than the one in Figure 12.8(a).

12.7.2 Risk-adjusted return on capital (RAROC)

The concept of **risk-adjusted return on capital (RAROC)** was first introduced by Bankers Trust in the late 1970s as a planning and performance management tool, in the context of risk-adjusted performance measurement (RAPM). Several approaches, defined as '*asset-volatility-based approaches*' as opposed to the traditional risk-based and ROE-based approaches were developed in response to the need to target shareholders' value and to allocate banks' internal resources more efficiently. The RAROC measures the risk inherent in each banking activity, and the risk factor is computed taking into account the asset price volatility, calculated on historical data. An interesting feature of RAROC is that it can be employed to estimate the relative capital allocation of all types of banking risks.

$$\text{RAROC} = \frac{\text{Revenues} - \text{Cost} - \text{Expected lossses}}{\text{Total equity capital}} \tag{12.14}$$

In the context of the Basel II Capital Accord, which encouraged the use of internal risk models to set banks' capital requirements, the RAROC measure helped bank managers to assess in what areas they should allocate more capital. However, when Basel III was phased in, considering the major credit losses and banking crisis of the time, it was clear that also the existing approaches to RAROC needed to be revised to take account of **tail risk** and stress testing. Tail risk can be defined as a higher than anticipated risk of an investment moving more than three standard deviations away from the mean. Box 12.7 shows that despite the progress with the vaccine, the Covid-19 pandemic is seen by fund managers as the main tail risk.

BOX 12.7 INVESTORS BET VACCINE-LED RECOVERY WILL LIFT EMERGING MARKETS

Investors are betting emerging markets will be among next year's winning asset classes, wagering a coronavirus vaccine will help spur a global economic recovery, according to a survey of fund managers by Bank of America.

The monthly report, which gathered views of fund managers collectively holding $526bn in assets, highlighted that the bullishness on emerging markets is part of a broader rotation theme, which has also boosted small-caps, value stocks and banks.

Investors began switching from pandemic winners, such as technology stocks, into sectors tied to a rebound in the economy after Pfizer and BioNTech announced strong early results from the trial of their Covid vaccine on November 9. A similar vaccine from Moderna also proved to be effective in its trial, the company said this week.

Emerging market equities have climbed 2.3 per cent since the Pfizer announcement, taking their gain for the year to just under 8 per cent, according to MSCI.

Bank of America said half of the interviewees indicated emerging markets as their favourite trade for 2021, ahead of the S&P 500 and oil. Meanwhile, a growing number of investors believe emerging market currencies are undervalued.

"The vaccine announcements provided another boost for emerging market risk sentiment," said Andreas Kolbe, a strategist with Barclays. "These results have likely removed some pessimism about the medium-term trajectory of the virus and its consequences on the global economy."

He added lower volatility should boost emerging market assets, particularly currencies and credit. "We expect emerging market local markets to rally across the quality spectrum," he said.

The progress in the fight to curb the spread of the virus has helped to bolster risk appetite. The amount of cash investors are keeping in their portfolios fell to 4.1 per cent, according to the bank, similar to the level in January before coronavirus rocked global financial markets.

Michael Hartnett, chief investment strategist at BofA, said the decline in cash levels was often a signal of investor exuberance.



BOX 12.7 Investors bet vaccine-led recovery will lift emerging markets (*continued*)

"We are starting to see some extreme measures of sentiment, as cash levels are low and equity allocation is high," he said.

Despite the progress in the fight against the virus, the survey showed 41 per cent of fund managers saw the Covid-19 pandemic as the main "tail risk" although they now expect a "credible vaccine" to be delivered in mid-January, one month ahead of the previous timeline.

Investors polled by the investment bank warned that bets on large US technology companies remained a crowded trade. The pandemic has benefited many of those businesses as consumers live more of their lives from home and use their computers to work or order food. Growth companies such as Amazon, Microsoft and Facebook have posted strong gains since the coronavirus outbreak.

Still, about one in four investors predicted value stocks would outperform growth stocks, the highest level since February 2019 and a sign that they see a brighter outlook for the real economy.

Source: Carnevali, D. (2020) 'Investors bet vaccine-led recovery will lift emerging markets', *Financial Times*, 17 November.
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12.8 Managing operational risk

The Basel Committee on Banking Supervision (BCBS, 2011a) broadly defines operational risk as 'the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events'. In general terms, this is the risk associated with the possible failure of a bank's systems, controls or other management failure (including human error). This definition focuses on the causes of operational risk, and it is aimed at facilitating operational risk measurement and management.

Various factors have contributed to increase the operational risk in the environment where banks operate over recent years. External forces include the progress in trading technology (e.g. high-frequency trading) and the increased complexities and interconnectedness in the financial marketplace globally. Losses can be quite substantial and recent research has warned that cyber- and IT-related risk are now a main concern for banks.

The increased importance of operational risk in financial institutions was recognised by the Basel Committee and a new capital charge was incorporated in Basel II. Since then, significant progress has been made in setting a framework for an effective measurement and management of operational risk in banking. In August 2020 the Basel Committee published two consultative documents: 'Revisions to the principles for the sound management of operational risk' (BCBS, 2020b) and 'Principles for operational resilience' (BCBS, 2020c). The former focuses on the importance of adopting an integrated risk management framework for sound operational risk that includes governance, risk management environment, information and communication technology, business continuity planning and the role of disclosure. The latter concentrates on the increased potential for disruptions to the normal banking business from 'pandemics, natural disasters, destructive cyber security incidents or technology failure'.

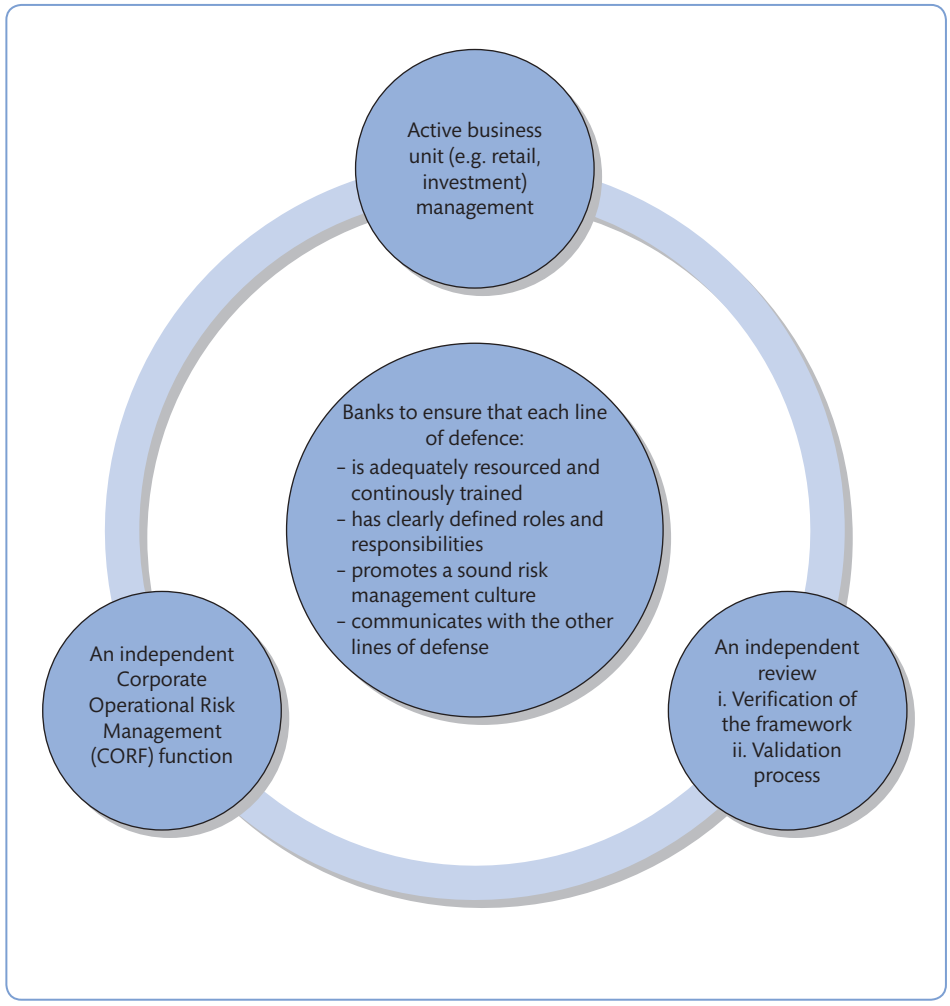


Figure 12.9 The three lines of defence for sound operational risk management

Source: Adapted from Basel Committee on Banking Supervision (2011d, 2020b).

Following these documents, the sound management of operational risk should rely on three lines of defence as illustrated in Figure 12.9.

The first line of defence is business line management, which is responsible for identifying and managing the risks inherent in the products, activities, processes and systems for which it is accountable. The second line of defence is the creation of a specialised and independent internal committee, the corporate operational risk function (CORF), responsible for the design, maintenance and ongoing development of the operational risk framework within the bank. CORF's functions include operational risk measurement and reporting processes, risk committees and responsibility for board reporting. The third line of defence is an independent review of the bank's operational risk management controls, processes and systems. It includes two interrelated aspects: (i) periodic verification and (ii) validation. The former is usually carried out by the bank's internal and/or external audit and is in charge of testing the effectiveness and consistency of the operational risk management framework. The latter is an independent process performed by audit and/or external staff and should confirm the

robustness and reliability of the quantification procedures and risk measurement methodology used by the bank. Banks will have to ensure that the lines of defence can function effectively and, for example, ensure that they are well resourced, appropriately trained and that there is a clear identification of roles and responsibilities.

In line with the management of other banking risks, a capital provision should be set aside to cover for unexpected losses due to operational risk. However, explicit pricing of the losses relating to operational risk is less common.

The Basel II framework proposes three methods for calculating operational risk capital charges, which present increasing sophistication and risk sensitivity:

1. the *basic indicator approach*;
2. the *standardised approach*;
3. the *advanced measurement approach*.

The basic approach allocates capital using a single indicator (gross income) as a proxy for a bank's overall operational risk exposure. Gross income is defined as net interest income plus net non-interest income and the bank is expected to set aside a capital provision to cover for unexpected losses due to operational risk equal to the average of the previous three years of a fixed percentage ('alpha') of positive gross annual income.

In the standardised approach, a bank's activities are divided into eight standard business units and business lines and all use gross income as a common indicator. These are:

1. corporate finance (18 per cent);
2. trading and sales (18 per cent);
3. retail banking (12 per cent);
4. commercial banking (15 per cent);
5. payment and settlement (18 per cent);
6. agency services (15 per cent);
7. asset management (12 per cent);
8. retail brokerage (12 per cent).

Within each business line, the capital charge is calculated by multiplying a bank's broad financial indicator by a percentage factor 'beta' (in brackets above). This is a rough proxy for the relationship between the industry's operational risk loss experience for a given business line and the broad financial indicator for the bank's activity in that business line. The total capital charge is the sum of the capital charges in each business line.

The advanced measurement approach (AMA) allows individual banks (subject to supervisory approval) to employ their own internal operational risk measurement systems using quantitative and qualitative criteria to calculate the required capital. Banks apply different AMA models depending on the way they combine the following four 'data elements':

1. Internal loss data.
2. External loss data.
3. Scenario analysis.
4. Business environment and internal control factors.

The Basel Committee on Banking Supervision (2011e) recognises that there are various ways that an AMA model can be constructed to use the four data elements listed above and

banks should ensure that the resulting level of operational risk capital is adequate given the banks' level of exposure. It also suggests that the most popular methods in modelling operational risk are the loss distribution approach (LDA) followed by scenario-based approaches (SBA).

In terms of actual measurement methodologies, the Basel Committee has identified three sub-approaches that banks can choose from:

1 *Scorecard approach* – relies primarily on qualitative analysis across business lines and less on historical loss data in determining capital. The process is constantly updated and aims at creating risk indicators that are combined into a score that reflects the degree of the operational risk. Risk loss data are used to validate results of scorecards.
2 *The loss distribution approach* – this is based on the historical database of operational loss for capital calculation. It requires the determination of the probability distribution of the frequency of operational loss events and the conditional probability distribution of the severity of operational losses given an operational loss event. This is calculated for each business unit and type of event; the capital charge is based on the sum of all operational risk for each business line/event type.
3 *Internal measurement approach* – see Box 12.8.

BOX 12.8 STRUCTURE OF THE INTERNAL MEASUREMENT APPROACH

In the internal measurement approach, a bank's activities are categorised into a number of business lines, and a broad set of operational loss types are defined and applied across business lines. Within each business line/loss type combination, the supervisor specifies an exposure indicator (EI), which is a proxy for the size (or amount of risk) of each business line's operational risk exposure.

For each business line/loss type combination, banks measure, based on their internal loss data, a parameter representing the probability of loss event (PE) as well as a parameter representing the loss given that event (LGE). The product of EI*PE*LGE is used to calculate the expected loss (EL) for each business line/loss type combination.

The supervisor supplies a factor (the 'gamma term', γ) for each business line/loss type combination, which translates the expected loss (EL) into a capital charge. The overall capital charge for a particular bank is the simple sum of all the resulting products. This can be expressed in the following formula:

$$\text{Required capital} = \sum i \sum j \left[\gamma(i,j) * EI(i,j) * PE(i,j) * LGE(i,j)\right] \quad (12.15)$$

where:

i = the business line

j = the risk type.

To facilitate the process of supervisory validation, banks supply their supervisors with the individual components of the expected loss calculation (i.e. EI, PE, LGE) instead of just the product EL. Based on this information supervisors calculate EL and then adjust for unexpected loss through the gamma term to achieve the desired soundness standard.

Source: Adapted from Basel Committee on Banking Supervision (2001b), p. 8.

In 2016, the Basel Committee proposed to reorganise the method of assessing operational risk (BCBS, 2016b) by introducing one single risk-sensitive standardised measurement approach (SMA) for all banks to replace all standardised approaches and the AMA. After receiving extensive criticism, the Committee published a final formula in 2017 (BCBS, 2017), but the industry currently lacks clarity and the final implementation was postponed initially to 2022 and then, due to the Covid pandemic, to 2023 (BCBS, 2020d).

12.9 International risk assessment

Banks engaged in international activities face a plethora of risks, in addition to the ones already discussed, including among others foreign currency risk, regulatory risk, strategic and reputation risk. These risks are not mutually exclusive and any product or service provided either domestically or internationally may expose the bank to multiple risks. For banks either contemplating an international investment or those already with substantial overseas operations the risks associated with operating in a foreign country need to be evaluated. Put simply, firms that operate internationally have to evaluate the country risk associated with their investments and/or overseas operations.

Country risk is the risk that economic, social and political conditions and events in a foreign country will adversely affect a firm's commercial/financial interests. In addition to the adverse effect that deteriorating macroeconomic conditions and political and social instability may have on the returns generated from an overseas investment, country risk also includes the possibility of nationalisation or expropriation of assets, governments revoking licences, imposition of exchange controls, and the likelihood of currency depreciation or devaluation.

Country risk can have a critical effect on a firm's international activities and therefore needs to be explicitly taken into account in the risk assessment of all overseas investments/activities. Even the risk associated with what are perceived to be the most stable (or safe) investments will increase if, for instance, the political or macroeconomic conditions change and cause the exchange rate to depreciate resulting in lower cash flows (and therefore profits) from overseas investments. Country risk is also not necessarily limited to a firm's exposure to overseas operations. A firm may have commercial relationships in its home country with a foreign firm that may be subject to such risks. For instance, country risk factors should also be taken into account, when assessing the creditworthiness of domestic trade creditors. One should also be aware that country risk factors are critically important for all types of international firms, non-financial and financial. Borrowers in higher-risk countries pay higher premiums for their debt compared with those located in lower-risk countries.

In banking, country risk is regarded as the exposure to a loss in cross-border lending, caused by events in a particular country that are (at least to some extent) under the control of the government but are not under the control of a private enterprise or individual. This contrasts with what is known as sovereign risk, which relates to the risk associated with a government default on bond or loan repayments. A broader definition of country risk relates to any loss associated with international activity due to adverse changes in the overseas operating environment beyond the control of the firm. Transfer risk is another form of risk that is believed to be one of the most important drivers of country risk. This is simply the risk associated with the restriction of foreign payments from overseas to the home company or bank. Transfer risk refers to restrictions on payments between private agents whereas

sovereign risk is associated with a government default on payments. In reality, sovereign and transfer risks are closely related as a government default on payments may lead private parties to renege on their payment obligations – especially if the government default leads to a major depreciation or crisis scenario.

12.9.1 Managing country risk

In order to effectively control the level of risk associated with their international operations, firms must have in place a procedure that systematically evaluates the country risk features of its business. This includes having in place a country risk evaluation process that has:

- effective oversight by senior managers;
- appropriate risk management policies and procedures;
- an accurate system for reporting change in country risk and potential exposures;
- an effective process for analysing country risk;
- a country risk-rating system;
- regular monitoring of country conditions.

While the details and complexity of country risk assessment will vary from bank to bank, senior management must be suitably qualified to evaluate the bank's international activities.

If country risk is to be managed effectively then senior bank managers, up to board level, must oversee the process. It is likely that a team of senior project appraisers will review the bank's international operations in order to ensure that they are consistent with the company's major strategic objectives. Decisions to extend international operations and exposure to different countries' risk will ultimately be a decision for the company board, as they should have a view of the sorts of country exposure required and it is up to the board to make sure that country risk (as well as other risks) is effectively managed.

It is the responsibility of senior bank management to implement policies and procedures for managing country risk. This involves:

- identifying investments and other activities exposed to country risk;
- identifying desirable and undesirable opportunities that can be used to complement or be substituted for current operations resulting in a reduction of country risk;
- establishing country risk limits if necessary;
- identifying clear lines of responsibility and accountability for country risk management decisions.

Senior management are ultimately responsible for country risk management policies, standards and practices and also need to make sure that these are communicated effectively to relevant parts of the organisation.

In order to effectively manage country risk, banks need to have reliable systems for capturing and categorising the volume and nature of their foreign activities. Such a reporting system should cover all aspects of the company's international operations. Banks, for example, have to have country exposure reporting systems to support regulatory reporting of foreign exposures requirements.

The level of resources dedicated to the country risk analysis process will vary from bank to bank, depending on the size and sophistication of the company's international activities.

In order to construct an effective country risk evaluation process senior managers need to ask the following questions:

- Is there a quantitative and qualitative assessment of the risk associated with each country in which the firm is conducting or planning to undertake activities?
- Is any formal country risk analysis undertaken on a regular basis and are changes in country risk monitored in any way?
- Is the country risk analysis adequately documented, with the findings communicated to the relevant parties?
- Are adequate resources devoted to country risk evaluation procedures?
- Do the company's country risk assessments concur with the risk ratings of third-party assessors, such as rating agencies?

If the answers to these questions are in the affirmative then the bank is well placed to use the results of its country risk analysis effectively in strategic and operational decision making. In order to arrive at a conclusion about the level of country risk faced by a bank, managers need to evaluate the current (and possible future) economic, political and social characteristics of a country. For this they are likely to use some form of country risk-rating system.

12.9.2 Country risk rating

Country risk ratings simply summarise the main findings of the country risk analysis process. While large firms and banks are likely to have teams evaluating country risk, smaller firms are more likely to rely heavily on the country risk assessments done by specialist third-party firms. Because there is a wide range of factors that can affect country risk, it is often difficult for smaller firms to dedicate the relevant resources to assess somewhat complex issues. Macroeconomic and political environments can change rapidly and it is often difficult to keep abreast of these developments, especially if one is considering or monitoring projects in a number of countries. Box 12.9 provides a broad indication of the various factors that affect country risk.

One can see from Box 12.9 that there is a whole host of factors that affect a country's risk rating including various economic, financial and socio-political risks, as well as those risks that may be relevant to the specific bank or firm in question. In quantifying the broad economic/financial and socio-political risks, companies can do their own risk evaluation but can also cross-check these with a variety of ratings calculated by third-party firms. There are many firms that provide services that measure country risk and among the main providers there are also private companies that sell their country risk ratings via the web. Examples include International Country Risk Guide (ICRG), OECD, Fitch, Moody's Investor Services and Standard & Poor's Rating Group. Apart from the OECD, all act as 'rating agencies' and sell their country risk ratings via the web or through other media.

Each of these firms produce risk ratings using a variety of qualitative and quantitative information so as to construct a single index or country risk-rating schedule. For example, International Country Risk Guide (ICRG) compiles monthly data on a variety of political, financial and economic risk factors to calculate risk indices in each of these categories as well as a composite risk index. Five financial, thirteen political and six economic factors are used. Each factor is assigned a numerical rating within a specified range. In the case of ICRG country risk weightings, political risk assessment scores are based on subjective staff analysis

BOX 12.9 FACTORS AFFECTING COUNTRY RISK

Macroeconomic factors

- Size and structure of the country's external debt in relation to its economy.
- Level of international reserves.
- Potential for extreme adverse exchange rate movements and the effect on the relative price of the country's imports and exports.
- GDP growth and inflation levels, current and forecast.
- Role of foreign sources of capital in meeting the country's financing needs.
- Country's access to international financial markets and the potential effects of a loss of market liquidity.
- Country's relationships with private sector creditors.
- The country's current standing with multilateral and official creditors such as the IMF.
- Trends in foreign investments and the country's ability to obtain foreign investment in the future.
- Privatisation of government-owned entities.
- The extent to which the economy of the country may be adversely affected through the contagion of problems in other countries.
- The size and condition of the country's banking and financial system.
- The extent to which state-directed lending or other government intervention may have adversely affected the soundness of the country's financial system and economy.

Socio-political factors

- The country's natural and human resource potential.
- The willingness and ability of the government to recognise economic or budgetary problems and implement appropriate remedial action.
- Extent to which political or regional factionalism or armed conflicts are adversely affecting government of the country.
- Any trends toward government-imposed price, interest rate, or exchange controls.
- Extent to which the legal system of the country can be relied upon to fairly protect the interests of foreign creditors and investors.
- Accounting standards and the reliability and transparency of financial information.
- The level of adherence to international legal and business practice standards.
- Level of corruption.
- Level of corporate social responsibility.
- Sustainability performance.

Institution-specific factors

- The bank's business strategy and its plans for investment in the country.

BOX 12.9 Factors affecting country risk (*continued*)

- Types of investments, FDI or portfolio investments, joint ventures, licensing agreements and so on.
- Economic outlook for any specifically targeted business opened within the country.
- Extent to which political or economic developments are likely to affect the bank's chosen lines of business.
- The degree to which political or economic developments are likely to affect the credit risk of individual counterparties in the country. For instance, foreign firms with strong export markets in developed countries may have significantly less exposure to the local country's economic disruptions than do other firms operating in the country.
- The institution's ability to effectively manage its country risk through in-country or regional representation, or by some other arrangement that ensures the timely reporting of, and response to, any problems.

of available information. Economic risk assessment scores are based upon objective analysis of quantitative data, and financial risk assessment scores are based upon analysis of a mix of quantitative and qualitative information.

Of the non-commercial country risk ratings, those provided on a regular basis by the OECD are widely used and often these will be cross-checked against a firm's own internal risk assessment and those of a private third-party provider. How the OECD calculates its country risk ratings is outlined in Box 12.10 and Table 12.5 reports its country risk ratings at October 2020.

BOX 12.10 OECD COUNTRY RISK-WEIGHTING CALCULATIONS

The OECD produces a regular country credit risk assessment that classifies countries into eight risk categories (1 to 7), with 7 being the most risky.

The Country Risk Classification Method measures the country credit risk, i.e. the likelihood that a country will service its external debt.

The classification of countries is achieved through the application of a methodology comprised of two basic components: (1) the Country Risk Assessment Model (CRAM), which produces a quantitative assessment of country credit risk, based on three groups of risk indicators (the payment experience of the participants, the financial situation and the economic situation) and (2) the qualitative assessment of the model results, considered country-by-country to integrate political risk and/or other risk factors not taken (fully) into account by the model. The details of the CRAM are confidential and not published.

The final classification, based only on valid country risk elements, is a consensus decision of the sub-group of country risk experts that involves the country risk experts of the participating export credit agencies. The sub-group of country risk experts meets several times a year. These meetings are organised in such a way as to guarantee that every country is reviewed whenever a fundamental change is observed and at least once a year. While the meetings are confidential and no official reports of the deliberations are made, the list of country risk classifications is published after each meeting.

Source: **www.oecd.org**.

Table 12.5 Example of OECD country risk classification of the participants to the arrangement on officially supported export credits (as of 16 October 2020)

Country code	Country name	Previous	Current prevailing
ALB	Albania	5	5
DZA	Algeria	5	5
AGO	Angola	6	6
ARG	Argentina	7	7
ARM	Armenia	6	6
AZE	Azerbaijan	5	5
BHR	Bahrain	5	5
BGD	Bangladesh	5	5
BLR	Belarus	6	6
BOL	Bolivia	5	5
BIH	Bosnia and Herzegovina	7	7
BWA	Botswana	3	3
BRA	Brazil	5	5
BGR	Bulgaria	3	3

Source: Adapted from **www.oecd.org/tad/xcred/cre-crc-current-english.pdf**

One emerging aspect in this context relates to a country's **sustainability performance**. The increasing concern about the environment and the need to take long-term views also in finance are becoming key elements in assessing country risk. Some private firms offer country sustainability rankings, based on a variety of ESG factors. For example, Robeco, an asset management company, publishes a list based on factors that are long term in nature, such as aging, corruption, institutions and environmental risk. The list, accessed in October 2020, shows that the top four countries are in Scandinavia, with Sweden first, followed by Finland, Norway and Denmark (**www.robeco.com**).

While banks have a wide range of resources at their disposal to evaluate country risk they also have to ensure that this risk is monitored on an ongoing basis as country circumstances can change rapidly. International banks therefore should have a system in place to monitor current conditions in each of the countries where they have significant operations and also reconcile their risk assessments with those provided by other parties (such as the rating scores provided by the firms listed in the previous section). The quantity of resources devoted to monitoring conditions within a country should, of course, be proportionate to the firm's level of overseas activity and the perceived level of risk. Information provided by senior managers in the foreign country is a valuable resource for monitoring country conditions, as are regular reports by regional or country managers. There also needs to be regular contact between parent senior management and those responsible for the operations in the foreign market. All banks conducting international business should not rely solely on informal and ad hoc lines of communication, and established procedures should be in place for dealing with operations that are faced with troubled overseas environments. Also, various contingency plans should be put in place for dealing with problems associated with increases in country risk; if necessary this should include various exit strategies.

It should also be stressed that international banks must have adequate internal controls in place so that there is a reporting mechanism ensuring the integrity of the information used by senior management to monitor country risk positions and to comply with any pre-determined country risk exposure limits.

12.10 Conclusion

This chapter reviewed various aspects of bank risk management. The basic principles of bank management, including asset and liability management, were reviewed in Chapter 10, whereas Chapter 11 analysed the main banking risks. This chapter introduced the general concepts of bank risk management included an extensive discussion of the growing importance of banks' corporate governance frameworks in setting the standards of good practice and the risk culture within banking organisations. The chapter then considered the management of specific banking risks, focusing particularly on the banking risk included in the calculation of regulatory capital in the most recent Basel documents (credit risk, market risk and operational risk) and the management of the 'traditional' ALM function (interest rate risk and liquidity risk). Finally, given the growing importance of international banking activities, we outlined the main features relating to the management of country risk. Risk management is a complex and comprehensive process, which includes creating an appropriate environment, maintaining an efficient risk measurement structure, monitoring and mitigating risk-taking activities and establishing an adequate culture framework of internal controls. Banks will increasingly need to adopt more formal and quantitative risk measurement and risk management procedures and processes. Last, but certainly not least, recent developments suggest that they will also need to incorporate non-traditional risks, such as those derived from climate change, in their future strategies and risk management frameworks to ensure stability.

Key terms

Backtesting
Basel framework
Corporate governance
Credit checking
Credit rationing
Credit reference agencies
Credit scoring
Digital footprint
Duration analysis
Expected shortfall (ES)
Gap analysis
Loan rate
Migration risk
Mortgage equity withdrawal
Negative equity
Risk culture
Risk management
Risk measurement
Risk-adjusted return on capital (RAROC)
Sustainability performance
Tail risk
Value-at-risk (VaR)

Key reading

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REVISION QUESTIONS AND PROBLEMS

12.1 What do you understand by 'risk culture'?

12.2 Why is corporate governance in banks more complicated than for other types of firms?

12.3 What is the bonus cap and why is it controversial?

12.4 What is described as 'sound practice' in the management of credit risk?

12.5 Explain the process of credit scoring and describe its main applications.

12.6 What are the main limitations of the GAP approach?

12.7 Why should prudent banks seek to minimise their volatility ratio?

12.8 What are the main techniques used to manage a bank's liquidity exposure?

12.9 What is VaR? What are the limitations of VaR and why is ES a better measure?

12.10 What are the difficulties inherent in the measurement and management of operational risk?

12.11 What are the main factors affecting country risk?

12.12 Should banks integrate environmental and social risks in their business models and risk management? Discuss.

PART 4

Comparative banking markets

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Chapter 13

Banking in the UK

Learning objectives

- To understand the main structural features of the UK banking market
- To identify the main trends in the recent performance of UK banks
- To discuss the implications of increased concentration on competition in the UK banking sector
- To understand how the financial crisis has impacted on UK banks
- To understand the characteristics of the UK payment system
- To describe the regulatory changes that have impacted the UK banking sector pre- and post-financial crisis

13.1 Introduction

UK banking was badly hit by the 2007 global financial crisis. What was once a profitable, innovative and dynamic industry virtually collapsed, exposing a series of weaknesses that increased the severity of the crisis and its impact on the real economy. The **Turner Review** (2009) identified five key issues that played a crucial role in the downfall of UK banking. A first reason is the rapid growth of the financial sector, particularly in terms of the relative size of wholesale financial services within the overall economy. The increasing size of the financial sector went hand in hand with an increase in leverage (asset to capital) and in the complexity of the financial system (for example, the growth in securitised credit and shadow banking; these are discussed in detail in Chapter 18). In addition, the growing scale of banking (particularly of investment banking activities) was accompanied by changing forms of maturity transformation, which lead to an underestimation of risk, compounded by the reliance on sophisticated risk management techniques (such as value-at-risk, or VaR). It is a commonly held opinion that the very complexity of the mathematical models used to assess and manage risk made it difficult for bank management to fully understand the risks banks were taking. Finally, the use of such models to guide management decisions and trading strategies created very strong interconnections, which amplified the impact of the downturn. As a leading financial centre, the UK was greatly exposed to these factors, which played a crucial role in reinforcing the severity of the financial crisis.

The events of 2007–2009 also revealed the weaknesses of the existing regulatory system and set the agenda for regulatory reform. Banking sector reforms are the second step in the UK government's programme for reform. The first step was the reform of financial services regulation, which culminated with the 2012 **Financial Services Act**. The 2012 Act abolished the existing financial regulator, the Financial Services Authority, and created three new regulatory bodies: the Financial Policy Committee (FPC), the Prudential Regulatory Authority (PRA) and the Financial Conduct Authority (FCA). Two of the three new bodies, the FPC and the PRA, are subsidiaries of the Bank of England, while the FCA is a separate body responsible for business, consumer protection and market conduct. The UK Government also moved to reform the structure of the UK banking system, through the **Financial Services (Banking Reform) Act (2013)**. The Act was largely based on the recommendations of the **Independent Commission on Banking (ICB)**, which reported in September 2011 (also known as the **Vickers Report**). UK banking groups with assets of more than £25 billion had to 'ring fence' (legally separate) their wholesale and investment banking activities from retail deposit taking business. Banks started complying with these structural reform requirements from 1 January 2019. It should also be remembered that over the last decade UK legislation has also been significantly influenced by European laws that set minimum requirements for the regulation of banks in the European Economic Area. Probably the most important are Regulation (EU) 575/2013 on the prudential regulation of banks and investment firms (known as the Capital Requirements Regulation, CRR) and the Capital Requirement Directive IV of 2013 (updated substantially in late 2016), which implements Basel III capital requirements. The Basel III rules will be implemented in 2023 and phased in over five years.

It is quite uncertain how the regulatory environment will evolve for the UK financial system. The consequences of the Brexit 'Yes' vote of June 2016 have still to feed through into the system. The UK government commenced official negotiations with the EU in March 2017 on the terms of the Brexit arrangements, although at the time of writing (May 2021) no trade agreement have yet been made regarding UK banks' free access to the EU financial services market. There have been indications that the government will choose to hold on to an extensive body of existing EU-derived law and regulation already in the UK statute book – only time will tell if this is the case.

In this context of fast-paced changes, this chapter aims to offer an overview of the UK banking industry, including an analysis of the 2007–2009 financial crisis and how it unravelled in the UK (Section 13.2). We then move on to discuss the key regulatory changes and examine their potential impact on UK banking in Section 13.3. Section 13.4 reviews the financial structure of UK banks with a particular focus on the major British banking groups (MBBGs)[1]. The performance of UK banks is analysed in Section 13.5, while Section 13.6 illustrates the main characteristics of the UK payment system. Section 13.7 discusses the competitive conditions in UK banking and Section 13.8 concludes the chapter.

13.2 The crisis in UK banking

The financial turmoil that hit several countries since mid-2007 impacted severely on the UK's banking sector. This section highlights the key crisis events that unfurled between mid-2007 and mid-2009.[2]

[1] The definition MBBGs is now rarely used, but it used to define the five big banks (HSBC, Barclays, Lloyds Banking Group, NatWest Group and Spanish-owned Santander UK) which dominate the retail and commercial banking landscape.

[2] A detailed account of the crisis in UK banking can be found in Goddard *et al.* (2009a) 'Crisis in UK banking: Lessons for public policy', *Public Money and Management*, 29, 276–284. Parts of this section are based on their analysis.

BOX 13.1 THE FAILURE AND RESOLUTION OF NORTHERN ROCK

The failure of Northern Rock

Northern Rock was originally a building society based in Newcastle upon Tyne, in the North of England. It was formed in 1965 following the merger of the Northern Counties Permanent Building Society and the Rock Building Society and operated mainly in the North of England. In 1997, Northern Rock (and a number of other large building societies) converted to bank status, following the process of **demutualisation**, which led to a shift of assets from the mutual to commercial banking sector (see Appendix 13.1). In the ten years between 1997 and 2007, the bank's business plan was extremely ambitious and involved a dramatic change of focus from a traditional mortgage lender to a bank pursuing an aggressive expansion in the retail mortgage market, funded via short-term money market funding and securitisation (see Figure 13.1). Northern Rock grew rapidly in the early 2000s, roughly trebling its share of the UK mortgage market. In 1999 Northern Rock accounted for 3.6 per cent (gross) and 6 per cent (net) of UK mortgage lending; at the onset of the crisis in 2007, these shares had increased to 9.7 per cent (gross) and 18.9 per cent (net) respectively (Bank of England, 2007).

Northern Rock's rapid lending growth and funding concentration came at the cost of its lending spreads, both in absolute terms and compared to other lenders. It was nonetheless considered a well-capitalised bank with a good quality mortgage book. Both Standard & Poor's (in August 2006) and Moody's (in April 2007) increased its debt rating by one notch. Market perceptions of its risk (measured by its CDS spreads) were also stable and in early 2007 Northern Rock was able to raise £10.7 billion through its principal securitisation programme, Granite, and it completed three covered bond (where the mortgage loans remain on the balance

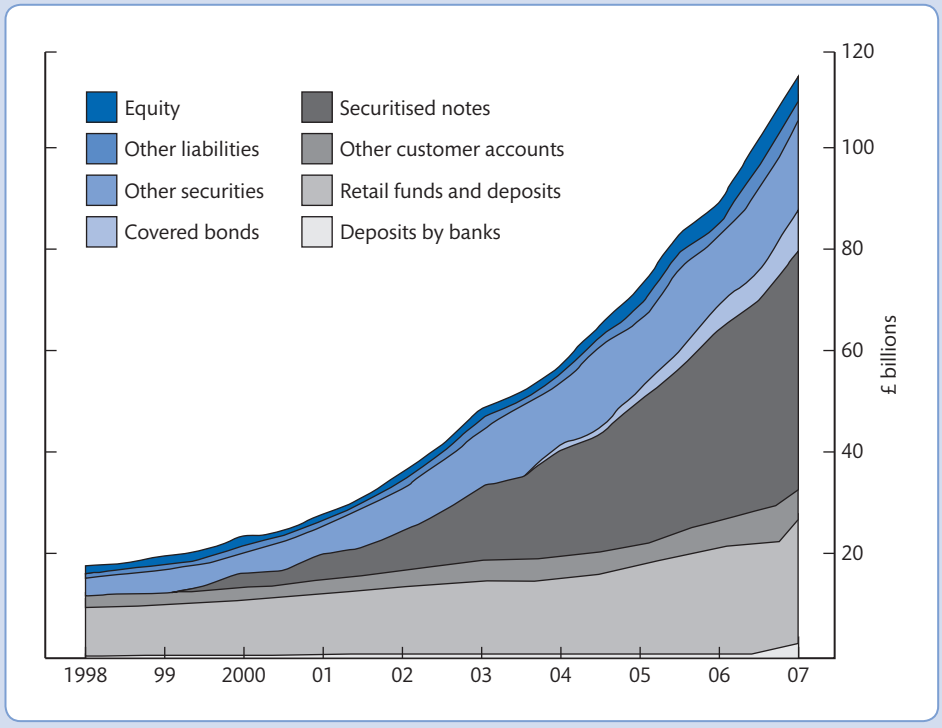


Figure 13.1 Northern Rock balance sheet growth and liability structure, June 1998–June 2007

Source: Bank of England (2007a), figures from Northern Rock Interim and Annual Reports.

Box 13.1 The failure and resolution of Northern Rock (*continued*)

sheet) issues totalling £2.2 billion. In 2007, Northern Rock's securitisations accounted for over 17 per cent of all RMBS issuance by UK-based issuers (Bank of England, 2007a). However, while Northern Rock's credit spread remained stable, its share price had been under pressure from early 2007. As the conditions in worldwide credit and money markets began to deteriorate, Northern Rock's CDS spread began to rise, while its share prices decreased further. Liquidity became a problem due to the need to constantly roll over its maturing short-term debt. By mid-September 2007, it had become apparent that Northern Rock's vulnerability was increasing and it could no longer access longer-term funding markets. At that time Northern Rock sought an assurance of liquidity support from the Bank of England. On 14 September 2007, Northern Rock issued a warning about its profits and on the same day the Tripartite (the Bank of England, the UK Treasury and the Financial Services Authority) issued a joint statement that they would provide liquidity support to Northern Rock. While the announcement should have been positive news, it confirmed the public's worse fears and triggered a run on the bank.

The UK government's response included an extension of the deposit guarantee scheme to all deposits at Northern Rock. However, the unfolding of the crisis limited the government's options: on 17 February 2008 attempts to find a private sector buyer for Northern Rock came to an end and on 22 February 2008 the UK government announced a full-scale nationalisation.

From nationalisation to sale

At the time of the nationalisation, Northern Rock had assets of just over £100 billion, government guarantees covering customer deposits and an outstanding emergency loan from the government of over £25 billion. In public ownership, the bank was expected to run down its mortgage assets to repay the emergency loan and the deposit guarantees would be removed by the end of 2011. It was also expected that Northern Rock would then enter a period of growth, followed by a return of the business to the private sector. However, following higher than expected losses, the government decided to review its options and split Northern Rock into two businesses: *Northern Rock plc*, a bank that could be returned to private sector ownership, and *Northern Rock Asset Management* (NRAM), to be retained in public ownership and eventually wound down. On 1 January 2010, the existing £21 billion of retail deposits, matched by £10 billion of the best-performing mortgages and £11 billion of cash, were transferred to Northern Rock plc. In 2010, oversight of the new companies transferred to **UK Financial Investments Ltd (UKFI)**.[3] Performance while in public ownership was below expectations – Northern Rock plc fell short of its lending targets both in 2010 and 2011 and incurred higher than expected losses. In 2011, UKFI reviewed all the options and a sale at the earliest opportunity appeared to be the best available option to minimise losses. Finally, at the end of 2011, the Treasury sold Northern Rock plc to Virgin Money (for between £863 million and £977 million, depending on the size and timing of future payments agreed as part of the sale). The sale was announced in November 2011 and finalised in January 2012. Figure 13.2 summarises the process of creation and sale of Northern Rock plc.

A 2012 report by the National Audit Office and HM Treasury (National Audit Office, 2012) concluded that, despite the fact that the sale resulted in a further loss to the taxpayer of £232 million, delaying the sale or considering other options would have incurred significant uncertainty and therefore concluded that the sale was justified.

[3] UKFI is a Treasury-owned company responsible for the management of the Treasury's interests in the financial institutions supported directly by the taxpayer.

Box 13.1 The failure and resolution of Northern Rock (*continued*)

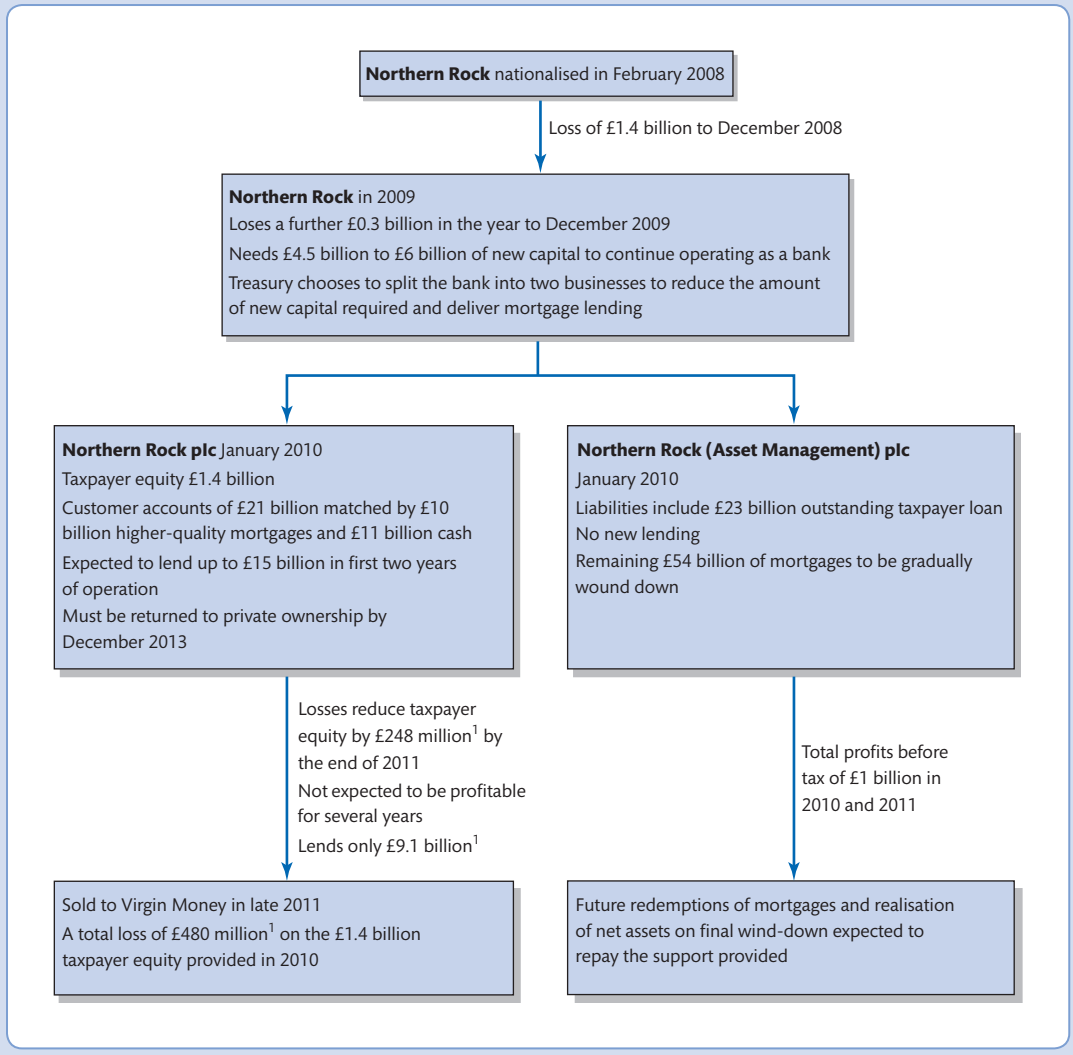


Figure 13.2 Northern Rock: from nationalisation to sale

Source: National Audit Office (2012).
Note: Latest available estimates of Northern Rock plc's lending, 2011 book values and the midpoint loss on the sale.

The US sub-prime crisis that started in the summer of 2007 raised international concerns about banks' exposure to real estate lending and about the value of asset-backed securities (see Chapter 15 on the crisis in US banking). All banks with significant real estate exposure came under scrutiny by analysts, depositors and investors. These concerns spread rapidly from the US to other banking markets. In the UK the first casualty of the crisis was Northern Rock in early September 2007 (see Box 13.1). The underlying causes of the failure of Northern Rock include over-aggressive growth in mortgage lending, and over-dependence on short-term wholesale funding. In September 2007, Northern Rock faced the first run on

a UK bank for over a century. To stem depositor panic, the UK government announced a full guarantee of depositors' savings.

Following the Northern Rock episode, worries about the possibility of a major slowdown in the UK economy led the Bank of England to implement a base rate cut in December 2007; this was the first of series of cuts that saw the base rate reduced to a historically unprecedented 0.5 per cent by March 2009.

In an attempt to inject more liquidity into a floundering UK banking system, in April 2008 the Bank of England also introduced a Special Liquidity Scheme (SLS) to allow banks to swap temporarily high-quality, illiquid mortgage-backed and other securities for Treasury Bills. The Scheme was intended as a temporary measure, to give banks time to strengthen their balance sheets and diversify their funding sources, although it remained in place for almost four years and was officially closed on 30 January 2012.

While the monetary authorities continued with their efforts to inject liquidity into the banking system, the potential for write-offs of non-performing assets to erode the capitalisation of the UK's largest banks was a growing concern. Over the next few months, several UK banks announced plans to raise new capital, although these were not always successful. For example, in July 2008 Barclays announced that only 18 per cent of the shares in a £4.5 billion rights issue had been taken up, with the rest acquired by an investment group including the Qatar Investment Authority. In July 2008 HBOS attempted to raise £4 billion through a rights issue, but only 8 per cent was taken up, the remainder reverting to the underwriters. The inability of UK banks to convince their shareholders to invest in rights issues provided a clear signal that further serious difficulties lay ahead.

Indeed the worst was still to come and global financial markets experienced the most momentous events in over a century in September 2008, which became known as '*meltdown month*': two major US government-sponsored organisations, Fannie Mae and Freddie Mac, were placed in 'conservatorship' (effective government ownership); and Lehman Brothers, the fourth-largest US investment bank, filed for bankruptcy. The Lehman collapse triggered a spectacular sequence of events that brought the global financial system to the brink of collapse, including the failure of AIG (the largest US insurance firm) and Washington Mutual (the largest US savings and loan institution) as well as various bank bailouts in Europe (Fortis, Dexia, Hypo Real Estate and Commerzbank among others – see Chapter 14 for a discussion of the crisis in EU banking and Chapter 15 for a discussion of the crisis events in the US).

In the UK, Lloyds TSB announced its acquisition of the troubled HBOS for £12 billion (at the behest of the government). And at the end of September 2008, the UK government announced that it was acquiring the mortgage-lending arm of Bradford & Bingley, and selling the still-viable depositor base and branch network to the Spanish Santander Banking Group. On the 13 October 2008, capital injections were announced for RBS (£20 billion), and Lloyds TSB and HBOS (£17 billion combined), increasing the government stakes in their ownership to around 60 per cent and 40 per cent, respectively. In return for government capital injections, the UK banks were required to make commitments to lend at competitive rates to homeowners and small businesses, reschedule mortgage payments for homeowners facing difficulties and exercise restraint over executive compensation. Meanwhile Barclays announced that it planned to raise £6.5 billion by private means, avoiding the need for partial nationalisation. On 3 November 2008, the UK government set up a new 'arm's-length' company, UK Financial Investments Ltd (UKFI), to manage the banks in public ownership, including RBS, Lloyds, Northern Rock and Bradford & Bingley (see Box 13.1). (On 31 March

2018, UKFI ceased trading and its activities were moved to UK Government Investments; by then the government still owned 71 per cent of RBS.)

On 21 February 2009 the **Banking Act** established a permanent **Special Resolution Regime (SRR)**, providing the authorities with tools to deal with banks facing financial difficulties. Details of the **Special Liquidity Scheme (SLS)**, the **Credit Guarantee Scheme (CGS)** and the **Asset Protection Scheme (APS)** were unveiled shortly afterwards. The first failure of a UK bank in 2009 occurred on 30 March, when the Treasury announced its acquisition of around £1.5 billion of non-performing mortgages and commercial property loans from Dunfermline Building Society. The rest of the Dunfermline's loans portfolio, and its deposits and branch network, were taken over by Nationwide Building Society.

Table 13.1 summarises the main actions of the UK Treasury to support the banks. The list excludes loans and commitments to other countries and interventions to support the wider economy (for example, the Bank of England's quantitative easing). It is possible to distinguish the support given to banks into (i) provision of cash (for example, loans to the Financial Services Compensation Scheme, loans to insolvent banks and the recapitalisation of RBS and Lloyds Banking Group) and (ii) the provision of guarantees and other non-cash support (for example, the CGS, the SLS and the APS).

Table 13.1 Government support to UK banks, 2007–2012

Intervention type	Intervention	Purpose
Cash outlay	Recapitalisation	Recapitalisation of Lloyds Banking Group (Lloyds) and Royal Bank of Scotland (RBS) to avoid bank failure. This was achieved through a series of transactions, eventually acquiring 83 per cent of RBS and 41 per cent of Lloyds.
	Lending through the Financial Services Compensation Scheme	To guarantee customer deposits of up to £50,000.
	Direct lending to insolvent banks	Lending directly to insolvent banks so they could repay customer deposits of over £50,000. Banks that benefited include London Scottish Bank and Dunfermline Building Society, and the Icelandic banks with UK depositors (Heritable, Kaupthing, Singer and Friedlander, and Landsbanki).
	Nationalisation	Nationalisation of Northern Rock and Bradford & Bingley to protect their depositors and facilitate the orderly unwinding of their obligations and the Treasury's guarantees.
Guarantee commitments	Special Liquidity Scheme	The scheme (April 2008 to January 2012) aimed to increase the liquidity of UK banks. It was a BoE scheme, supported by a Treasury guarantee, under which banks swapped assets for more liquid Treasury Bills in return for a fee.
	Credit Guarantee Scheme	The scheme (October 2008 to October 2012), to help restore investor confidence in bank wholesale funding by providing short-term liquidity by guaranteeing certain unsecured debts in return for a fee.
	Asset Protection Scheme	The scheme (January 2009 to October 2012) was designed to protect assets on banks' balance sheets. The scheme originally involved two banks, RBS and Lloyds, but in the end only RBS joined as Lloyds Banking Group paid £2.5 billion to exit the scheme in November 2009 and instead raised additional capital from shareholders. The scheme was only a partial success in terms of encouraging lending.

Source: Adapted from the National Audit Office, Taxpayers support for UK banks, **www.nao.org.uk**

One can see that a lot has happened since the onset of the crisis in mid-2007 and while the implications of these dramatic changes are just becoming apparent, it is clear is that the current UK bank system is remarkably different to the one that existed just a decade ago. By the end of 2009 two of the country's largest banks, Royal Bank of Scotland (see Box 13.2) and Lloyds Group, were in state majority ownership while Northern Rock and Bradford & Bingley were nationalised. Even those banks not under state ownership have benefited directly or indirectly from the massive capital and liquidity provision granted by the government via the Bank of England.

BOX 13.2 WHY DID RBS FAIL?

In October 2008, the Royal Bank of Scotland (RBS) in effect failed and was part nationalised. From 7 October, it relied on the Bank of England Emergency Liquidity Assistance (ELA) to fund itself; and on 13 October, the government announced that it would provide up to £20bn of new equity to recapitalise RBS. Subsequent increases in government capital injections amounted to £25.5bn. RBS's failure thus imposed significant direct costs on British taxpayers. In addition, the failure played an important role within an overall financial crisis which produced a major recession.

In March 2009, the FSA's Enforcement Division initiated enquiries into a number of firms which had in effect failed during 2007 to 2008. While the results of these investigations were not disclosed to the public, the FSA also produced a comprehensive report into the causes of RBS's failure, with the additional aim to identify and report on any key deficiencies in the FSA's own regulation and supervision of RBS in the years running up to failure.

The results of the FSA report can be summarised as follows:

Why did RBS fail? Poor management decisions, deficient regulation and a flawed supervisory approach.

The FSA (2011a) report concludes that failure of RBS can be explained by a combination of six key factors:

1. **Capitalisation.** Significant weaknesses in RBS's capital position, as a result of management decisions and permitted by an inadequate regulatory capital framework.
2. **Liquidity.** Over-reliance on risky short-term wholesale funding.
3. **Asset quality.** Concerns and uncertainties about RBS's underlying asset quality, which in turn was subject to little fundamental analysis by the FSA.
4. **Trading activities.** Substantial losses in credit trading activities, which eroded market confidence. Both RBS's strategy and the FSA's supervisory approach underestimated how bad losses associated with structured credit might be.
5. **The ABN AMRO acquisition.** RBS proceeded with the acquisition without appropriate heed to the risks involved and with inadequate due diligence.
6. **Systemic risk.** An overall systemic crisis in which the banks in worse relative positions were extremely vulnerable to failure. RBS was one such bank.

Capitalisation

The immediate cause of RBS's failure was a liquidity run. But concerns about the bank's capital adequacy (as well as about capital adequacy across the banking system) were crucial to its failure. It is now apparent that the global regulatory capital framework in place before the crisis was severely deficient, and the reforms introduced by Basel II added major complexity without addressing the fundamental problem of inadequate capital across entire banking systems. However, even in the context of that capital regime, RBS chose to be lightly capitalised relative to its peers and made considerable use of lower-quality forms of capital (see Figure 13.3). In addition, the acquisition of ABN AMRO further weakened its capital position.

BOX 13.2 Why did RBS fail? (*continued*)

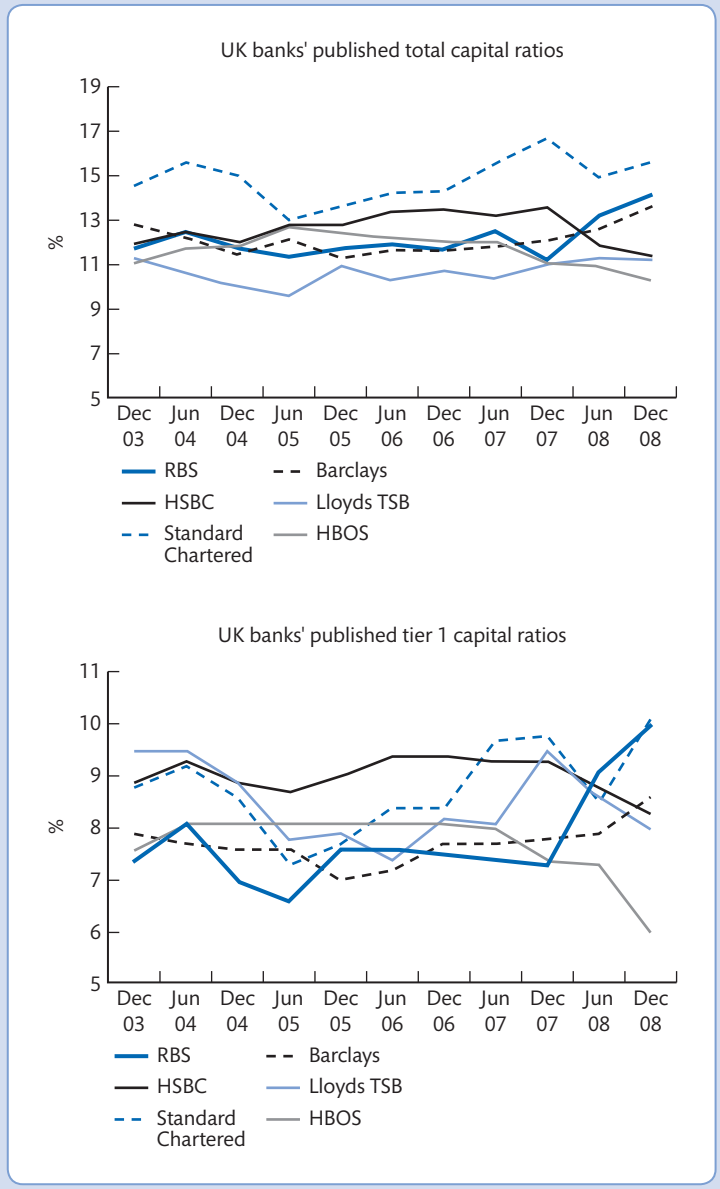


Figure 13.3 RBS capitalisation

Source: Financial Services Authority (2011a), available at **www.fsa.gov.uk/pubs/other/rbs.pdf**

As an example, the FSA Review Team estimated that, if the Basel III definitions of capital had been in place before the crisis, RBS would have recorded a common equity tier 1 ratio at end-2007 of around 2% (instead of the new minimum standard of 4.5% and the higher standard of 9.5% that the Financial Stability Board and the Basel Committee have agreed for Systemically Important Banks (see Section 7.11 for

BOX 13.2 Why did RBS fail? (*continued*)

a discussion of Basel III)). In this instance, it is evident that RBS's capital position before the crisis was grossly inadequate.

Liquidity

RBS entered the crisis with extensive reliance on wholesale funding. Its short-term wholesale funding gap was one of the largest in its peer group, and it was more reliant on overnight funding and unsecured funding than most of its peers. The acquisition of ABN AMRO increased its reliance on short-term wholesale funding.

Again, as an example, if the Basel III Liquidity Coverage Ratio (LCR) had been in place, the FSA Review Team estimated that RBS's liquidity position at end-August 2008 would have translated to an LCR (as currently calibrated) of between 18% and 32%, versus a future standard requirement of 100%.

Asset quality

In addition, RBS's balance sheet and leverage increased rapidly in the years leading up to the financial crisis, in a period of fast growth in credit extension and leverage across the banking sector. While RBS's investment banking division, Global Banking and Markets, was the most rapidly growing area, RBS's loan portfolio in its other divisions also expanded. Significant loan losses were subsequently incurred in many areas of business, with a particular concentration in commercial property. Indeed, impairments incurred on loans and advances eventually amounted to £32.5bn over the period 2007–2010, significantly exceeding the £17.7bn of losses on credit trading activities.

Trading activities

By early 2007, RBS had accumulated significant exposures containing credit risk in its trading portfolio, following its strategic decision in mid-2006 to expand its structured credit business aggressively. The acquisition of ABN AMRO increased RBS's exposure to such assets just as credit trading activities were becoming less attractive. This increased the firm's vulnerability to market concerns.

The ABN AMRO acquisition

The acquisition of ABN AMRO by a consortium led by RBS greatly increased RBS's vulnerability. The decision to fund the acquisition primarily with debt, the majority of which was short-term, rather than equity, eroded RBS's capital adequacy and increased its reliance on short-term wholesale funding. The acquisition significantly increased RBS's exposure to structured credit and other asset classes on which large losses were subsequently taken. In the circumstances of the crisis, its role as the leader of the consortium affected market confidence in RBS.

Systemic risk

The intensification of market uncertainties during the summer of 2008, culminating in the acute loss of confidence following the collapse of Lehman Brothers in September, affected all banks in some way. But those most affected were those that were, or were perceived as being, in a worse position, in terms of capital, liquidity or asset quality. They included RBS.

Overall

Some of the causes of RBS's failure were systemic – common to many banks or the consequence of unstable features of the entire financial system. But with hindsight it is clear that poor decisions by RBS's management and Board during 2006 and 2007 were crucial to RBS's failure.

FSA Review Team concludes that it was individual poor decisions that caused RBS to fail. These poor decisions, at the time or with hindsight, were also considered indicative of underlying deficiencies in the bank's management capabilities and style; governance arrangements; checks and balances; mechanisms for oversight and challenge; and in its culture, particularly its attitude to the balance between risk and growth.

Source: Adapted from FSA (2011a), available at **www.fsa.gov.uk/pubs/other/rbs.pdf**

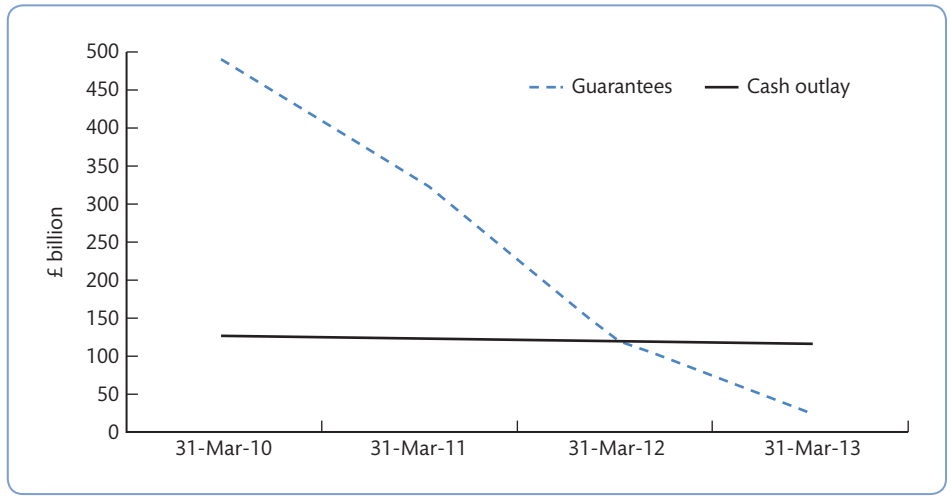


Figure 13.4 Outstanding guarantees to the UK banking sector

Source: National Audit Office (2013).

Figure 13.4 highlights the decline in state guarantees to the UK banking system through to 2013. The National Audit Office (NAO) provides figures for estimates of the total peak support provided to banks at £1,162 billion, and reports that by 2017 the UK government had recovered all but 5 per cent – some £58 billion. (Royal Bank of Scotland still owed the taxpayer £20 billion, down from a peak of £256 billion, while Bradford & Bingley still had £30 billion of taxpayer support funds outstanding. At the top of the crisis, it had received £46 billion of Government support!)

13.3 Regulatory reforms and the changing face of UK banking

The regulatory environment in the UK banking and financial services industry has changed dramatically since the mid-1980s. To understand the ongoing changes brought on by the events discussed in Section 13.2, it is necessary to step a little further back in time and discuss the changes that shaped the UK financial sector from the 1980s to the mid-2000s.

In general, legislation has covered three main areas. First, a range of regulatory changes have sought to reduce demarcation lines between different types of financial service firms (especially between banks and building societies) as well as commercial and investment banking business. Second, the UK has implemented various pieces of EU legislation into domestic banking law, thus facilitating the introduction of the single banking licence (making it easier for banks to do business throughout Europe) and harmonising prudential regulation for both commercial banks and investment firms. Third, legislation laid down in the **Financial Services and Markets Act** (2001) put in place the transfer of regulatory responsibility for the whole financial system to a 'super regulator' – the Financial Services Authority – in the light of the Labour Government's announcement to make the Bank of England independent for monetary policy purposes.

Changes governing the regulatory treatment of the building society sector have had a major impact on the competitive environment in the retail banking sector. Ironically, reforms

that were put in place to improve the competitive stance of the mutual sector vis-à-vis commercial banks led to a systematic decline of the former. This is because most of the largest building societies embraced demutualisation, leading to a shift of assets from the mutual to commercial banking sector (see Appendix 13.1).

Another area where the changes in legislation have had a big impact is in the restructuring of the domestic merchant banking industry. Prior to the 1986 '**Big Bang**' reforms, investment banking and securities business was dominated by UK-owned banks – mainly partnerships operating in the City. Independent UK firms like Morgan Grenfell, Kleinwort Benson and SG Warburg dominated domestic business. The 'Big Bang' reforms allowed commercial banks to be members of the London Stock Exchange and the legal separation between stockbroking and jobbing firms (those operating on the floor of the exchange) was abandoned. This led to a frenzy of domestic and foreign commercial banks (as well as the main US investment banks) acquiring UK securities firms. The merger and acquisition frenzy faltered, to a certain extent, after the 1987 stock market crash – although Deutsche Bank acquired Morgan Grenfell in 1989. It commenced again post UK recession, particularly from 1995 onwards, and by 2005 there were hardly any significant independent UK merchant banks. Since the mid-2000s, investment banking and securities business in the UK has been dominated by the US 'bulge bracket' firms (Goldman Sachs, Morgan Stanley, Merrill Lynch) as well as by various Swiss (Credit Suisse and UBS) and German banks (Deutsche Bank). UK banks such as Barclays and RBS invested heavily in the investment banking business to become credible competitors.

The gradual structural deregulation relating to commercial banking, investment banking, securities business and insurance meant that financial firms had the choice of being universal operators. The decision by the government to create a single financial services regulator in 1999 (the Financial Services Authority) was another reflection of the universalisation of the UK banking industry.

Many of the above mentioned regulatory initiatives aimed to create a more competitive and innovative banking and financial system. Domestic banks became engaged in non-interest business on a bigger scale and competed with other domestic financial firms, as well as foreign banks and even new non-banking firms that had moved into financial service provision. An area for excess competition was the real estate lending market where a boom in mortgages fed a property price bubble. When the bubble burst in the US and sailed across the Atlantic in mid-2007, UK banks were over-exposed to the property market.

The UK regulatory response to the crisis was rapid and (as documented in section 13.1) aimed to re-establish stability in a crisis situation. In addition, it had become apparent that the tripartite regulatory structure between the Bank of England, Treasury and FSA did not work well during the crisis. As such, the UK authorities set out proposed legislation in 2011 called 'A new approach to financial regulation – The blueprint for reform' that became law in 2012 as the Financial Services Act. The 2012 Act abolished the Financial Services Authority and created the Financial Policy Committee (FPC), the Prudential Regulatory Authority (PRA) and the Financial Conduct Authority (FCA).

In 2012, the UK banking system was involved in a different type of crisis: the largest UK credit institutions were allegedly involved in the LIBOR fixing scandal as described in Box 13.3. As a result of this scandal, the UK government put in place new legislation to regulate the LIBOR and to ensure that any wrongdoing in relation to benchmark setting is now treated as a criminal offence in UK.

BOX 13.3 LIBOR FIXING

Understanding LIBOR

LIBOR (London Interbank Offered Rate) is an interest rate set in London and used as a global benchmark to price financial products worth some $350 trillion. Its origins relate to the importance of London as a global financial centre, over 30% of global foreign exchange trading is done in London and more than 20% of international bank lending.

LIBOR had traditionally been set by the British Bankers Association (up until February 2014) as follows:

1. Each day a panel of global banks submitted rates at which they could borrow various currencies over different time periods
2. Individual bids were submitted daily at 11 am
3. Thomson Reuters processed the bids by rejecting some of the highest and lowest and used the middle two quartiles to calculate the average. This process was repeated 150 times to create the days LIBOR rates for 15 borrowing periods and 10 currencies
4. Once calculated the LIBOR figures were published at midday
5. Libor rates set the basis for a range of financial instruments including a broad array of wholesale instruments including derivative products as well as retail home mortgages, credit cards and company loans.

Problems arose when it was revealed that the global banks submitting rates to fix LIBOR were colluding to manipulate rates that would favour their own pricing of certain derivative instruments. The scandal is outlined below.

Gargantuan task of LIBOR probes becomes clearer

Last year, when Barclays became the first bank to admit to rigging LIBOR, politicians, regulators and bankers loudly jumped on the enforcement bandwagon, promising to clean up the interbank lending market and other survey-based indices vulnerable to manipulation.

Fifteen months later, the gargantuan nature of that task is becoming clearer. Four banks and an interdealer broker have paid more than $3.5bn in fines on LIBOR alone, with more settlements expected. Rate-rigging has been documented on three continents, with traders in cities as far-flung as Singapore, New York and London captured on emails and in chat rooms openly discussing their efforts to influence the daily rate-setting process to make money on derivatives.

Nor has the misbehaviour been confined to the high-flying investment banks. Rabobank, which has its roots in a Dutch farmers' co-operative, this week paid $1bn in penalties, the second-largest settlement to date, and lost its chief executive.

Meanwhile, efforts to replace LIBOR with a transaction-based rate that would be less susceptible to manipulation are faltering, dragged down by three problems. The first was known up front, the holders of a number of existing LIBOR contracts, including 30-year home mortgages, are reluctant to accept a new rate that could change their position. Second, the interbank lending market remains so barren that there are not many transactions to anchor a new rate. The third reason became depressingly clear this week – transaction-based rates may not solve the problem.

Several of the world's biggest banks – including several LIBOR players – confirmed that they are co-operating with a global probe into alleged manipulation of foreign exchange rates. Employees at Barclays, Royal Bank of Scotland, JPMorgan Chase and Citigroup have all been put on leave, and several other banks are conducting internal investigations. Regulators are said to be focusing on instant messages among traders at different banks. While the investigation is still in its infancy, the revelations to date are reminiscent of the early days of the still-unfolding LIBOR scandal.

BOX 13.3 LIBOR fixing (*continued*)

But this time the scandal cannot be blamed on surveys or lack of trading. The forex markets are among the most liquid in the world and the rates in question are based on actual transactions during specified windows.

If rates cannot be engineered to prevent manipulation, what are regulators to do? The Swiss gave a clue to the answer this week when UBS revealed that it had been ordered to bump up the capital it holds against litigation, compliance and operational risks by 50 per cent. Global regulators are thinking along similar lines – the Basel Committee on Banking Supervision warned last year that it was considering bumping up worldwide capital requirements for this area.

The optimistic view of this development is that regulators are using the big stick of higher capital requirements to force banks to take their conduct and compliance duties more seriously. The glass half-empty version is that authorities have thrown up their hands and given up. Essentially, regulators seem to be saying that if they cannot stop bad behaviour, they will at least make sure banks have enough cash on hand to pay for the lawsuits and enforcement penalties that will inevitably follow.

NEW LIBOR arrangements

On February 1st 2014, the responsibility for administering LIBOR was transferred from the British Bankers Association to ICE Benchmark Administration Limited (IBA) a company owned by Intercontinental Exchange (ICE) which owns the New York Stock Exchange (NYSE) Euronext. ICE was granted the business after an independent enquiry set-up by the UK government. IBA is authorised by the UK's Financial Conduct Authority (FCA). ICE take over from Thomson Reuters as the primary publisher of the LIBOR rates, using a new Secure File Transfer Protocol (SFTP) service. The new arrangements aim to:

- return credibility, trust and integrity to LIBOR, by bringing together a strong regulatory and governance framework and market-leading validation techniques
- implement a new post-publication surveillance system and tests designed to assess the credibility of LIBOR submissions and rates
- introduce new surveillance approaches to vary to changing market conditions and employ sophisticated analytical tools to operate the benchmark price setting process with transparency.

The End of LIBOR

The majority of Libor settings will be discontinued at the end of 2021, with some settings continuing for a limited period to support an orderly wind-down of legacy contracts only. In sterling markets, most use of Libor in new contracts has now ceased and been largely replaced by the Sterling Overnight Index Average (SONIA), a risk-free rate produced by the Bank of England. In US dollar markets however, some market participants are considering using alternatives to the preferred RFR, Secured Overnight Financing Rate (SOFR).

FT *Sources*: Ben Freese and Johanna Kassel (2013) Understanding LIBOR, The Financial Times. Brooke Masters (2013) The Financial Times Published November 1st 2013. ICE Benchmark Administration **https://www.theice.com/iba**; Bank of England (2021) Financial Stability Report. https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2021/july-2021.pdf?la=en&hash=B1A3F7FF0D5F3FAF2CFC98AA5C17EC02116E8488

BOX 13.3 LIBOR fixing (*continued*)

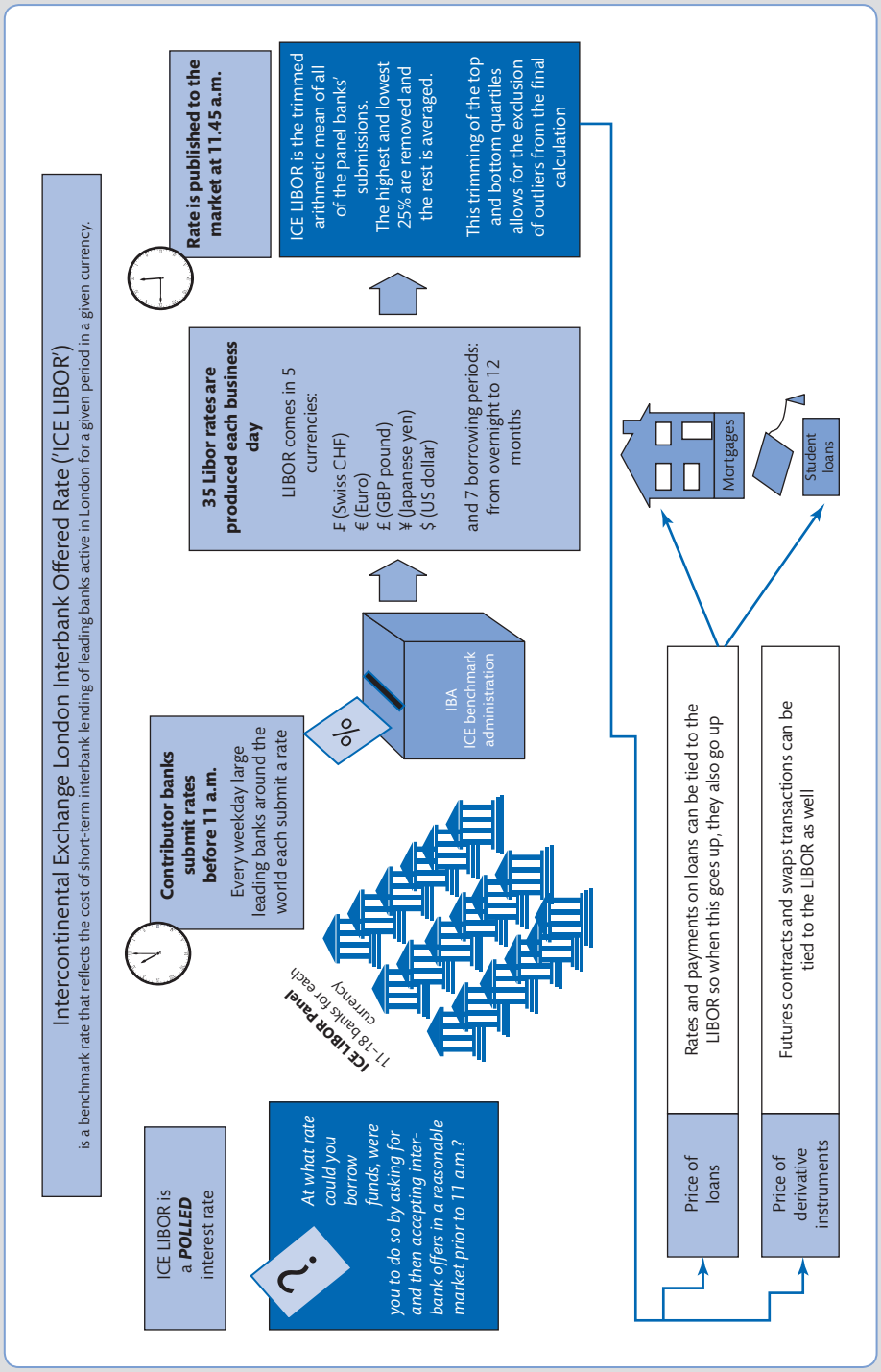


Figure 13.5 The new ICE LIBOR arrangements

13.3.1 A new approach to regulation in UK banking

As a response to the recognition that the structural and other features of the UK banking system needed reform, in June 2010 the Treasury set up an *Independent Commission on Banking* (ICB), chaired by Sir John Vickers. The ICB was requested to make recommendations on:

- reducing systemic risk in the banking sector, exploring the risk posed by banks of different size, scale and function;
- mitigating moral hazard in the banking system;
- reducing both the likelihood and impact of firm failure, as well as promoting competition in both retail and investment banking with a view to ensuring that the needs of banks' customers and clients are efficiently served, and in particular considering the extent to which large banks gain competitive advantage from being perceived as too big to fail.

The Vickers Commission produced its final Report in September 2011 (Independent Commission on Banking, 2011). Its main recommendations related to **ring-fencing** retail banking, boosting capital resources and various measures relating to competition. Most attention has been placed on the ring-fencing argument aimed at protecting retail depositors and separating higher-risk investment banking activities. In simple terms, ring-fencing will exclude banks that accept retail deposits from undertaking a range of activities that are not directly connected to providing payment services and making loans. The *Financial Times*' assessment of the report is illustrated in Box 13.4.

BOX 13.4 JUST THE FACTS: THE VICKERS REPORT

The ring-fence

What has been announced?
British banks must separate their high street and investment banking operations. The ring-fence must contain all retail and small business deposits and their overdrafts. Investment banking activities including derivatives, debt and equity underwriting and investing and trading in securities must fall outside. Banks are free to place other activities including lending to consumers and businesses and trade finance on either side of the fence.

Who will be most affected?
The reforms will trigger far-reaching structural changes for every one of the big UK banks. The ICB's estimate for the amount of assets that will be held behind the ring-fence is between £1,500bn and £2,300bn. Allowing individual institutions to decide where they draw the line will mean they can adapt the rules to suit their own models. Nevertheless, as the two banks with the largest and most diversified UK businesses, Barclays and RBS are likely to be hardest hit.

What do the critics say?
Ring-fencing UK retail operations may encourage banks to take greater risks with activities that are grouped inside the fence, such as mortgages and corporate and personal loans, because they are more confident of being bailed out. Bankers complain that the UK is "going it alone" on ring-fencing at the worst possible time, when economic growth is slowing and without enough detail about the impact of the changes.

FT Verdict
Making the ring-fence flexible in allowing banks a degree of choice over where it is placed – and, in particular, over whether to include big corporate deposits and loans – was a sensible compromise by the commission in pursuit of its fundamental aim: curtailing the implicit government subsidy that stems from the prospect that universal banking groups will be bailed out by the taxpayer when they run into difficulty.

BOX 13.4 Just the facts: the Vickers Report (*continued*)

Capital requirements

What has been announced?
Banks will have to hold equity capital – the highest quality kind – of at least 10 per cent of risk-weighted assets in the ring-fenced business. On top, Vickers recommends that both parts of the bank have total loss-absorbing capital of at least 17–20 per cent. This could include "bail-in bonds" – or long-term loss unsecured debt – and contingent capital or "cocos", as well as equity and other capital.

Who will be most affected?
All British banks will be hit, although they were generally already moving in this direction. The Vickers proposals are slightly higher than the existing Basel III rules for the ring-fenced business. Analysts estimate that banks typically already have between 15 and 25 per cent of loss-absorbing debt, in addition to their top layer of highest quality capital.

What do the critics say?
That these capital requirements are out of step with internationally agreed measures. Only Switzerland has gone this far in increasing banks' capital buffers. The banks themselves are likely to be the biggest critics, arguing that introducing tougher regulation in the UK could damage their ability to compete globally. Some others, including the CBI employers' group, say the proposals could increase the cost of lending for UK businesses, putting them at a disadvantage to their overseas competitors.

FT Verdict
The biggest cause of bank failures during the recent financial crisis was too little capital, so it is hard to argue that levels should not be increased. While the proposals for the ring-fenced business go further than the Basel III rules, the commission has aligned the minimum equity requirements for the non-ring-fenced with international standards. The further layer of loss-absorbing capital should not cause too many problems as banks already hold high buffers.

Costs

What has been announced?
The commission put the costs to the banking industry at £4bn–£7bn per year. However it expects the social cost – the amount that will actually translate into lower growth – to be between £1bn and £3bn. Much of this comes from higher funding costs, largely in the non-ring-fenced business. Operational changes – through setting up an independent board for the retail arm, for example – will also increase costs, although to a lesser degree.

Who will be most affected?
Banks' shareholders, creditors, employees and customers will all be affected to some degree. The commission expects the effect to be greatest in the non-ring-fenced business, which is more vulnerable to rises in funding costs. The impact on UK borrowers should therefore be lower. Overall, the commission says borrowing costs could rise by an average of 0.1 of a percentage point – far less than other estimates.

What do the critics say?
Banks and some business groups argue that hitting the industry with billions of pounds of additional costs at a time when their business models are already under pressure could undermine lending and the recovery. They are concerned that in spite of the delayed target date for implementation of 2019, banks will be under pressure to start restructuring their businesses sooner, which could put pressure on their ability to lend.

FT Verdict
The commission estimates the annual benchmark cost of financial crises at about £40bn, so paying up to about £7bn to avoid that looks worthwhile. The commission's estimates are far lower than some of the banks' own figures, which suggested annual costs could be as much as £10bn. The impact should be largely mitigated by the decision to delay implementation until 2019 at the latest. Still, the costs are clearly only worth paying if the proposals are successful in averting another crisis.

Competition

What has been announced?
A range of measures largely focused on improving access to bank accounts for retail and small business customers. The commission wants to ensure the branch portfolio being sold by Lloyds Banking Group creates a strong new challenger in the market. It has endorsed a new industry-wide switching service that should enable customers to move providers within seven days and has recommended that banks provide more detail on charging structures and that the regulator takes charge of competition.

BOX 13.4 Just the facts: the Vickers Report (*continued*)

Who will be most affected?
As the biggest high-street lender, Lloyds has always been at the centre of the commission's competition proposals. The final recommendations are less harsh than feared: Lloyds must ensure the business it is selling has at least a 6 per cent share of UK current accounts, but it does not have to sell more branches. For the market as a whole, new entrants and smaller lenders, who have long complained that it is hard to win market share from the big banks, should see most benefit from the new switching service.

What do the critics say?
Generally, measures to promote competition for consumers and small businesses are widely supported. However, consumer organisations are concerned that it will take a long time to implement the changes, and even longer for them to make a real difference in the market. Also, some say the recommendations on Lloyds were watered down. Initially, the commission had wanted to shrink Lloyds' own share of current accounts, which may not be achieved through its final recommendations.

FT Verdict
Lloyds has dodged a bullet. It does not have to sell more branches and its share of the current account market – expected to be 25 per cent following the branch disposal – has been left intact. Also, its efforts to dispose of the branches specified by the EU should not be disrupted. Lloyds can still sell to a new entrant as long as it ensures the new entity has a 6 per cent share of current accounts. An easier and faster switching service is clearly sensible. A survey from Firstsource Solutions shows that half of those polled would consider moving provider if there were a seven-day deadline.

FT *Source*: Goff, S. (2011) 'Just the facts: The Vickers Report', *Financial Times*, 12 September.
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Based on the recommendations of the Independent Commission on Banking (ICB), the UK government published a White Paper (HM Treasury, 2012) titled 'Banking reform: Delivering stability and supporting a sustainable economy', which sets out the proposal for reform of the UK banking sector.

Following a period of consultation, in February 2013 the UK Chancellor presented the *Banking Reform Bill* to Parliament. The Bill incorporates many of the ICB's recommendations; it aims to separate the retail and investment arms of UK banks and erect a ring-fence around the retail bank so that essential operations continue even if the whole bank fails. There have also been promises that the legislation, if passed, would 'electrify the ring-fence', that is it would incorporate provisions to allow regulators to split up a bank, if it were found to flout the rules.

The Banking Reform Act of 2013 (together with its secondary legislation), now stipulates that banks with £25 billion or more in so-called core deposits will have to ring-fence their retail and small and medium-sized enterprise (SME) deposit-taking business into a legally, operationally and economically separate ring-fenced body (RFB). This has been in place from the start of 2019. The RFB will be prohibited from various activities, such as dealing in complex derivatives, principal and commodity trading activities, and operating branches and subsidiaries outside the EEA. However, certain other activities will be permitted, such as:

- taking deposits from high-net-worth individuals, large organisations, relevant financial institutions and non-EEA persons;
- selling simple derivatives for client risk management;
- acting as agent on behalf of RFB customers acquiring any product from other providers.

RFBs will generally be restricted from incurring financial institution exposures, and from indirect participation in clearing and settlement and interbank payment systems. Various exemptions from the above prohibitions will also be available to enable an RFB to manage its

liquidity and balance sheet risk. Overall, the Banking Reform Act of 2013 aims to establish a more resilient, stable and competitive banking sector, splitting the low-risk retail activities from more volatile investment banking business.[4]

As we mentioned earlier, a growing proportion of banking and financial sector regulations emanate from European legislation. Probably the most important are those that impact capital regulation, namely: Regulation (EU) 575/2013 on prudential requirements for credit institutions and investment firms (Capital Requirements Regulation, CRR) and Directive 2013/36/EU on capital requirements (Capital Requirements Directive IV, CRD IV). These implement the Basel III capital requirement rules into EU legislation. Under CRD IV, which has been in place in the UK since 2016, globally systemically important institutions (G-SIIs) and other systemically important institutions (O-SIIs) have to hold extra capital, a so-called 'buffer' of Tier 1 common equity (the SII Buffer). The Prudential Regulation Authority (at the Bank of England) is responsible for identifying the SIIs and setting and publishing capital buffer rates annually. There are four UK headquartered banking groups identified as G-SIIs:

- HSBC Holdings Plc;
- Barclays Plc;
- Royal Bank of Scotland Group Plc;
- Standard Chartered Plc.

G-SIIs are also expected to maintain a leverage ratio buffer, which will be set at a firm-specific level for G-SIIs and will apply in addition to the minimum quantitative leverage ratio requirements applicable to all other banks regulated by the CRR/CRD IV. It was introduced on 1 January 2019. UK banks that qualify as G-SIIs will become subject to the Financial Stability Board (FSB) standards on total loss absorbing capacity (TLAC) – which relate to tougher capital and leverage rules for G-SIBs internationally.

In addition to the tougher capital requirements, another set of regulations from the EU continues to have a big impact on the UK investments business. The Markets in Financial Instruments Directive (MiFID) regulates investment companies (which provide services to clients around shares, bonds, collective investment schemes and derivatives) as well as the organised trading of financial instruments (such as trading via the London Stock Exchange). MiFID has applied in the UK since late 2007, and was revised and extended by MiFID II, which took effect in January 2018. The legislation aims to improve the functioning of financial markets in light of the financial crisis, increase transparency and strengthen investor protection, as shown in Figure 13.6.

There are a host of other EU regulations that also cover the UK banking/financial system, including:

- Regulation (EU) 596/2014 on market abuse (Market Abuse Regulation);
- Regulation (EU) 648/2012 on OTC derivatives, central counterparties and trade repositories (European Market Infrastructure Regulation) (EMIR);
- Regulation (EU) 236/2012 on short selling and certain aspects of credit default swaps (Short Selling Regulation);
- Regulation (EU) 2015/2365 on transparency of securities financing transactions and of reuse and amending Regulation (EU) 648/2012 (Securities Financing Transactions Regulation);

[4] The full text of the Financial Services (Banking Reform) Act of 2013 can be found at **www.legislation.gov.uk/ukpga/2013/33/pdfs/ukpga_20130033_en.pdf**

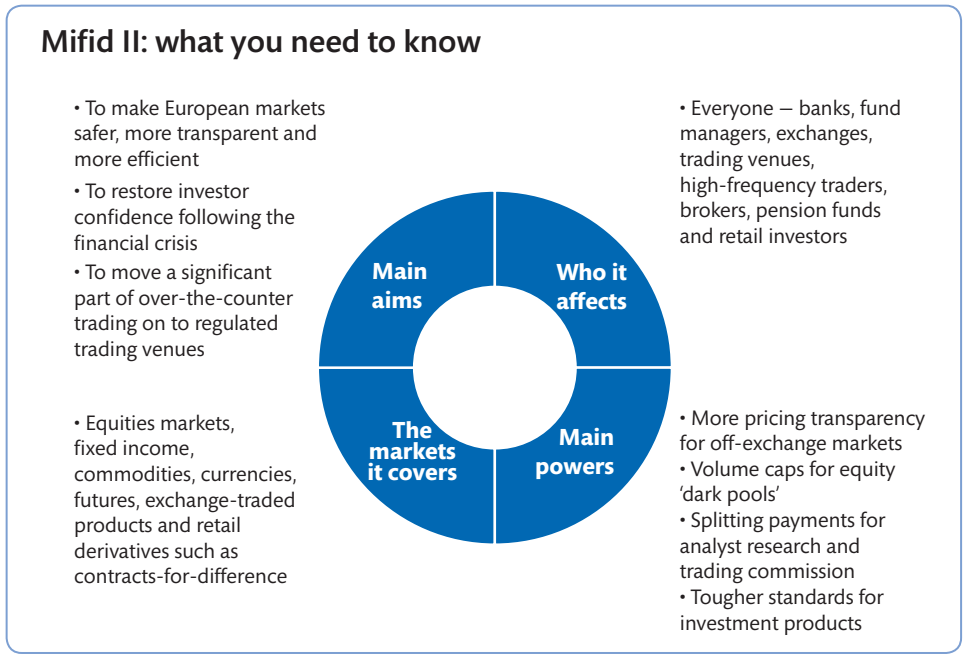


Figure 13.6 MiFID 2

Source: Stafford (2017).

- Regulation (EU) 600/2014 on markets in financial instruments (amending Regulation (EU) 648/2012) (Markets in Financial Instruments Regulation) (MiFIR) (from 2018);
- Regulation (EU) 2016/1011 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds (amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014) (Benchmarks Regulation).

The main features of the UK regulatory framework are expected to alter over the next few years. The June 2016 Brexit vote – when the United Kingdom electorate voted to leave the European Union – is expected to have an impact on the legal and regulatory framework governing the regulation of banks in the UK, although the extent of changes is at present by no means certain. The regulatory authorities have said that they hope that a significant amount of the current EU-initiated legislation is likely to stay in place – although one area where this looks like it will not happen is access for UK banks and other financial firms to the EU market through the single market licence (established under the EU's Second Banking Directive of 1992). Under these rules, any bank that obtains a licence to do business in any EU country is free to do the same in any other EU country – banks located in one EU country do not have to get licences to operate in other countries – so it is easier and cheaper to do cross-border business. In the UK there are around 5,500 banks and financial firms that have these single passporting rights and estimates suggest that financial firms earn over £45 billion in revenue from these services. Failure to maintain the passporting rights means that (say) American banks currently based in London doing business with a wide variety of EU clients will find it much more attractive to relocate within an EU country where it will still have these passporting rights. At the time of writing (May 2021) negotiations to agree passporting rights were ongoing – a so-called 'hard Brexit' exists, see Box 13.5. The Bank of England have suggested that over the long term this could result in a loss of 75,000 jobs in the City of London and a decline in business of more than 20 per cent. According

to the New Financial think-tank, by April 2021, 440 banks and other financial service firms have moved some or all of their jobs out of London because of Brexit, along with £900 billion in bank assets (around 10 per cent of UK banking sector assets). Some 135 firms have moved to Dublin, 102 to Paris, 93 to Luxembourg, 62 to Frankfurt and 48 to Amsterdam.[5]

BOX 13.5 EUROPE'S BANKS TOLD TO KEEP PLANNING FOR FULL BREXIT IN 2019

Officials maintain June deadline for Eurozone licences despite UK transitional deal

The eurozone's top financial supervisors have told banks to keep planning for Brexit without any transition arrangements, despite this week's deal to delay the UK's exit from the EU's single market. The region's banking authorities are maintaining a deadline of the end of June for groups with operations in the UK to apply for eurozone banking licences as part of possible relocation plans to deal with Brexit.

Andreas Dombret, executive director for banking supervision at the Bundesbank, Germany's central bank, said on Tuesday it was "too early to lay back" despite the EU–UK goal of a transition to make Brexit "less painful". Such advice could leave big international banks in a quandary over how to prepare for Britain's departure since it is at odds with guidance from the Bank of England, which is expected to give lenders more breathing space on the back of Monday's 21-month transition deal.

The problem confronting lenders and authorities is that, although the transition agreement is set to be endorsed by EU leaders at a summit on Friday, it will not be legally binding until and unless an overall Brexit deal is agreed and ratified – and may yet be vulnerable to political risk. Many issues are still to be discussed and the transitional period is still not fully guaranteed. That puts regulators in a crucial position over whether to require lenders to focus on March 2019 – the date of Brexit – or December 2020 – the end of the proposed transition period.

Mr Dombret indicated on Tuesday that the Bundesbank, which shares supervision of German banks along with BaFin, the country's financial watchdog, would be unwilling to look past the lack of legal certainty. "Many issues are still to be discussed and the transitional period is still not fully guaranteed," he told an audience in Dublin, highlighting unresolved issues such as continuing EU-UK differences over the Irish border. "The . . . phrase that 'nothing is agreed until everything is agreed' still holds true." By contrast, the BoE, which oversees the largest lenders and insurers operating in the UK, has already said it will give a "regulatory underpinning" to any clear political agreement over the transition period, even if not legally finalised. That would give more time for firms in the City of London – headquartered both in the UK and in the EU27 – that otherwise would have to plan for the worst on the basis that the UK will fall out of the bloc in March 2019.

Mr Dombret's position is close to that of the European Central Bank's supervisory wing, the Single Supervisory Mechanism, which is thought to take a conservative view of the applicability of any transition deal. The SSM declined to comment. Sabine Lautenschläger, vice-president of the SSM, said in February that banks had until the end of the second quarter to apply for a banking licence.

Ms Lautenschläger said only banks that had "already presented high-quality and credible plans" would be allowed more time to implement relocation plans in the event of

[5] **https://newfinancial.org/brexit-the-city-the-impact-so-far/**

BOX 13.5 Europe's banks told to keep planning for full Brexit in 2019 (*continued*)

a transition period. The SSM is in talks with about 50 banks about their Brexit plans. SSM officials are concerned that some lenders are not taking the June deadline seriously, and that the transition deal will be used as a tool to delay coming up with credible plans. The BoE itself warned last week that regulators and politicians on both sides of the Channel needed to do more, even with a transition agreement, to address the legal uncertainty posed by Brexit weighing on huge numbers of derivative contracts and insurance policies. The BoE has long said that unless a transition deal was agreed, it would expect firms to start launching their contingency plans to move operations and jobs at the end of the first quarter of 2018 – which is now little more than a week away.

Source: Jones, C., Binham, C. and Barker, A. (2018) 'Europe's banks told to keep planning for full Brexit in 2019', *Financial Times*, 21 March.
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The current structure of the UK banking sector is reviewed in Section 13.4.

13.4 The structure of the UK banking sector

This section aims to review the structural features of the UK banking industry, with particular focus on the main high street banking groups, highlighting recent trends. The impact of the increased consolidation in the sector, and possible adverse market power effects, have become more pressing from a **competition policy** perspective given the banking sector restructuring that has taken place since mid-2007.

13.4.1 Number and types of banks

In contrast to other large European countries, the UK has a relatively small number of banks. The total number of authorised banking institutions fell from around 600 in 1985 to 367 by 2021. The decline in the total number of banks is attributable to foreign banks acquiring UK banks as well as consolidation in the domestic retail banking market. During the second part of the 1990s the decline in the number of foreign banks has been greater than that for UK incorporated banks, although mergers and acquisitions between UK incorporated banks resulted in a fall in their number from 202 in 1999 to 157 by the end of 2008. Post-crisis numbers continued to decrease, reaching 132 by 2021. During the second half of the 1990s, a decline in the number of non-European banks (particularly Japanese banks) was counteracted by the increased presence of European institutions, whose number increased from 79 to 105 between 1993 and 1999. However, the number of European banks subsequently fell to under 72 by 2021.

Foreign banks typically do little sterling-denominated business focusing mainly on wholesale foreign currency activity relating to investment banking activity. The main UK retail banks dominate sterling-denominated banking business. Up until the end of 2007 the major banks included Abbey National, Alliance & Leicester, Barclays, Bradford & Bingley, HBOS, HSBC Bank, Lloyds TSB, Northern Rock and Royal Bank of Scotland. Four of these were mutual building societies that converted to bank status – Abbey National (converted in 1989), Alliance and Leicester (1997), Northern Rock (1997) and Bradford & Bingley (2000). HBOS was formed by the merger of Halifax (which converted into plc and bank status in June 1997)

and the Bank of Scotland in September 2001. As discussed in Section 13.2, since mid-2007 these banks have experienced turmoil and there have been significant developments adversely affecting their activities. Northern Rock was the first casualty of the crisis in September 2007 (see Box 13.1). Later the same month Lloyds TSB announced that it was to acquire HBOS for £12 billion, creating a merged entity with a market share of around one-third in the UK savings and mortgage markets. The aim of preventing the collapse of HBOS overrode antitrust concerns that would otherwise stem from the merger of two large high street retail banks. On 29 September 2008 the UK government announced that it was acquiring the mortgage-lending arm of Bradford & Bingley, and selling the still-viable depositor base and branch network to the Spanish Santander banking group. Royal Bank of Scotland (RBS) (owner of NatWest) and Lloyds received massive financial support in bailouts during 2008 that meant both had large government ownership. Lloyds came fully back into private ownership in 2017 but even by mid-2021 over 54 per cent of RBS remained in government ownership.

13.4.2 Trends in branch numbers, ATMs and employment

Over the last 30 years or so (notwithstanding the forced impact of the financial crisis), UK banks and building societies have engaged in significant reorganisation. This is characterised by the decline in branch numbers that have occurred since the late 1980s. The financial crisis further accelerated the decrease in number of retail bank UK branches, with a fall from 10,051 in 2006 to 7,022 in 2014. The building society sector has around 1,500 branches, down from over 2,000 just before the crisis. Concern about the decline in branches and the impact on communities has also been discussed (see House of Commons Briefing Paper, Branch Closures, No. 385, 9 February 2018).

While branch numbers were declining, the introduction of ATMs (at the branch and in 'remote' locations) grew up to mid-2016 but has fallen noticeably since then.[6] There was also a substantial growth in electronic fund transfer at point-of-sale (EFTPOS) terminals, reflecting the trend to supplement traditional with new distribution channels. These are terminals placed in stores, petrol stations and so on that process credit and debit card payments.

The reason for the shift from branches to other means of financial service delivery mainly relates to UK retail financial service firms' desire to improve operating efficiency as well as customers increasing demands to access banking services outside traditional (rather limited) banking hours – namely the rapid growth in online and mobile banking.

The largest branching network in 2021 was Lloyds (1,590 branches) followed by Barclays (798 branches). A ruling by the European Commission in 2009 on the conditions for state aid raised the issue of forced divestments through the sale of branches. The aim of the ruling was to increase competition and customer choice in the UK banking sector (see also Section 13.8). The Co-operative Bank had agreed in 2012 to buy 632 Lloyds bank branches, although the deal fell through in May 2013. In September 2013 Lloyds Banking Group announced the launch of TSB as a separate bank. The standalone TSB has a network of 475 branches in England, Wales and Scotland (see Box 13.6). Even as late as mid-2017 RBS abandoned a plan (hatched some seven years earlier) to spin-off 300 branches as part of its obligation to meet state aid requirements.

[6] The total number of ATMs stood at 68,135 in 2014 Q1, peaked at 70,682 in 2016 Q2 and thereafter has fallen to 60,012 by 2020 Q1 (Statista, **www.statista.com/statistics/291638/number-of-cash-machines-in-the-united-kingdom/**).

BOX 13.6 A BRIEF HISTORY OF TSB

- 1810: 'Trustee Savings Bank' is founded by Reverend Henry Duncan to help working people in Dumfriesshire manage their annual wages.
- 1951: TSBs had combined deposits of more than £1bn.
- 1961: The 'three circles' TSB logo was commissioned as part of the bank's 150th anniversary celebrations.
- 1986: TSB Group floated on the London Stock Exchange for £1.2bn.
- 1995: Lloyds Bank and TSB merged to form Lloyds TSB.
- 2008: Lloyds TSB was bailed out by the government following its disastrous rescue of HBOS.
- 2009: Lloyds TSB was ordered by the European Commission to sell 600-plus branches.
- 2013: Lloyds TSB' plan to sell the branches to the Co-operative collapses in April.
- 2013: Lloyds launches TSB as a separate, standalone business with 632 branches on 9 September . Along with the branches, TSB will have 5m customers, 8,500 staff, about £20bn of loans and deposits and 4.3 per cent of the UK current account market. The bank was floated in June 2014.
- 2015: Acquired by Spain's Banco Sabadell.

FT Source: Adapted from Goff, S. (2013) 'Born from the Reverend Henry Duncan, a brief history of TSB', *Financial Times*, 6 September. Authors' updates.
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Together with the general decline in branch numbers, the restructuring of the system has also led to a fall in bank and building society employment. The fall in staff employed is particularly noticeable for retail banks (it fell by around 75,000 between 1990 and 1996), increasing to a peak of around 350,000 in 1999 and then systematically falling to under 186,000 by the end of 2016. The increase in employment after 1996 was attributable to building society conversions to bank status. In addition, there was also a substantial increase in employment by foreign banks from 1996 up to 2001 to 2002, reflecting the booming capital markets activity of foreign owned investment banks in London. There was also a big fall in employment from 2008 onwards as a result of the crisis. A report from the House of Commons (2018)[7] looks at the contribution of the broader financial services sector (banks, insurance companies, investment firms and so on) to the UK economy and shows that the peak employment year was 2008 when the sector employed 1.21 million, accounting for 3.8 per cent of total UK employment. By 2017 employment had fallen to 1.13 million and the share of total employment had fallen to 3.2 per cent.

13.5 Profits and the financial features of UK banks

To calculate the profitability of UK banks we have to identify income sources and costs. This is summarised in Box 13.7 (for more details on banks' financial accounts see Chapter 9).

Using the figures for HSBC Bank plc for 2020, Table 13.2 shows how profits are calculated. The table shows that reported loss before tax was £1,614 million in 2020, a much bigger

[7] House of Commons Briefing Paper (2018) 'Financial services: Contribution to the economy', No. 6193, 25 April (by Chris Rhodes).

BOX 13.7 COMPONENTS OF BANK PROFITS

Interest Income includes interest earned on loans; on investments held by the bank that pay interest (such as bonds); interest paid to the bank on interbank deposits they hold at other banks and other sources of interest income.

Interest Expense includes interest paid to depositors; interest paid to holders of bonds that the bank has issued itself to raise debt finance and other interest costs.

Net Interest Income = Interest Income **minus** Interest Expense.

Non-Interest Income includes fee and commission income (from selling insurance, share dealing, private pensions, processing various payments, sales of assets and all income unrelated to interest earnings)

Gross Income = Net Interest Income + Non Interest Income.

Operating Expenses includes Staff Costs and other expenses associated with running branch networks and headquarters.

Net Income = Gross Income **minus** Operating Expenses.

Provisions include funds set aside by the bank to cover losses on loans that are expected to not be repaid (as well as other types of losses). Provisions are made on a regular basis and are charged against current earnings. The total accumulated stock of provisions is known as loan-loss reserves. This is a cost to the bank and so they are deducted from Net Income to arrive at bank profits.

Profit before Tax = Net Income minus Provisions.

Profit after Tax = Profit before Tax **minus** Tax.

Retained Profit = Profit after Tax **minus** Distributed Profit (dividends to shareholders, the owners of the bank).

Table 13.2 HSBC Bank Plc: consolidated income statement 2019–2020 (£mil)

Summary consolidated income statement for the year ended	2020 £m	2019 £m
Net interest income	**1,898**	1,483
Net fee income	**1,400**	1,344
Net income from financial instruments measured at fair value	**2,314**	3,882
Gains less losses from financial investments	**95**	38
Net insurance premium income	**1,559**	2,147
Other operating income	**417**	516
Total operating income*	**7,683**	9,410
Net insurance claims, benefits paid and movement in liabilities to policyholders	**(1,783)**	(3,366)
Net operating income before expected credit losses and other credit impairment charges	**5,900**	6,044
Change in expected credit losses and other credit impairment charges	**(808)**	(124)
Net operating income	**5,092**	5,920
Total operating expenses excluding impairment of goodwill and other intangible assets*	**(5,903)**	(5,615)
Impairment of goodwill and other intangible assets	**(802)**	(1,167)
Operating Loss	**(1,613)**	(862)
Share of Loss in associates and joint ventures	**(1)**	(10)

Table 13.2 continued

Summary consolidated income statement for the year ended	2020 £m	2019 £m
Loss before tax	**(1,614)**	(872)
Tax expense	**136**	(119)
Loss for the year	**(1,478)**	(991)
Loss attributable to shareholders of the parent company	**(1,488)**	(1,013)
Profit attributable to non-controlling interests	**10**	22

Source: HSBC Bank plc Annual Report 2019, 2020
* Total operating income and expenses include significant items.

loss than in 2019 (£1,862 million). This was mainly due to the negative impact of the Covid pandemic.

If one looks at UK bank profitability trends, in the early 2000s the relatively high interest margins, lower costs and buoyant economic conditions (and increased loan demand) led to a sustained increase in the profitability of UK banks (see Figure 13.7). After-tax returns

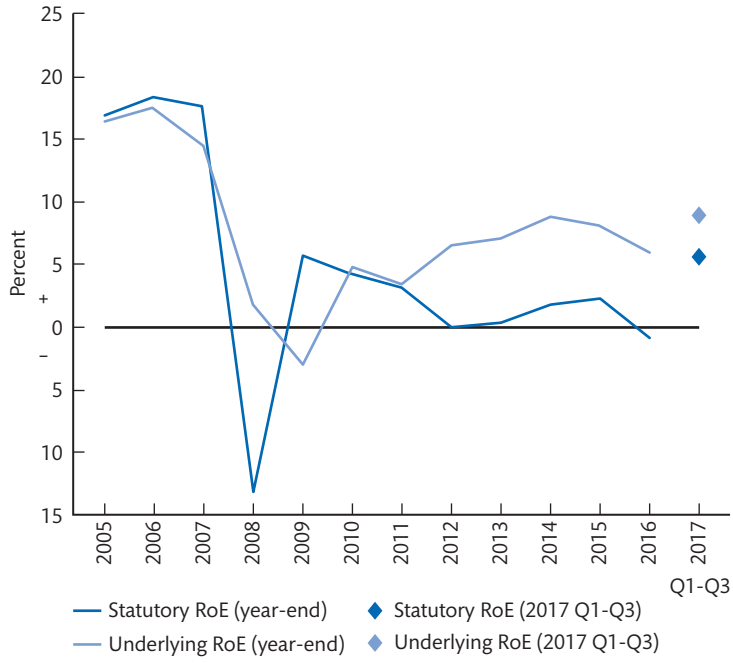


Figure 13.7 UK banks – return on equity

Notes: Weighted average is by shareholders' equity. Statutory RoE is defined as net income attributable to shareholders divided by average shareholders' equity. Underlying RoE strips out misconduct costs as well as one-time charges such as restructuring costs. UK banks are Barclays, HSBC, Lloyds Banking Group and RBS. Diamonds show averages of quarterly results for 2017 Q1–Q3. Data are annualised and may display seasonality. They are not directly comparable to full-year results.

Source: Bank of England (2017), Chart B9, p. 40.

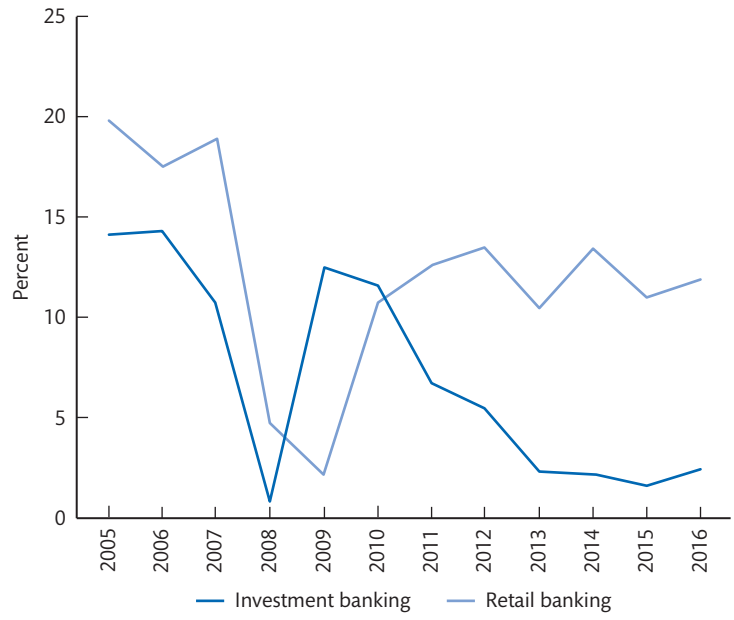


Figure 13.8 Investment and retail banking profitability in the UK

Notes: Simple average of estimated return on equity by business segment for Barclays, HSBC and RBS. The exact scope of the business segments varies across institutions depending on their public disclosures. Net income for each business segment is estimated by applying the UK corporate tax rate and bank surcharge to that segment's reported profits before tax. Equity is estimated for business segments based on their share of total group risk-weighted assets. This will vary over time reflecting changes to the regulatory regime as well as underlying exposures.

Source: Bank of England (2017), Chart B10, p. 40.

hovered between 20 per cent and 25 per cent between 2000 and 2007. The relatively high level of profitability experienced in 2006 and 2007 was the end to the UK banking boom. For instance, Barclays posted a return on equity (ROE) of 20.5 per cent in 2007, which fell to 14.6 per cent in 2008; Lloyds Group reported an ROE of 34 per cent in 2007, which fell to 8 per cent in 2008; and most spectacularly Royal Bank of Scotland's ROE declined from 18.6 per cent in 2007 to –43.7 per cent in 2008 (hence the government bailout). UK bank profitability has rebounded since then, although the heady days of the mid-2000s appear a long way off, with bank posting returns around the 10 per cent level (at best). Figure 13.8 illustrates the sharp fall in investment banking profitability of the main UK banks compared to retail banking profitability.

The suppressed level of profits is a reflection of the tougher capital and liquidity standards that banks have to abide by after the global financial crisis and the subsequent sluggish economy (limiting loan demand). If a bank has to hold more capital for regulatory purposes (much of which is held in the form of equity) it means that if your net income remains relatively flat, your ROE will fall (ROE = Net Income/Equity). Also, as part of Basel III and national regulations UK banks have shifted away from higher-risk (higher-return) business activities, thereby reducing their risk-weighted assets – one way of trying to increase a bank's

capital strength without having to issue more capital. Put simply, UK banks have de-risked. Another feature of the changed regulatory environment is that banks have also had to boost their liquid assets. These features are reflected in Figures 13.9 to 13.11.

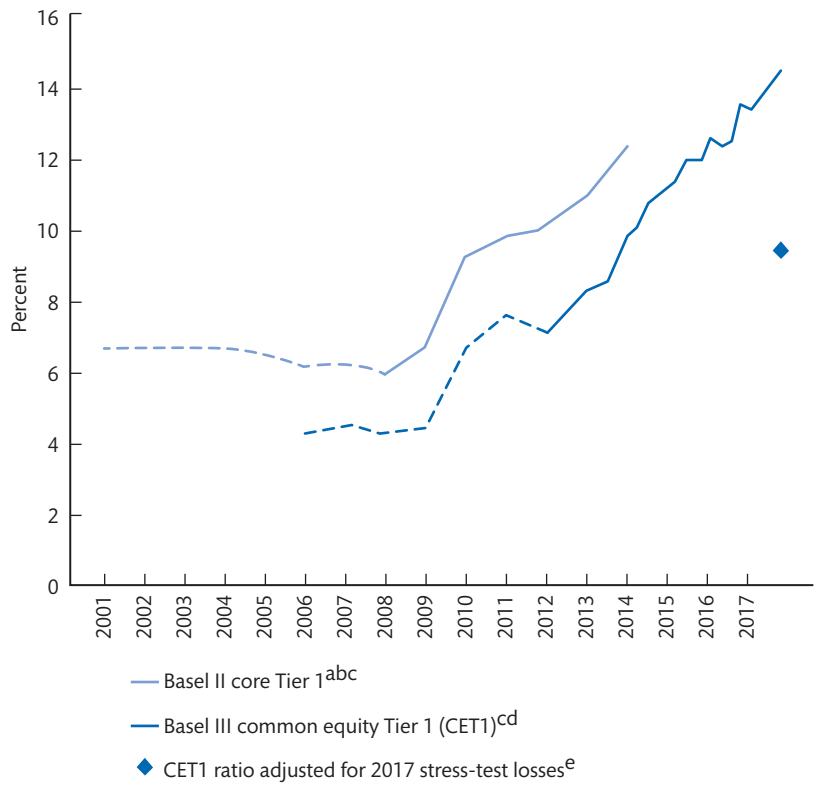


Figure 13.9 Capital strength of UK banks

Notes: [a] Major UK banks' core Tier 1 capital as a percentage of their risk-weighted assets. Major UK banks are: Banco Santander, Bank of Ireland, Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, National Australia Bank, Nationwide, RBS and Northern Rock (until 2007).

[b] From 2008, the chart shows core Tier 1 ratios as published by banks, excluding hybrid capital instruments and preference shares, and making deductions from capital based on FSA definitions. Prior to 2008 that measure was not typically disclosed; the chart shows bank estimates.

[c] Weighted by risk-weighted assets.

[d] From 2012, the 'Basel III common equity Tier 1 capital ratio' is calculated as common equity Tier 1 capital over risk-weighted assets, according to the CRD IV definition as implemented in the United Kingdom. Prior to 2012, the chart shows Bank estimates. The peer group includes Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, Nationwide, RBS and Santander UK.

[e] CET1 ratio less the aggregate percentage point fall projected under the Bank of England's 2017 annual cyclical stress scenario for the six largest UK banks.

Source: Bank of England (2017), Chart B1, p. 35.

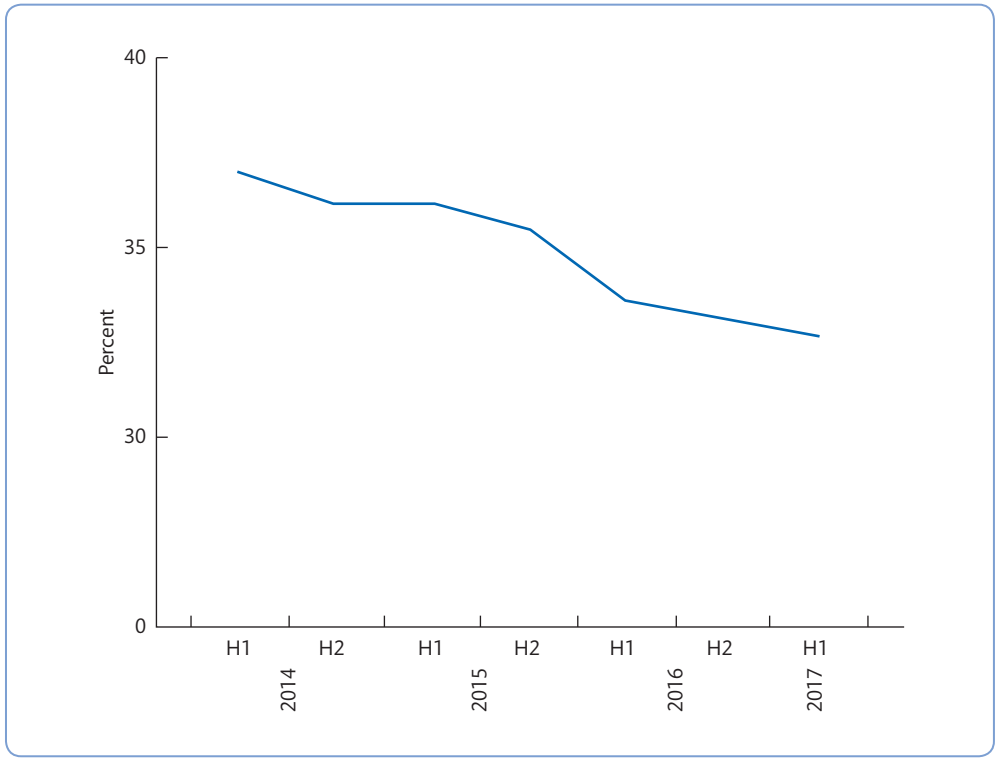


Figure 13.10 De-risking – major UK banks risk-weights

Notes: Sample includes Banco Santander, Bank of Ireland, Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, National Australia Bank, Nationwide, RBS and Virgin Money. Aggregate end-year peer group risk-weighted assets divided by aggregate end-year peer group published balance sheet assets. Data are on a CRD IV basis. Latest published figures have been used; in the case of Nationwide, these relate to 2016 H2.

Source: Bank of England (2017), Chart B2, p. 36.

13.6 The UK payment system

As we saw in Chapter 2, a payment system can be defined as any organised arrangement for transferring value between its participants. Some of these transactions involve high-value transfers, typically between financial institutions. However, the highest number of transactions relates to transfers between individuals and/or companies (they include the payment and receipt of wages, salaries and government benefits, direct debits, cheques, debit and credit card payments).

In 2017 over 30 billion cash and non-cash payments took place in the UK with a total value exceeding £75 trillion. The main UK payment systems are: CHAPS, BACS, Faster Payment System, CREST, LCH.Clearnet Ltd (Protected Payment System), ICE Clear Europe (Assured Payment System) and CLS. In June 2015, Payments UK was set up (the successor to the UK Payments Council) to continue to set strategy for the payments industry and its

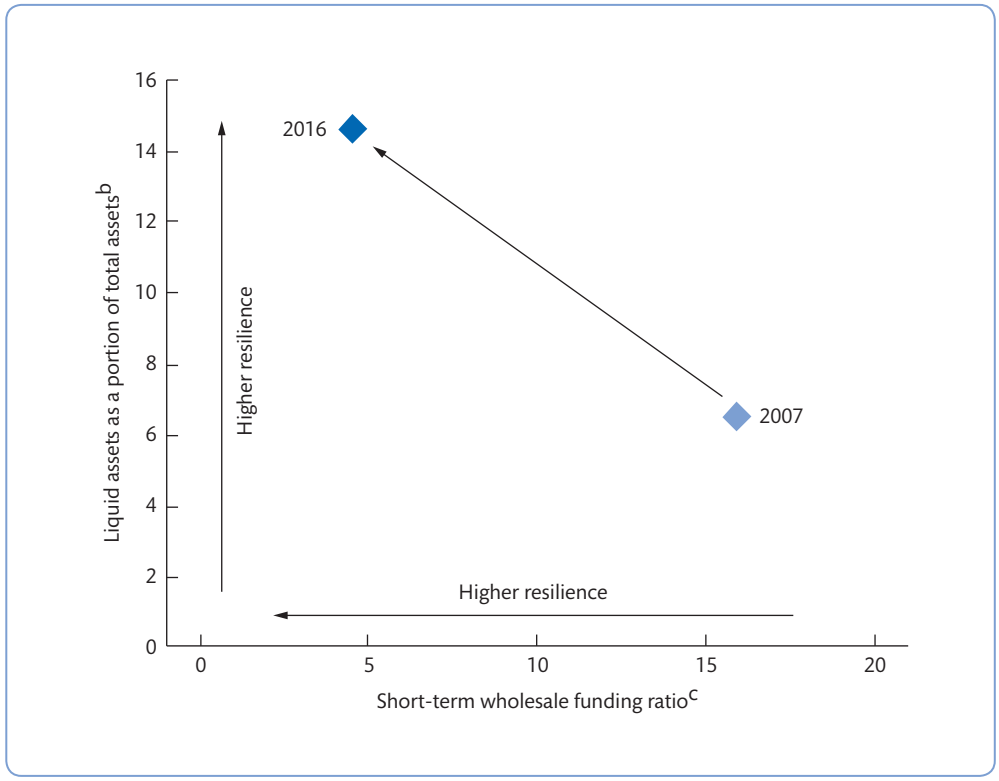


Figure 13.11 Liquid assets and short-term funding of large UK banks[a]

Notes: [a] Sample includes Barclays, HSBC, Lloyds Banking Group (including HBOS in 2007), Nationwide and RBS.

[b] The estimate of liquid assets in 2007 is based on: cash and balances with central banks, and highly liquid securities. Liquid assets in 2016 comprise Liquidity Coverage Ratio Level 1 high-quality liquid assets excluding covered bonds.

[c] Share of total funding (including capital) accounted for by wholesale funding with residual maturity of under three months other than repo funding (repurchase agreements and securities lending).

[d] Wholesale funding comprises deposits by banks, debt securities and subordinated liabilities. Funding is proxied by total liabilities excluding derivatives and liabilities to customers under investment contracts. Where underlying data are not published estimates have been used.

Source: Bank of England (2017), Chart B2, p. 36.

predecessors other (mainly standard setting) powers were transferred to the Payment Systems Regulator (this acted primarily as an industry body). In November 2015, Payments UK merged with the British Bankers' Association, the Council of Mortgage Lenders, the UK Cards Association and the Asset Based Finance Association, following a review into financial trade bodies. The resulting organisation, **UK Finance**, began operating in July 2017 and now oversees the sector (see also Section 2.4.1).

Under the Banking Act of 2009, the payment systems oversight is carried out by the Bank of England (Part 5, Banking Act, 2009). The Bank of England currently oversees the seven recognised payment systems: the three main sterling payment schemes (BACS, CHAPS and Faster Payments Service (FPS)), the foreign exchange settlement scheme CLS, the payment

arrangements embedded in the CREST securities settlement system (SSS) operated by Euroclear UK and Ireland (EUI), and the CCPs operated by LCH.Clearnet Ltd and ICE Clear Europe. In addition, following the Financial Services Act of 2012, the responsibility for supervision of CCPs (central counterparties) and SSSs (securities settlement systems) was moved from the Financial Services Authority (FSA) to the Bank of England with effect from 1 April 2013. Following a period of consultation, in February 2013 the UK Chancellor announced plans to regulate payment systems with the establishment of the Payments System Regulator (it became fully operational in April 2015).

The past two decades witnessed a rapid growth in the use of cards, both in the form of credit and debit cards, instead of cheques or cash transactions (see also Section 2.4.1). Cash payments have remained fairly stable whereas the use of cheques has fallen significantly. UK businesses and consumers have switched from cheques to cards: transactions using plastic cards (credit, debit and store cards) have dramatically increased. Debit cards were introduced in the UK in 1985, linking transactions directly to the holder bank or building society account and automatically debiting such account. By 1994, debit cards volumes exceeded credit cards for the first time and more than half of all cash acquired by individuals came from withdrawals at cash machines. By 1998 there were more debit cards payments than cheques payments made by personal customers. By 2001, over 6 million adults in the UK accessed their banks accounts on line (one in four internet users). The year 2002 witnessed the largest annual decline in cheques volumes and the largest ever increase in the number of credit card issued. By the mid-2000s all UK credit and debit card transactions had been authorised by customers keying in their personal identification number (PIN) rather than signing for the receipt of goods and services.[8]

A relatively recent innovation is **Faster Payments**: it was introduced in 2008 and it was the first new payments service to be introduced in the UK for more than 20 years. By the end of 2011 over 85 per cent of phone and internet payments were being processed through Faster Payments. Faster Payments Scheme membership is open to credit institutions with a settlement account at the Bank of England who can connect their payment system to the central infrastructure 24 hours a day, 7 days a week.[9] Faster Payment Service (FPS) is operated by Faster Payments Scheme Limited. FPS is owned by the ten members of FPS. The current members of the scheme are Barclays, Citi, Co-operative Bank, Clydesdale and Yorkshire Banks (National Australia Group), HSBC, Lloyds Bank, Nationwide Building Society, Danske Bank, Royal Bank of Scotland Group (including NatWest and Ulster Bank) and Santander UK. The number of Faster Payments rose from 198 million in 2012 Q2 to 763 million in 2021 Q1, while the combined value of Faster Payments continued to rise. Annual payment volumes amounted to 2.4 billion with a value of £2.1 trillion for 2020.

The increasing reliance on electronic payments does not come without glitches, as highlighted in Box 13.8.

[8] The source for early figures cited is APACS, Payment Developments and Innovations Milestones since 1985.

[9] **www.fasterpayments.org.uk/**

BOX 13.8 TSB CUSTOMERS SUFFER FIFTH DAY OF IT PROBLEMS AS PAYDAY LOOMS

Many clients still locked out of online banking accounts

The IT problems at TSB stretched into their fifth day on Friday, as many of the bank's customers continued to be locked out of their online accounts, causing uncertainty for those with end-of-month bills to pay. TSB, which has not been able to restore online or mobile banking for hundreds of thousands of its 5m customers since it attempted to move them over to a new IT platform last weekend, said on Friday that half its online banking customers still could not log in. Its mobile app was working better, it said, with just 10 per cent of users still locked out.

Over the past week, angry TSB customers have taken to social media to complain about not being able to log into their accounts, not being able to pay suppliers and being given access to other people's accounts. On Friday, many of the complaints centred around payday, a popular point of the month for people to pay their mortgages, and utility and credit card bills. TSB's direct debit service has not been affected by its IT problems, although issues have mounted up for customers who tend to pay their monthly bills directly from a TSB account.

Anthea Barker, who runs an electromagnetic test equipment rental business in Bedfordshire, said she had only been able to log in sporadically to her TSB account all week. "Today is my payday, and I have rent and bills to pay," she said. "But this morning I could not log in to check my balance or see what direct debits have gone out. I don't know what my financial position is."

TSB is owned by Sabadell, and has moved its customers on to a new IT platform designed by the Spanish bank from one that was run by its former owner, Lloyds Banking Group. Paul Pester, TSB chief executive, said on his Twitter account on Thursday "I've agreed with the Sabadell chair that I will take responsibility for our IT platform". Wes Streeting, a Labour MP on the Commons Treasury select committee, on Friday said the management of TSB needed to explain to parliament how the IT glitch occurred. "There can be no excuses for such a serious failure, but we need to understand what has gone so evidently badly wrong," he said. A Downing Street spokesman said: "We recognise this is something that customers want to see put right, that it is an issue that TSB are working on, but it is a matter for them."

On Thursday, Mr Pester promised to waive overdraft fees and interest charges for TSB retail and small business customers for April. The bank has not pledged, however, to compensate customers for any late-payment fines that may be levied by other organisations as a result of them being locked out of internet banking.

"We will look at every complaint on a case-by-case basis," TSB said. Missed mortgage payments, for example, can result in fines and affect consumers' credit profiles. The bank has not pledged to compensate customers who may be fined for late payments by other banks or service providers. Jonathan Reynolds, shadow City minister, said: "We need to see urgent action from TSB senior management on this. Frontline staff have been left to pick up the pieces with customers who are rightly angry over what has been a monumental lack of foresight. "TSB must quickly make clear how it is going to compensate customers who have lost business due to this blunder, beyond just an apology.

The level of communication to account holders has also fallen short of the standards we would expect and there must be serious questions asked."

FT Source: Adapted from Rovnick, N. and Pickard, J. (2018) 'TSB customers suffer fifth day of IT problems as payday looms', *Financial Times*, 27 April.
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13.7 Competition in UK banking

The UK banking market, like many other European systems, is relatively concentrated, with the top seven banks accounting for over 75 per cent of all banking sector assets. Concentration remained relatively stable throughout the 1980s up to 1997; this trend was contrary to concentration developments in various other European markets (see Chapter 14). However, from 1997 onwards concentration increased. The market share of the top banks, as a proportion of UK bank assets, grew rapidly from 1997 onwards due to various large-scale mergers and acquisitions, for example – Bank of Scotland merged with Halifax to form HBOS and the Royal Bank of Scotland acquired NatWest.

In addition to these broad trends, concentration in specific market segments is also substantial. The share of the top four banks increased more rapidly since 2005 than in previous years. The forced 2008 merger between Lloyds TSB and HBOS that gave the newly formed institution an estimated one-third of the UK retail savings market was testimony to this point. By 2016 banking sector concentration in the UK was higher than in Japan, Switzerland, Germany and the US but lower than in France. Concerns about having a market dominated by a handful of banks have pushed the regulators to encourage the start-up of new 'challenger' banks focusing on certain market segments (especially retail). These new challenger banks are growing, although they still represent only about 5 per cent of lending market share and also face a tough operating environment as shown in Box 13.9. Further reorganisations and restructurings have highlighted the dominant role played by a handful of institutions. In mid-2018 rumours were swirling around suggesting that Barclays was considering commencing talks on a merger deal with Standard Chartered.

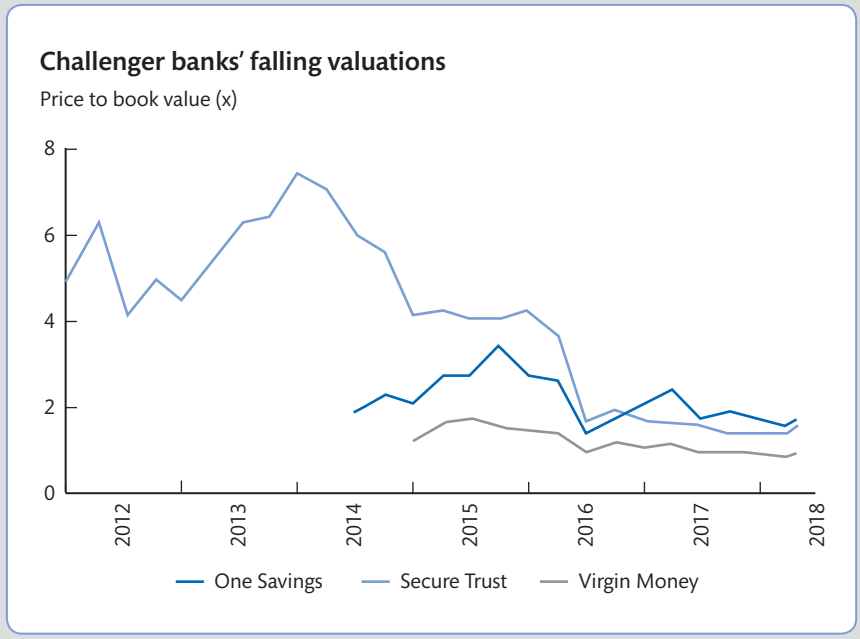
BOX 13.9 UK CHALLENGER BANKS BRACED FOR FRESH WAVE OF CONSOLIDATION

Lenders taking on the big five face rising costs, competition and a sluggish economy

The UK's small and mid-sized banks are bracing themselves for a fresh wave of consolidation as rising costs, increased competition and a sluggish economy create new challenges for groups trying to take on the big five lenders. Senior executives at several smaller lenders and established high street banks said they expect a pick-up in M&A activity, after last year's £850m takeover of Shawbrook and FirstRand's £1.1bn purchase of Aldermore put the sector on notice for a return to dealmaking.

Regulations designed to foster competition in the banking sector have encouraged a flowering of new "challenger" banks and specialist lenders since the financial crisis. However, Paul Lynam, board member with responsibility for challengers at industry lobby group UK Finance, and chief executive of Secure Trust Bank, said it is "almost inevitable" that some of them will combine. "All of the challenger banks will have a reasonably heavy fixed overhead from the costs of having a banking licence, so combining one or more banks of a smaller scale does give rise to huge cost efficiencies", he said. "Last year's transactions involving Aldermore and Shawbrook are unlikely to be the last."

BOX 13.9 UK challenger banks braced for fresh wave of consolidation (*continued*)

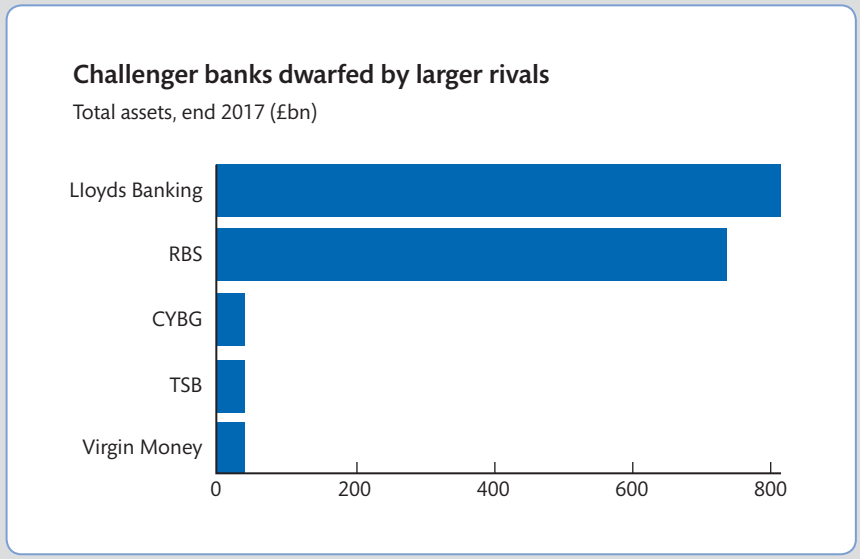


Two sources close to CYBG, the owner of Clydesdale and Yorkshire Banks, said it was one of the most obvious candidates to become a consolidator. One of the people said the bank had been "prevented hitherto by fancy valuations and a lack of catalyst – over the next two years we see both are likely to change". Industry figures also pointed to Shawbrook and its private equity owners – BC Partners and Pollen Street Capital – as another potential purchaser. One person close to Shawbrook said they saw an opportunity to build the business with further acquisitions in the short term. Smaller groups such as Secure Trust and OneSavings have also been vocal about their interest in buying either full businesses or boosting their growth by purchasing assets such as mortgage portfolios. OneSavings chief Andy Golding said: "Our game plan is staying independent ... We have an appetite to acquire assets, but really strict rules on pricing and return on risk means we'll only bid at a certain value."

OneSavings Bank, Virgin Money, Secure Trust, Close Brothers and Paragon all trade at price-to-book ratios below their 2015 peaks. A senior executive at one of the big five high street banks said that for the past few years, challengers had "never had it so good", as economic growth, a buoyant property market and record-low interest rates allowed double-digit growth in lending. However, they now face more pressures and several have warned growth is likely to slow.

Earlier this year, the Bank of England brought an end to its Term Funding and Funding for Lending schemes, two programmes that had provided hundreds of billions of pounds that fuelled lending growth over the past six years. Rating agency Moody's estimated that banks would have to pay more than £800m in extra interest costs to make up for the loss of funding, with challengers the most severely affected.

BOX 13.9 UK challenger banks braced for fresh wave of consolidation (*continued*)



The race to attract customer deposits is likely to drive up the interest rates banks pay, while competition from larger groups such as HSBC – which is expanding rapidly in the UK mortgage market – makes it harder to charge borrowers more, putting further pressure on margins.

Source: Megaw, N. (2018) 'UK challenger banks braced for fresh wave of consolidation', *Financial Times*, 30 April.
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Worries about limited competitive conditions in the UK banking sector are not a result of recent turmoil and reorganisation of the UK banking system post-crisis. Concerns about the effectiveness of competition in the banking market go back many years. A Treasury report entitled 'Competition in UK banking', published in 2000, aimed to investigate these issues (Cruickshank, 2000). The report (known as the **Cruickshank Report** as it was headed by Don Cruickshank) examined a broad range of issues relating to competitive conditions in the UK banking market. However, the main focus was on three areas – money transmission services, services to retail customers and services to SMEs. Since then the Office of Fair Trading (OFT), **Competition Commission** (CC) and the latter's successor since 2014, the **Competition and Markets Authority**, have conducted almost 30 inquiries into competition in different parts of the retail banking market. Many of these inquiries and investigations have focused on particular segments of the market, such as the personal current account market (Office of Fair Trading, 2008), cash ISAs (Office of Fair Trading, 2010) and store card credit services (Office of Fair Trading, 2004; Competition Commission, 2006). There have been two studies on SME banking (Competition Commission, 2002; Office of Fair Trading, 2007). The Office of Fair

Trading conducted a market study on a 'Review of barriers to entry, expansion and exit in retail banking' (2010b) and a 'Review of the personal current account market' in (2013). In 2016 the Competition and Markets Authority published its retail banking report 'Making banks work harder for you', which sets out proposals to reduce entry barriers in the retail banking market. In addition, there have also been a number of EU inquiries into the banking sector, including the European Commission's 2007 inquiry into retail banking (European Commission, 2007a).

The following briefly summarises the findings of the key reports and highlights concerns about the effectiveness of competition in the UK banking market (see Chapter 20 for an analysis of the various methods used to evaluate competitive conditions in banking).

13.7.1 The Cruickshank Report

Published in March 2000, the Cruickshank Report found that there were important limitations to competition in various key markets and that the established regulatory environment was inappropriate to deal with this. Recommendations were therefore made for a major overhaul of bank regulation in order to improve competition and innovation in UK banking.

One area that came in for particular criticism was the market for money transmission services (cheque payment, credit transfers and other payments media) where 'profound competition problems and inefficiencies' were found to exist. The report argued that money transmission services were dominated by a handful of major banks and the current arrangements restricted entry and resulted in high costs to retailers for accepting credit and debit cards as well as excessive charges for cash withdrawals (up to six times their cost). Money transmission services were also found to be 'cumbersome and inflexible' and slow to adapt to the new demands of e-commerce.

In the supply of retail banking services, it was found that competition had increased in the mortgage, personal loan and credit card areas although the prices charged by new entrants had had only a limited impact on established bank pricing. In addition, the dominant role played by the major banks in the current account market was believed to restrict competition in many other product areas. Significant barriers to switching current accounts remained. The report voiced concerns about the inadequate representation and redress for consumers in the event of disputes. It also referred to 'significant information problems', citing the fact that consumers were rarely aware of the terms and conditions of the products they bought.

The market for SME banking services was found to be much less competitive than the retail sector. Problems associated with switching current accounts, financial product information, representation and redress were found to be acute. The market for SME services was much more concentrated than the retail sector and entry barriers were found to be high (it is noticeable that the building societies that converted to banks did not enter the SMEs market in any significant fashion). Money transmission costs for UK SMEs was also found to be very high on an international basis and access to risk capital for high-growth firms was perceived to be limited.

Taking together the report's findings on retail and SMEs banking services, a broad range of recommendations were made, including:

- strengthening the current arrangements for customer redress and representation, including the establishment of a new Financial Services Consumer Council;
- improving customer information by publishing, via the Financial Services Authority (FSA), a broad range of benchmark retail and SMEs services according to price (providing both regional and UK prices):

- various initiatives to improve the flow of equity finance to high-growth SMEs;

Other, more controversial, recommendations included:

- that until UK merger law is reformed, the government should refer all mergers between financial suppliers to the Competition Commission if the merging firms have 'material shares of the market';
- calling for a Competition Commission inquiry into banking for SMEs.

An important theme throughout the report was the highly concentrated nature of the UK current account and SME markets as well as the structure of the domestic payments system. All these areas, the report argued, were characterised by high entry barriers as well as limited price and non-price competition. The large market shares held by a handful of banks was put as a major reason for the high profitability of UK banks during the 1990s. Market structure and adverse competitive outcomes were most pressing in the SME market. The Cruickshank Report stated that the competition problems were so significant that a change in market structure may be the only way of achieving an effectively competitive marketplace. It went on to argue that the only mechanism for delivering such a change was action following a complex monopoly reference to the Competition Commission.

Overall, the report argued that there was substantial scope for increased competition as well as the opportunity for competing banks to make adequate returns even in the provision of basic banking services. The recommendations, although unpalatable to the main UK banks at the time, were thought to go a long way to promote more effective competition in the UK banking market; in reality, however, the Report has had little actual effect.

13.7.2 Competition Commission Report

The UK Competition Commission Report (2002), 'Supply of banking services by clearing banks to small and medium-sized enterprises', followed on from the Cruickshank Report. The Report recommended a number of measures to apply to all the eight main clearing groups to reduce barriers to entry and expansion in the SME banking area. Primary among these were measures to ensure fast error-free switching of accounts regarded as crucial to a more competitive market. In addition, it was recommended that measures should be taken to limit bundling of services, and improving information and transparency and an examination of the scope for sharing of branches. The report also concluded that the four largest clearing groups (Barclays, HSBC, Lloyds TSB and Royal Bank of Scotland Group) were charging excessive prices (including interest forgone on non-interest-bearing current accounts) and therefore making excessive profits, in England and Wales, of about £725 million a year, with adverse effects on SMEs or their customers. For the most part, the Report found no such excessive prices in Scotland or Northern Ireland. The Commission recommended that the four largest clearing groups be required to pay interest on current accounts or alternatively to offer SMEs accounts that are free of money transmission charges, or to offer SMEs a choice between the two options.

The banking sectors response to the above recommendations has been to introduce a range of **Banking and Business Banking Codes**, which are voluntary codes that set standards of good banking practice for banks and building societies to follow when they are dealing with personal or business customers in the United Kingdom. As voluntary codes, it was argued that they allow competition and market forces to work to encourage higher standards for the benefit of customers. Various measures have been implemented to make it easier for retail

and small business customers to switch accounts and free banking services are now generally available to new customers, although the banks did not adopt the recommendation that market rates be paid on current accounts and access to payment systems still appears relatively limited. In short, there has been no noticeable improvement in competition as a result of the Competition Commission's report.

13.7.3 The Independent Commission on Banking

The Independent Commission on Banking (also known as the Vickers Commission as it was chaired by Sir John Vickers) was established by the Government in June 2010 to 'consider the structure of the UK banking sector, and look at structural and non-structural measures to reform the banking system and promote competition'. While its main recommendations related to ring-fencing retail from investment/wholesale banking, boosting capital resources (see Section 13.3.1), it also included various measures relating to increasing the competitive conditions in UK banking. Although we have touched on this already in this chapter, here we focus in a little more detail on the competition issues. The ICB report aimed to distinguish between 'good competition' (which increases consumers' choice and serves them well), and 'bad competition' (which exploits customer unawareness or for example, 'creates a race to the bottom on lending standards'). The Report painted a depressing picture:

- most of the bad issues highlighted in the Cruickshank Report remain;
- the competition authorities have had to intervene on several occasions in recent years;
- the industry is more concentrated post crisis than it was before; and
- consumer satisfaction levels are low and the perceived costs of exercising market choice by switching accounts are 'remarkably' low.

The Commission recommended:

- that the divestment of RBS and Lloyds Banking Group should be enhanced to create a major new 'challenger' in the market;
- the introduction of an account 'redirection' service for personal and small business accounts to 'boost confidence in the ease of [account] switching';
- improved transparency of the costs of an account, including interest foregone indicators;
- competition should be central to financial regulation.

The UK government accepted all the Commission's recommendations concerning increased competition, apart from the recommendation that the divestiture of Lloyds should exceed the EC requirements (see also Section 13.3 for a discussion of the new regulatory landscape and the impact of the Vickers Report).

13.7.4 The Competition and Markets Authority – retail banking market investigation

In 2016 the Competition and Markets Authority (CMA) published a report[10] investigating retail banking and concluded that the existence of barriers to entry for smaller and newer banks made the banking market less competitive. The CMA report paved the way for what

[10] **www.gov.uk/cma-cases/review-of-banking-for-small-and-medium-sized-businesses-smes-in-the-uk**

some have called the 'open banking revolution', which enables financial services customers to securely share their financial data with other financial institutions. **Open banking** requires major banks in the UK to share account data with third parties. To maximise information transparency and encourage competition, open banking shakes up the financial services industry by offering an equal competitive position to services offered by both established and new challenger banks.

This is expected to facilitate greater customer switching as customers will be able to obtain more tailored financial offers and better priced services delivered securely and confidentially. These developments are expected to shape and change the financial services industry in several ways.

First, it will reform the retail bank business model. A united financial platform that has been designed to provide users with a network of financial institutions' data through the use of application programming interfaces (APIs) will disrupt the existing bank advantages in UK. It will threaten the traditional retail banking business model with disintermediation, when bank customers are able to centralise their account information and payment options into one digital application. Newer and smaller banks or fintech start-ups that are able to provide innovative solutions and modern financial products are likely to benefit from these developments.

Second it will reform the payment system. Open banking will enable financial institutions to launch easy, fast and innovative global payment methods. Open banking means that third parties like payment initiation services providers (PISPs) will be able to initiate online payments to an e-merchant or other beneficiary directly from the payer's bank account. Payment of bills and transfer of money will be as easy as sending a message. One of the key points of the open banking standard is to enhance financial safety. Third-party financial services providers will be required to obtain licenses and to meet the rules set by the main UK bank regulator – the FCA. It is hoped this big change in the payment industry will stimulate innovation, efficiency and security in a world of digitised banking/financial services.

Finally, open banking will mean that fintech firms will play a more important role in the financial services industry. In a world of open banking, existing major banks will need to build up active partnerships with fintech services providers. Open banking will lead to a huge number of fintech start-ups entering the financial services industry – mainly because the new environment will enable them to access client financial information from traditional banks.

There remain a lot of unanswered questions about the future of open banking. Security and privacy is fundamental to its implementation. Overall, the open banking initiative is a revolutionary experiment aimed at boosting retail banking competition and giving a kick-start to help new challenger banks and other fintech start-ups operating in the financial services space.

13.8 Conclusion

Up until mid-2007 the changing features of the UK banking system were mainly a consequence of the evolving market environment and also the result of various domestic regulatory reforms. Since the global financial crisis hit in the summer of 2007, all has changed. UK banks have been transformed from highly profitable, well-managed and innovative institutions to pariahs – subject to public and private derision. There is extensive debate surrounding the longer-term implications of the crisis for the future architecture of the UK (and global)

banking and financial system. In addition, the decision of the electorate in June 2016 to leave the EU has also added increased uncertainty, and by mid-2021 a 'hard Brexit' with no single banking licence and passporting rights remains (although there is ongoing political discussion between the UK and EU to arrive at some sort of deal). This already has forced many banks to relocate a part of their business inside the EU to places including Dublin, Paris, Luxembourg, Frankfurt and Amsterdam.

In terms of the general operating environment support has been expressed for a 'return to basics' involving: greater emphasis on simple leverage and liquidity ratios; more realistic risk assessment as the basis for risk-based capital regulation; greater transparency and the curtailment of opaque business models (e.g. complex securitisation and derivatives activity); and the development of systems and other procedures to identify problem institutions for early intervention in cases of financial distress. The proposals made by the Independent Commission on Banking in September 2011 have been incorporated in two major new pieces of legislation: the 2012 Financial Services Act and the 2013 Financial Services (Banking Reform) Act. The 2012 Financial Services Act abolished the existing financial regulator, the Financial Services Authority, and created three new regulatory bodies: the Financial Policy Committee (FPC), the Prudential Regulatory Authority (PRA) and the Financial Conduct Authority (FCA). The 2013 Financial Services (Banking Reform) Act, among other measures, introduces the ring-fencing of retail banking activities that will be in place at the start of 2019. Also implementation of CRD IV will boost bank solvency together with the linked Basel III liquidity rules. It will be interesting to see whether the open banking initiative helps boost competition in the retail banking space or whether the new challengers or fintech operators will be gobbled-up by their much larger competitors. Whatever changes take place, there is no doubt that these momentous events will resonate for many years to come, and that UK banks are likely to experience limitations to their business activities and risk-taking capabilities for many years to come.

Key terms

Asset Protection Scheme (APS)
Banking Act (2009)
Banking and Business Banking Codes
Big Bang
Competition Commission
Competition and Markets Authority
Competition policy
Credit Guarantee Scheme (CGS)
Cruickshank Report
Demutualisation
Faster Payments
Financial Services (Banking Reform) Act (2013)
Financial Services Act (2012)
Financial Services and Markets Act (2001)
Independent Commission on Banking
Open banking
Ring-fencing
Special Liquidity Scheme (SLS)
Special Resolution Regime (SRR)
Turner Review
UK Finance
UK Financial Investments Ltd (UKFI)
Vickers Report

Key reading

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REVISION QUESTIONS AND PROBLEMS

13.1 Why did the global financial crisis affect UK banking so severely? Discuss the main features of UK banks in the 1990s and early 2000s and explain why these features made the UK banking sector particularly vulnerable.

13.2 Describe how changes in the regulatory structure contributed to the banking crisis and outline the key issues of current and future reform.

13.3 Read Box 13.3 on LIBOR fixing. Answer the following questions:

(a) What is the LIBOR and how was it traditionally fixed?

(b) What do you understand by 'rate rigging'?

(c) What are the two main motivations for banks to misreport LIBOR rates?

(d) What reforms have been introduced in the UK as a result of this scandal?

13.4 Why did RBS fail? Discuss the main reasons of the failure of one of the largest UK banks.

13.5 What are the main drivers of UK banks' profitability and how has the global financial crisis affected performance?

13.6 What are the implications of increased concentration in the UK banking market? Will the new challenger banks boost competition in the market?

13.7 Are we likely to witness any more M&As among major UK banks in the near future? What implications does this have for competition and innovation in the UK banking sector?

13.8 What were the main recommendations of the Independent Commission on Banking and how do you think the banking industry respond?

13.9 What are the main features of the UK payment system?

13.10 Discuss the key threats posed by Brexit to the City of London.

Appendix 13.1
Demutualisation of the UK building society sector

Year	Building society name	Assets size	Nature of conversion or acquisition
1989	Abbey National	£38.9 billion (end 1989)	Converted to plc and bank status in July 1989
1995	Cheltenham & Gloucester	£19.4 billion (end 1994)	Acquired by Lloyds TSB in August 1995
1996	National & Provincial	£14.1 billion (end 1995)	Acquired by Abbey National in August 1996
1997	Alliance & Leicester	£22.3 billion (end 1996)	Converted to plc and bank status in April 1997
1997	Halifax	£102.1 billion (end 1996)	Halifax and Leeds Permanent Building Societies merged in 1995; the new Halifax then converted into plc and bank status in June 1997. Halifax merged with the Bank of Scotland in September 2001 to form HBOS
1997	Woolwich	£29.3 billion (end of 1996)	Converted to a bank in July 1997 and acquired by Barclays in October 2000
1997	Bristol & West	£9.4 billion (end of 1996)	Acquired by the Bank of Ireland in July 1997
1997	Northern Rock	£13.7 billion (end of 1996)	Converted to bank status in October 1997
1999	Birmingham Midshires Building Society	£8.22 billion (end of 1999)	Acquired by Halifax in April 1999 The Halifax merged with the Bank of Scotland in September 2001 to form HBOS
2000	Bradford & Bingley	£24.7 billion (end of 2000)	Converted to bank status in December 2000

Note: The year 1997 was the most significant for building society conversions into banks, when five of the eight largest societies demutualised. These five societies accounted for around 60 per cent of the total assets of the building society sector.

Chapter 14

Banking in Europe

Learning objectives

- To understand the main structural features of the European banking market
- To analyse the implications of the 2007–2009 financial crisis on European banks
- To analyse the implications of the eurozone crisis on European banks
- To describe the regulatory changes that have affected the European banking sector
- To understand the key building blocks of the Banking Union
- To understand the main trends in the recent performance of European banks

14.1 Introduction

Since the introduction of the First Banking Directive in 1977, the **deregulation** of financial services in the European Union (EU) – together with the establishment of the Economic and Monetary Union (EMU) and the introduction of the euro – aimed at fostering integration through the creation of a level playing field in the provision of banking services across the EU. Financial integration is considered to be one of the key factors for making Europe more efficient and competitive and, ultimately, for contributing to sustainable economic growth. During this time, European banking markets have experienced marked changes – the number of banks has fallen substantially as a result of merger and acquisitions (M&As) and industry concentration has increased. Banks have shifted their business focus on generating revenue through non-interest sources of income and there has been widespread diversification into areas such as insurance, pensions, mutual funds and various securities-related areas. Technological developments re-shaped the way in which banks distribute products and services to their customers and also reorganised back-office functions for the processing of financial transactions and information.

The EU's financial integration has been an ongoing process during the last two decades and has made substantial progress, particularly in the wholesale financial sector. This process

has also fostered the growth of many large banking groups, which combine investment, commercial, retail and investment banking. These provide a range of services in several different countries, both inside and outside the EU. The European model of integration is based on the **single EU passport** (introduced by the Second Banking Directive in 1989), thanks to which financial institutions have the freedom to determine where they want to be established, and under which legal form. Over time, many financial institutions have expanded their operations across national borders, through branches and subsidiaries.

Ten years into the introduction of the euro, the global financial crisis of 2007–2009 triggered a swing of the pendulum for the process of integration and the sustainability of the bank business model fostered by the EU agenda came under question. In addition, the **eurozone crisis**, which affected eurozone countries in 2010–2013, has combined banking sector fragilities with a sovereign debt crisis, deepening the impact of the global financial crisis on EU growth and competitiveness. The crises have also highlighted a number of issues with the existing EU regulatory architecture. Debates on the necessary reforms needed to strengthen the EU regulatory framework to limit future risks arising from banks' activities are ongoing. European authorities have initiated substantial reforms to strengthen simultaneously the three pillars of financial stability, namely surveillance, crisis prevention and crisis management. The reforms come under the umbrella of the EU's **Banking Union**, which include three main parts: (i) to place eurozone banks under the overarching supervision of the ECB; (ii) the creation of a common bank resolution scheme; and (iii) a common deposit scheme.

This chapter discusses the key developments in the European Union (Section 14.2), and the creation of the Single Market for Financial Services (Section 14.3). In Section 14.4 we look at the impact of the global financial and eurozone crises on EU banks and discuss the various developments in response to the 2007–2009 banking crisis and 2010–2013 sovereign debt problems. Structural trends in European banking are discussed in Section 14.5 and Section 14.6 provides an overview of the recent performance features of European banks. Section 14.7 concludes the chapter.

14.2 The European Union

The origins of the European Union date back to the 1950s: in 1951 Belgium, France, Germany, Italy, Luxemburg and the Netherlands formed the European Coal and Steel Community (ECSC) and in 1957 the Treaty of Rome established the European Economic Community (EEC). Since then, the European Union (formally established by the Maastricht Treaty in 1993) has grown to a union of 27 member states, through a number of enlargements and one exit, as summarised in Table 14.1. The last amendment to the constitutional basis of the EU came into force in 2009 and was the Lisbon Treaty.[1] To join the EU a country must meet the

[1] The Treaty of Lisbon was signed on 13 December 2007, but could enter into force only when ratified by all member states. The last country to ratify the treaty was the Czech Republic, which completed the process on 3 November 2009. The treaty became law on 1 December. The Lisbon Treaty amends both the Treaty establishing the European Community (Treaty of Rome 1957) and the Treaty on European Union (Maastricht Treaty 1992). These two Treaties will continue to be the basis on which the EU functions. The Treaty of Lisbon simplifies the structure of the EU, which currently consists of three 'pillars': the Community, the common foreign and security policy, and justice and home affairs. In the new Treaty, these pillars cease to exist and the Community is replaced by the Union, which will have legal personality. The Treaty establishing the European Community is renamed the Treaty on the Functioning of the Union.

Table 14.1 The European Union: a timeline

Year	Member states	Enlargement
1957	Belgium, France, Germany, Italy, Luxemburg and the Netherland	Founding six
1973	Denmark, Ireland, United Kingdom	First enlargement
1981	Greece	Second enlargement
1986	Portugal, Spain	Third enlargement
1995	Austria, Finland, Sweden	Fourth enlargement
2004	Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, Hungary	Fifth enlargement (part one)
2007	Bulgaria, Romania	Fifth enlargement (part two)
2013	Croatia	
2014	Albania, the Former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey	Official candidates
	Bosnia and Herzegovina and Kosovo	Applied for membership
2021	United Kingdom	Exits the EU

so-called Copenhagen criteria, which require a stable democracy, a respect of human rights and the rule of law, a functioning market economy and the acceptance of the obligations of membership, including EU law.

On 1 May 2004, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and the Slovak Republic joined the European Union. Bulgaria and Romania joined in 2007. This was the biggest ever enlargement of the EU and a historic step towards unifying Europe after several decades of division resulting from the Cold War. Finally, Croatia became the 28th EU country on 1 July 2013. Over the past two decades, these countries faced a great degree of change and have made remarkable progress toward convergence to EU standards on a number of economic indicators. Between 1999 and 2003, for example, they recorded an average GDP growth of 3.2 per cent compared with 2.0 per cent for the EU-15 countries. Despite growth and continuing convergence, GDP levels per capita on average still lag behind those of the old EU member states. Indeed, EU membership is only the first of the many major milestones that these countries will be facing over the next several years.

At the time of writing (May 2021), Albania, Montenegro, Serbia, the former Yugoslav Republic of Macedonia and Turkey are official candidate countries. Bosnia and Herzegovina and Kosovo have also applied for membership and are considered potential candidates. Since the breakup of Yugoslavia and the civil war in the 1990s, countries in the Balkans have been prioritised for EU membership. Turkey has been negotiating since the 1980s. Iceland applied for EU membership, following the 2007–2009 financial crisis, but in 2015 it announced its intention to drop the EU membership bid. The UK voted to leave the EU in 2016 and officially exited on 31 January 2021.

14.2.1 The economic outlook

The European Union covers a large part of the European continent, with 27 member states and a population of over half a billion citizens, the world's third largest after China and India. Although standards of living have improved considerably over the past decade, significant

differences among member states remain. GDP per capita is highest in Luxembourg and lowest in Bulgaria. The EU is striving to narrow the gap between its rich and poor members and GDP growth is currently higher in the countries that have joined the EU since 2004 than in the older member states.

Table 14.2 summarises the main macroeconomic indicators for the 27 EU member states and the UK and shows the considerable growth both in total and per capita GDP, in the run up to accession for central, eastern and southern European countries. Indeed, growth in these

Table 14.2 Macroeconomic outlook

Country	Population[1]		GDP at current prices[2]		Real GDP growth rate[3]		Employment rate[4]	
	2005	2019	2005	2019	2005	2019	2005	2019
BE	10,474	11,549	303,435	476,203	1.8	1.7	66.5	65.3
BG	7,719	6,951	23,256	61,240	6.2	3.7	61.9	70.0
CZ	10,234	10,693	104,629	223,945	6.3	2.3	70.1	75.3
DK	5,419	5,822	207,367	312,747	2.4	2.8	78.0	75.4
DE	82,464	83,167	2,224,400	3,449,050	0.8	0.6	69.4	77.8
EE	1,348	1,330	11,182	28,112	9.4	5.0	72.	76.1
IE	4,160	4,964	162,897	356,051	6.2	5.6	72.6	70.2
GR	11,104	10,710	193,050	183,414	2.3	1.9	64.6	56.5
ES	43,398	47,330	909,298	1,244,722	3.6	2.0	67.2	63.7
FR	62,958	67,099	1,718,047	2,425,708	1.9	1.5	69.4	65.9
IT	58,607	60,245	1,436,380	1,789,747	0.7	0.3	61.6	59.2
CY	758	888	13,598	22,287	3.9	3.1	74.4	71.0
LV	2,300	1,908	12,928	30,463	10.6	2.1	70.3	72.7
LT	3,414	2,794	20,969	48,797	7.8	4.3	70.6	73.2
LU	465	626	30,270	63,516	5.4	2.3	69.0	67.9
HR	4,669	4,058	36,030	54,238	4.3	2.9	60.0	62.2
HU	10,087	9,770	88,766	146,062	4.0	4.6	62.2	70.3
MT	403	515	4,931	13,462	3.9	5.3	57.9	73.9
NL	16,317	17,408	513,407	810,247	2.0	1.7	75.1	78.4
AT	8,225	8,901	245,243	397,575	2.5	1.4	71.7	73.8
PL	38,161	37,958	244,420	532,329	3.6	4.5	60.1	68.5
PT	10,549	10,296	154,269	213,301	0.9	2.2	72.3	70.6
RO	21,624	19,318	79,802	223,337	4.2	4.2	63.6	66.0
SI	2,001	2,096	28,731	48,393	4.5	3.2	71.1	71.6
SK	5,387	5,458	38,489	93,865	6.7	2.3	64.5	68.5
FI	5,245	5,525	157,429	240,556	2.9	1.1	73.0	72.7
SE	9,030	10,328	298,353	474,468	3.3	1.3	78.1	76.7
UK	60,238	67,026	1,867,129	2,522,713	2.2	1.3	75.2	75.1

Notes: [1]In thousand inhabitants; [2]in millions of euro; [3]percentage change over previous year; [4]percentage. AT = Austria; BE = Belgium; BG = Bulgaria; CY = Cyprus; CZ = Czech Republic; DE = Germany; DK = Denmark; EE = Estonia; ES = Spain; FIN = Finland; FR = France; GR = Greece; HR = Croatia; HU = Hungary; IE = Ireland; IT = Italy; LT = Lithuania; LV = Latvia; MT = Malta; NL = the Netherlands; PL = Poland; PT = Portugal; RO = Romania; SE = Sweden; SI = Slovenia; SK = Slovakia; UK = United Kingdom.

Source: Eurostat.

countries has been higher than in the old member states over the same period. However, most economies witnessed a contraction up to 2016, with some of the new member states being badly hit by the global recession. There has been modest growth thereafter.

Income per capita rose from 40 per cent of the old member states' average in 1999 to 52 per cent in 2008. Research estimates indicated that the accession process boosted economic growth in the new member states by about $1^{3}/_{4}$ percentage points per year over 2000–2008, when growth increased from $3^{1}/_{2}$ per cent, on average, in 1999–2003 to $5^{1}/_{2}$ per cent in 2004–2008.[2] Growth in the old member states also benefited from enlargement, in particular in those countries that increased trade and investment in the new member states. A key driver of growth was institution building. Institutional reforms introduced by the adoption of the ***acquis communautaire***, which is the body of principles, practices, obligations, objectives and legal and other acts that have been agreed or have been developed over the years by the European Union. These include the EU Treaties in their entirety, as well as all existing EU legislation and Court of Justice judgments. These have improved the regulatory framework and increased the effectiveness of public administration in the new member states.

The sovereign debt crisis, which followed on from the global banking crisis in 2010, however, posed major new challenges for all member states through declining trade, reduced availability of financing, falling household wealth and deteriorating market confidence. Although EU membership, and even more so euro area membership, provides some degree of protection and stability, all member states have developed similar vulnerabilities. There are fears that in the wake of both crises, the convergence process could slow down. But the economic situation also offers opportunities for reform which could mitigate the adverse social and economic impacts and provide a strong underpinning for a quick and sound recovery.

The EU has enacted a series of initiatives to promote growth. These strategies also includes seven 'flagship initiatives', providing a framework through which the EU and national authorities mutually reinforce their efforts in priority areas such as innovation, the digital economy, employment, youth policy, industrial policy, poverty and resource efficiency.

14.3 The Single European Market for financial services

Since the passing of the First Banking Co-ordination Directive in 1977, EU legislation has been directed towards creating an integrated and competitive European banking system. To assist banks in confronting challenges posed by the ever-changing economic environment, financial authorities throughout Europe have become more aware of the importance of financial regulation. Possibly the most far-reaching legislation for EU banking, the 1989 **Second Banking Co-ordination Directive (2BCD)**, sought to enhance competition by establishing EU-wide recognition of single banking licences. The 1992 Maastricht Treaty created the European Union and led to the establishment of the euro currency and the European Central Bank in 1999.

In this respect, EU legislation creating a **Single Market** and the introduction of **Economic and Monetary Union (EMU)** in 1999 (see Box 14.1 for more details) further liberalised financial market activity.

[2] European Commission (2009).

BOX 14.1 THE CREATION OF A SINGLE MARKET FOR FINANCIAL SERVICES IN THE EUROPEAN UNION

Until the 1980s the European financial and banking sectors were mainly domestically oriented. National governments invariably acted as protectors of their banks from foreign influences and sometimes were themselves owners of major banks. Interest rate restrictions and capital controls were common, and branching restrictions existed in some countries. The objective of harmonisation of laws and practices of the member states reflected wider changes in the domains of economic policy, internationalisation, technological advances and globalisation. The integration process embodied extensive financial liberalisation and was aimed at creating a single market for financial services.

In a report to the House of Lord, the Select Committee on the European Union (2003) clarifies the meaning of a single market in financial services for providers and consumers:

> A single market in financial services means that a financial services provider authorised to provide financial services in one member state is able to offer the same services throughout the EU competing on an equal basis within a regulatory framework that is consistent across the Union. On the other side, the consumer would have access to a wider range of more competitively priced products and would be able to shop with confidence and safety in the market place.

A milestone in the harmonisation of EU banking laws was the 1989 Second Banking Co-ordination Directive, which established EU-wide recognition of single banking 'passports' issued in any member state as well as the principle of home-country supervision with minimum standards (including capital) at EU level. In addition the directive allowed banks to operate as *universal banks*: that is to engage directly in other financial activities, such as financial instruments, factoring, leasing and investment (merchant) banking. A number of other directives were enacted in an attempt to harmonise the details (e.g., setting minimum standards for deposit guarantee schemes). The single market for financial services implied also liberalisation of non-bank financial intermediaries. Insurance companies and investment firms were granted a single EU 'passport' with mutual recognition as a result of directives enacted in the early 1990s. Mutual recognition is a system that allows licensed banks to set up branches across states while being subject to each state's rules and regulations.

A major barrier to the formation of a single European market for financial services was that countries still had their own national currencies and monetary policy. As part of the EU's single market programme, the introduction of a single currency was viewed as a central element in the harmonisation process. A further step towards a single market in financial services was finally taken on 1 January 1999, with the launch of the third stage of EMU. This was achieved in three stages detailed in the report of the committee chaired by the then President of the European Commission, Jacques Delors.

- Stage 1 of EMU began on 1 July 1990. Member states had to abolish all remaining capital controls. It required also a higher co-operation among national central banks and underlined the need for a new Treaty to permit the realisation of an economic union ('Treaty on European Union', agreed December 1991 and signed in Maastricht on 7 February 1992).
- Stage 2 of EMU began on 1 January 1994, a few months after the coming into force of the Maastricht Treaty. Member states made significant progress towards economic policy convergence. As a precursor to the European Central Bank (ECB), the EMI (European Monetary Institute) was created. Its task was to strengthen co-operation between the national central banks and to carry out the necessary preparations for the introduction of the single currency.
- Stage 3 of EMU began on 1 January 1999. Exchange rates between national currencies were fixed and a European Central Bank created. The transition to the third stage of the monetary union was made on the basis of a series of 'convergence criteria' set out in the Maastricht Treaty on European Union, the objective was to establish an economic environment of sustainable low inflation in all the member countries.

The euro replaced national currencies by 1 July 2002: 11 countries made up the euro area when the euro was introduced in 1999; there are now 19 member states.

The 11 euro area (also known as the eurozone) countries originally participating in EMU are the

Box 14.1 The creation of a single market for financial services in the European Union (*continued*)

following: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Spain and Portugal. In July 2000 the conversion rates between the euro and the Greek drachma were set as Greece fulfilled the conditions for joining the EMU. Denmark and the UK negotiated an 'opt-out' Protocol to the EU Treaty, granting them the option of joining the euro area or not. Sweden initially did not meet the necessary conditions for entry and in September 2003 rejected the euro in a national referendum.

Since then, seven more countries have adopted the euro: Slovenia on 1 January 2007, Cyprus and Malta on 1 January 2008, Slovakia on 1 January 2009. Estonia joined the euro area on 1 January 2011, when the euro replaced the Estonian kroon. Latvia became the 18th member state of the eurozone on January 2014 and Lithuania the 19th, on January 2015.

Euro banknotes and coins were introduced on 1 January 2002 in 12 member states of the European Union (EU). The irrevocably fixed conversion rates between the euro and the currencies of the 12 initial member states adopting the euro are shown in Table 14.3 (OJ L 359, Vol. 41, 31/12/1998 and OJ L 167, 07/07/2000). Table 14.3 also indicates the irrevocably fixed conversion rates for the newer eurozone members:

Table 14.3 Euro area member states

Country	Conversion rate of 1 EUR	Member of the eurozone since
Austria	13.7603 ATS	1999
Belgium	40.3399 BEF	1999
Cyprus	0.585274 CYP	2008
Estonia	15.6466 EEK	2011
Finland	5.94573 FIM	1999
France	6.55957 FRF	1999
Germany	1.95583 DEM	1999
Greece	340.750 GRD	2002
Ireland	0.787564 IEP	1999
Italy	1936.27 ITL	1999
Latvia	0.702804 LVL	2014
Lithuania	3.45280 LTL	2015
Luxembourg	40.3399 LUF	1999
Malta	0.429300 MTL	2008
Netherlands	2.20371 NLG	1999
Portugal	200.482 PTE	1999
Slovakia	30.1260 SKK	2009
Slovenia	239.640 SIT	2007
Spain	166.386 ESP	1999

A major aim of EU legislation has been to reduce the barriers to cross-border trade in the banking and financial services area, with the ultimate aim of creating a single market in financial services. The liberalisation of structural obstacles has been accompanied by financial deregulation through the reduction of direct government control. Table 14.4 shows the main regulatory measures that have aimed at establishing a harmonised framework for European financial services in the pre-crisis period (the regulatory changes triggered by the global financial crisis and eurozone crisis are discussed in Section 14.4).

Table 14.4 Regulatory measures affecting the EU banking and financial sectors

Year	Regulation
1977	**First Banking Directive (77/780/EEC)** – adoption of regulations, norms and procedures, which removed obstacles to the provision of services across the borders of member states and to the establishment of branches. It also harmonised the rules and conditions for issuing a licence to operate as a bank and defined the authorities that supervise banks and branches of foreign banks, as well as the procedures for co-operation among these authorities.
1985	**White Paper 'Completing the internal market' (COM 85/310)** – proposed to abolish all remaining non-tariff barriers to the free circulation of goods, services, people and capital.
1988	**Basel Capital Adequacy Regulation** – established minimum capital adequacy requirements for banks – the so-called 8 per cent ratio. Established definitions of capital including Tier 1 (equity) and Tier 2 (near-equity) capital. Devised risk-weightings based on credit risk for bank business. These were incorporated into European law by the Council Directive 89/299/EEC on the own funds of credit institutions.
1988	**Deregulation of capital movements in the European Monetary System (EMS)** – enabled the free flow of capital cross-border within the EU (Council directive 88/361/EEC).
1989	**Second Banking Directive** (Second Council Directive 89/646/EEC) – established the rules for a single banking licence within the EU and introduced the principles of home-country control (home regulators have ultimate supervisory authority for the foreign activity of their banks) and mutual recognition (EU bank regulators recognise that their rules and regulations are equivalent). The Second Banking Directive was passed in conjunction with the Own Funds and Solvency Directives that effectively introduced capital adequacy requirements similar to those proposed by Basel into EU law.
1993	**Investment Services Directive** (Council Directive 93/22/EEC) – set the legislative framework for investment firms and securities markets in the European Union, providing for a single passport for investment services.
1994	**Deposit Guarantee Scheme –** Directive 94/19/EC introduced minimum harmonisation for Deposit Guarantee Schemes.
1999	**Financial Services Action Plan (FSAP)** – aimed at developing a legislative framework for developing the Single Market in financial services. Between its endorsement by the European Council in Lisbon in March 2000 and the end of April 2004, 38 out of the 42 FSAP measures were adopted in the EU.
2000	**Directive on e-money** – Directive 2000/46/EC was conceived and adopted at the height of the e-commerce boom, and was intended to facilitate access by non-credit institutions to the business of e-money issuance. Dealt with harmonising rules and standards relating to such things as payments by mobile telephone, payments using transport cards, as well as Basel payment facilities.
2001	**Directive on the Re-organisation and Winding-Up of Credit Institutions** – Directive 2001/24/EC created rules to ensure that reorganisation measures or winding-up proceedings adopted by the home state of an EU credit institution are recognised and implemented throughout the Community.
2001	**Regulation on the European Company Statute** (Council Regulation (EC) No 2157/2001) – established a legal framework for a new form of company, the European Company or 'Societas Europaea (SE)', and consisted of an EU regulation (setting out the core company law framework and which has direct effect throughout the Community) and an accompanying EU Directive dealing with employee involvement in SEs. Aimed to establish standard rules for company formation in the EU.
2004	**Directive on Takeover bids (Directive 2004/25/EC)** – established a common framework for cross-border takeover bids.
2004	**Markets in Financial Instruments Directive (Directive2004/39/EC)** – known as **MiFID,** the Directive proposed harmonised regulation for investment services across the European Economic Area (EEA). It introduced a 'passport' for trading venues and investment firms to operate throughout the EEA on the basis of authorisation in their home member state. It also introduced various investor protection measures.
2006	**Basel II – solvency (capital adequacy) framework** – to update the original international bank capital accord (Basel I), which has been in effect since 1988. The new rules aim to improve the consistency of capital regulations internationally, make regulatory capital more risk sensitive and promote enhanced risk-management practices among large, internationally active banking organisations. These were incorporated into European law by Directive 2006/49/EC and Directive 2006/49/EC. These Directives, also known as CRD (*Capital Requirement Directives*).

Table 14.4 continued

Year	Regulation
2007	**Payment Services Directive (Directive 2007/64/EC)** – the directive known as PSD sets the basis for a harmonised legal framework for the creation of an integrated payments markets. It was seen as an additional step towards the single market, and aimed at increasing consumer protection and market transparency and at enhancing competition in payment markets by removing market entry barriers. It is also a key step towards the completion of the *Single Euro Payments Area* (SEPA).
2014	**Capital Requirement Directive IV –** the relevant EU legislation regarding the prudential regulation of banks which implemented the Basel II reforms was the Capital Requirements Directive (CRD I), which comprised two directives: the Banking Consolidation Directive (Directive 2006/48/EC) and the Capital Adequacy Directive (Directive 2006/49/EC). It was later amended in 2009 by CRD II (2009/111/EC) and in 2010 by CRD III (2010/76/EU). The more recent changes to the prudential regime for banks, as required by the Basel III reforms were introduced in the EU in 2013 under the CRD IV (2013/36/EU). This is the current EU legislation on prudential banking requirements.
2014	**Bank Recovery and Resolution Directive 1 –** established new tools and powers for national regulators to deal with crises. This covered rules requiring banks to prepare recovery plans and requiring resolution authorities to prepare resolution plans based on consultation with the institution concerned; new powers of supervisory intervention at an early stage and during a crisis, such as the ability to require a bank to implement its recovery plan; and powers giving regulators new tools to deal with the failure of a firm, including a sale-of-business tool, a bridge institution tool, an asset-separation tool and a bail-in tool.
2019	**Bank Recovery and Resolution Directive 2 –** this updated the 2014 Directive. The focus was to incorporate features of the Financial Stability Boards Total Loss-absorbing Capacity (TLAC) standard. The TLAC standard requires global systemically important banks (G-SIBs) to have financial instruments available during resolution to absorb losses and enable them to be re-capitalised to continue performing their critical functions while the resolution process is ongoing. The objective is to have an orderly resolution by making debt/equity holders absorb losses (enabling a 'bail-in'), instead of using public funds (conducting a 'bailout').

In this respect, the launch of the EU's **Financial Services Action Plan (FSAP)** in 1999 acted as catalyst for the realisation of the single market – the ultimate aim of the FSAP was to promote a more competitive and dynamic financial services industry with better regulation and this would be expected to feed through into enhanced economic growth. Consumers of financial products should obtain lower prices, and producers of such services will benefit from lower costs. The original document put forward indicative priorities and a timetable for specific measures to achieve three strategic objectives:

- establishing a single market in wholesale financial services;
- making retail markets open and secure; and
- strengthening the rules on prudential supervision.

A range of other regulatory actions focused on establishing more uniform fiscal treatment of financial products and business in order to 'obtain wider conditions for an optimal single financial market'. Good progress was made on the proposed measures and by the start of 2005, 38 out of the original 42 measures outlined in the FSAP had been adopted and were being implemented into EU law.

In 2005, the Financial Services Action Plan was replaced by the *White Paper on Financial Services*, which set out the Commission's objectives from 2005 to 2010. In the White Paper, the EC states the main aims of its policy for the period 2005–2010, which include:

- consolidation of the progress achieved;
- completion of current measures;
- enhancement of supervisory co-operation and convergence;
- removal of remaining barriers to integration.

The White Paper set the following priorities: (1) strengthening the achievements made under the FSAP; (2) strengthening the regulatory framework; (3) enhancing convergence of supervisory practices, and improving the supervisory architecture; (4) fostering competition in EU financial services; and (5) enhancing the EU's role in global capital markets.

One of the key objectives was to ensure the coherence of the regulatory framework and the development of consistent legislation. Co-ordination and harmonisation of financial supervision in the EU was pursued through the so-called **Lamfalussy procedure**, which aimed to simplify and speed up the complex and lengthy EU legislative process. In the words of the European Commission, the launch of the Lamfalussy process in 2001 aimed at putting in place 'an efficient mechanism to begin converging European financial supervisory practice and enable financial services legislation to respond rapidly and flexibly to developments in financial markets'. Under this approach, financial regulation is passed at four levels, as discussed in Box 14.2. A broad review of the process was carried out in 2007 and found that although the process had broadly met its overall objectives, some essential changes were required in order to make it more efficient.

BOX 14.2 THE LAMFALUSSY PROCEDURE

In July 2000, the French Presidency of the EU initiated the appointment of a Committee of Wise Men chaired by Alexandre Lamfalussy, with the task of drafting proposals for improving the effectiveness of the EU's securities market regulatory process. In February 2001, the Wise Men's report proposed a four-level legislative process, where significant powers are delegated to implementing committees. The procedure, now known as the Lamfalussy procedure, aims to simplify and speed up the complex and lengthy regular EU legislative process by means of a four-level approach. It was extended to the entire EU financial sector in December 2002.

According to the Lamfalussy procedure, EU institutions adopt framework legislation under the auspices of the Commission (*level one*). The Commission then prepares the detailed technical implementing measures with the help of four specialist committees (*level two*). These are the European Banking Committee (EBC), the European Securities Committee (ESC), the European Insurance and Occupational Pensions Committee (EIOPC) and the Financial Conglomerates Committee (FCC) for supervisory issues relating to cross-sector groups. They decide on implementing measures put forward by the Commission. In developing the implementing measures, the Commission is again advised by committees of experts at the *third level* of the Lamfalussy procedure. These are the Committee of European Banking Supervisors (CEBS), the Committee of European Securities Regulators (CESR) and the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS). The Banking Supervision Committee also includes representatives from the national central banks. Apart from advising and assisting the Commission in the development of technical implementing measures, the committees of experts also deal with the exchange of supervisory information, the consistent implementation of European legal acts and the harmonisation of supervisory practices in the European market for financial services. At the *fourth level*, the Commission – in close co-operation with the member states, the regulatory authorities involved in level three and the private sector – checks that Community law is applied consistently. The Lamfalussy procedure is illustrated in Figure 14.1.

A review of the Lamfalussy process was carried out in 2007, to identify some practical, necessary and achievable improvements to the process.

Following the outbreak of the global financial crisis in 2007, EU regulators identified supervisory convergence as a key objective not only from an integration point of view, but also from a financial stability perspective.

Box 14.2 The Lamfalussy Procedure (*continued*)

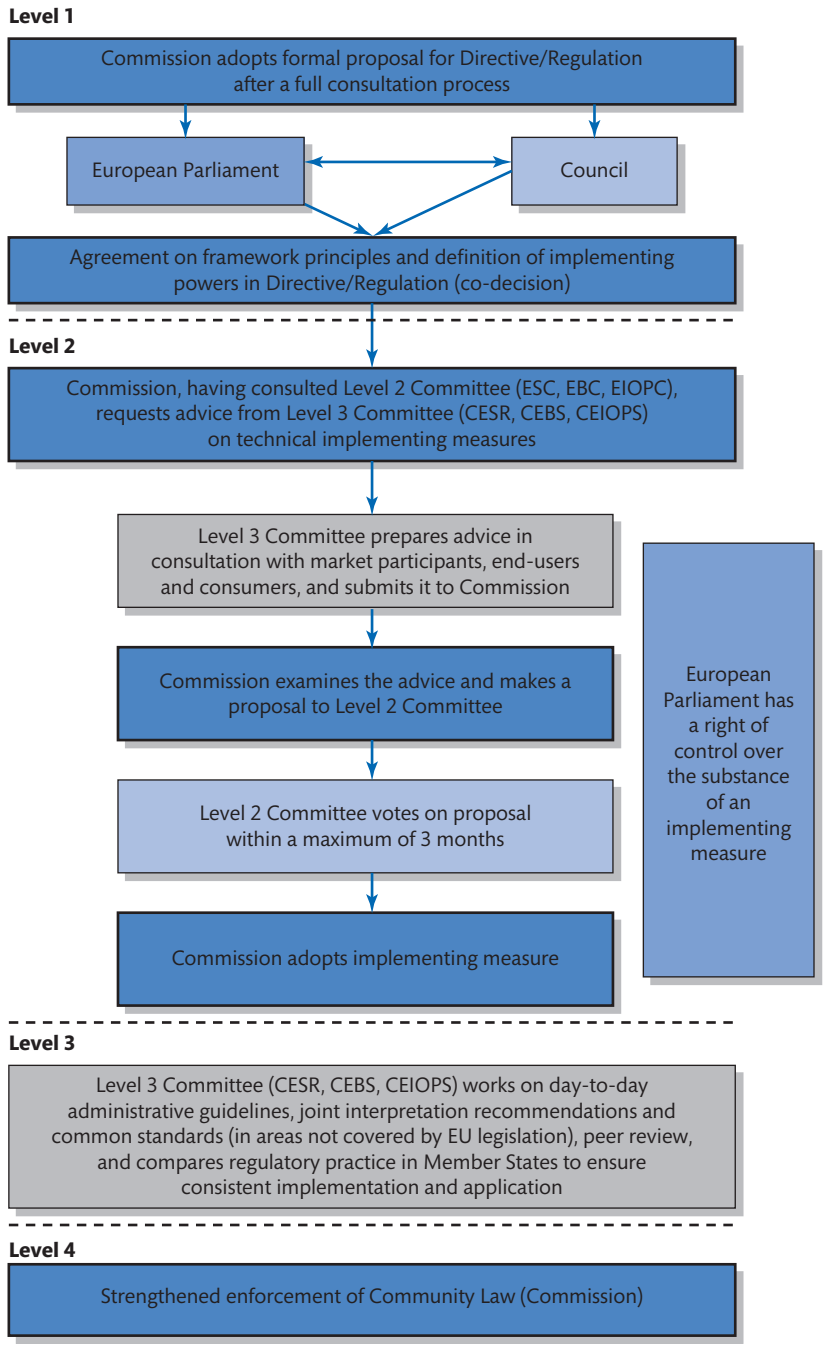


Figure 14.1 The Lamfalussy procedure

Source: European Commission (2007b).

While the creation of a single financial market is an admirable aim, it has long been recognised that this may be difficult to achieve for certain financial products – especially those that are essentially national in nature. Since the earliest assessments of conditions in European financial services there has been the recognition that retail financial services markets are segmented by national boundaries. A study by the Single Market Observatory (European Economic and Social Committee, 2012) indicates that, after 20 years of existence, the single market is still a work in progress; while a number of barriers have been abolished, new ones have appeared.

Table 14.5 shows an outline of the integration obstacles classified by demand- and supply-side factors. In general, most seem to be a result of natural or policy-induced elements. Such obstacles to further integration are apparent in a wide range of areas. Some of these barriers are natural and can only be partially influenced by policy makers; others require further regulation (e.g. new capital adequacy rules).

Various studies have identified that there remain substantial price differences in retail financial services across the EU. These price differences reflect a broad array of factors, not least the different institutional, legal and risk features in the various national markets. They also reflect varying degrees of competition and the lack of cross-border trade in retail products. Cross-border trade in retail financial services is marginal for unsecured loans, deposit and savings accounts, credit cards, pensions and insurance (although there is a modest amount of non-life business and retail mutual fund activity). All these factors point to a market that is far from integrated. A report from the EC to the European Parliament (2013b) finds that fragmentation of national rules relating to labour, taxation, health and safety, consumer protection and contract law remains an issue. In general, market fragmentation has increased since the 2007 sub-prime crisis. For example, fragmentation is evident when comparing interest rates on bank loans to households and SMEs across member states. While the cost of borrowing for households and non-financial corporations has decreased across the euro area as illustrated in Figure 14.2, substantial differences remain. As per February 2021, the average cost of borrowing was 1.31 per cent, but it increased to 2.26 per cent in Greece and 2.81 per cent in Ireland.

Regulations governing the retail financial services sector are also country-specific. It remains problematic to undertake cross-border activity without (physical) establishment. Differences in tax treatments, consumer protection legislation, marketing rules, definition

Table 14.5 Obstacles to full integration of EU financial retail markets

	Natural	Policy-induced
Demand side	• Language, culture • Consumer trust in national suppliers • Distance and the desire for personal contacts	• Discriminatory tax treatment of foreign services/products • Existence of national currencies (e.g. UK) • Insufficient knowledge about cross-border redress procedures
Supply side	• Information costs caused by natural factors (e.g. cultural differences) • Bias for home products in established distribution channels • Smaller national EU market commercially not attractive	• Information and adjustment costs derived from national differences in regulation (e.g. consumer protection) • Obstacles to cross-border information flow (e.g. limited access to foreign credit registers) • Competitive privileges of domestic suppliers • Shortcomings of internal market rules (e.g. through slow EU legislative adjustments to new developments) • Particular costs of cross-border operations (e.g. money transfers)

Source: Adapted from Heinemann and Jopp (2002).

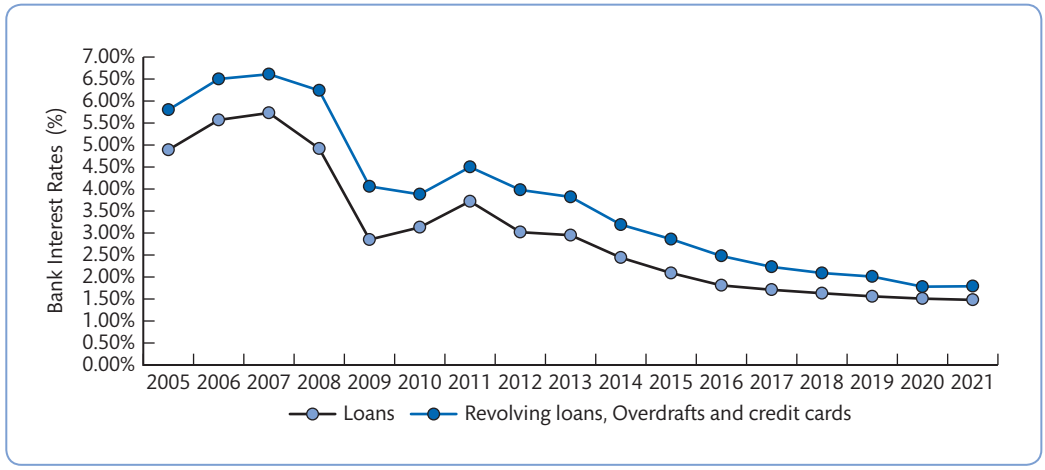


Figure 14.2 Interest rates, loans to non-financial corporates

Source: ECB statistical data, available at **http://sdw.ecb.europa.eu/home.do**

of products, investor protection and so on, substantially hinder the cross-border provision of many retail banking and other financial services. Banks that try to sell their retail services cross-border (without a physical presence), therefore, are likely to have a substantial competitive disadvantage. These barriers may be less onerous when banks operate in areas that have a more international dimension such as investment and international banking, although it is noticeable that even the world's largest investment banks typically have extensive physical market presence in many countries, suggesting that cross-border provision of services without establishment is also not the preferred strategy, even in wholesale business. In general, domestic regulations as well as institutional factors, culture, strength of banking relationships, the need for proximity in certain services and so on, dictate that banks must have a physical presence in the country before they can access retail markets.

Overall, limited integration in the retail financial services in the European Union can be put down to:

- the nature of the retail banking/financial services relationship;
- limited cross-border consolidation (due to economic/business factors mainly);
- very limited cross-border provision without establishment, due to business reasons as well as obstacles such as double taxation or discriminatory taxation of financial products when sold across frontiers, consumer protection laws, data transfer issues, contract law differences, legal definitions of collateral for retail mortgages, definition of customers, difficulties in implementing 'know your customer rules', different ways of calculating prices (such as annual percentage rates or APRs) and so on.

The already existing fragmentation in retail financial services has also been in some cases exacerbated by the response of some national supervisors to potential stability concerns triggered by the eurozone crisis (starting in 2010), including prudential measures that have 'ring-fencing' effects, such as measures aimed at retaining liquidity, dividends and other bank assets within national borders. In reaction to concerns of decreased integration, EU regulators have promoted the development of a **Single Rulebook**, which should ensure uniform rules, supervision and resolution across the EU (this is discussed in Section 14.4.6). In addition, the creation of the Banking Union aims to restore confidence in the single market for financial services.

14.4 Building a new EU financial architecture

Based on the Nice Treaty and the Lisbon strategy, the EU has fostered liberalisation of financial services providers and financial markets.[3] The key principles behind this strategy have been stronger competition in EU markets, with the purpose of reducing financing costs and improving allocation of resources, thus boosting the global competitiveness of the EU's financial industry. As previously discussed, a major aim of EU legislation has been to reduce barriers to cross-border trade in the banking and financial services area with the ultimate aim of creating a single market in financial services. Over the past two decades, a large body of EU regulation has been put in place to improve co-operation, convergence, harmonisation or standardisation of financial regulation and supervision (see Table 14.4). These initiatives – initiated by the Lamfalussy process – created a rather complex framework of sometimes overlapping committees. The EC had the right to propose a directive, and the Economic and Financial Affairs Council (ECOFIN) and the European Parliament (through the Economic and Monetary Affairs Committee) had co-decision rights to adopt the directive. Once a directive was adopted, the EC and the member states played an important role in implementation. While the European Central Bank (ECB) had no legal mandate to regulate or supervise banks and other financial institutions, or financial markets, it was involved in many EU structures and institutions in an advisory function and was legally mandated to provide information in support of action on financial stability (see Box 14.2 on the Lamfalussy process).

During the financial turmoil and government interventions of the late 2000s, the weakness of the existing structure became clear. Many governments first took national measures before gradually co-ordinating EU-wide responses. This led to widespread criticism and major public debate about changes in EU institutional arrangements. To understand these regulatory changes, we need first to review the key events of the crisis in EU banking. Section 14.4.1 highlights the key crisis events and discusses their impact on the EU banking sector.

14.4.1 Crises in European banking

Some have argued that the crises that hit EU countries since the late 2000s relates to three different crises: a banking crisis, a sovereign debts crisis and an economic growth crisis – and the three are highly interlinked. The notion of multiple crises is not new (see Chapter 8 for crises definitions) although many argue that the case for the eurozone problems is different.

There are many conjectures about the causes of eurozone troubles, with a number of critics pointing to the creation of the monetary union. The causes of the global financial crisis that started in mid-2007 in the United States are discussed in detail in Chapter 15. The unfolding of the financial crisis and how it became a European sovereign debt crisis and an economic crisis is often described in phases or waves, as follows:

(I) Phase one: US sub-prime crisis (August 2007 to September 2008).

(II) Phase two: systemic or global crisis (September 2008 to March 2009).

[3] The Treaty of Nice was signed in 2001 by European leaders and entered into force in February 2003. The treaty had a clear mandate to revise existing legislation in preparation of the European enlargement.

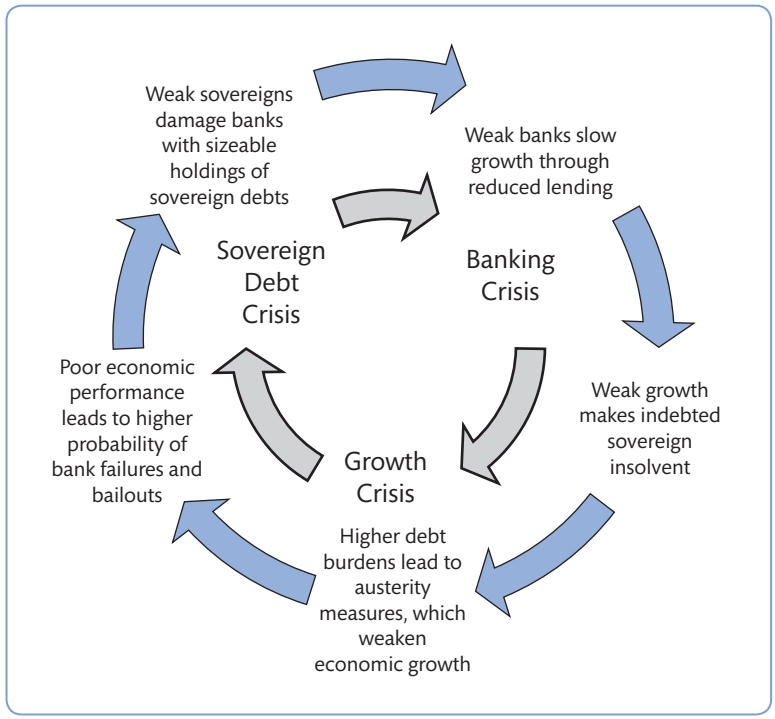


Figure 14.3 The three crises in the eurozone

Source: Adapted from Shambaugh (2012).

(III) Phase three: economic crisis (March 2009 to 2010).

(IV) Phase four: sovereign debt crisis (2010 to 2011).

(V) Phase five: 'crisis of confidence' in Europe (2011–2012).

14.4.1.1 Phase One: US sub-prime crisis

The early phase of the global financial crisis impacted mainly US banking and became systemic or global from September 2008, with the failure of the investment bank Lehman Brothers. Eurozone banks, unlike UK banks, although exposed to sub-prime securitised products were not immediately impacted (with some exception) by the bursting of the US real estate bubble and consequent loss of value of securitised products backed by US residential mortgages. One notable exception was Deutsche Industriebank IKB, which became one of the first eurozone banks to be hit by the crisis. The German bank had built a large portfolio of asset-backed commercial paper (ABCP) funds whose investment strategy suffered from the losses announced by the US investment bank Bear Stearns in the summer of 2007. Bear Stearns then failed in March 2008 and was acquired by JPMorgan Chase. When the ABCP market collapsed in the summer of 2007, IKB was unable to roll over its funds' short-term debt and had to be rescued with a package arranged by the German central bank. Within days of IKB's rescue, the situation in the eurozone financial markets started to deteriorate and the ECB had to intervene with liquidity injections (the first in August 2007 and the second in December 2007). In this first part of the financial crisis, the EU banking industry experienced losses due to significant write-downs when the price of mortgage-backed securities collapsed.

During this phase, the total write-downs in the global banking system amounted to $720 billion, with euro area banks accounting for $131 billion, or 18 per cent, of the global amount (ECB statistics).

14.4.1.2 Phase Two: systemic or global crisis

A second phase or 'systemic' part of the financial crisis started in September 2008. In the 12 months following the collapse of Lehman Brothers, unprecedented state aid was directed towards the banking sector. During this phase UK banks (see Chapter 13 for a detailed account of the crisis in UK banking) were badly impacted and the banking sector in Iceland collapsed (see Box 8.5 for details on the Icelandic crisis). On average, credit losses of euro area banks generally remained low in 2008; however, eurozone **large and complex banking groups (LCBGs)**, encountered persistent funding problems, which, coupled with sizeable write-downs on securities, contributed to falling profits. Indeed, during this period, a number of large cross-border banks encountered difficulties. In September 2008 Fortis, a large Benelux financial group active both in the banking and insurance markets and one of the top five financial institutions in the EU, experienced a sharp fall in its share price, amidst rumours of difficulties in raising liquid funds through the interbank markets. The rescue of Dexia Bank (a Franco-Belgian financial institution which was once the world's largest municipal lender) in September 2008 by the governments of Belgium, French and Luxembourg highlighted the need for state co-ordination for banks with substantial cross-border activities. The 2008 bailout was the first of a series of bailouts eventually needed by the Dexia group, which went on to become the first big casualty of the sovereign debt crisis (see Box 14.3).

During the same period, a major German commercial-property lender, Hypo Real Estate, had to be saved from the brink of collapse, after its Irish subsidiary ran into short-term funding problems. Commerzbank, Germany's second-largest bank, also received public support between November 2008 and January 2009, required partly to cover losses emanating from the acquisition of Dresdner Bank in August 2008.

By the end of September, conditions in the euro area financial market had become extremely tense and banks were increasingly dependent on ECB liquidity operations and overnight borrowing, as interbank lending at longer maturities had ceased almost completely. Quick and co-ordinated policy actions by the ECB and eurozone national governments helped to stabilise the situation. A common eurozone framework and an action plan to support banks was agreed in October 2009. These measures included a strengthening of deposit guarantee schemes, government guarantees for bank debt issuance and capital provisions to relevant banks. In late 2009, around €2 trillion was pledged by governments in the euro area to guarantee banks' new debt issuance, support their recapitalisation or purchase their assets (European Central Bank, 2009b).

14.4.1.3 Phase Three: economic crisis

The extraordinary remedial actions taken by the European Central Bank and eurozone national central banks and governments since mid-2009 were successful in restoring confidence in financial markets. However, eurozone banks were still exposed to a number of potential vulnerabilities. In particular, the pressure on banks to deleverage was acute: they faced high funding costs in wholesale markets, had difficulties in issuing debt and were under increasing pressure to raise capital buffers. Eurozone banks responded to these pressures by tightening their lending standards and by cutting costs. This resulted in a sharp reduction of the growth of banks' risk-weighted assets, also due to slower growth in lending to both

BOX 14.3 THE FAILURE OF CROSS-BORDER BANKS: THE CASE OF FORTIS AND DEXIA

Fortis

Fortis Group was a Belgian/Dutch financial conglomerate with substantial subsidiaries in Belgium, the Netherlands and Luxembourg. Fortis was present in over 50 countries with more than 85,000 employees. In 2006, financial results amounted to a record €4 billion profit. The consolidating and co-ordinating supervisor was Belgium's Commission Bancaire, Financière et des Assurances (CBFA), as the banking activities within Fortis Group, headed by the Belgium-based Fortis Bank SA/NV, were the largest part of Fortis's operations. Fortis was deemed to be systemically relevant in the three countries, not only because of its large positions in domestic markets, but also because of its function as a clearing member at several major domestic and foreign stock exchanges.

In 2007, Fortis acquired portions of the operations of ABN AMRO through a consortium with Royal Bank of Scotland and Santander. In 2008 the international financial crisis intensified to such an extent that Fortis had difficulties realising its plans to strengthen its financial position and to finance the acquisition and integration of its acquisitions of portions of ABN AMRO. Starting in June 2008, there was increasing uncertainty in the market whether Fortis would be able to realise the intended steps. Over the summer, its share price deteriorated and liquidity became a serious concern.

In the last week of September 2008, its share price declined rapidly and institutional clients began to withdraw substantial deposits. Fortis lost access to the overnight interbank market, and had to turn to the Marginal Lending Facility of the Eurosystem provided by the National Bank of Belgium (NBB). The combined effect made the finding of a solution imperative, triggering intervention by public authorities.

After the Dutch government purchased Fortis Bank Netherlands, Fortis Insurance Netherlands, Fortis Corporate Insurance and the Fortis share in ABN AMRO, the Belgian government raised its holding in Fortis Bank Belgium up to 99%. The Belgian government also agreed to sell a 75% interest to BNP Paribas (BNP) in return for new BNP shares, keeping a blocking minority of 25% of the capital of Fortis Bank Belgium. BNP also bought the Belgian insurance activities of Fortis and took a majority stake in Fortis Bank Luxembourg. A portfolio of structured products was transferred to a financial structure owned by the Belgian State, BNP and Fortis Group.

On 12 December 2008, the Court of Appeal of Brussels suspended the sale to BNP, which was not yet finalised, and decided that the finalised sales to the Dutch State and to the Belgian State as well as the subsequent sale to BNP had to be submitted for approval by the general assembly of shareholders of Fortis Holding in order for these three sales to be valid under Belgian Law. After initial rejection by the shareholders, certain transactions were renegotiated and the financing of the portfolio of structured products was modified. The renegotiated transaction with the Belgian State and BNP was approved at the second general assembly of shareholders and the latter transaction was finalised on 12 May 2009.

The Fortis case illustrates the tension between the cross-border nature of a group and the domestic focus of national frameworks and responsibilities for crisis management. This led to a solution along national lines, which did not involve intervention through statutory resolution mechanisms. The Fortis case also illustrates the trade-off between the need to maintain financial stability, for which a bank under certain circumstances needs to be resolved in the public interest and with public support, and the position of the shareholders of such a bank. Despite a long-standing relationship in on-going supervision and information sharing, the Dutch and Belgian supervisory authorities assessed the situation differently. Differences in the assessment of available information and the sense of urgency complicated the resolution.

Dexia

Dexia was established in 1996 as a result of a merger between a Belgian and a French bank, respectively Crédit Communal de Belgique and Crédit Local de France, with a significant presence in Luxembourg. In 1999, the two listed holding companies – one French (Dexia France) and the other Belgian (Dexia Belgium) merged to create Dexia SA, a financial company under Belgian law not operating with the status of a bank, which wholly owned the three main operating entities in France, Belgium and Luxembourg: Dexia Crédit Local, Dexia Banque Belgique and Dexia Banque Internationale à Luxembourg.

Box 14.3 The failure of cross-border banks: the case of Fortis and Dexia (*continued*)

The growth years

Between 1999 and 2008, the size of the consolidated balance sheet increased by 2.7%. The group's net income improved continuously, reaching €2.75 billion in 2006. The group's growth was primarily driven by the increase in the portfolio of invested assets. In addition, the bank's funding structure was not based on long-term, stable funding or on deposits but more than 40% of the balance sheet was covered by short-term funding. The group was structurally dependent on wholesale liquidity.

The first bailout

During 2008, difficulties came in particular from: (i) the financing of long-term assets, and, in particular, of an important portfolio of bonds, by short-term funding; and (ii) its US subsidiary, Financial Security Assurance (FSA), a monoline insurer. Following a decision taken by Dexia's Board of Directors on 30 September 2008, Dexia increased its capital by €6.4 billion, of which Belgian and French public and private sector investors subscribed €3 billion each and the Luxembourg State subscribed €376 million under the form of convertible bonds. Following this recapitalisation, Dexia's chairperson and the chief executive were replaced.

On 9 October 2008, Belgium, France and Luxembourg concluded an agreement on a joint guarantee mechanism – covered 60.5% by Belgium, 36.5% by France and 3% by Luxembourg – to facilitate Dexia's access to financing. On 14 November 2008, additional public Belgian and French guarantees were announced in the context of the sale of FSA, Dexia's US subsidiary, to US insurer Assured Guaranty, to insulate Assured Guaranty from any risk resulting from FSA's portfolio of riskier securities linked to subprime mortgages that were not included in the sale.

In the case of Dexia, authorities in Belgium, France and Luxembourg agreed to share the burden of guarantees in order to allow the institution to access financing and provide time for the sale of certain operations and the retrenching of others. In general terms, the division of the burden for guarantees among the three national authorities was premised on the proportions of share ownership held by the institutional investors and public authorities of the three countries. Before the crisis, public sector institutions and municipalities already had significant minority stakes in Dexia. These interests increased by virtue of capital injections during the crisis by these historical shareholders.

The eurozone crisis and the break up of the Dexia Group

Despite the bailout, Dexia was to become the first victim of the eurozone crisis and the financial institution needed to be bailed out for the second time in 2011 and for a third time in 2012.

In October 2011 France, Belgium and Luxembourg agreed to a second bail out of the troubled bank, following fears it could go bankrupt. At the core of the crisis, Dexia had €3.4 billion of exposure to Greek government bonds (and analysts estimated it had a further €17.5 billion of exposure to sovereign debt issued by Italy, Spain, Portugal and other troubled eurozone economies). During the summer of 2011, Dexia wrote down the value some of its long-term Greek holdings by 21%. However, this started speculations of a record loss and the inability of Dexia to absorb such loss, triggering a fall in the institution's share price to an all-time low. This prompted the decision of a second rescue. The Belgian government agreed to buy the bank's division in Belgium for €4 billion. A Qatari investment group was ready to buy the bank's Luxembourg unit.

Dexia also secured state guarantees of up to €90 billion to secure borrowing over the next 10 years. Belgium will provide 60.5% of these guarantees, France 36.5% and Luxembourg 3%.

In the aftermath of the second bailout, it became necessary to recapitalise Dexia, as the financial

Table 14.6 The development of Dexia's balance sheet and income (in €bn)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total assets	245	258	351	351	350	405	509	567	605	651
Net income	761	1,001	1,426	1,299	1,431	1,822	2,038	2,750	2,533	−3,326

Source: Court des Comptes (2013).

Box 14.3 The failure of cross-border banks: the case of Fortis and Dexia (*continued*)

institution was incurring heavy losses following the discounted sale of several assets. The sale of its assets contributed to net losses of €11.6bn in 2011 after units were sold at a discount. Dexia sold its Turkish bank DenizBank to Sberbank of Russia in June for about €3 billion.

In November 2012, France and Belgium agreed to a third bailout in four years and injected €5.5 billion of fresh capital into what was once the world's largest municipal lender. Up to 53%, or €2.9 billion, of the bailout was provided by Belgium and the balance by France. It is estimated that France lost €6.6 billion through the bailout of Dexia,

The failure of Dexia, three times bailed out by the French and Belgian authorities, showed the need for the eurozone to accelerate its plans to establish a single banking supervisor and resolution authority.

In July 2013, the French Court of Accounts (the competent authority) published a report into the Franco-Belgian banking groups' failure and highlighted the following:

- Dexia's management was pursuing a high-risk strategy (a financing model based on short-term funding; the search for ever-higher profitability and the distribution of substantial dividends) that neither Dexia's internal governance or the supervisory authorities were able to prevent.
- Failure of the restructuring plan put together in 2008. In exchange for accepting State aid, the European Commission wanted a restructuring plan whose main objective was to reduce Dexia's balance sheet size. While the objectives of the plan were met for the most part, Dexia's high exposure to sovereign debt meant that the group had to be dismantled once the sovereign debt crisis peaked in 2011.
- A high cost in terms of public spending, with added risks over the long term. To date, the direct cost of this banking debacle, for the French part alone, comes to €6.6 billion.
- A late and incomplete search for accountability. The 2008 bailout of Dexia was followed by a change in its Management teams, then the substantial overhaul of the Board of Directors in 2009. However, members of Dexia top management nevertheless held onto substantial financial benefits.

Source: Adapted from Basel Committee on Banking Supervision (2010b); Court des Comptes (2013); authors' updates.

households and firms against the backdrop of weaker economic activity. Eurozone economies were heading towards a period of recession. In addition, concerns about the sustainability of public finances of some member states started to emerge.

14.4.1.4 Phase Four: sovereign debt crisis

Sovereign debt refers to debt incurred by governments – mainly through the issue of medium to long-term bonds. Under certain circumstances, governments may suspend debt payments or fall behind on their debt payments. In other words, there are instances when governments default on their debt. A *sovereign debt crisis* can be defined as the inability or unwillingness of a government to repay its debt. Defaults and debt crises can be triggered by a number of different economic and political factors (for example, wars, economic recessions, changes in political leadership, currency depreciations, fluctuation in the price of imports, among other factors). A sovereign debt crisis may not result in an actual default if, for example, the country receives a bailout package or a loan (for example, from the IMF) to allow it to stay current in its debt obligations.

Countries may be unwilling to repay their debt, based on a consideration of the relative costs and benefits of default. Alternatively, countries may be unable to repay their debt because they are either insolvent or illiquid. The perceived riskiness of a country (that is, its

ability or willingness to repay its debt) can be measured by the 'spread' or additional interest that markets demand for holding the debt of a country compared with the bonds issued by a country that is deemed safe. Within the eurozone, the benchmark 'safe country' is Germany and the spread over 10-year German *bunds* is the standard measure of perceived risk and it can be used as a benchmark to compare the premium that markets/investors demand for holding, let's say, (risky) Greek bonds with the bonds issued by (safe) Germany.

During the second phase of the crisis, yields on eurozone sovereign bonds remained relatively unaffected. However, when the newly elected Greek government revealed the true size of the country's deficit and debt in November 2009, markets' attention moved to sovereign risk. After that, sovereign spreads rose sharply for most of the euro area countries, causing the biggest challenge for the European monetary union since its creation. As speculation on the ability of Greece to service its debt intensified, markets feared that most of Greece's debt was owned by large EU banks, thus establishing the link between sovereign and banking crises.

In May 2010, after lengthy negotiations, the Greek government eventually accepted a €110 billion EU/IMF led rescue package. Simultaneously, a €750 billion emergency fund was created jointly by EU member states and the IMF to support other weaker EU economies. In November 2010, Ireland asked for financial assistance from that emergency fund. In April 2011, Portugal followed. The long political process to put together sufficient firewalls at European level and to find a solution for Greece, Ireland and Portugal, combined with the attempts to restore market confidence, imposed significant costs on the European banking sector and European banks had to rely on covered bonds (bond issues backed by balance sheet capital) or secured short-term funding from the ECB (see Liikanen Report, 2012).

During the first half of 2011, it became apparent that the regulatory efforts put in place by EU authorities were not sufficient to restore confidence. Greece's sovereign debt was further downgraded by Standard & Poor's in June 2011, due to increasing concerns about the country's inability to meet targets set by the '*Troika*' (the European Central Bank, the European Commission and the International Monetary Fund) and a second rescue package worth over €100 billion became necessary in July 2011. During the summer of 2011, sovereign debt pressure also hit Italy and Spain, two of the largest economies in the euro area. Although Italy and Spain's credit spread decreased by the autumn of 2011, the episode highlighted the need for a credible and permanent mechanism for providing financial assistance to EU members. The European Council adopted a comprehensive package of measures to respond to the crisis, as well as providing a backstop against future crises. To this end, the **European Stability Mechanism (ESM)** was designed to provide financial assistance to euro area member states experiencing or threatened by financing difficulties. The ESM replaces the **European Financial Stability Facility (EFSF)**, the temporary mechanism set up in 2010, which will cease to exist once all outstanding liabilities are repaid. Table 14.7 summarises the key financial assistance facilities put in place for eurozone countries during this phase of the crisis.

14.4.1.5 Phase Five: crisis of confidence

The events of 2011 put the European project in general and the euro in particular under severe strain. The process of integration was interrupted and there was an increased risk of fragmentation. Supervisors' focus on domestic financial stability exacerbated this process. For example, there had been a decline or reversal of some cross-border credit flows, banks increasingly focused on their home markets, and differences in wholesale financing costs and retail interest rates between member states increased (see Liikanen Report, 2012 and European Commission, 2012).

Table 14.7 Financial assistance facilities for euro area countries

	Euro area intergovernmental loans to Greece	European Financial Stabilisation Mechanism	European Financial Stability Facility	European Stability Mechanism
Legal/ institutional form	Intergovernmental agreement	EU mechanism	Private company owned by euro area countries	Intergovernmental organisation
Capital structure	None. Bilateral loans pooled by the European Commission	Guaranteed by EU budget (i.e. all member states)	Guarantees from euro area countries	€80 billion paid-in capital and €60 billion callable capital (payment of initial shares by euro area countries to be make in five annual instalments of 20 per cent of the total amount)
Lending capacity **– *EU/euro area limit*** **– *Commitments***	– €80 billion – €80 billion	– €60 billion – €22.5 billion for Ireland and €26 billion for Portugal	– €440 billion – €17.7 billion for Ireland (plus €4.8 billion in bilateral loans) and €26 billion for Portugal	– €440 billion
Instruments	Loans	Loans, credit lines	Loans, bond purchases on the primary market	Loans, bond purchases on the primary market
Duration	Loans to be repaid after seven and half years after disbursement date in 22 equal quarterly payments	Until the end of June 2013	Until the end of June 2013, but will remain operational until all outstanding liabilities are repaid	Permanent mechanism from the beginning of July 2013 onwards
ECB involvement	Involved in programme design an monitoring and as paying agent	Involved in programme design and monitoring and as paying agent	Involved in programme design an monitoring and as paying agent	Involved in conducting sustainability analysis, programme design and monitoring and as paying agent
Main decision making bodies	Eurogroup	ECOFIN Council, acting by qualified majority voting on proposal form EC	Eurogroup/EFSF Board of Directors	Eurogroup/ESM Board of Governors and ESM Board of Directors
Legal basis **– *Financing*** **– *Conditionality***	– Intergovernmental decision and Treaty Article 136 – Treaty Articles 126 and 136	– Treaty Article 122 – EU Council decision on the basis of EFSM regulation	– Intergovernmental decision – EFSF framework agreement by cross-reference with Memorandum of Understanding and EU Council decision	– Intergovernmental treaty linked to amended Treaty Article 136 – EU Council decision under Treaty Article 136.

Source: Adapted from European Central Bank (2011b).

In June 2012, the Presidents of the European Council, European Commission, Eurogroup and ECB issued the joint report, 'Towards a Genuine Economic and Monetary Union', setting out the four essential building blocks for the future of EMU: (i) an integrated financial framework; (ii) an integrated budgetary framework; (iii) an integrated economic policy

framework; and (iv) strengthened democratic legitimacy and accountability (Van Rompuy, 2012). In June 2012 the European Council asked for a road map for the achievement of a genuine Economic and Monetary Union; as a first step, legislative proposals were put forward for the establishment of a single supervisory mechanism in Europe, with a view of achieving a Banking Union going forward. The ultimate aim being to try and break the link between banking and sovereign debt crises.

14.4.2 The road to a EU banking union

The weaknesses of the EU regulatory framework became apparent during the early stages of the global financial crisis, particularly with respect to the resolution of cross-border groups. In the absence of a multinational resolution framework, national authorities will typically seek to protect national interests (that is, minimise the losses to domestic depositors, shareholders and other creditors, including losses to taxpayers and deposit insurers).

In 2009, a high-level group on financial supervision in the EU, chaired by Jacques de Larosière, published a report outlining the proposals for reform of the EU regulatory framework. The report, known as the **de Larosière Report**, outlined 31 recommendations on regulation and supervision of EU financial markets (High-Level Expert Group on Financial supervision in the EU, 2009). A key issue highlighted by the report related to the lack of a common rulebook across EU member states, which led to inconsistencies in crisis management and financial stability oversight. Therefore, the report proposed a two-level approach to reforming the EU financial architecture centred around the creation of a new systemic risk board for the oversight of financial markets and high-level co-ordination among national supervisors. The report recommended the creation of a European Systemic Risk Council (ESRC), chaired by the President of the European Central Bank. Figure 14.4 summarises the recommendations for regulatory changes made by the de Larosière Report.

The European Commission followed most of the report's recommendations and the new structure for European financial supervision started to take place. In November 2010 the EU Council of Finance (ECOFIN) agreed upon the creation of a new **European Systemic Risk Board (ESRB)** and a **European System of Financial Supervisors (ESFS)**, comprising three functional authorities: the **European Banking Authority (EBA)**, the **European Insurance and Occupational Pensions Authority (EIOPA)** and the **European Securities and Markets Authority (ESMA)**. The European Systemic Risk Board (ESRB) was established on 16 December 2010 and the new regulatory system became operational from 1 January 2011. Table 14.8 summarises the timeline of the key regulatory changes towards the establishment of a Banking Union.

The establishment of the European System of Financial Supervision, comprising the ESRB and the three European Supervisory Authorities, has contributed to improving co-operation between national supervisors in EU member states. It also contributed to the development of a single rulebook for financial services. However, the supervision of banks remains to a large extent within national boundaries and therefore fails to keep up with integrated banking markets. To further strengthen co-operation and improve supervision with the aim to restore confidence in banking markets and in the euro, the European Commission put forward a longer-term plan for a Banking Union. In June and December 2012, the European

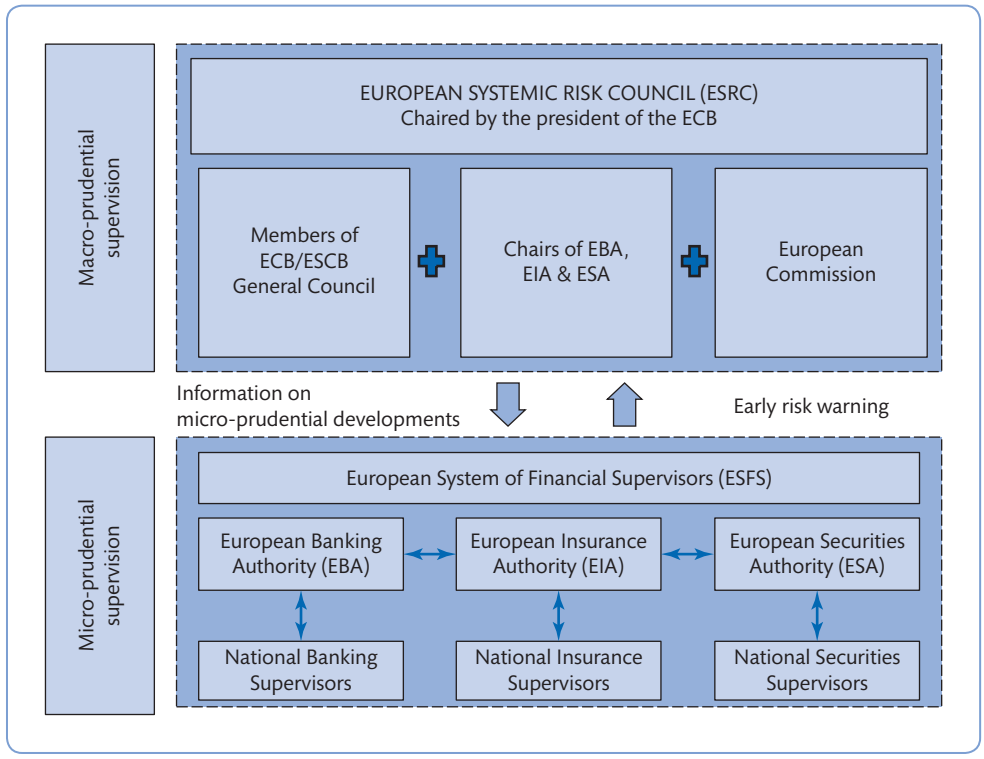


Figure 14.4 Proposals for EU financial supervision – de Larosiére Report

Source: Adapted from de Larosière Report (2009).

Table 14.8 Towards a banking union: timeline and milestones

Timeline	Milestone
October 2008	The European Parliament called on the European Commission to fundamentally reform the supervisory structure of Level 3 Committees established in 2001 by the Lamfalussy process: the Committee of European Banking Supervisors (CEBS); the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS); and the Committee of European Securities Regulators (CESR).
November 2008	The European Commission mandated a high-level group chaired by Jacques de Larosière to make recommendations on how to strengthen European supervisory arrangements.
February 2009	Publication of the de Larosière Report on financial supervision in the EU.
June 2009	The European Council recommended establishing a 'Single Rulebook' for all financial institutions in the single market.
September 2009	The European Commission adopted proposals to strengthen financial supervision that would set up the European System of Financial Supervisors (ESFS) composed of the European Systemic Risk Board (ESRB) and the three **European Supervisory Authorities (ESAs)** for the banking (EBA), securities and markets (ESMA) and insurance and occupational pensions sectors (EIOPA).

Table 14.8 Towards a banking union: timeline and milestones (*continued*)

Timeline	Milestone
December 2010	The three founding regulations (ESA Regulations) and the ESRB Regulation were published and entered into force in December 2010. The European Systemic Risk Board (ESRB) was established on 16 December 2010.
January 2011	The ESAs started their operations.
July 2011	The ESMA became the direct supervisor of Credit Rating Agencies (CRAs).
September 2012	European Commission presents a 'Roadmap towards a Banking Union'. It proposes to set up a Single Supervisory Mechanism within the ECB and amend the EBA Regulation in order to strengthen the Economic and Monetary Union. The set of proposals is a first step towards an integrated Banking Union, which includes further components such as a Single Rulebook, common deposit protection and a single bank resolution mechanism.
December 2012	The Presidents of the European Council, the European Commission, the European Central Bank and the Eurogroup presented the report (known as the 'Four Presidents' Report') 'Towards a genuine Economic and Monetary Union'. The report sets out a road map for the creation of a genuine Economic and Monetary Union and builds on the vision presented by Herman Van Rompuy, President of the European Council, in June 2012.
March 2013	European Parliament and European Council agreed on a Regulation amending the EBA regulation with regards to the interactions between EBA and ECB within the new Single Supervisory Mechanism (SSM).
July 2013	European Commission started a consultation of the ESFS review.
July 2013	The European Commission proposed a Single Resolution Mechanism for the Banking Union. The Single Resolution Mechanism complements the Single Supervisory Mechanism; it is set to centralise key competences and resources for managing the failure of any bank in the euro area and in other member states participating in the Banking Union.
November 2013	Regulation on the Single Supervisory Mechanism came into force.
January 2014	The EC adopted structural measures to improve the resilience of EU credit institutions.
March 2014	The European Parliament and the Council reached provisional agreement on the proposed Single Resolution Mechanism for the Banking Union.
January 2015	Lithuania adopts the euro and joins the Single Supervisory Mechanism (SMM).
January 2016	The Single Resolution Board (SRB) becomes operational.
October 2020	Bulgaria and Croatia join the Single Supervisory Mechanism (SMM) through close co-operation.

Commission presented its vision for the EU as part of a longer-term vision for economic and fiscal integration in the publication 'Towards a genuine Economic and Monetary Union', highlighting the following building blocks (this is also known as the Van Rompuy plan):[4]

1. An integrated financial framework.
2. An integrated budgetary framework.
3. An integrated economic policy framework to ensure growth, employment and competitiveness.
4. Ensuring democratic legitimacy and accountability in decision-making in the EMU.

[4] Van Rompuy (2012).

BOX 14.4 EUROPEAN SYSTEM OF FINANCIAL SUPERVISION (ESFS)

Drawing on the lessons from the financial crisis and based on the recommendations of the de Larosière Report, the European System of Financial Supervision (ESFS) was created as a decentralised, multi-layered system of micro- and macro-prudential authorities. This supervisory system came into being in January 2011 and underwent major changes due to the introduction of a Banking Union in 2012.

The ESFS consists of two pillars: macro-prudential oversight and micro-prudential supervision (see Figure 14.5).

The micro-prudential pillar at the European level is formed by the European Supervisory Authorities (ESAs): the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA), and the European Insurance and Occupational Pensions Authority (EIOPA), which work together in the Joint Committee of the European Supervisory Authorities (ESAs). These new authorities take over the assignments of the former Committee of European Banking Supervisors (CEBS), Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) and Committee of European Securities Regulators (CESR).

The three authorities have similar powers and competences in their respective fields. The EBA is headquartered in London; its scope includes *inter alia* credit institutions, financial conglomerates, investment firms and payment institutions (including e-money). The ESMA is located in Paris; its scope is directed at securities markets and their participating institutions. It is also responsible for supervising credit rating agencies. The EIOPA's seat is in Frankfurt, Germany. Its set-up is similar to that of the EBA, but its scope is directed at insurance undertakings, reinsurance undertakings, financial conglomerates, institutions for occupational retirement provision and insurance intermediaries. It is important to note that the responsibility for day-to-day supervision remains with the **National Competent Authorities (NCAs)**.

The Joint Committee ensures overall and cross-sectoral co-ordination in order to ensure cross-sectoral supervisory consistency. This includes: financial conglomerates, accounting and auditing, micro-prudential analyses of cross-sectoral developments, risks and vulnerabilities for financial stability, retail investment products, measures fighting money

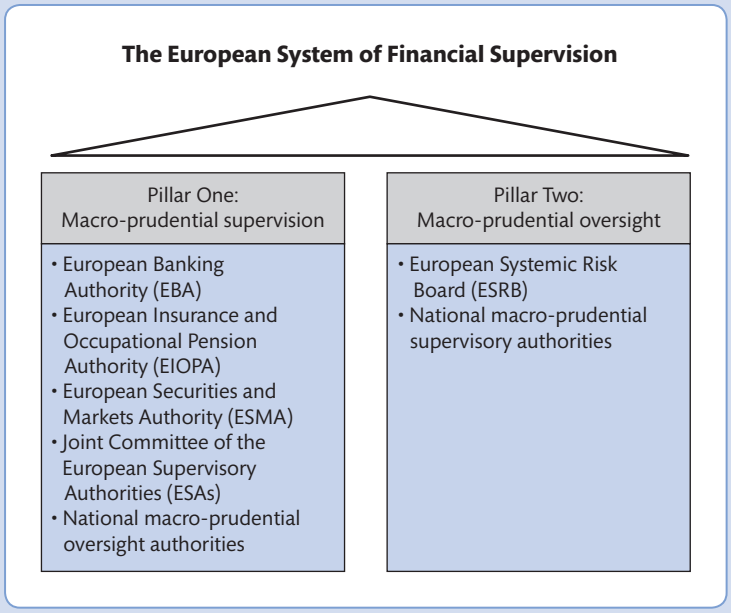


Figure 14.5 The European system of financial supervision

Source: Adapted from European Systemic Risk Board (2011).

Box 14.4 European system of financial supervision (ESFS) (*continued*)

laundering, and information exchange between the ESRB and ESAs and developing relations between these institutions. The Joint Committee is responsible for the settlement of cross-sectoral disagreements between ESFS authorities.

The respective member states' National Competent Authorities (NCAs) are also part of the EFSF. One objective of the ESFS is, *inter alia*, the development of a common supervisory culture and facilitating a single European financial market.

Macro-prudential oversight is conducted by the European Systemic Risk Board (ESRB), which is an independent EU body, seated in Frankfurt, Germany (within the ECB). The ESRB task is to monitor the entire financial sector, to identify potential problems which could contribute to a crisis in the future, working in close co-operation with the European Supervisory Authorities (ESA).

Source: Adapted from European Parliament (2014).

The Banking Union is the first of the four building blocks, which aim to deliver an integrated financial framework. In September 2012 the European Commission presented a detailed plan highlighting the central elements necessary to achieve its aim in the publication 'A roadmap towards a Banking Union' (European Commission, 2012). The central elements of the Banking Union are the following:

1. single European banking supervision (**Single Supervisory Mechanism – SSM**);
2. common deposit insurance (**Single Deposit Guarantee Mechanism – SDM**);
3. common resolution framework (**Single Resolution Mechanism – SRM**);
4. single rulebook (common legal framework, EBA Single Rulebook).

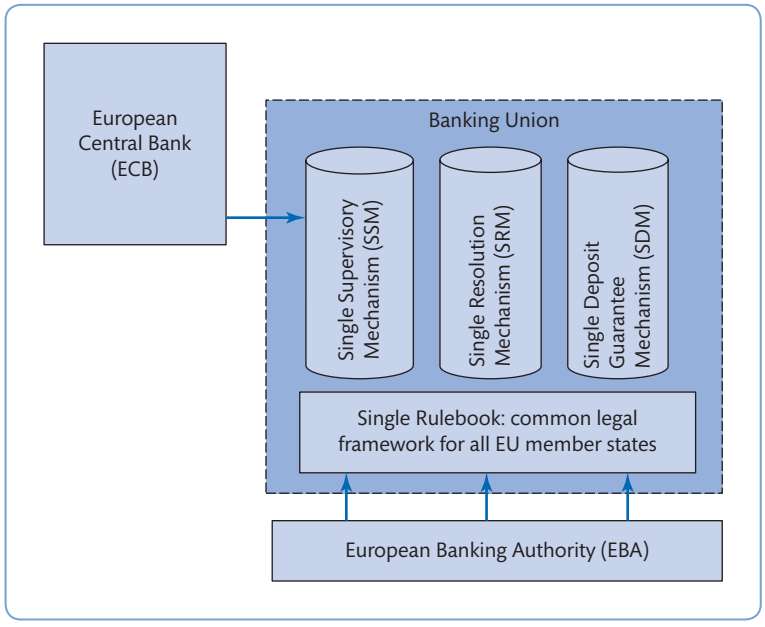


Figure 14.6 The Banking Union

Before we discuss in detail the building blocks of the Banking Union, it is necessary to recall that the European Union includes countries that have adopted the single currency (the eighteen countries forming the eurozone) and countries that are EU member states but have not adopted the euro (see Box 14.1). This distinction has caused EU reforms to follow a 'two-speed' path, one for the eurozone and one for all member states (some critics have gone as far as labelling it 'two Europes'). In this context 'two-speed Europe' does not mean creating a two-tier Europe, with first- and second-class citizens. It refers to the development of a closer integration among some member states, while still pursuing objectives that are common to all EU member states.

In this respect, it is possible to classify the recent developments into:

1. Tier one – common to all EU member states: these include the creation of the European System for Financial Supervision, as discussed above. It also includes the 'Single Rulebook', comprising, for example, the Capital Requirements Directive (CRD IV) and the Capital Requirement Regulation (CRR); the Bank Recovery and Resolution Directive (BRRD) and the Deposit Guarantee Scheme (DSG).
2. Tier two – common to eurozone countries: these include more advanced integration measures towards the creation of the Banking Union, such as the Single Supervisory Mechanism, the Single Resolution Mechanism and the Single Bank Resolution Fund.

14.4.3 Single Supervisory Mechanism

In March 2013 the European Parliament and European Council agreed on regulation regarding the interaction of the EBA and the European Central Bank's (ECB) prudential supervision powers within the new SSM. The regulation came into force in November 2013. The transfer of supervisory tasks to the ECB is based on Article 127(6) of the Treaty on the Functioning of the European Union (also known as the Lisbon Treaty). More specifically, this regulation details:

- new competencies of the European Central Bank as supervisor;
- co-operation between the European Central Bank and the European Banking Authority.

The SSM is a component of the Banking Union; under the SSM, the ECB is responsible for specific supervisory tasks related to the financial stability of all euro area banks as well as banks in other (non-euro area) member states voluntarily joining the SSM. The main aims of the SSM are to ensure the safety and soundness of the European banking system and to increase financial integration and stability in Europe. The SSM confers to the ECB new supervision powers for the banks of the euro area. Under the SSM, the ECB directly supervises 'significants' credit institutions and works closely with the national competent authorities to supervise all other credit institutions. Credit institutions are classified as 'significant' based on:[5]

- total value of their assets;
- importance for the economy of the country in which they are located or the EU as a whole;
- significance of cross-border activities;
- whether they have requested or received financial assistance from the European Stability Mechanism (ESM) or the European Financial Stability Facility (EFSF).

[5] See **www.ecb.europa.eu/ssm/html/index.en.html**

Since November 2013, the ECB directly supervises all banks having assets of more than €30 billion or constituting at least 20 per cent of their home country's GDP, which includes around 130 credit institutions, representing almost 85 per cent of total banking assets in the euro area. This number reflects a consolidated perspective; that is banking groups that include a number of individual credit institutions are counted as one institution. All other credit institutions in the participating countries will continue to be supervised by the national competent authorities. However, the ECB can decide at any time to exercise direct supervision of any one of these credit institutions in order to ensure consistent application of high supervisory standards.

The main objective of an SSM is to centralise prudential supervision (in the hands of the ECB) to end national fragmentation and to ensure that the rules are applied in all cases and in the same way. The creation of an SSM should contribute to creating a more level playing field while decreasing the scope for regulatory arbitrage and the protection of 'national champions' in ways that breach the principles of the single market.

In addition, it should improve the conditions for cross-border activity. Figure 14.7 summarises the main features of the SSM.

Non-euro area member states can also choose to participate in the SSM by their national competent authorities entering into 'close co-operation' with the ECB. For cross-border banks active both within and outside member states participating in the SSM, existing home/host supervisor co-ordination procedures will continue to exist.

The governance structure needs to ensure separation between the ECB's monetary and supervisory tasks, in order to eliminate potential conflicts of interests; to this end the SSM centres around a newly established separate Supervisory Board supported by a steering

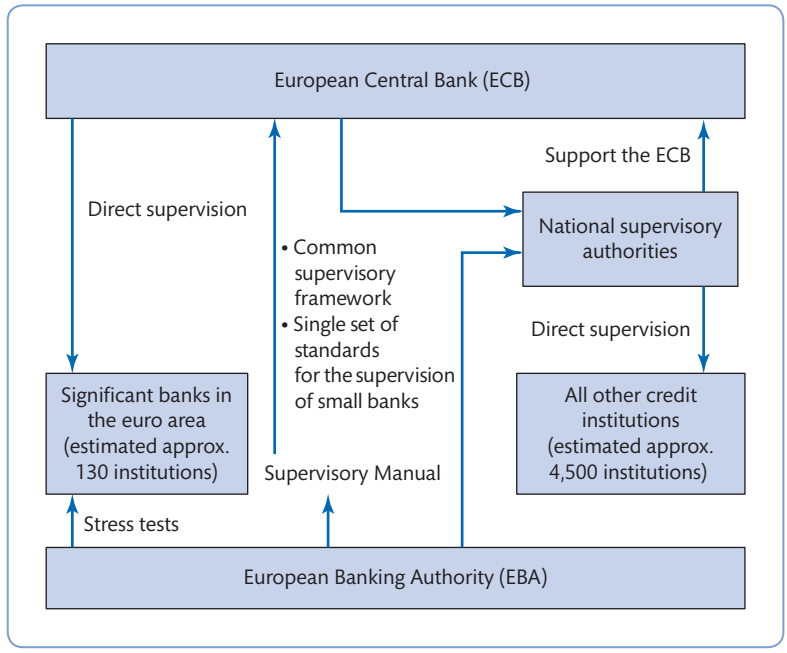


Figure 14.7 The Single Supervisory Mechanism

committee. In 2017, the EU Commission published an assessment of the SSM, covering five areas: governance of the SSM; supervisory tools developed by the ECB; performance of supervisory tasks by the ECB; interaction with relevant EU and international bodies; and the cost-effectiveness of the SSM. The overall assessment was positive, and the Commission did not propose any amendments the SSM.

14.4.4 Single Resolution Mechanism

The second building block of the Banking Union is the Single Resolution Mechanism (SRM). As highlighted by the European Council in December 2012 and June 2013, it is not feasible to have a Single Supervisory Mechanism without a Single Resolution Mechanism. If bank resolution was left to national authorities, tensions between the supervisor (ECB) and national resolution authorities could emerge over how to deal with ailing banks. At the same time, as the financial crisis in Cyprus clearly highlighted, without a SRM market, expectations about member states' ability to deal with bank failure nationally could persist, reinforcing negative feedback loops between sovereigns and banks, and maintaining fragmentation and competitive distortions across the single market.

Political agreement on the single resolution mechanism was reached in March 2014:

> Today's compromise allows us to complete the architecture of the banking union for the eurozone. It represents a major step towards the alignment of both banking supervision and banking resolution at a central level, whilst involving all relevant national players. Backed by an appropriate resolution funding arrangement, and an acceptable decision-making process, this second pillar of the banking union will allow bank crises to be managed more effectively. In case of cross-border failures, it will be much more efficient than a network of national resolution authorities and will help to avoid risks of contagion. The Single Resolution Mechanism might not be a perfect construction but it will allow for the timely and effective resolution of a cross border bank in the eurozone thus meeting its principal objective.
>
> Together with reforms to the financial sector for all 28 countries, the completed banking union will put an end to the era of massive bailouts. It will further contribute to the return to financial stability thus creating the right conditions for the financial sector to once again lend to the real economy which is essential to consolidate the economic recovery and to create jobs.
>
> Michel Barnier
> Internal Market and Services Commissioner
> Brussels, 20 March 2014

The proposed SRM applies only to banks that are covered by SSM; this means that the SRM would cover all banks established in all euro area member states and any other member state deciding to join the Banking Union.

The SRM Regulation builds on the Rulebook on bank resolution set out in the Bank Recovery and Resolution Directive (BRRD). It comprises establishing a **Single Resolution Board (SRB)** and a **Single Bank Resolution Fund (SRF)**. In most cases, the ECB would notify that a bank is failing to the Board, the Commission and the relevant national resolution authorities. The Board would then assess whether there is a systemic threat and any private sector solution. If not, it would adopt a resolution scheme including the relevant resolution tools

and any use of the Fund. Once agreed, the national resolution authorities would then be tasked with the implementation of the resolution scheme. If resolution entails state aid, the Commission would have to approve the aid prior to the adoption by the Board of the resolution scheme.

One of the most controversial parts of the SRM is the creation of a Single Bank Resolution Fund to which all the banks in the participating member states would contribute (see Box 14.5). The Fund has a target level of €55 billion and would be owned and administrated by the Single Resolution Board. There is a transitional period of eight to ten years, during which the Single Fund would reach a target level of at least 1 per cent of covered deposits.

BOX 14.5 EU REACHES DEAL ON FINAL PIECE OF BANKING UNION

Europe agreed the final piece of its banking union after marathon talks ended with a deal on a common system for handling bank crises that pushed Germany's red lines on cost sharing.

The breakthrough came after record-breaking 16-hour talks, ending a protracted political stand-off between the European Parliament and EU member states that threatened to delay the reforms.

Once formally approved by the parliament, the legislation will establish a single eurozone system to shut failing banks – the Single Resolution Mechanism – and a €55bn shared fund to cover costs, paid for by banks.

While the compromise falls well short of the parliament's opening position, the MEPs secured terms to ensure the fund is mutualised earlier and somewhat curbed the influence of finance ministers in decisions to close a lender.

MEPs hailed the compromise as showing they had the clout to make Wolfgang Schäuble, the German finance minister, make bigger concessions to them than his fellow finance ministers.

Although the compromise largely bends to Germany's vision for the system, some diplomats fear there is a small chance that the tentative deal could unravel, specifically over Berlin's discontent at being required to mutualise the fund more rapidly than it said was acceptable.

The reform is the final leg of an ambitious project launched almost two years ago to fuse financial oversight in the eurozone and improve the resilience of the currency bloc against the ravages of its debt crisis.

However, the resolution system has faced criticism, including from the European Central Bank, for being too complex and inadequately funded.

The final terms make hard-fought changes to the negotiating position of EU states, which was heavily influenced by Berlin resistance to German taxpayers being exposed to any bank bailout.

Michel Barnier, the EU commissioner responsible for the reforms, said the deal had been won through the "spirit of compromise".

"The Single Resolution Mechanism might not be a perfect construction but it will allow for the timely and effective resolution of a cross-border bank in the eurozone thus meeting its principal objective," he said.

The main concessions made to the parliament is accelerating the build-up of a common bank-paid fund from 10 to eight years and front-loading its mutualisation, so that a bigger proportion of the fund is shared at an earlier stage. Under the provisional deal, 40 per cent of contributions are mutualised from the first year and 60 per cent from the second.

This is the one area that significantly tests the position of Mr Schäuble who said mutualisation should not be faster than the pace at which the fund is built up.

Some tweaks were also made to the decision-making structure. The Commission is given a formal role to approve resolution decisions

Box 14.5 EU reaches deal on final piece of Banking Union (*continued*)

recommended by an independent board. Finance ministers would be able to overturn the finding in limited cases.

The European Parliament and European Commission had pushed for a fully mutualised fund, with a strong external credit line, working under a system where Brussels rather than member states would have the final say on decisions.

Other revisions include giving the ECB, as top supervisor, the primary responsibility for triggering a resolution process when a bank is identified as facing difficulties. However, as demanded by member states, the resolution board would be able to push for the closure of a bank against the judgment of Frankfurt.



Source: Barker, A. (2014) 'EU reaches deal on final piece of Banking Union', *Financial Times*, 20 March.
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During this transitional period, the Single Fund would comprise national compartments corresponding to each participating member state. In the longer term, the resources accumulated in those compartments are to be progressively mutualised, starting with 40 per cent of these resources in the first year.

The SRM came into force on 1 January 2015, whereas bail-in and resolution functions applied from 1 January 2016, as specified under the first BRRD (note this Directive was updated in 2019 to deal with capital provisions for globally systemic banking institutions (G-SIBS)).

14.4.5 Single Deposit Guarantee Scheme

The third building block of the Banking Union is the creation of a Single Deposit Guarantee Scheme (SDGS). Recall that the aim of deposit insurance is to reimburse a limited amount of deposits to depositors whose bank has failed (see Section 7.4.1).

Deposit Guarantee Schemes in the EU were regulated according to a 1994 Directive (94/19/EC). In 2008, the need to restore confidence in the financial sector was paramount and the European Commission put forward a revision of EU rules and a proposal to promote convergence of deposit guarantee schemes within member states in order to improve depositor protection. The main changes proposed included the following:

- *Increased level of coverage for deposits* – the 1994 Deposit Guarantee Schemes Directive covered savings up to at least €20,000, although individual member states could choose to increase this level. The reforms proposed to increase the minimum level of coverage for deposits from €20,000 to €100,000.
- *Removal of co-insurance* – co-insurance (i.e. where the depositor bears part of the losses) is to be abandoned. Member states must ensure that the deposit is reimbursed up to the coverage level. Under the 1994 Directive, member states had the option to decide that deposit guarantee only covers 90 per cent of savings.
- *Reduction of the payout period* – it was proposed that the time allowed for the deposit guarantee scheme to pay depositors in the event of bank failure should be reduced from three months to three days.

These proposals were adopted by the European Council in February 2009. The evolution of the eurozone crisis, however, highlighted the need for more drastic improvements, mainly aimed at increasing harmonisation of deposit insurance schemes within the EU, thus ensuring a uniform level of protection to depositors. In July 2010, the European Commission proposed changes to existing rules to further improve protection for bank account holders and retail investors. This involved amending the existing Deposit Guarantee Scheme Directive (94/19/EC). Specifically, the draft legislation proposes a harmonisation of the scope of coverage (type of deposits), the introduction of common standards on financing (where the lack of common standards has allowed for diverging models of *ex-ante* and *ex-post* funding schemes), a target fund size of 1.5 per cent of eligible deposits, the introduction of risk-based contributions, shorter payout periods (limited to seven working days), a clarification of responsibilities to improve insurance payments for cross-border banks, and limited cross-border borrowing arrangements between various national DGS. Moreover, in order to facilitate the payout process in cross-border situations, the EC has proposed that the host country DGS acts as a 'single point of contact' for depositors at branches in another member state (including paying out those depositors on behalf of the home country DGS, which would subsequently reimburse the host DGS).[6] The new draft legislation was under discussion at the European Parliament and European Commission from 2010 and a deal was finally reached in December 2013 (see Box 14.6). This has been in place since July 2015.

14.4.6 The Single Rulebook

An important piece of the puzzle in the integration process is the creation of a Single Rulebook, applicable to all financial institutions in the EU. The term 'Single Rulebook' was coined in 2009 by the European Council to refer to a unified regulatory framework for the EU financial sector that would complete the single market in financial services. The Single Rulebook aims to provide a single set of harmonised prudential rules that institutions throughout the EU must respect.

It is expected that the Single Rulebook will lead to a more resilient, transparent and efficient EU banking sector:[7]

- *Resilience* – a Single Rulebook will ensure that prudential safeguards are applied across the EU and not limited to individual member states.
- *Transparency* – a Single Rulebook will ensure that institutions' financial situation is more transparent and comparable across the EU for supervisors, deposit-holders and investors. Lack of transparency is an obstacle to effective supervision but also to market and investor confidence.
- *Efficiency* – a Single Rulebook will ensure that institutions do not have to comply with 27 differing sets of rules.

While the creation of a Single Supervisory Mechanism represents a key step in strengthening Economic and Monetary Union by transferring the responsibility for the supervision of all the euro area banks to the European Central Bank, national supervisors will continue to pay

[6] See International Monetary Fund (2013a) 'European Union: Publication of Financial Sector Assessment Programme Documentation – Technical Note on Deposit Insurance', IMF Country Report 13/66.

[7] **www.eba.europa.eu/regulation-and-policy/single-rulebook**

BOX 14.6 EU AGREES DEPOSIT GUARANTEE SCHEME DEAL

The EU is to finance better the guarantees offered to depositors under a long-delayed deal that will increase the levies that banks must pay to cover the costs of a lender failing.

After more than three years of stop-start negotiations, EU member states and the European parliament agreed on reforms to make available funds of up to 0.8 per cent of the banking sector's insured deposits for payouts.

The revision to the Deposit Guarantee Scheme Directive is one of a number of financial services reforms that Brussels is aiming to close in December. Last week preliminary approval was given to national rules on bank failure, which will require governments to impose fees on banks equivalent to 1 per cent of insured deposits, which will go towards the costs of resolving or rescuing banks.

While the EU deposit guarantee of €100,000 will remain the same, the rules will co-ordinate better the way governments arrange for that insurance to be paid. At present many countries have poorly funded or unfunded deposit guarantee schemes, which may ask for industry contributions after a payout is made.

"This is a good day for the taxpayer and for depositors. We have further severed the link between taxpayers and banks, and depositors will be able to receive their money more quickly," said Peter Simon, the parliament's lead negotiator.

Michel Barnier, the EU commissioner responsible for the reforms, said it was "another important step towards completing the single rule book on crisis management for credit institutions in the EU".

The weaknesses of the existing guarantees were brutally exposed after the 2008 financial crisis. The Cyprus bailout this year initially included plans to hit insured depositors, on the grounds that a tax would not trigger the €100,000 deposit guarantee. The revisions to the directive agreed on Tuesday night do not preclude the taxation of deposits.

The system of European deposit guarantees was also tested by the Icesave case, where Iceland refused to compensate UK and Dutch savers lured by high interest rates on the grounds that it faced a systemic crisis.

Under the deal, in principle, countries will need to build a bank-paid fund for deposit guarantees over the next decade, which could approach up to €53bn. The law requires this money raised from banks to be available in a crisis. Some countries would choose to set it aside in standalone funds, which often invest in sovereign debt.

With the approval of the European Commission, the fundraising target can fall from 0.8 per cent to 0.5 per cent of covered deposits in "concentrated banking sectors" – a concession that helps France.

Banks engaged in "risky" activities are required to pay a relatively higher fee, according to the deal. Up to 30 per cent of the fund can be in the form of "payment commitments".

The deadline for payouts is gradually reduced from 20 to seven working days by 2024. At least 70 per cent of this payment must be made in cash; the remainder can be deferred for a year.



Source: Barker, A. (2013) 'EU agrees Deposit Guarantee Scheme deal', *Financial Times*, 18 December.
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an important role in the day-to-day supervision of banks and in the implementation of ECB decisions. In addition, the fact that ten EU member states are not part of the eurozone has led EU authorities to propose that the European Banking Authority should develop a **Single Supervisory Handbook** to 'preserve the integrity of the single market and ensure coherence in banking supervision for all 28 EU countries'. The EBA is mandated to produce a number of *Binding Technical Standards* (BTS) for the implementation of the CRD IV package. BTS are legal acts which specify particular aspects of an EU legislative text (Directive or Regulation) and aim at ensuring consistent harmonisation in specific areas.

Key to the implementation of the Single Rulebook are stronger prudential requirements (the implementation of Basel III) and the implementation of a harmonised framework for bank recovery and resolution.

More specifically:

- *CRD IV/CCR* (Capital Requirements Directive/Capital Requirements Regulation) – the CRD IV package transposes, via a Regulation (CCR) and a Directive (CRD IV), the new global standards on bank capital adequacy and liquidity issued by the Basel Committee on Banking Supervision in December 2010 (Basel III) into the EU legal framework. The regulatory package entered into force on 17 July 2013. While EU member states will have to transpose the Directive into national law, the Capital Requirements Regulation (CRR) is directly applicable, without the need for any further action on the part of the national authorities. The CCR contains detailed and prescriptive provisions on capital, liquidity, leverage and counterparty credit risk. The Capital Requirements Directive (CRD IV), which must be implemented through national law, includes enhanced requirements for quality and quantity of capital, a basis for new liquidity and leverage requirements, new rules for counterparty risk, and new macro-prudential standards including a countercyclical capital buffer and capital buffers for systemically important institutions. CRD IV also makes changes to rules on corporate governance, including remuneration, and introduces standardised EU regulatory reporting, which will specify the information firms must report to supervisors in areas such as own funds, large exposures and financial information (for more details on Basel III see Section 7.7.4).
- *BRRD* (Bank Recovery and Resolution Directive) – this law, which applies to all 28 EU member states, is designed to ensure that failing banks can be wound down in a predictable and efficient way with minimum recourse to public money. It is fundamental to restoring confidence in Europe's financial sector. The Directive proposed a minimum harmonisation regime for the resolution of banks within the EU with the aim to ensure a bank or an institution can be resolved speedily and with minimal risk to financial stability. BRRD 2 was introduced in 2019.

The global financial crisis and the eurozone crisis clearly have had a profound impact on the EU banking landscape. The regulatory framework has changed in the direction of a more integrated Banking Union. In the next section we will review the main structural features of EU banking markets as well as the proposed structural reform.

14.5 Structural features and the consolidation trend

The EU banking sector is large by international standards, both in absolute terms and relative to GDP. While total banking sector assets make up around 80 per cent of GDP in the US, and around 175 per cent in Japan, they are as much as 350 per cent in the EU (Liikanen

Report, 2012). There is, however, significant cross-country heterogeneity; the largest banking sectors in absolute terms are those of the UK, Germany and France. However, relative to GDP, the largest banking sectors are those of Luxemburg, Ireland, Malta and Cyprus (all offshore financial centres). Figure 14.8 shows the total assets of EU credit institutions in absolute terms (in million euro) and relative to country GDP.

Up until the late 1980s many European financial systems were characterised by relatively high levels of controls, where regulatory authorities maintained a protected banking environment that inhibited competition. However, market conditions have undergone extensive changes over recent years. On the demand side, customer preferences have changed substantially, becoming more sophisticated and price conscious. On the supply side (as noted in Chapter 2) the globalisation of financial markets has been accompanied by deregulation, financial innovation and automation. These factors imply an increasingly competitive environment. In addition, progress in technology has enabled financial firms to extend their activities beyond local or national boundaries and to increase their market share by providing competitive products to wider markets at a lower price. Technological advances have also enabled banks to reorganise their back-office activities, making the processing of financial information faster and more efficient. New suppliers of retail financial services, such as retailers, automobile manufacturers and so on, have entered the market. As such, banks are

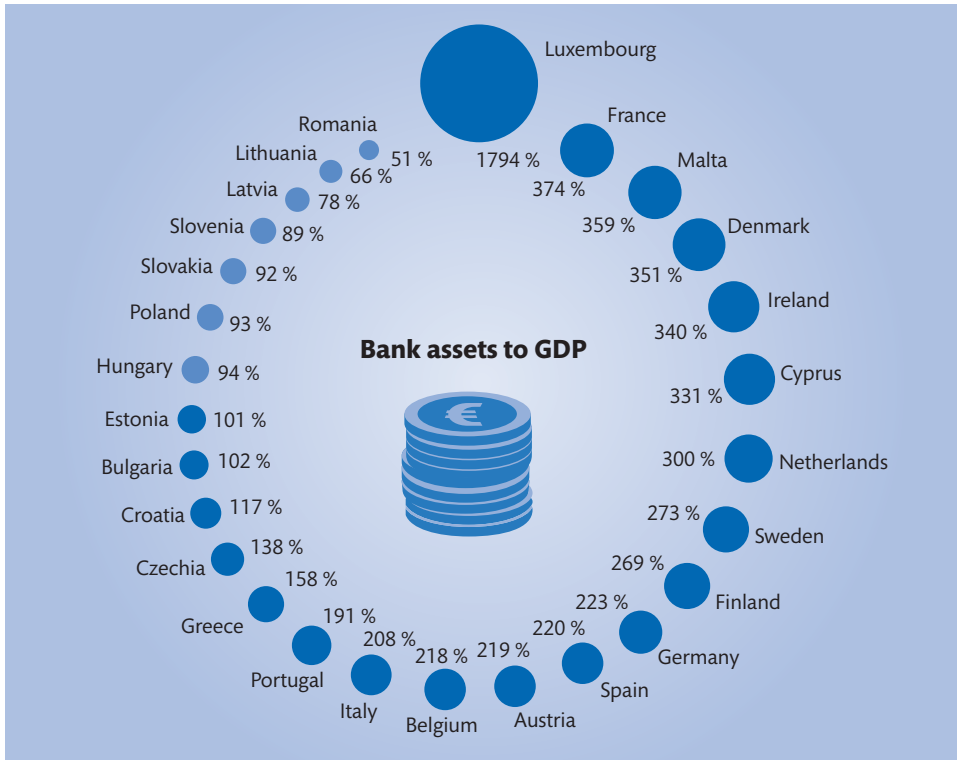


Figure 14.8 Total assets of credit institutions in the EU-27, 2018

Source: https://ec.europa.eu/eurostat/cache/digpub/european_economy/bloc-3d.html?lang=en.

now faced with strong competition from both banks and non-bank institutions, and this also accentuates competition within the banking and financial services sector overall. This has been reflected in banks' efforts to rationalise their business, with pressures to cut costs. In addition, since 2008 EU banks have been undergoing a deleveraging process. This process of deleveraging was accompanied by a drop in the number of credit institutions following bank restructuring and resolution processes in many EU countries.

14.5.1 Structural indicators of banking capacity

Technological developments, deregulation at the EU level, the introduction of the single market for financial services, and the global financial and eurozone crises have all played their part in restructuring European banking markets. This is reflected in the decline in the number of banks. While the reduction in the number of credit institutions has accelerated since 2008, the trend towards banking sector consolidation started long before the financial turmoil. This, in turn, has tended to increase the level of domestic market concentration where a handful of banks have a substantial share of banking sector assets. As Table 14.9 shows, a fall in the number of banks has been a shared tendency throughout Europe.

Table 14.9 Number of credit institutions in the euro area, 1999–2019

Country	1999	2004	2007	2008	2009	2010	2013	2019
AT	878	796	803	803	790	780	731	496
BE	117	104	110	105	104	106	103	101
CY		405	215	163	155	152	101	42
DE	2,996	2,148	2,026	1,989	1,948	1,929	1,842	1,519
EE		9	15	17	18	18	31	39
ES	386	346	357	362	352	337	290	248
FI	345	363	360	357	349	338	303	229
FR	11,163	897	808	728	712	686	623	407
GR	57	62	63	66	66	62	40	36
IE	80	80	81	81	492	489	458	302
IT	894	787	821	818	801	778	694	475
LU	209	165	155	153	174	146	147	129
LV		23	31	34	37	39	63	50
MT		16	22	23	23	26	27	24
NL	615	461	341	302	295	290	253	88
PT	223	197	175	175	166	160	151	146
SI		24	27	25	25	25	23	16
SK		21	26	26	26	29	28	17
Euro area	7,906	6,406	6,127	6,570	6,458	6,334	5,846	4,354

Notes: AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; EE = Estonia; ES = Spain; FIN = Finland; FR = France; GR = Greece; IE = Ireland; IT = Italy; LT = Lithuania; LV = Latvia; MT = Malta; NL = the Netherlands; PT = Portugal; SI = Slovenia; SK = Slovakia. The euro area total covers the EU member states that had adopted the euro at the time to which the statistics relate (see Table 14.3 for the date of adoption of the euro). The jump in the number of credit institutions in IE in 2009 is attributable to a reclassification of 419 credit unions as credit institutions.

Source: **www.ecb.europa.eu/stats/money/mfi/general/html/mfis_list_102.en.html** and updates from **www.ecb.europa.eu/stats/ecb_statistics/escb/html/table.en.html?id=JDF_MFI_MFI_LIST**

The vast majority of euro area MFIs are credit institutions (i.e. commercial banks, savings banks, post office banks, credit unions, etc.), which represented 87 per cent of all MFIs (4,316 units) on February 2021. Money market funds accounted for 8 per cent (414 units). Central banks (21 units including the ECB) and other institutions (226 units) together accounted for 5 per cent of the total number of euro area MFIs (ECB statistics).

In the EU as a whole, credit institutions represented 89 per cent of MFIs by December 2019, while money market funds accounted for 7.2 per cent (see Figure 14.9).

In the euro area, Germany and France accounted for 42 per cent of all MFIs. Austria, Italy and Ireland accounted for a further 30 per cent. Between 2000 and 2014 there were relatively large declines in the number of MFIs in the Netherlands (−60.5 per cent), France (−50 per cent), Luxembourg (−46.7 per cent) and Spain (−43.3 per cent) and, to a lesser degree, in Portugal (−28.9 per cent), Italy (−24.4 per cent) and Belgium (−24.2 per cent). This trend has continued with a general decline in the number of banks mainly due to merger activity up to 2020. As illustrated in Table 14.10, among the non-euro area EU member states, Poland had the largest number of MFIs (613 at the end of 2020), representing 10 per cent of MFIs in the EU, or 40 per cent of MFIs in the non-euro area. The other main contributors (in terms of the number of MFIs) among non-euro area EU member states are Hungary, Sweden and Denmark.

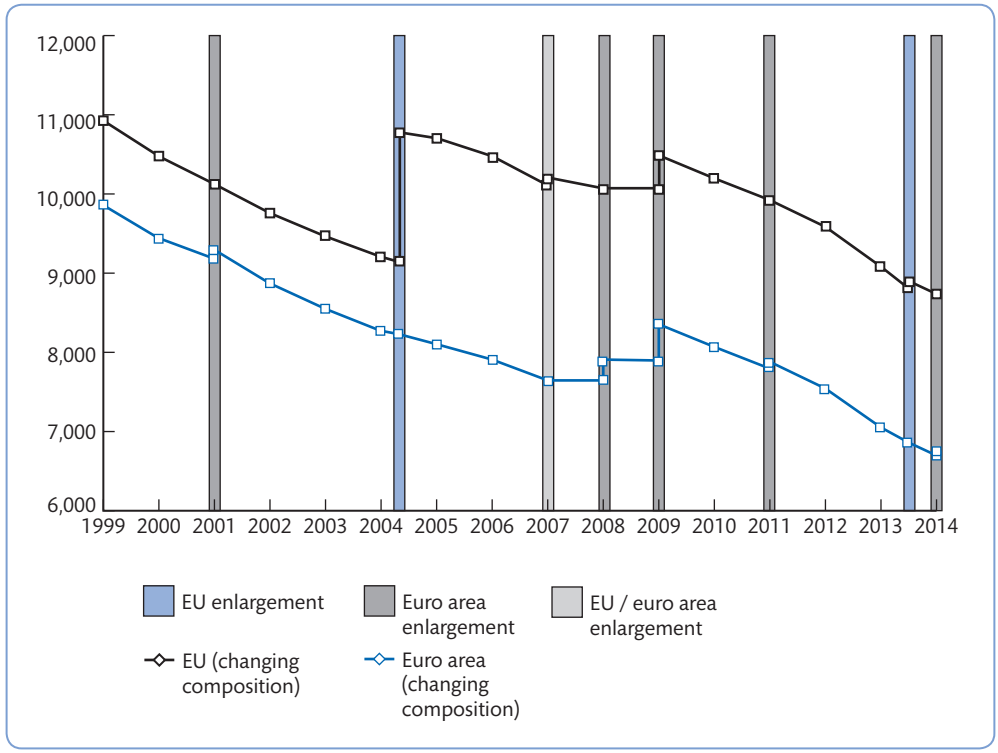


Figure 14.9 Number of MFIs in the EU and euro area, enlargement period

Source: European Central Bank, Press Release, 21 January 2014, **www.ecb.europa.eu/press/pr/date/2014/html/pr140121.en.html**

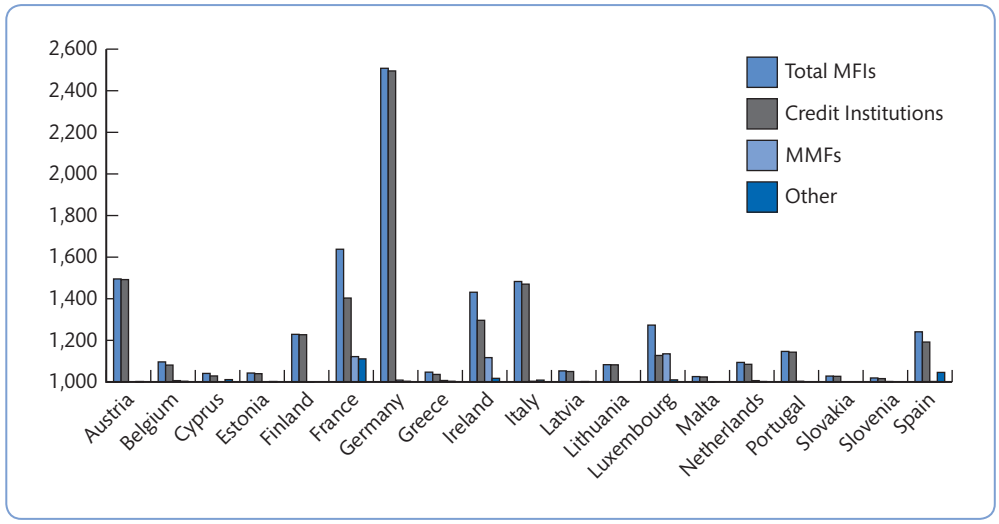


Figure 14.10 Number of MFIs (by country and category), February 2021

Source: European Central Bank, Selected Euro Area Statistics, **https://www.ecb.europa.eu/stats/ecb_statistics/escb/html/table.en.html?id=JDF_MFI_MFI_LIST**.

Another indicator of the changing features of the banking sector relates to indicators of banking sector capacity, including the distribution of bank branches, the population per credit institution and per branch. The availability of banking services is also proxied by the population per bank employee and bank assets per bank employee. Table 14.11 illustrates these key indicators on banking capacity.

The process of rationalisation and cost cutting during the crises period (2008–2012) brought about a decline in the number of bank branches by 8.7 per cent (in absolute terms, this represents a decline of 16,294 bank branches). The total number of branches at the end of 2012 stood at 171,477, but by the beginning of 2020 it had fallen to 128,753. In addition, the population per branch and the population per bank employee have increased steadily, in line with banks' efforts to reduce staff costs and branch networks, as well as the shift to digital banking. While the population per branch in 2012 was 1,945, it increased to 2,720 by 2020; similarly, the population per bank employee increased from 158 in 2012 to 170 in 2020.

14.5.2 Cross-border banking

The rapid growth of EU banking has also been accompanied by an expansion in international activities, both within the EU and globally. The creation of the Single Market and the adoption of the euro fostered cross-border expansion, particularly prior to the financial crises.

On 1 January 2019 there were 670 branches of non-domestic credit institutions resident in the euro area, accounting for 11 per cent of all euro area credit institutions. Of these, 107 branches (16 per cent) were located in Germany. However, foreign branches in Germany account only for 6 per cent of the total number of German credit institutions and for 4 per cent of total assets, which is similar to the EU average. Belgium, Slovakia and Greece had the largest number of foreign branches as a proportion of the total number of credit institutions. Cross-border banking grew prior to the financial crises, but it differs substantially

Table 14.10 Number of MFIs by country and percentage change

Country	2000	2004	2013	2021	% of all MFIs euro area	% of all MFIs non-euro area	% of all MFIs EU	Change 2000–2013	Change 2013–2021
AT	910	827	741	495	9.99%	–	8.18%	−18.6	−33.20
BE	153	126	116	95	1.92%	–	1.57%	−24.2	−18.10
CY	–	409	103	41	0.83%	–	0.68%	–	−60.19
DE	3,280	2,268	1,885	1,508	30.44%	–	24.91%	−42.5	−20.00
EE	–	25	35	42	0.85%	–	0.69%	–	20.00
ES	608	512	345	240	4.84%	–	3.96%	−43.3	−30.43
FI	354	396	318	224	4.52%	–	3.70%	−10.2	−29.56
FR	1,938	1,577	966	635	12.82%	–	10.49%	−50.2	−34.27
GR	102	100	62	47	0.95%	–	0.78%	−39.2	−24.19
IE	96	294	554	426	8.60%	–	7.04%	477.1	−23.10
IT	944	854	714	478	9.65%	–	7.89%	−24.4	−33.05
LU	676	586	360	271	5.47%	–	4.48%	−46.7	−24.72
LV	–	52	73	53	1.07%	–	0.88%	–	−27.40
LT	–	74	92	82	1.66%	–	1.35%	–	−10.87
MT	–	17	31	26	0.52%	–	0.43%	–	−16.13
NL	668	484	264	93	1.88%	–	1.54%	−60.5	−64.77
PT	228	205	162	148	2.99%	–	2.44%	−28.9	−8.64
SI	–	27	29	18	0.36%	–	0.30%	–	−37.93
SK	–	28	30	29	0.59%	–	0.48%	–	−3.33
Euro area	**9,856**	**8,230**	**6,935**	**4,954**	**100.00%**		**81.82%**	**−10.2**	**−28.57**
BG	–		37	26	–	1.67%	0.43%	–	−29.73
CZ	–	79	59	56	–	3.60%	0.92%	–	−5.08
DK	216	206	164	97	–	6.24%	1.60%	−24.1	−40.85
HR	–		56	25	–	1.61%	0.41%	–	−55.36
HU	–	238	250	47	–	3.02%	0.78%	–	−81.20
PL	–	659	692	619	–	39.81%	10.22%	–	−10.55
RO	–		42	74	–	4.76%	1.22%	–	76.19
SE	179	255	174	157	–	10.10%	2.59%	−2.8	−9.77
UK	556	475	390	454	–	29.20%	7.50%	−29.9	16.41
EU	**10,909**	**10,856**	**8,746**	**6,055**			**100.00%**	**−19.8**	**−30.77**

Notes: MFIs are central banks, credit institutions and other financial institutions whose business is to receive deposits, grant credit and/or make investments in securities. Money market funds are also classified as MFIs. AT = Austria; BE = Belgium; BG = Bulgaria; CY = Cyprus; CZ = Czech Republic; DE = Germany; DK = Denmark; EE = Estonia; ES = Spain; FIN = Finland; FR = France; GB = Great Britain; GR = Greece; HR = Croatia; HU = Hungary; IE = Ireland; IT = Italy; LT = Lithuania; LV = Latvia; MT = Malta; NL = the Netherlands; PL = Poland; PT = Portugal; RO = Romania; SE = Sweden; SI = Slovenia; SK = Slovakia.

The euro area total covers the EU member states that had adopted the euro at the time to which the statistics relate (see Table 14.3 for the date of adoption of the euro). The EU total covers the countries that became members of the EU during the time to which the statistics relate (see Table 14.1). The jump in the number of credit institutions in IE is attributable to a reclassification of 419 credit unions as credit institutions in 2009. The UK left the European Union in January 2021.

Source: **www.ecb.europa.eu/stats/money/mfi/general/html/mfis_list_102.en.html**

Table 14.11 European Union Indicators of banking sector capacity, 2019

Country	Number of branches	Number of employees	Population per credit institution	Population per branch	Population per bank employee	Population density
AT	3,513	71,479	17,897	2,522	124	107.6
BE	2,729	50,335	120,584	4,198	228	377.3
BG	3,420	28,238	269,231	2,047	248	63.4
CZ	1,807	39,738	190,175	5,894	268	138.2
CY	328	8,554	21,363	2,670	102	95.7
DK	934	41,432	59,857	6,216	140	138.5
DE	26,620	578,596	55,053	3,119	143	235.2
EE	83	5,425	31,543	15,961	244	30.5
ES	24,004	173,447	195,571	1,955	271	93.8
FI	801	20,922	24,633	6,889	264	18.2
FR	35,837	399,374	105,532	1,870	168	106.1
GB	7,649	344,076	147,633	8,763	195	273.8
GR	1,834	36,727	228,183	5,848	292	82.4
HR	964	19,563	163,048	4,228	208	72.8
HU	1,956	39,659	207,932	4,996	246	107.1
IE	876	27,692	11,512	5,598	177	71.9
IT	24,350	280,219	126,275	2,479	215	201.5
LU	216	26,334	2,265	2,842	23	239.8
LT	359	10,334	36,226	5,348	186	44.6
LV	137	6,915	34,076	20,396	404	30.2
MT	94	5,175	18,985	5,251	95	1,595.1
NL	1,260	70,000	185,830	13,716	247	507.3
PL	12,273	160,878	25,492	307	23	123.6
PT	4,046	51,060	16,602	2,540	201	113.0
RO	4,059	53,106	262,358	4,783	366	82.7
SI	526	9,553	115,606	3,956	218	103.7
SE	1,450	44,499	65,161	7,055	230	112.0
SK	1,140	19,393	187,945	4,781	281	112.0
Euro area	128,753	1,851,534	–	–	–	–
EU	164,265	2,622,723	73,794	2,720	170	118.0

Notes: AT = Austria; BE = Belgium; BG = Bulgaria; CY = Cyprus; CZ = Czech Republic; DE = Germany; DK = Denmark; EE = Estonia; ES = Spain; FIN = Finland; FR = France; GB = Great Britain; GR = Greece; HR = Croatia; HU = Hungary; IE = Ireland; IT = Italy; LT = Lithuania; LV = Latvia; MT = Malta; NL = the Netherlands; PL = Poland; PT = Portugal; RO = Romania; SE = Sweden; SI = Slovenia; SK = Slovakia.

Population density is inhabitants per square kilometres.

Source: Authors' estimates. Data: ECB statistical data, available at **http://sdw.ecb.europa.eu/home.do**

across member states. As it can be seen in Table 14.12, in the largest EU economies the share of assets of non-domestic banks is limited, whereas in some smaller economies the foreign banking share is sometimes greater than 50 per cent of total banking sector assets.

Table 14.12 Number and total assets of foreign branches and subsidiaries in the euro area, 2012–2019

Country	2012					2019				
		Branches		Subsidiaries			Branches		Subsidiaries	
	Domestic	Other EU	Outside EU	Other EU	Outside EU	Domestic	Other EU	Outside EU	Other EU	Outside EU
AT	4,460	28	1	18	17	3,513	21	1	15	13
BE	3,820	35	24	21	6	2729	31	22	10	7
CY	866	11	16	5	3	328	5	13	3	1
DE	36,239	88	20	22	15	26,620	87	20	17	16
EE	176	7	1	2	3	83	6	20	2	0
ES	38,142	77	8	33	10	24,004	78	3	11	6
FI	1,404	20	2	4	0	801	21	2	2	0
FR	38,359	65	22	56	61	35,837	64	20	42	37
GR	3,629	18	4	5	0	1,834	17	3	2	0
IE	1,064	35	1	15	11	876	31	2	6	10
IT	32,528	69	9	17	7	24,350	53	26	18	2
LU	689	8	0	66	34	216	27	13	36	40
LV	400	8	1	3	4	137	5	0	2	0
MT	107	1	2	11	2	94	2	2	2	2
NL	2,466	34	5	9	14	1260	40	3	2	8
PT	6,258	22	2	7	4	4,046	31	0	7	2
SI	695	3	0	7	0	526	2	0	6	0
SK	1,061	14	0	12	0	1140	15	0	10	0
Euro area	171,477	557	123	310	187	128,753	544	131	195	144
EU	217,716	743	228	439	289	163,265	730	238	287	226

Notes: AT = Austria; BE = Belgium; BG = Bulgaria; CY = Cyprus; CZ = Czech Republic; DE = Germany; DK = Denmark; EE = Estonia; ES = Spain; FIN = Finland; FR = France; GR = Greece; HR = Croatia; HU = Hungary; IE = Ireland; IT = Italy; LT = Lithuania; LV = Latvia; MT = Malta; NL = the Netherlands; PL = Poland; PT = Portugal; RO = Romania; SE = Sweden; SI = Slovenia; SK = Slovakia.

Source: Authors' estimates. Data: ECB statistical data, available at **http://sdw.ecb.europa.eu/home.do**

Post-crises, the share of domestic banking assets increased in Greece, Ireland, Portugal and Cyprus, due to the financial assistance programmes enacted by the respective governments under EU-IMF supervision.

Another factor that may be suggestive of the relative size of the banking sector is the amount of employment in the banking industry as a percentage of total employment. Traditionally, employment in the European banking sector has been substantially larger than in the United States or Japan. Having said this, however, it should be noted that the number of employees in the banking sector has fallen slightly in recent years – EU banking sector employment stood at 3.6 million in 2008, fell to 3 million by 2012 and continued its decline to 2.7 million by 2019.

14.5.3 The consolidation trend

As already mentioned, a key feature of European banking systems in recent years has been the consolidation trend that has led to a small number of banks having dominant positions in various banking systems. During the 1990s the preference was for **national consolidation**, as it appeared to offer clearer opportunities for reducing costs and fewer complications in terms of handling the merger due to a normally more homogeneous corporate culture. Besides, firms try first to establish a stronger national presence so that they are large enough to compete in cross-country consolidation. In the 2000s and up to the financial crises, emphasis was placed on **cross-border mergers** as domestic markets became increasingly concentrated. The EU largest banks have grown even larger over time, leading to the emergence of *large and complex banking groups* (LCBG). This term was introduced in 2006 by the European Central Bank (see Special Feature A, Financial Stability Review). The European Central Bank (2006) recognised the importance of identifying and monitoring the activities of large and cross-border banking groups, because their size and business model can have serious implication for financial stability in the case of failure.

While some EU banking markets are dominated by large domestic banks (for example, France and the UK), others are dominated by foreign players, as discussed above. At the end of 2020, BNP Paribas was the largest EU bank, with total assets of more than 2,488 trillion euro.

The large and complex group term has now been almost completely replaced by the Systemically Important Financial Institution (SIFI) definition, introduced in 2011 by the Financial Stability Board (FSB). Recall from Chapter 7 that SIFIs are determined based on four main criteria: (a) size, (b) cross-border activity, (c) complexity and (d) substitutability. The list of SIFIs (or Global Systemically Important Financial Institutions, G-SIFIs, or Global Systemically Important Banks, G-SIBs) is published annually by the FSB. The November 2019 list identified 30 banks as G-SIBs, of these 11 were EU banks: Barclays (UK), BNP Paribas (France), Deutsche Bank (Germany), Groupe BPCE (France), Group Crédit Agricole (France), HSBC (UK), ING Bank (the Netherlands), Santander (Spain), Société Générale (France), Standard Chartered (UK) and Unicredit Group (Italy).

Figure 14.11 illustrates the size of selected EU banks (2020 assets in € billion and as % of national GDP). Particularly in smaller economies, large banks are bigger than the country's GDP, with important implications for financial stability.

Merger and acquisition activities have been declining since 2008 (both in the number and the value of transactions), and no substantial cross-border deal has taken place within the EU up to 2020. This trend is reflected in the concentration ratios across EU banking markets. When we compare the percentage of the banking and credit sector controlled by the five largest banks, measured in terms of total assets, we observe an increase in this figure for most countries. Banking sectors have become more concentrated in countries with relatively low levels of concentration as well as in countries undergoing banking sector restructuring processes (for example, Greece, Italy and in various new member states like Latvia and Lithuania). Yet concentration levels are decreasing in some banking markets traditionally characterised by high concentration levels, for example in Belgium where the market share of the five largest banks decreased from 80.8 per cent in 2008 to 74 per cent in 2019 (Table 14.13).

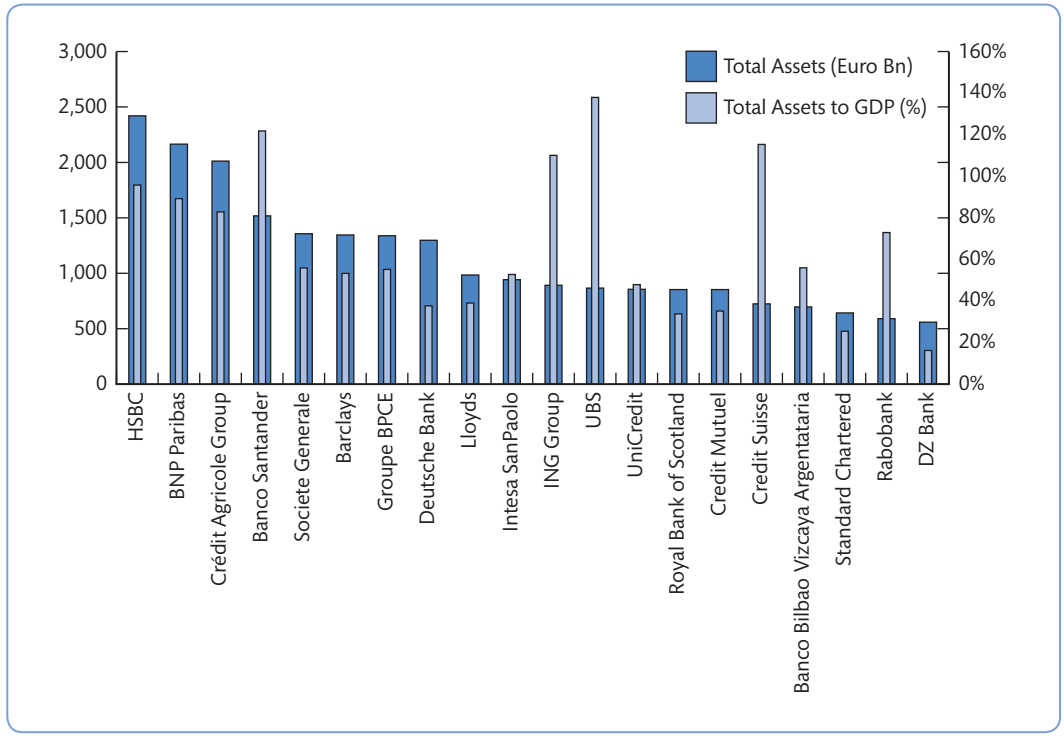


Figure 14.11 Size of selected EU banks, 2020 (assets in €bn and as % of national GDP)

Source: S&P Global (total assets), Eurostat (GDP); authors' calculations.

Table 14.13 Five-firm concentration ratio as percentage of total banking sector assets and Herfindahl index, 2008 to 2019

	Herfindahl index					CR-5 (total assets) %				
Country	2008	2009	2010	2011	2019	2008	2009	2010	2011	2019
AT	454	414	383	423	369	39.0	37.2	35.9	38.4	36.0
BE	1881	1622	1439	1294	1246	80.8	77.1	74.9	70.8	74.0
BG	834	846	789	766	992	57.3	58.3	55.2	52.6	62.5
CY	1019	1089	1124	1027	2276	63.8	64.9	64.2	60.8	85.7
CZ	1014	1032	1045	1014	1082	62.1	62.4	62.5	61.8	64.8
DE	191	206	298	317	277	22.7	25.0	32.6	33.5	31.2
DK	1229	1042	1077	1192	1170	66.0	64.0	64.4	66.3	66.2
EE	3120	3090	2929	2613	2545	98.8	93.4	92.3	90.6	93.0
ES	497	507	528	596	1110	42.4	43.3	44.3	48.1	67.4
FI	3160	3120	3550	3700	2420	82.8	82.6	83.8	80.9	80.4
FR	681	605	610	600	654	51.2	47.2	47.4	48.3	48.7
GR	1172	1184	1214	1278	2382	69.5	69.2	70.6	72.0	97.4
HU	819	864	828	848	920	54.4	55.2	54.6	54.6	52.7
IE	800	90	900	800	665	55.3	58.8	56.8	53.2	49.7
IT	307	298	410	407	643	31.2	31.0	39.8	39.5	47.9
LT	1714	1693	1545	1871	1596	81.3	80.5	78.8	84.7	83.2

Table 14.13 Five-firm concentration ratio as percentage of total banking sector assets and Herfindahl index, 2008 to 2019 (*continued*)

	Herfindahl index					CR-5 (total assets) %				
Country	2008	2009	2010	2011	2019	2008	2009	2010	2011	2019
LU	309	310	343	346	277	29.7	29.3	31.1	31.2	27.7
LV	12.5	1181	1005	929	1596	70.2	69.3	60.4	59.6	90.4
MT	1236	1250	1181	1203	1548	72.8	72.8	71.3	72.0	75.1
NL	2168	2032	2052	2061	2039	86.7	85.1	84.2	83.6	84.7
PL	562	574	559	563	688	44.2	43.9	43.4	43.7	49.8
PT	1114	1150	1207	1206	1225	69.1	70.1	70.9	70.8	73.3
RO	922	857	871	878	978	54.0	52.4	52.7	54.6	62.6
SE	953	899	860	863	787	61.9	60.7	57.8	57.8	54.9
SI	1268	125	1160	1142	1008	59.1	59.7	59.3	59.3	60.9
SK	1197	1273	1239	1268	1404	71.6	72.1	72.0	72.2	75.7
UK	370	360	424	523	349	35.3	34.1	39.8	44.1	40.6

Notes: AT = Austria; BE = Belgium; BG = Bulgaria; CY = Cyprus; CZ = Czech Republic; DE = Germany; DK = Denmark; EE = Estonia; ES = Spain; FIN = Finland; FR = France; GR = Greece; HR = Croatia; HU = Hungary; IE = Ireland; IT = Italy; LT = Lithuania; LV = Latvia; MT = Malta; NL = the Netherlands; PL = Poland; PT = Portugal; RO = Romania; SE = Sweden; SI = Slovenia; SK = Slovakia; UK = United Kingdom.

Source: Data: ECB statistical data, available at **http://sdw.ecb.europa.eu/home.do** and **https://sdw.ecb.europa.eu/reports.do?node=1000002869**

14.5.4 The Liikanen Report and structural reform of the EU banking sector

In November 2011 the European Commission mandated a High-Level Expert Group (HLEG), chaired by Erkki Liikanen, Governor of the Bank of Finland, with the remit to assess the need for structural reform of the EU banking sector. More specifically, the Group's mandate was to determine whether, in addition to ongoing regulatory reforms discussed in Section 14.4.2, structural reforms of EU banks would strengthen financial stability and improve efficiency and consumer protection. The Group delivered its report (known as **Liikanen Report**) in October 2012. The key recommendations included in the Liikanen Report can be summarised as follows:

- mandatory separation of proprietary trading and other high-risk trading activities;
- possible additional separation of activities conditional on the recovery and resolution plan;
- possible amendments to the use of bail-in instruments (where bonds convert to equity, in order to boost capital, in times of stress) as a resolution tool;
- a review of capital requirements on trading assets and real estate-related loans; and
- a strengthening of the governance and control of banks.

Following a consultation period, the European Commission adopted a proposal for a regulation to stop the EU's largest banks from engaging in proprietary trading. The new rules also give supervisors the power to require banks to separate certain potentially risky trading activities from their deposit-taking business if the pursuit of such activities compromises financial stability. Note that these new rules apply only to the largest banks, those considered too-big-to fail (TBTF), and in particular those with significant trading activities, whose failure could have a detrimental impact on the rest of the financial system and the whole economy. In this context, it applies to those EU European banks that are deemed to be of global systemic importance (G-SIFIs) or to those institutions exceeding certain thresholds (€30 billion in total assets, and

trading activities either exceeding €70 billion or 10 per cent of the bank's total assets). After the consultation period, the EC agreed that imposing structural measures across the board would have disproportionate and unnecessary costs for smaller banks. It was expected that out of the 8,000 banks operating in the EU, only a handful (probably around 30) would be affected by the proposal, but representing over 65 per cent of the total banking assets in the EU. With the aim of pursuing a level playing field, the proposal applies to EU banks and their EU parents, including their subsidiaries and branches wherever they are located. It also applies to foreign branches operating in the EU. The proprietary trading ban became effective from 1 January 2017 and the separation of other trading activities became compulsory in 1 July 2018. This reform is in line with those ongoing in the US (the so-called Volker rule) and UK (the ring-fencing of core banking activities advocated by the Vickers Report). However, EU reforms do not question the universal banking model nor do they call for a break-up of large EU banking groups.

14.6 Balance sheet structure and performance in European banking

The structure of EU banks' balance sheets was impacted substantially by the events of 2007–2010. On the asset side, the share of loans declined in the majority of countries, both due to the transfer of 'bad loans' to asset management companies and to decreased lending. In addition, banks have been trying to build up capital and liquidity buffers, in preparation for Basel III. Cross-country differences are also stark – for example, the share of loans to total assets varies from 80 per cent in Ireland to only 49 per cent in France (ECB, 2013). Differences are also attributable to bank size – for large banks, trading assets accounted for around 24 per cent of total assets whereas the percentage for small banks was around 2 per cent (and 4 per cent for medium-sized banks). The asset structure of small and medium-sized banks is, in turn, dominated by loans, particularly retail loans. These differences are illustrated in Table 14.14 which illustrates selected balance sheet items at the end of the eurozone crisis.

As regards the liability side, prior to the crises, many banks increasingly relied on short-term wholesale funding. However, since 2008 banks have had to change their funding structures towards more stable sources, such as customer deposits and equity while reducing their exposure to short-term wholesale and interbank funding. Banks adopted different strategies to reduce their reliance on interbank liabilities and to increase their liquidity and build up more stable funding.

Figure 14.12 illustrates the trend of the interbank market dependence ratio (calculated as the ratio of deposits from credit intuitions to total assets) and the funding base stability ratio (calculated as the ratio of deposits (other than from credit institutions) to the sum of total deposits and total debt certificates as indicators of bank liquidity during the crises period.

The share of non-bank deposits to total liabilities has increased since 2008 for all bank types in most EU countries. However, there are still substantial cross-country differences: the share of non-bank deposits to total assets ranges from 21.5 per cent in Ireland to 71.5 per cent in Slovakia (European Central Bank, 2013).

The performance of European banks has remained weak between 2008 and 2013, although again this varies considerably from country to country, not least because of the different features of the specific markets as well as the general economic climate. However, there are some features common to all systems. Profitability levels have remained low since the onset of the crises (see Table 14.15), return on assets (ROA) and return on equity (ROE) have returned to positive levels in most countries by 2013, although at values much lower than the pre-crisis peak of 2006.

Table 14.14 Selected balance sheet items (€bn and as % of total assets), 2013

	All domestic banks		Large domestic banks		Medium-sized domestic banks		Small domestic banks		Foreign banks	
	€ billion	% of total assets	€ billion	% of total assets	€ billion	% of total assets	€ billion	% of total assets	€ billion	% of total assets
Assets										
Cash and cash balances with central banks	1,343.3	3.90%	1,176.3	4.64%	155.3	1.95%	11.7	1.06%	307.5	4.10%
Financial assets held for trading	6,472.8	18.80%	6,328.9	24.95%	141.1	1.77%	2.8	0.25%	2,343.1	31.24%
Available-for-sale financial assets	1,764.5	5.12%	1,234.8	4.87%	509.7	6.41%	19.6	1.78%	338	4.51%
Intangible assets	235.5	0.68%	203.8	0.80%	30.77	0.39%	0.9	0.08%	18.4	0.25%
Total loans and advances	20,632.6	59.93%	14,515.5	57.22%	5,359.8	67.35%	757.4	68.75%	3,409.4	45.46%
Total debt instruments	5,840.1	16.96%	4,070.4	16.05%	1,555.9	19.55%	213.7	19.40%	1,547.3	20.63%
Total equity instruments	724.1	2.10%	512.07	2.02%	153.3	1.93%	58.7	5.33%	114.8	1.53%
Liabilities										
Total deposits from credit institutions	3,178.7	9.23%	2,039.9	8.04%	1,001.2	12.58%	137.5	0.124848	1,365.7	18.21%
Total deposits (other than from credit institutions)	15,163.2	44.05%	10,541.7	41.56%	3,831.9	48.15%	789.5	71.67%	2,229.2	29.73%
Total debt certificates (including bonds)	6,164.7	17.91%	4,744.9	18.71%	1,402.5	17.62%	17.4	1.58%	976.9	13.03%
Total equity	1,883.2	5.47%	1,326.2	5.23%	474.5	5.96%	82.5	7.49%	423.2	5.64%
TOTAL ASSETS	**34,426.1**		**25,366.2**		**7,958.3**		**1,101.66**		**7,499.4**	

Source: ECB statistical data, available at **http://sdw.ecb.europa.eu/home.do**

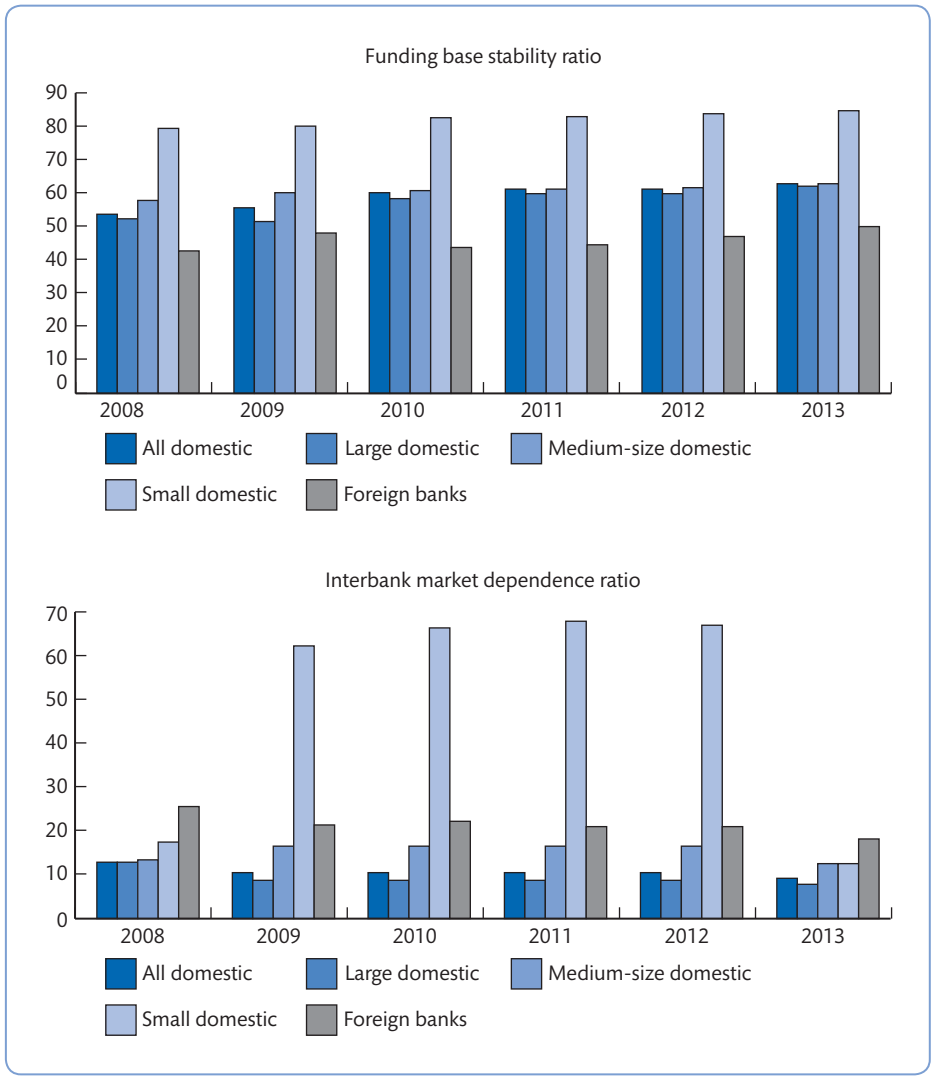


Figure 14.12 Funding base stability ratio and interbank market dependency ratio

Note: The interbank market dependence ratio is defined as the ratio of deposits from credit institutions to total assets. The funding base stability ratio is defined as the ratio of total deposits (other than from credit institutions) to the sum of total deposits and total debt certificates.

Source: ECB and national central banks.

Since then profitability has remained a major challenge facing European banks. The ROE for EU banks averaged at 5.4 per cent in 2019; on a positive note, all countries had a positive ROE for the first time since 2007 and six countries had double-digit ROE, with the best-performing banking systems being those of Hungary (16 per cent), Romania (15.2 per cent) and the Czech Republic (12.5 per cent). ROE across EU countries has become more divergent across the EU since 2007, indicating greater fragmentation, particularly across euro area banking systems.

Table 14.15 also illustrates recent trends in EU bank cost efficiency (as measured by the cost–income ratio). Cost–income ratios fell modestly between 2008 and 2013, from just over 70 per cent to around 60 per cent. Overall it appears that the trend is towards restructuring and cost cutting in order to drive improvements in bank efficiency. These figures, however, mask

Table 14.15 Selected income statement items (EU banks), crisis period (2008–2013)

	2008	2009	2010	2011	2012	2013
Income structure (% of total assets)						
Interest income	4.4	3.2	2.84	2.96	2.75	2.46
Net interest income	1.1	1.3	1.34	1.27	1.1	1.09
Total operating income	0.1	2.2	2.2	2.15	1.9	2.03
Expenditure structure (% of total assets)						
(Total operating expenses)	−1.2	−1.3	−1.34	−1.34	−1.19	−1.23
Profitability (% of total assets)						
Operating profits	0.5	0.9	0.86	0.81	0.71	0.8
Efficiency indicators						
Cost-to-income ratio (%)	70.6	59.8	60.89	62.39	62.58	59.27
Return on equity (%)	3.2	0.3	3.9	−0.78	2.65	6.03
Return on assets (%)	−0.1	0	0.2	−0.04	0.13	0.33

Source: ECB statistical data, available at **http://sdw.ecb.europa.eu/home.do**

differences between countries and for various types and sizes of banks. For instance, typically cost–income ratios are higher for small banks compared to large banks, and are also generally greater for investment banks compared with commercial banks. Operating costs, as a share of total assets, also declined slightly between 2008 and 2013. Interestingly, these reductions were not driven by significant cost saving due to reductions in the number of employees. Staff costs increased for large banks while they remained constant for small and medium sized-banks. Overall, cost–income ratios have remained stubbornly high over the last few years and in 2019 euro area banks continued to underperform some of their international peers in terms of cost efficiency with an average cost–income ratio of 66 per cent, compared with 55–57 per cent for US banks. As we mentioned earlier, it is important to note that the situation varies from country to country and from bank to bank. Typically, the best-performing banks show evidence of sustained profitability improvements supported by efficiency gains.

Cost reductions have been necessary as EU banks have been confronted by lower revenue (both interest and non-interest) since 2008. Another factor negatively impacting EU bank profitability has been the steady deterioration in asset quality during the crises period, which has forced banks to increase impairment charges and provisions (see Figure 14.13). However, higher provisioning did not keep pace with the increasing levels of non-performing loans. The latter were caused mainly by losses on loans and receivables, but also on other financial assets, including exposure to sovereign debts (particularly in the case of exposure to Greek debt). The level of non-performing loans in the euro area stood at over 7 per cent by 2014 but has gradually fallen to around 3.5 per cent by 2020. Countries with the worst bad loan problem in 2019 are Greece, Cyprus and Portugal. However, the still relatively high levels of non-performing loans throughout the euro area, as well as the impact of the Covid pandemic, will continue to drag performance down.

EU banks have also been under pressure to increase their capital buffers, with some success: the median Tier 1 ratio increased from 8.7 per cent in 2008 to 14.3 per cent in 2020. These improvements were partly driven by the EBA capital exercise and by banks anticipating the Basel III requirements. Most EU banks decreased their leverage, through a combination of increased capital and reduced assets (by scaling back lending and selling assets) (see Figure 14.14).

Overall, the EU banking sector has been badly impacted by the 2007–2009 financial crisis and then by the eurozone crisis. EU banks are still struggling with low profitability and

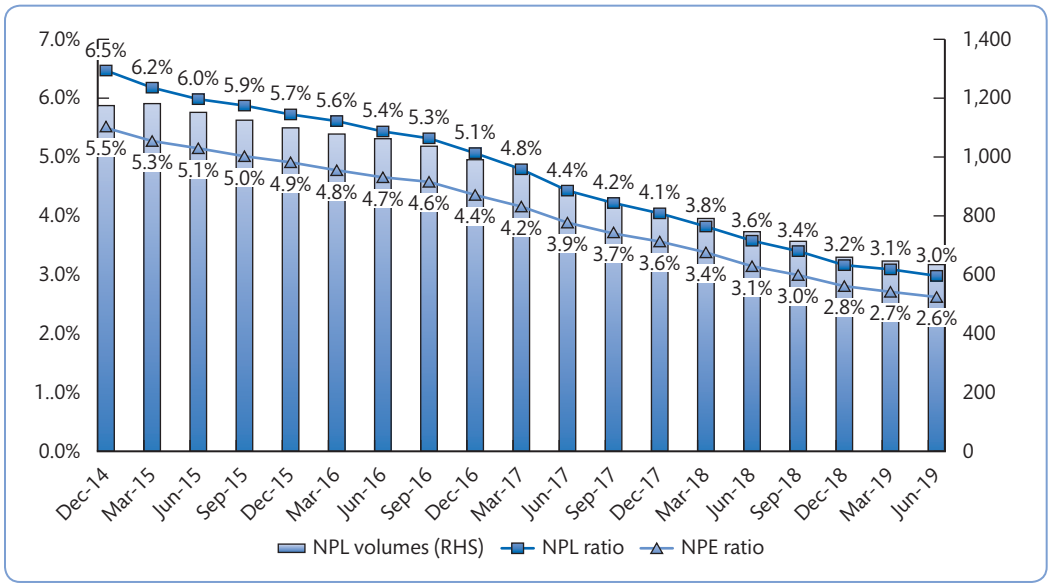


Figure 14.13 EU non-performing loans, trends and volumes, 2014–2019

Note: NPL = Non-Performing Loans; NPE = Non-Performing Exposures; NPE includes non-performing loans and advances and debt securities.

Source: ECB statistical data, available at **http://sdw.ecb.europa.eu/home.do**

bad assets. Higher levels of uncertainty regarding changes in the regulatory structure as well as ongoing negative feedback loops between banks and sovereign contribute to a more pessimistic outlook for EU banks compared to their US counterparts. On the positive side, EU banks have made significant progress in clearing up their balance sheets since the outbreak of the financial crisis in 2007 and a return to profitability seems likely in the near future.

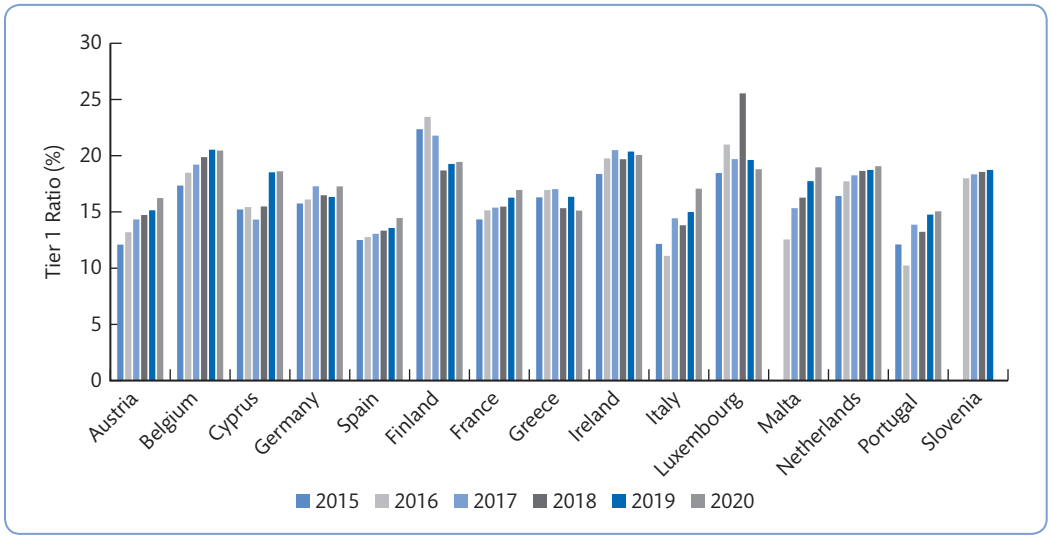


Figure 14.14 Tier 1 capital ratio, 2015–2020

Source: ECB statistical data, available at **http://sdw.ecb.europa.eu/home.do**

14.7 Conclusion

Major changes are impacting on the global financial system and European banks are not immune from these developments. The EU banking sector is readjusting following a prolonged period of crises, which started in 2007 with the sub-prime crisis and evolved into a global financial crisis first and then a sovereign debt crisis. This badly affected all EU economies and the eurozone in particular, leading to a number of bank failures and government bailouts.

In an evaluation of the causes of the crises, the Liikanen Report found that EU banks were taking excessive risks and relied excessively on short-term funding. Since then, a number of regulatory reforms have been initiated to ensure financial stability in the EU. The implementation of the new Capital Adequacy Directive (CRD IV/CCR) continues to encourage banks to improve their capital positions.

A significant step towards increased integration and enhanced financial stability was the creation of the European System of Financial Supervisors (ESFS), comprising three functional authorities: the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA). To further strengthen co-operation and improve bank supervision, the European Commission put forward a longer-term plan for a Banking Union, comprising three pillars: a Single Supervisory Mechanism (SSM), a Single Deposit Guarantee Mechanism (SDM) and a Single Resolution Mechanism (SRM). All EU banks will also be supervised according to a common legal framework (a Single Rulebook). Ultimately, if the EU is to overcome the legacy of the sovereign debt crisis, the need to foster increased integration, particularly in the eurozone, appears paramount. It is also hoped that the new Banking Union will go a long way to break the link between banking and sovereign debt crises.

Key terms

Acquis communautaire
Banking Union
Cross-border mergers
de Larosière Report
Deregulation
Economic and Monetary Union (EMU)
European Banking Authority (EBA)
European Financial Stability Facility (EFSF)
European Insurance and Occupational Pensions Authority (EIOPA)
European Securities and Markets Authority (ESMA)
European Stability Mechanism (ESM)
European Supervisory Authorities (ESAs)
European System of Financial Supervisors (ESFS)
European Systemic Risk Board (ESRB)
Eurozone crisis
Financial Services Action Plan (FSAP)
Lamfalussy procedure
Large and complex banking groups (LCBGs)
Liikanen Report
National Competent Authorities (NCAs)
National consolidation
Second Banking Co-ordination Directive (2BCD)
Single Bank Resolution Fund (SBRF)
Single Deposit Guarantee Mechanism
Single EU passport
Single market
Single Resolution Board (SRB)
Single Resolution Mechanism (SRM)
Single Rulebook
Single Supervisory Handbook
Single Supervisory Mechanism (SSM)

Key reading

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REVISION QUESTIONS AND PROBLEMS

14.1 Describe the main trends that have influenced the structure of the European banking markets over the last ten years.

14.2 Starting from the 1977 First Banking Co-ordination Directive, what are the other important regulatory measures affecting the EU banking and financial sectors?

14.3 Discuss the impact of the global financial crisis and the eurozone crisis on the EU banking sector

14.4 What are the lessons learnt from the failure of large cross-border banks like Fortis and Dexia?

14.5 Discuss the process of creation of a Banking Union for euro area countries.

14.6 Illustrate the European System of Financial Supervision and the interactions between macro-prudential and micro-prudential regulation.

14.7 Discuss the aims of a Single Rulebook, in the context of the differences between euro area and non-euro area countries within the European Union.

14.8 Discuss the importance of cross-border banking in EU member states.

Chapter 15

Banking in the US

Learning objectives

- To distinguish between different types of bank depository institutions and investment companies operating in the US
- To understand the meaning of the disintermediation process
- To understand the characteristics of the US payment system
- To understand the main trends in the performance of US banks
- To understand the main tasks and organisation of the US regulatory authorities
- To understand the impact of the global financial crisis on US banking

15.1 Introduction

This chapter examines the main features of the US banking system outlining recent structural and financial developments. Since mid-2007 the system has been involved in crises and has witnessed the biggest financial sector bailout in living memory. Since the onset of the sub-prime crisis, the US banking system has been transformed from one of the world's most profitable to teetering on bankruptcy. The first part of this chapter presents a brief analysis of the financial crisis and its impact on the US banking and financial sectors. We then look at the changing structure of the banking system, highlighting the consolidation trend, the increase in industry concentration and the radical post-crisis developments. We next outline the main types of banking and financial service firms operating in the US, discussing the major deposit-taking institutions and other financial firms. Since the passing of the **Gramm–Leach–Bliley Act** of 1999, US banks can establish financial holding companies and engage in the full range of financial services areas. The general adoption of the universal banking model and its implications for bank balance sheet structure, performance as well as regulation are discussed, and linked to the banking sector turmoil. The move to universal banking, however, has been reversed by the passing of the **Dodd–Frank (Wall Street Reform and Consumer Protection) Act** in July 2010 that limits commercial banks' activity in undertaking proprietary trading activities as well as owning hedge funds and private equity firms (under the so-called **Volcker Rule**). Under the new regulatory environment, US banks are being forced to hold significantly more capital and liquidity, reduce their risk exposures and

undertake increasingly conservative banking practices. Retail banking profits have become the main driver of commercial banks' performance since 2009, as returns from commercial and investment banking have dwindled.

The remainder of the chapter is organised as follows. Section 15.2 highlights the key events of the financial crisis in US banking. Section 15.3 reviews the structure of the US banking and financial systems while Section 15.4 focuses on the US payment system. The balance sheet features of US commercial banks are discussed in Section 15.5 while their performance characteristics are analysed in Section 15.6. The regulatory architecture of the US financial sector, including the changes brought forward by the passing of the Dodd–Frank Act of 2010, are discussed in Section 15.7, and Section 15.8 concludes.

15.2 The financial crisis in the US

The US banking system underwent a drastic transformation during the past two decades, driven by deregulation, financial innovation and a wave of mergers and acquisitions that led to increased consolidation and competition in the sector. These changes led to increased profitability and efficiency, increased provision of banking and financial services and to the international growth of US financial institutions. On the down side, these rapid changes also led to increased risk taking and instability, which culminated in the financial crisis of 2007–2009. The crisis originated in the US banking system, with the demise of the **sub-prime mortgage lending** market and led to financial losses, government bailouts and prolonged economic recession in many countries.

Since the onset of the crisis in 2007, there has been a large body of research investigating the causes and consequences of the crisis. In this section, we aim to review the key events that led to the almost complete meltdown of US banking and the actions taken by regulators and policy makers to avoid it.

The origins of the 2007 crisis are linked to the housing market bubble and the development of the securitisation market (see Section 18.3). In the US, house prices had risen constantly from the mid-1990s until 2006, with the increased demand driven by low interest rates, rising household income and increased availability of mortgages. The increase in mortgage loan originations was coupled with a decrease in lending standards.

Sub-prime mortgage lending refers to loans made to relatively high-risk borrowers for property purchase. This market expanded rapidly from the early 2000s onwards and was funded primarily by the securitisation of mortgages that were re-packaged and sold on to investors (see also Chapter 18). Box 15.1 illustrates the different type of mortgage loans available to would-be homeowners in the US.

BOX 15.1 US MORTGAGE BASICS

The mortgage industry in the US has some different characteristics from the UK or continental European industries. In the US, The Federal government created several government-sponsored entities (GSEs) to foster mortgage lending and encourage home ownership. These include the Government National Mortgage Association (Ginnie Mae), the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac). The GSEs do not originate mortgages themselves, but rather fulfil

BOX 15.1 US mortgage basics (*continued*)

their missions by purchasing mortgages originated by lenders, under the terms of separate, annually negotiated, contracts. The GSEs work by offering a guarantee on the mortgage payments of certain '*conforming loans*'. Whether or not a loan is conforming depends on the size and a set of guidelines implemented in an automated underwriting system.

The terminology used is typical of the US market and it is illustrated below:

Conforming mortgages: a mortgage that is equal to or less than the amount established by the conforming loan limit set by Fannie Mae and Freddie Mac's Federal regulator, the Office of Federal Housing Enterprise Oversight (OFHEO), and meets the funding criteria of Freddie Mac and Fannie Mae. In 2020, for the 8th consecutive year, the one-unit (that is, a single-family residence) conforming mortgage loan limit is $510,400, an increase from $484,350 in 2019. A further increase has been confirmed for 2021, to $548,250 (and $822,375 in high-cost areas). This will be the fifth consecutive year of increases.

Non-conforming mortgages: mortgages that exceed the conforming loan limit are classified as non-conforming or Jumbo mortgages.

Jumbo mortgages: a Jumbo mortgage is a mortgage loan in an amount above conventional conforming loan limits. In general, jumbo loans require larger deposits, have higher interest rates, and have more stringent requirements.

Alt-A mortgages: Alt-A (Alternative A) mortgages are defined not according to the size of the loan, but according to the risk. In this case, the borrowers will typically have clean credit histories, but the mortgage itself will generally have some issues that increase its risk profile (for example, higher loan-to-value and debt-to-income ratios, investment properties, or inadequate documentation of the borrower's income). In this sense, Alt-A loans are 'alternatives' to the standard of conforming, GSE-backed mortgages.

Sub-prime mortgages: a type of mortgage that is normally given to borrowers with lower credit ratings. A borrower with good credit rating will get what is called an A-paper loan (or conforming loan). Borrowers with less-than-perfect credit scores might be given A-minus, B-paper, C-paper or D-paper loans, with interest payments progressively increasing for borrowers' lower scores. Although there is no single, standard definition, in the US sub-prime loans are usually classified as those where the borrower has a FICO score below 640. FICO is a leading provider of credit scoring, decision management, fraud detection and credit risk score services.

The decrease in lending standards and the growth of the sub-prime market are well documented in the literature (Dell'Ariccia *et al.*, 2012). Table 15.1 illustrates the growth of *adjustable-rate mortgages* (ARM) (these are also known as *variable-rate mortgages* and are mortgages with interest rates periodically adjusted based on an index, which is designed to reflect the cost of borrowing for the lender), interest-only mortgages as well as low- or no-documentation mortgages.[1] Table 15.1 also documents the increase in the *debt-to-income ratio* (DTI – which represent the percentage of monthly of income that needs to be disbursed to cover mortgage payments and other debts) and in the *loan-to-value ratio* (LTV – the value of the house to the amount borrowed. For example, a mortgage of $150,000 on a house that is worth $200,000 results in a LTV of 75 per cent). Higher LTVs are often considered an indication of riskier lending practices.

These riskier mortgage loans were then used as collateral for the issuance of structured finance products, via securitisation (see Chapter 18 for a detailed discussion of securitisation).

[1] In an interest-only nortgage, the monthly mortgage payment is made up only of interest on the outstanding debt, while the amount of capital borrowed is repaid on maturity. Low-documentation or no-documentation mortgages normally fall into the Alt-A classification.

Table 15.1 Sub-prime home purchase loans (%) pre-crisis period

Year	Adjustable-rate mortgage (ARM)	Interest-only (ARM)	Low-/No-documentation (Alt-A)	Debt payment-to-income ratio	Average loan-to-value ratio
2001	73.8	0.0	28.5	39.7	84.04
2002	80.0	2.3	38.6	40.1	84.42
2003	80.1	8.6	42.8	40.5	86.09
2004	89.4	27.2	45.2	41.2	84.86
2005	93.3	37.8	50.7	41.8	83.24
2006	91.3	22.8	50.8	42.4	83.35

Source: Data from Freddie Mac, reported by the IMF at **www.imf.org/external/pubs/ft/fmu/eng/2007/charts.pdf**

The issuance of sub-prime and other mortgage loan-backed products grew from around $150 billion in 2000 to around $1.2 trillion by 2007. Up until mid-2007, the demand for these structured credit products increased exponentially: the market for mortgage-backed securities increased from around $2.4 trillion outstanding in 1995 to $7.1 trillion at year-end 2006.[2]

Figure 15.1 illustrates the increase in mortgage-related issuance. Recall that 'agency issuance' relates to issuance by government-sponsored entities (GSEs) such as Fannie Mae and Freddie Mac (more precisely, it includes issuance by the following: the Federal Home Loan Mortgage Corporation (FHLMC), known as Freddie Mac; the Federal National Mortgage Association (FNMA), commonly known as Fannie Mae; the Government National Mortgage Association (GNMA), known as Ginnie Mae; the National Credit Union Administration (NCUA); and the Federal Deposit Insurance Corporation – FDIC), whereas non-agency issuance, also known as *private label issuance*, includes issuance of non-conforming mortgages, i.e. mortgages which didn't meet the limits sets for conforming mortgages (see Box 15.1 for a discussion of US mortgage basics).

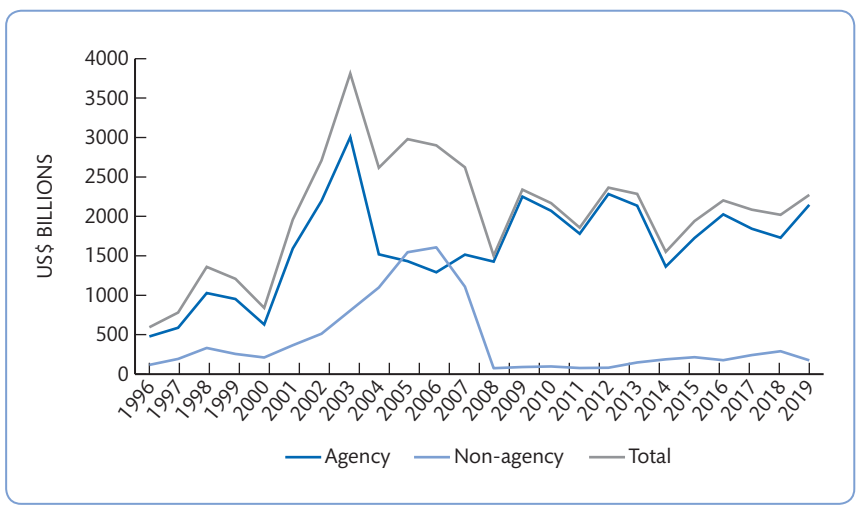


Figure 15.1 US mortgage-related issuance

Source: Securities Industry and Financial Markets Association (SIFMA).

[2] Data available from the Securities Industry and Financial Markets Association (SIFMA) (**www.sifma.org**).

Figure 15.1 illustrates the rise of total issuance, mainly driven by agency issuance. Non-agency issuance started to become significant from 2002 onwards, reaching a peak in 2005 and 2006 and falling post-2007. Investors were attracted to these securities because they appeared to offer higher returns than similarly rated alternative investments.

At the top of the US credit cycle in 2006, around 20 per cent of US mortgage originations were sub-prime, and 75 per cent of these were securitised. When foreclosures and defaults on US sub-prime mortgages accelerated from late 2006 onwards, the value of the securities backed by such assets rapidly declined. Furthermore, property prices crashed, causing prime and sub-prime borrowers to increasingly default on their mortgages, further putting downward pressure on the value of securitised mortgage products and bank-loan books. This resulted in a liquidity gridlock in interbank markets and the subsequent '*credit crunch*'. Key events relating to the US credit crisis are illustrated in Box 15.2.

BOX 15.2 KEY EVENTS IN THE US CREDIT CRISIS

December 2007 – the Federal Reserve introduced the Term Auction Facility (TAF).This was a temporary programme managed by the Federal Reserve aimed to 'address elevated pressures in short-term funding markets'. Under the TAF the authorities auctioned collateralised loans with terms of 28 and 84 days to depository institutions that are 'in generally sound financial condition' and 'are expected to remain so over the terms of TAF loans'. Eligible collateral included a variety of financial assets. The programme aimed to help banks raise short-term funds due to gridlock in interbank markets. (The initial programme envisaged $20 billion of loans under the TAF, but this ballooned – $1.6 trillion in loans to banks were made for various types of collateral under the TAF by November 2008.)

March 2008 – Bear Stearns became the largest casualty of the 'credit crunch' to that date when the failing investment bank was purchased by JPMorgan Chase for a nominal amount ($2 per share or $236 million) following the provisions of earlier liquidity support (a revised offer of $10 per share was made on 24 March enabling JPMorgan Chase to acquire 39.5 per cent of Bear Stearns). In addition, the Federal Reserve extended the safety net arrangement to ensure that JPMorgan Chase would not suffer significant losses on loans extended to Bear Stearn.

June 2008 – the FDIC took over IndyMac Bank, a large alt-A mortgage lender (alt-A mortgages are considered riskier than 'prime' and less risky than 'sub-prime', and often do not require income verification of the borrower) that suffered large losses on these mortgages. The bank had $32 billion in assets, making it the second largest bank failure in US history. The estimated cost of the failure is $8.9 billion. The takeover followed a slow run or 'walk' on the bank of $1.3 billion in deposits withdrawn between 27 June and 10 July. This followed a public warning about the bank from Senator Charles Schumer. At the same time, Fannie Mae and Freddie Mac, who held or guaranteed over $5 trillion in US mortgages (about half of the total), were having their own problems of a 'walk' on their outstanding stock and shares, both of which declined by more than 80 per cent in value from a year earlier.

July 2008 – Treasury Secretary Henry Paulson announced a plan to insure that Fannie Mae and Freddie Mac would continue to support the housing market. This consisted of a proposal that the Treasury would temporarily increase its credit lines to the organisations, that they may borrow from the Federal Reserve under certain circumstances, and that the Treasury would get temporary authority to buy their shares should that be necessary.

September 2008 – Freddie Mac and Fannie Mae were placed into conservatorship of the Federal Housing Finance Agency (FHFA).

September 2008 – Lehman Brothers collapsed and Merrill Lynch was sold to Bank of America. The two remaining large investment banks, Goldman Sachs and Morgan Stanley, converted into commercial banks. AIG, the world's largest insurance company was rescued by the Federal Reserve courtesy of an $85 billion emergency loan and in exchange, the Federal government acquired a 79.9 per cent equity stake. Washington Mutual (WaMu) was acquired by

BOX 15.2 Key events in the US credit crisis (*continued*)

the US Office of Thrift Supervision (OTS) and the bulk of its untroubled assets sold to JPMorgan Chase.

October 2008 – the Fed announced that it was to expand the collateral it would lend against to include commercial paper, to help address ongoing liquidity concerns.

November 2008 – Citigroup failed and was rescued by the US government. In a complex deal, the US government announced it was purchasing $27 billion of preferred stock in Citigroup and warrants on 4.5 per cent of its common stock. The preferred stock carried an 8 per cent dividend. This acquisition followed an earlier purchase of $25 billion of the same preferred stock using Troubled Asset Relief Program (TARP) funds. The TARP is a plan under which the US Treasury would acquire up to $700 billion worth of mortgage-backed securities. After various revisions the plan was introduced on 20 September 2008 by US Treasury Secretary Hank Paulson. Under the agreement, Citigroup and regulators would support up to $306 billion of mainly residential and commercial real-estate loans and certain other assets, which would remain on the bank's balance sheet. Citigroup would bear losses on the first $29 billion.

November 2008 – the Federal Reserve announced the $200 billion **Term Asset-Backed Securities Loan Facility**, a programme supporting the issuance of 'asset-backed securities' (ABS) collateralised by loans related to autos, credit cards, education and small businesses. In the same month, the Federal Reserve also announced a $600 billion programme to purchase MBS of government-sponsored enterprises (such as Freddie Mac and Fannie Mae) in a move aimed at reducing mortgage rates.

February 2009 – the US authorities presented plans for new comprehensive measures in support of the financial sector, including a **Public-Private Investment Programme (PPIP)** of up to $1 trillion to purchase troubled assets.

March 2009 – the US Federal Reserve announced plans for purchases of up to $300 billion of longer-term Treasury securities over a period of 6 months and increases the maximum amounts for planned purchases of US agency-related securities. The US Treasury provided details on the PPIP proposed in February

April 2009 – the US Federal Open Market Committee authorised new temporary reciprocal foreign currency liquidity swap lines with the Bank of England, ECB, Bank of Japan and Swiss National Bank.

The US Federal Reserve released details on the stress tests conducted to assess the financial soundness of the 19 largest US financial institutions, declaring that most banks had capital levels well in excess of the amount required for them to remain well capitalised.

January 2010 – President Barack Obama announced plans to restrict commercial banks from carrying out securities business and to limit their size. The proposed reforms, encapsulated under the Dodd–Frank Act, prohibited commercial banks from doing proprietary trading (trading in securities on their own account) and from investing in hedge funds and private equity firms. No bank would be permitted to hold more than 10 per cent of US bank deposits with the definition of what constitutes deposits being narrowed to limit further concentration in the domestic US banking system.

December 2013 – US regulators approved the Volcker Rule, which aims to stop banks from making speculative bets from their own account (proprietary trading). This rule is one of the critical provisions of the 2010 Dodd–Frank Act. Despite its importance, it took almost four years for the rule to be finalised.

Source: Adapted from Valdez and Molyneux (2013), Table 10.3, pp. 294–295; BIS (2009a), Table 11.1 p. 19; and authors' updates.

The US response to the crisis has been unprecedented in recent banking history. The US government attempted to tackle the crisis on several different fronts, with the overall aim of helping the economy. There have been a number of initiatives, the most known by far is the **Troubled Assets Relief Programme** (TARP), through which the US government purchased assets and equity from financial institutions. The US Congress initially authorised $700 billion for TARP in October 2008; however, that authority was reduced to $475 billion by the Dodd–Frank Wall Street Reform and Consumer Protection Act (Dodd–Frank Act). Of that amount, approximately $250 billion was committed to the stabilisation of the banking sector. TARP measures aimed

to remove bad or doubtful assets from bank balance sheets (or off-balance sheet) to strengthen banks' financial position – indirectly helping them to boost their soundness (capital strength) and provide greater confidence in the system so as to encourage lending. A report by the special inspector-general for TARP carried out in January 2012 on the use of TARP funds by US banks confirmed that the programme was widely used and helped promote lending. The US Treasury believes that TARP helped stabilise the financial system by providing capital to more than 700 banks. TARP funds were invested in both large and small banking institutions. By 2017, US banks had paid back 99 per cent of the funds invested by the US Treasury. And whereas banks participating in TARP at the height of the financial crisis held more than 98 per cent of all US banking assets, now that number is less than 1 per cent. Figure 15.2 illustrates the TARP funds outstanding. According to data from the US Treasury, TARP's bank programmes earned significant positive returns for taxpayers. As of January 2020, the US Congressional Budget Office reports that the Treasury has recovered $295 billion through repayments and other income and has written off $19 billion. The total cost of TARP is estimated at $31 billion.

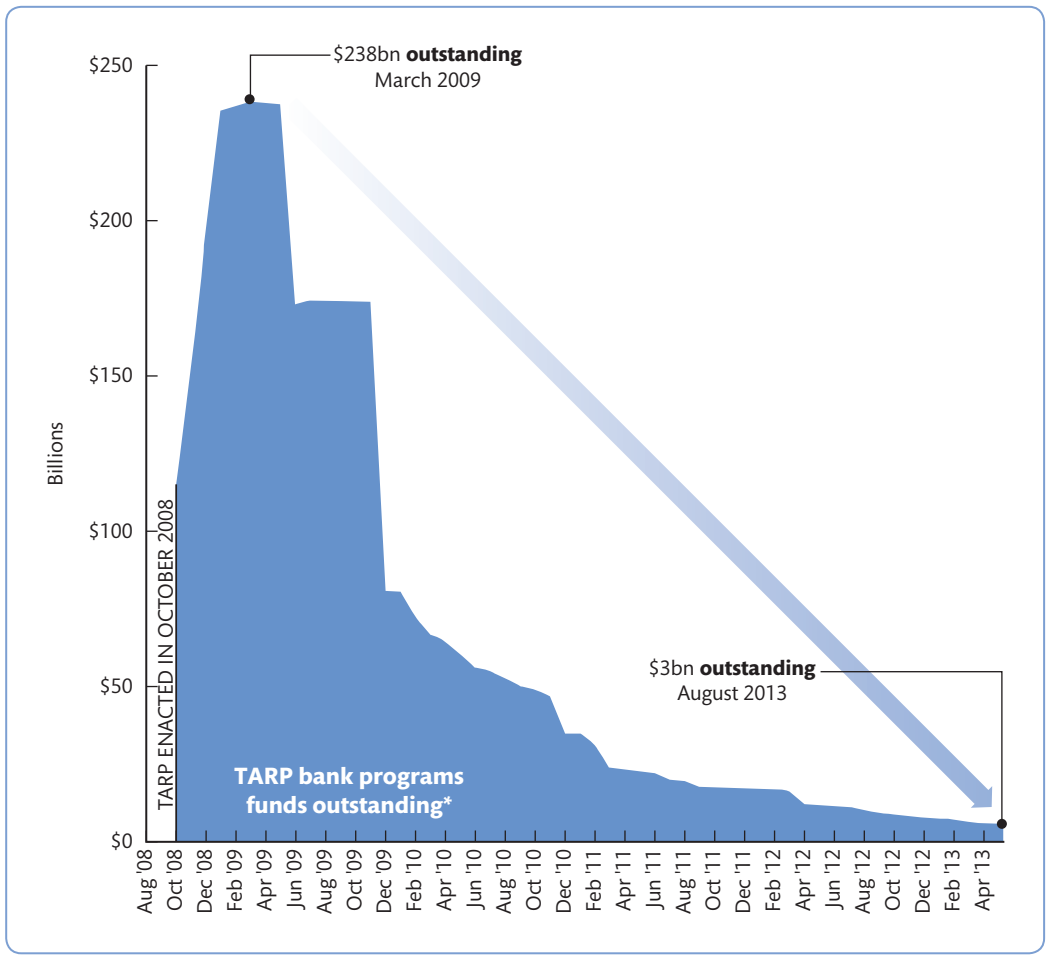


Figure 15.2 TARP funds outstanding

* TARP collections include $2 billion from loans refinanced under the Small Business Lending Fund.

Source: US Department of the Treasury (2013).

In addition to TARP, other programmes aimed at the banking sector include:

- *Asset Guarantee Program* (AGP): under this programme, which began in January 2009 and is now closed, the US government supported institutions whose failure would have caused serious harm to the financial system and the broader economy. It was a joint programme between the US Treasury, the Federal Reserve and the FDIC and it involved supporting the value of certain assets held by qualifying financial institutions by agreeing to absorb a portion of losses on those assets. Two institutions received assistance under the AGP – Bank of America and Citigroup.
- *Supervisory Capital Assessment Programme* (SCAP) and *Capital Assistance Programme* (CAP): these programmes were established to ensure that the US major banking institutions had adequate capital buffers to withstand losses and meet the credit needs of their customers in an adverse scenario (for example, a more severe recession than was anticipated). The SCAP is basically a stress test and was conducted in early 2009. It assessed the largest 19 US bank holding companies (assets greater than $100 billion) and 18 of them were found to have adequate capital buffers and therefore did not need further help under CAP, which then closed in November 2009.[3] The SCAP proved to be a critical step to restore confidence in the financial system and get credit flowing again. Following the release of the stress test results, banks were able to raise hundreds of billions of dollars in private capital. A mid-cycle stress test was run in 2013.
- *Capital Purchase Programme* (CPP): this programme was launched with the aim of strengthening the capital position of solvent banks of all sizes, to help rebuild confidence in these institutions and in the US financial system as a whole. The US Treasury initially committed $250 billion TARP funding to the CPP; this was later reduced to $218 billion in March 2009. At the end of the investment period for the programme, the US Treasury had invested approximately $205 billion under the CPP, providing capital to 707 financial institutions in 48 states. The final investment under the CPP was made in December 2009. According to the US Treasury, taxpayers have already recovered more than the amount invested in banks through the CPP and the US Treasury is in the process of winding down its remaining bank investments.
- *Community Development Capital Initiative* (CDCI): this was launched in February 2010 to help viable certified Community Development Financial Institutions (CDFIs) and the communities they serve cope with the effects of the financial crisis. CDFIs include community banks, thrifts and credit unions. Under CDCI, 84 institutions received investments amounting to $570 million. The programme closed in September 2010.
- *Targeted Investment Programme* (TIP): this programme was established in December 2008 to help stabilise institutions considered systemically significant. Under the TIP, the US Treasury purchased $20 billion in preferred stock from two institutions, Citigroup Inc. and Bank of America. The programme is now closed: Bank of America and Citigroup repaid their TIP investments in full in December 2009.

Economists seem to agree that the US response to the financial crisis, including the government fiscal stimulus, the bailouts of banks and other financial institutions, the introduction of

[3] The 19 largest US bank holding companies that were stress tested under SCAP in 2009 were Bank of America, JPMorgan Chase, Citigroup, Wells Fargo, Goldman Sachs, Morgan Stanley, Metropolitan Life Insurance Company, PNC Financial Services, US Bancorp, The Bank of New York Mellon, GMAC, SunTrust Bank, Capital One, BB&T, Regions Financial Corporation, State Street Corporation, American Express, Fifth Third Bank and KeyCorp.

bank stress tests and the Fed purchase of asset-backed securities, probably avoided a depression and saved millions of jobs (see, for example, Blinder and Zandi (2010), *How the Great Recession was Brought to an End*).

However, while the financial crisis had for the most part ended by 2010, the post-crisis recovery has been very slow. In July 2010, US President Barak Obama passed the Dodd–Frank Wall Street Reform and Consumer Protection Act. The Dodd–Frank Act aimed to overhaul financial regulation and supervision in order to boost disclosure, transparency and the safety and soundness of the financial system. The Act's key changes include the establishment of the **Financial Stability Oversight Council**, the introduction of new measures to deal with systemically important financial institutions (SIFIs) and the creation of a *Consumer Financial Protection Bureau*. In addition, the Act reformed the Federal Reserve; proposed ways to improve transparency in derivatives transactions by moving more over-the-counter (OTC) transactions on to regulated exchanges; and introduced new rules on executive pay and credit rating agencies. Another important regulatory reform contained in the Dodd–Frank Act is the 'orderly liquidation authority' (OLA) granted to the FDIC. These key changes will be discussed in more detail in Section 15.7.

15.3 Structure of the US banking and financial systems

There is a wide range of financial intermediaries operating in the US system that provide a variety of banking and other financial services. A common way of distinguishing between such intermediaries is based on the main type of liabilities these institutions hold.

The main types of financial institutions include the following:

- *Depository institutions* – commercial banks, savings institutions and credit unions. The main types of liabilities these institutions hold are deposits.
- *Contractual savings institutions* – insurance companies and pension funds whose main liabilities are the long-term future benefits to be paid to policyholders and fund holders. These liabilities typically take the form of reserves that are listed on the company's balance sheet as part of liabilities.
- *Investment intermediaries* – mutual funds, investment banks and securities firms and finance houses whose liabilities are usually short-term money market or capital market securities.

The following provides an overview of the main features of these types of financial intermediaries.

15.3.1 Depository institutions

Commercial banks are the major financial intermediaries in the US economy. They are the main providers of credit to the household and corporate sectors and operate the payments mechanism. Commercial banks are typically joint stock companies and may be either publicly listed on the stock exchange or be privately owned.

As you should know already, their main liabilities are deposits (of different size, currency and maturity). Often a distinction is made between *demand deposits* (deposits payable on demand) and *time deposits* (deposits that have a term, e.g. three-month deposits). Deposits are either retail (small household deposits) or wholesale (large-value deposits from

companies, banks and other institutions). Deposits can be denominated in the home or foreign currency.

Figure 15.3 shows that the number of commercial banks has fallen from just over 14,000 in 1935 to 4,518 in 2019. According to the FDIC's Statistics on Depository Institutions, commercial banks had $15.5 trillion in assets of which total loans amounted to $10.3 trillion by the end of 2019.

The decline in the number of banks, a trend common in many other countries, has been mainly the result of mergers and acquisitions (M&A) activity and recent years have witnessed deals between large banks that had the impact of increasing industry concentration. The share of banking sector industry assets controlled by the ten largest banks has increased from 20 per cent in 1990 to 67.1 per cent by the end of 2019. Over the same period the market share of the top 100 banks has grown from around 50 per cent to close to 90 per cent. Figure 15.4 illustrates that the number of small banks – those with less than $500 million – witnessed a major decline in number over the last few decades. The passing of the Gramm–Leach–Bliley Act of 1999 also encouraged consolidation as it allowed the possibility of the creation of financial holding companies whereby banks can engage in securities underwriting, insurance sales and a broad range of investment banking and other financial services business. All major banks are part of financial holding companies, of which there were 463 by the start of 2019.

Table 15.2 illustrates the ten biggest US banks at different time periods. One can see that some banks have remained in the top slots since 1988 – Citicorp, Bank of America, JP Morgan (now merged with Chase Manhattan) and Wells Fargo. Others have disappeared – Chemical Bank (acquired by Chase Manhattan), Manufacturers Hanover (acquired by Chemical before the aforementioned Chase deal), Bankers Trust (acquired by Germany's Deutsche Bank) and First Interstate (acquired by Wells Fargo). Looking at the top US banks in December 2012 one can see Goldman Sachs (an investment bank that converted to a bank holding company status at the peak of the 2008 banking crisis), General Electric Capital (the banking subsidiary of US conglomerate GE Capital) and Capital One Financial whose business has been built on credit cards and other consumer financial services. However, by 2019, the top investment banks, Goldman Sachs and Morgan Stanley, dropped out of the list. Both have shrunk their assets

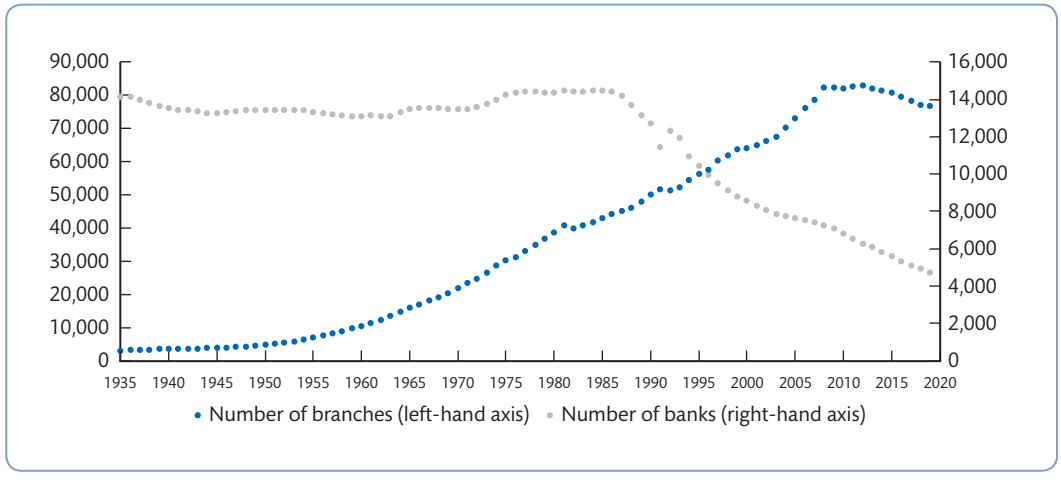


Figure 15.3 Number of commercial banks and branches in the US (1935–2019)

Source: Federal Deposit Insurance Corporation.

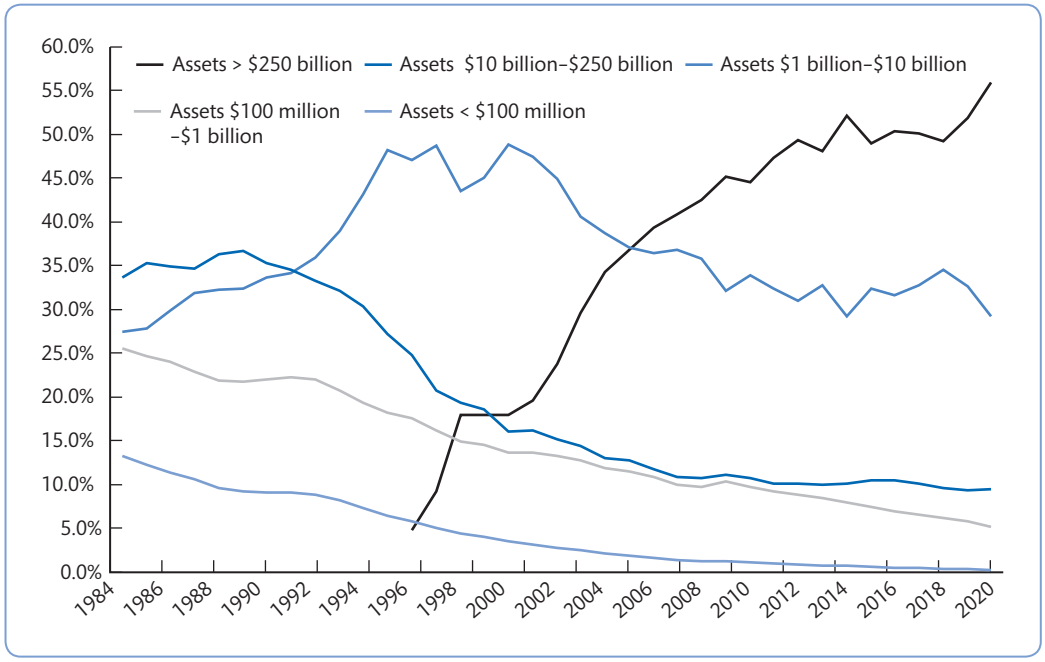


Figure 15.4 Share of industry assets according to bank size (%), 1984–2020

Source: Federal Deposit Insurance Corporation.

substantially in order to boost capital and de-risk their activities given the tougher ongoing regulations imposed on the sector.

Another interesting trend since the 1990s has been the increased international presence of US banks, and noticeably, non-bank subsidiaries have been the most rapidly growing source of foreign assets reported by US bank holding companies over the past decade or so. These subsidiaries undertake a range of activities, including securities underwriting, real estate brokerage and other commercial enterprises. The growth of these non-banking subsidiaries underscores the long-term trend toward diversification of earnings beyond traditional commercial banking products and services.

In general, the main strategic reasons for the foreign expansion of US banks relates to the desire to:

- grow profits by expanding distribution channels into new, potentially high-growth geographic markets and across demographic groups;
- provide commercial lending and capital markets products and services to complement the international expansion plans of corporate and commercial clients;
- increase revenue diversification; and
- cross-sell and leverage existing product expertise in foreign markets.

While major US banks have expanded overseas, it needs to be noted that liberalisation of the domestic banking market also fuelled increased foreign presence in the home market. In addition, the move to a universal banking model, whereby traditional commercial banking and markets become more closely entwined, is likely to have led to excessive risk taking – particularly in the securitisation of residential mortgage products and the granting of mortgage lending (see also Section 15.2).

Table 15.2 Ten largest US banking companies, ranked by assets ($mil)

	June 1988		December 1997		June 2007		December 2012		June 2020	
	Bank	Total assets ($mil)	Bank	Total assets ($mil)	Bank	Total assets ($mil)	Bank	Total assets ($mil)	Bank	Total assets ($mil)
1	Citicorp	194,600	Chase Manhattan Corp.	365,531	Citigroup Inc.	2,220,866	JPMorgan Chase & Co.	2,359,141	JPMorgan Chase & Co.	2,690,959
2	Chase Manhattan Corp.	98,860	Citicorp	262,159	Bank of America Corp.	1,535,684	Bank of America Corp.	2,212,004	Bank of America Corp.	2,031,940
3	BankAmerica	96,923	NationsBank Corp.	260,159	JPMorgan Chase & Co.	1,458,042	Citigroup, Inc.	1,864,660	Wells Fargo & Co.	1,763,696
4	Chemical Banking Company	78,410	J.P. Morgan & Co.	157,274	Wachovia Corp.	719,922	Wells Fargo & Co.	1,422,968	Citigroup, Inc	1,632,405
5	J.P. Morgan & Co.	74,681	BankAmerica Corp.	140,102	Wells Fargo & Co.	539,865	Goldman Sachs	938,770	US Bank National Association	533,129
6	Manufacturers Hanover Corp	73,826	First Union Corp.	116,182	Washington Mutual Inc.	349,140	Morgan Stanley	780,960	Truist Bank	495,079
7	Security Pacific Corp.	64,714	Bankers Trust New York Corp.	140,102	US Bancorp	222,530	General Electric Capital Corp.	548,771	PNC Bank	433,803
8	Bankers Trust New York Corp.	54,700	Banc One Corp.	116,182	SunTrust Banks Inc.	180,314	Bank of New York Mellon	359,301	Bank of New York Mellon	387,037
9	First Interstate Bancorp	51,790	First Chicago NBD Corp.	114,096	Capital One Financial Corp.	145,938	US Bancorp	353,855	State Street Bank and Trust Company	359,196
10	Wells Fargo & Co.	44,721	Wells Fargo & Co.	97,456			Capital One Financial Corp.	313,040	TD Bank	355,767

Source: American Banker (**www.americanbanker.com/data-tools**).

The US financial system also hosts a variety of savings institutions that are similar in many respects to commercial banks, although the main difference (typically) relates to their ownership features – as savings institutions traditionally have mutual ownership. They are owned by their 'members' or 'shareholders', who are the depositors or borrowers. The main type of savings institutions in the US are the so-called **Savings and Loans Associations (S&Ls)** (or thrifts) which traditionally were mainly financed by household deposits and lent retail mortgages. Their business is more diversified nowadays, as they offer a wider range of corporate loans, credit cards and other facilities. Originally, the S&Ls were mainly mutual in ownership but now many have become listed. They compete directly with commercial banks, particularly in the retail and small to medium business sectors. There were 652 S&Ls by the first quarter of 2020 with assets of $1.235 trillion – and they are the second-largest deposit-taking group of financial institutions in the US. Commercial banks and the S&Ls compete for personal and business banking services, although commercial banks focus more on larger-scale corporate banking activity.

Credit unions are another type of mutual deposit institution that are present in the US financial system and have grown in importance over the last decade or so. These are non-profit institutions that are owned by their members. Member deposits are used to offer loans to the members. Credit unions focus almost entirely on the retail financial services segment. Many staff are part-time and they usually are regulated differently to banks. In the US there were 5,133 credit unions by the end of 2020, with 123.7 million members and assets of over $1,79 billion.[4]

15.3.2 Contractual savings institutions

Although depository institutions constitute the main deposit-taking institutions in the US it is also important to mention other financial services firms that also compete and/or complement banks in the provision of financial services. This is because these firms, especially pension funds and mutual funds, have become increasingly important relative to banks in the US financial system.

Insurance companies

Insurance products are an integral feature of the financial services sector and many US banks nowadays cross-sell insurance services to their banking clients. As discussed in Chapter 3, insurance companies protect individuals and firms (or policyholders) from various adverse events. They receive premiums from policyholders and promise compensation if the adverse event occurs. There are two main types of insurance company – life insurance and general (or property and casualty insurance). The latter is insurance that does not involve death as the main risk. It includes home, auto and various commercial risks such as aviation insurance. A company that undertakes both life and non-life insurance is known as a *composite insurance company*.

According to the US Insurance Information Institute, the life insurance sector received net premiums of $679.9 billion and property and causality insurance received $637.7 billion in 2019.[5] The US is the largest insurance market in the world, accounting for 39 per cent of global insurance premiums (followed by China at 10 per cent; Japan, 7 per cent; UK, 6 per cent; and France, 4 per cent). There were 2,496 property and casualty insurance companies and 837 life insurance companies in 2019. Tables 15.3 and 15.4 illustrate the main insurance

[4] **www.ncua.gov/files/publications/analysis/quarterly-data-summary-2020-Q3.pdf**
[5] **www.iii.org**

Table 15.3 Leading US property and casualty insurance companies, March 2020

Company	Direct written premiums[1] ($bn)
State Farm Mutual Automobile Insurance Company	65.6
Berkshire Hathaway	46.1
Progressive Insurance Group	39.2
Liberty Mutual Insurance Company	35.6
Allstate Insurance Group	35.0
Travelers Companies, Inc.	28.0
United Services Automobile Association	23.4
Chubb Ltd Group	23.3
Farmers Insurance Group of Companies	20.6
Nationwide Mutual Insurance Company	18.4

Notes: [1]Before reinsurance transactions, includes some state funds.

Source: SNL Financial.

Table 15.4 Leading US life insurance companies, 2019

Company	Direct written premiums[1] ($bn)
MetLife Inc.	95.1
Prudential Financial Inc.	56.2
Equitable Holdings	44.7
New York Life Insurance Group	33.4
Massachusetts Mutual Life Insurance Co.	30.4
Lincoln National Corp.	28.5
Principal Financial Group Inc.	27.0
American International Group (AIG)	25.7
Jackson National Life Group	23.1
Transamerica	23.4

Notes: [1]Includes life insurance, annuity considerations, deposit-type contract funds, other considerations; excludes accident and health insurance from life/health insurers. Before reinsurance transactions.

Source: SNL Financial.

companies operating in the US. Note that the fourth-largest property/casualty insurance firm in 2012 was American International Group (AIG) – this firm failed on 16 September 2008. It suffered from a liquidity crisis as a result of its credit rating being downgraded due to its large exposure to losses in the credit default swaps market. AIG was a major underwriter of credit default swaps that were purchased to insure against bond defaults. When major defaults occurred AIG had to make substantial payouts – it had done little hedging to cover these risks. The Federal Reserve Bank had to create an $85 billion credit facility to bail out the insurer (for 79.9 per cent of the equity of AIG) and later the US government revised the credit facility and it eventually amounted to $182.5 billion. Effectively these moves nationalised one of the world's largest insurance companies. It still is in the top ten US life insurance companies.

Pension funds

Pension funds provide retirement income (in the form of annuities) to employees covered by pension plans. They obtain their income from contributions made by employees and employers and invest these in a variety of long-term securities (bonds and equity) and other investments such as property. A distinction is made between private and public pension funds:

- *Private pension funds* are pension funds that are administered by a bank, life insurance firm or pension fund manager. Contributions paid into the fund by employers and employees are invested in long-term investments with the individual making contributions receiving a pension on retirement. Note, however, that many company pension plans are underfunded because they aim to meet pension obligations out of current earnings when benefits are due. If companies have sufficient earnings then this underfunding is not a problem but if not then they cannot meet pension obligations. Various legislations have been put in place, particularly in the US and UK, to try and minimise the likelihood of major underfunding but it continues to be an important issue for many large private pension funds.
- *Public pension funds* are the pension provisions of the government. In the US the most important public pension plan is the Social Security Old Age and Survivors Insurance Fund.

15.3.3 Investment intermediaries

Investment intermediaries are financial companies whose liabilities are usually short-term money market or capital market securities. These include mutual funds, investment banks and securities firms and finance houses.

Mutual funds

A mutual fund is a company that pools the money of many investors – its shareholders – so as to invest in a range of different securities. Investments may be in stocks, bonds, money market securities or some combination of these. Mutual funds are professionally managed on behalf of the shareholders, and each investor holds a share of the portfolio and is entitled to any profits (and losses) when the securities are sold.

There are two main segments of the mutual fund industry – long-term and short-term funds. Long-term funds include bond funds, equity funds and other hybrid funds that contain a mix of bonds and equity. Short-term funds are known as money market funds and they are comprised of a range of money market instruments – in the US (where the market for mutual funds in general is most developed) they also allow shareholders to write cheques against the value of money market funds (these are known as *money market fund checking accounts*).

The main attraction for investors is that mutual funds provide diversification benefits as its assets are invested in many different securities. Note that there are many different types of mutual funds with different risk–return objectives. In the US over $25 trillion was invested in some 7,985 mutual funds by the end of 2019.[6]

Investment banks and securities firms

As we noted in Chapter 3, the world's largest investment banks come from the US – including such firms as Goldman Sachs and Morgan Stanley. Their main function is to help companies and governments raise funds in the capital markets and business relates to issuing new debt

[6] For more detail on the US mutual funds industry see **www.ici.org/research#statistics**

and equity, which they arrange on behalf of clients, as well as providing corporate advisory services on M&As and other types of corporate restructuring. Since the repeal of the Glass–Steagall Act in 1999 various US commercial banks have acquired investment banks. This means that banks such as Citigroup and JPMorgan Chase now offer both commercial and investment banking services.

Despite their long and successful pedigree, the US investment banking industry has been almost destroyed by the credit crisis. Bear Stearns and Lehman Brothers failed in 2008; Merrill Lynch merged with Bank of America; Goldman Sachs and Morgan Stanley converted into bank holding companies. By the end of 2009, none of the largest investment banks had the same corporate form they had at the start of 2007. As we mentioned earlier, the latter two have shrunk their business and no longer rank in the top ten of US banks by assets size. The industry had been also blamed for the excesses that led to the crisis (see also Section 3.7).

Securities firms

Securities firms assist in the trading of existing securities. There are two main types of securities firms: *brokers* (agents of investors that match buyers with sellers of securities) and *dealers* (agents who link buyers and sellers by buying and selling securities). In the US there are specialist discount brokers, for instance, that undertake trading activities for clients without providing advice (like Charles Schwab) and specialist electronic trading securities firms (E*trade).

Table 15.5 provides a snapshot of the evolution and relative size of various types of financial firms in the US and highlights the relative long-term decline of depository firms compared to mutual and pension funds between 1980 and 2019. The decline is a reflection of the **disintermediation** trend, where customer's bypass intermediaries so as to obtain improved returns from direct financing. However, the increased market activity of banks in recent years (up to the crisis at least) reversed this trend, although mutual funds and pension funds have increased in relative importance post-crisis.

In formal terms disintermediation occurs where ultimate borrowers and ultimate lenders bypass the established financial intermediation channels and borrow/lend directly. Traditionally, for large corporate borrowers possessing high credit ratings, it may simply be cheaper to raise funds direct from savers/investors than via a financial intermediary. The costs associated with the intermediary are cut out of the transaction to the benefit of both borrowers and lenders. There are also other advantages for companies in terms of raising market profile and the diversification of sources of funds. However, these benefits must be weighed against the costs (i.e. financial intermediation forgone). A good example of disintermediation in this context is the use of commercial paper issues by large companies as a means of raising short-term funds.

While the cost factor is the main commercial driver of disintermediation, it may also occur on account of official restrictions being placed on normal intermediation activity, perhaps with the purpose of controlling the money supply. Borrowers may be turned away from financial intermediaries and hence may seek other sources of funds, directly from savers/investors. Whatever the cause, it is clear from Table 15.5 that the decline in depository institutions is a sign that the disintermediation process has been prevalent in the US.

One area where it seems that disintermediation has been prevalent is in the emergence of the so-called *shadow banking system* (see Chapter 18 for a detailed discussion). Many firms involved in the securitisation business – hedge funds, private equity firms, structured investment companies, money market funds – either traded with banks or undertook banking type activities but were not subject to the same regulations. This meant that a large part of the

Table 15.5 US financial intermediaries (market share, total assets)

	1980	2012	2019
Depository institutions (banks, thrifts, credit unions)	50.6	24.5	23.3
Pension funds (public and private)	18.0	18.5	26.7
Insurance companies	14.8	11.5	12.2
Mortgage finance companies and funds*	7.1	16.3	12.7
Finance companies	4.9	2.5	1.7
Mutual funds (stock, bond, money market)	3.3	19.9	19.5
Securities firms (brokers, dealers, funding corporations)**	1.4	6.9	3.9
Total	**100.0%**	**100.0%**	**100.0%**

Notes: *Includes government-sponsored enterprises (GSEs) and pools they sponsor, private mortgage securitisers and pools they sponsor, mortgage banks and real estate investment trusts (REITs).

** Includes assets held by investment banks.

Source: Federal Reserve System Flow of Funds Accounts.

financial system fell outside traditional banking sector regulations and therefore could operate in an unregulated environment. Shadow banking first emerged in the US on the back of the securitisation business.[7]

15.4 US payments systems

Having a well-functioning payments system is critical for the smooth running of an economy. The challenges posed by the ever-changing demands of individuals, firms and government, and technological advances impact on the evolution of the payment system. As in most developed countries, the US has two main parts to its payments system – one that deals with wholesale large-value payments and another that deals with retail and relatively small-value payments.

15.4.1 Wholesale payments

In the US, payment and securities settlement systems involve a large number of financial intermediaries, financial services firms and non-bank businesses that create, distribute and process large-value payments. The bulk of the dollar value of these payments are processed electronically and are generally used to purchase, sell or finance securities transactions; to make or repay loans; settle real estate transactions; and make large-value, time-critical payments, such as payments for the settlement of interbank purchases, settlement of foreign exchange transactions or other financial market transactions.

There are two main networks for interbank, or large-value, domestic, funds transfer payment orders. The first, **Fedwire**, is owned and operated by the Federal Reserve Banks, and is an important participant in providing interbank payment services as well as safekeeping and transfer services for US government and agency securities, and mortgage-backed securities.

[7] See Pozsar *et al.* (2010) for an excellent account of shadow banking.

Fedwire is a real-time gross settlement (RTGS) system that enables participants to make final payments in central bank money.[8] Fedwire consists of a range of procedures and computer applications to route and settle payments orders: the system reviews payment orders and notifies participants of related credits and debits to their accounts. Fedwire is supported by the Federal Reserve's FEDNET national communications network (FEDNET).

An institution that holds an account with a Federal Reserve Bank generally can become a Fedwire participant. These participants use Fedwire to instruct a Federal Reserve Bank to debit funds from the participant's own Federal Reserve account and credit the Federal Reserve account of another participant. Fedwire processes and settles payment orders individually throughout the operating day. Payment to the receiving participant over Fedwire is final and irrevocable when the amount of the payment order is credited to the receiving participant's account or when the payment order is sent to the receiving participant, whichever is earlier. Fedwire participants send payment orders electronically or by phone to a Federal Reserve Bank. Payment orders must be in the proper syntax and meet the relevant security controls. An institution sending payment orders to a Federal Reserve Bank is required to have sufficient funds either in the form of account balances or overdraft capacity, or a payment order may be rejected.

The value of payments conducted via Fedwire amounted to over $2.02 trillion per day (from an average of 490,548 daily transactions) by the end of 2019.

The second major wholesale payments system is known as **CHIPS**, the Clearing House Interbank Payments System, and this is the main bank-owned payments system for clearing large-value payments. CHIPS is a real-time payments system for US dollars that uses bilateral and multilateral netting (where payments are netted out between bank participants). In 2019 CHIPS processed over 323,000 payments a day with a gross value of $1.14 trillion. Much of CHIPS business relates to cross-border payments in US dollars. The number of participants using CHIPS has also fallen from 104 in 1996 to 44 in 2019 reflecting consolidation between major banks. Also the value of transactions conducted via CHIPS has declined since 1997 from around 40 times GDP in 1997 to under 20 times by 2019 – as a result of the fall in number of participating banks and also possibly due to the reduction in fees charged by Fedwire for wholesale payments.

The processing of large-value funds transfers involves two important elements: *clearing* and *settlement*. Clearing relates to the transfer and confirmation of information between the payer (sending financial institution) and payee (receiving financial institution). Settlement is the transfer of funds between the payer's financial institution and the payee's financial institution. Settlement discharges the obligation of the payer's financial institution to the payee's financial institution with respect to the payment order. Final settlement is irrevocable and unconditional. The finality of the payment is determined by the rules and the relevant laws that apply.

In general, payment messages may be credit transfers or debit transfers. Most large-value funds transfer systems are credit transfer systems in which both payment messages and funds move from the payer financial institution to the payee financial institution. An institution initiates a funds transfer by transmitting a payment order (a message that requests the transfer of funds to the payee). Payment order processing follows the rules and operating procedures of the large-value payment system used. Typically, large-value payment system operating procedures include identification, reconciliation and confirmation procedures necessary to

[8] A real-time gross settlement system is a payment system in which processing and settlement of transactions take place in real time (continuously).

process the payment orders. In some systems, financial institutions may contract directly with one or more third parties to help perform clearing and settlement activities on behalf of the institution.

15.4.2 Retail payments

In the United States, many payments traditionally made with paper instruments – cheques and cash – are now being made electronically with debit or credit cards or via the **automated clearing house (ACH)**. The ACH electronic funds transfer system provides for the clearing of electronic payments for participating banks and other depository institutions. ACH payments include such things as:

- direct deposits of payroll, social security and other government benefits, and tax refunds;
- direct payments of consumer bills such as mortgages, loans, utility bills and insurance premiums;
- business-to-business payments;
- e-cheques;
- e-commerce payments;
- federal, state and local tax payments.

Until recently, paper cheques accounted for the majority of non-cash payments but since the mid-1990s they have been increasingly replaced by other means of non-cash payment. Table 15.6 shows that between 2000 and 2019 the number of cheque payments in the US fell substantially, while credit card and debit card payments grew rapidly. The Federal Reserve suggests that a variety of factors, such as growth in economic activity and population, have contributed to the increase in electronic payments. They also note that some of the increase is likely also due to the replacement of some cash and cheque payments with electronic payments.

Moves to reduce paper-based processing of cheques are a major feature of the Check Clearing for the 21st Century Act ('**Check 21**') that became effective in October 2004. Check 21 is designed to foster innovation in the payments system and to enhance its efficiency by permitting banks greater flexibility in converting paper cheques into electronic form to speed up retail payments.

Table 15.6 Number of non-cash payments ($bn), 2000–2019

	2000	2003	2006	2009	2012	2019
Non-cash payments	72.5	81.2	93.3	109.0	122.8	166.7
Cheque[1]	41.9	37.3	30.6	24.5	18.3	13
Credit card	15.6	19	21.7	21.6	23.2	44
ACH[2]	6.2	9.1	14.6	19.1	20.1	24.7
Debit cards[3]	8.3	15.6	25.4	37.9	40.8	78
Prepaid card	–	–	3.3	6.0	6.2	7

Notes: [1] The cheque estimates represent cheques paid, not cheques written.

[2] ACH are Automated Clearing House transactions such as direct debits, standing orders and other payments.

[3] Debit card payments include online debit (PIN-based), which includes purchases at the point of sale with ATM cards, and offline debit (signature-based).

Source: Federal Reserve System (2011, 2013); BIS Payments Statistics, **https://stats.bis.org/statx/toc/CPMI.html**.

15.5 Balance sheet features of US commercial banks

The balance sheet structure of US commercial banks reflects the main assets and liability components of their business. An overview of the assets and liabilities of the commercial banking sector is shown in Tables 15.7 and 15.8 respectively. Table 15.7 shows the asset structure of banks and illustrates that loans constituted around 56 per cent of banking sector assets in 2019 compared with around 60 per cent in 1995 – in fact the proportion of loans over total assets was at its lowest level from 2008 onwards. Investment securities typically comprise 15 per cent to 25 per cent of total assets, although it reached its lowest level of just over 14 per cent in 2007 and 2008, but increased to 20 per cent by 2019. In addition, the amount of liquid assets (cash and due) fell systematically over the period from 7.1 per cent in 1995 to 4.3 per cent in 2007, then jumped markedly to 8.5 per cent in 2008 – the latter a clear reflection of banks' (and the regulatory authorities') desire to boost liquidity in the light of the credit crunch. It stood at around 9 per cent by end-2019. Other earning assets also increased from around 5 per cent in 1990 to 7 per cent by 2019.

Table 15.8 shows the changing liability features of US commercial banks highlighting the greater reliance on borrowed funds (wholesale deposits acquired through the interbank market) up until 2004 (16 per cent of total liabilities), staying at this level until 2008, then falling to 7 per cent by 2019. Capital levels also increased over most of the period; the equity-to-assets ratio increased from 6.4 per cent to 8.5 per cent between 1990 and 2000, and reached 10.2 per cent by 2007. Figures for 2008 and the impact of the crisis reduce the equity-to-assets ratio to 9.4 per cent, but recapitalisations post-crisis increase the ratio to 11.3 per cent by 2019.

It is important to remember that the above trends relate to the whole banking system and there are substantial differences in the balance sheet make-up of the largest banks compared to other banks. For instance, the ten largest banks, on average do less lending, and hold more securities and less capital compared to smaller banks. Also, as noted above, the lending structure of the banks also varies substantially with size – for example, small and medium-sized banks account for around 42 per cent of US commercial real estate lending, whereas the top 100 banks account for just under 24 per cent. As such, it is always important to remember that bank balance sheet features vary considerably according to different asset sizes of banks.

15.6 Performance of US commercial banks

US commercial banks have been among the most profitable banks in the developed world, with return on equity (ROE) varying between 11 per cent and 15 per cent for all but the smallest banks, between 1993 and 2006. From then on, as shown in Figure 15.6, the returns of the US banking sector have gradually fallen to 8 per cent in 2007 and then collapsed to –1.1 per cent in 2008 and –1.35 per cent in 2009. Mild improvements have been recorded since, from 5.7 per cent in 2010 to between 9 per cent and 10 per cent in the years up to

Table 15.7 Assets of US commercial banks, 1995–2019 ($bn)

Year	No. of banks	Cash and due	Total investment securities	Total loans and leases	Allowance for losses, loans and leases	Net loans and leases	Other earning assets	Bank premises and equipment	Other real estate owned	Intangible assets	All other assets	Total assets
1995	9,943	306,545	810,877	2,605,474	52,966	2,552,508	398,023	61,425	6,644	30,219	148,934	4,315,175
1996	9,530	336,052	800,656	2,815,090	53,647	2,761,444	404,770	64,613	5,451	44,721	164,457	4,582,165
1997	9,144	355,149	871,879	2,974,456	54,897	2,919,559	558,528	67,182	4,454	61,690	180,090	5,018,532
1998	8,775	356,703	979,867	3,236,642	57,255	3,179,386	563,908	71,311	3,656	80,222	207,552	5,442,604
1999	8,582	366,456	1,046,536	3,489,092	58,746	3,430,346	483,580	73,743	3,075	98,067	233,332	5,735,135
2000	8,315	369,931	1,078,985	3,815,498	64,120	3,751,377	584,102	75,794	3,210	103,803	278,358	6,245,560
2001	8,082	390,340	1,172,540	3,884,328	72,273	3,812,055	620,534	76,644	3,830	120,143	356,208	6,552,294
2002	7,887	383,842	1,334,710	4,156,207	76,983	4,079,224	709,197	79,233	4,431	124,850	361,356	7,076,844
2003	7,767	387,417	1,456,169	4,428,530	77,121	4,351,409	780,437	83,383	4,531	158,174	379,480	7,601,000
2004	7,628	387,643	1,552,046	4,909,620	73,558	4,836,062	889,541	86,835	3,852	275,827	388,293	8,420,099
2005	7,523	400,416	1,573,394	5,386,068	68,797	5,317,271	942,529	91,769	4,026	303,004	414,536	9,046,946
2006	7,397	433,133	1,667,639	5,985,674	69,119	5,916,555	1,149,163	96,861	5,468	358,610	470,312	10,097,742
2007	7,279	482,310	1,592,773	6,629,764	89,231	6,540,533	1,513,757	105,045	9,792	423,317	514,374	11,181,901
2008	7,077	977,134	2,201,298	6,496,607	213,878	6,282,730	1,108,105	110,526	35,849	386,991	724,148	11,826,782
2009	6,519	922,854	2,353,960	6,596,069	218,015	6,378,054	1,178,101	110,671	46,654	373,372	705,776	12,069,443
2010	7,077	1,041,880	1,747,930	6,840,672	156,708	6,683,965	1,627,953	109,698	22,913	392,656	686,146	12,313,141
2011	6,275	1,197,160	2,541,727	6,719,229	178,667	6,540,563	1,171,949	111,963	41,011	348,544	697,550	12,650,468
2012	6,072	1,335,227	2,749,381	7,043,762	152,214	6,891,548	1,227,756	112,510	34,864	351,465	684,749	13,387,499
2013	5,847	1,632,512	2,720,883	7,241,020	126,471	7,114,549	1,038,858	111,983	27,769	354,284	672,217	13,673,057
2014	5,607	1,854,479	2,933,592	7,631,148	113,065	7,518,083	1,010,920	112,001	19,748	346,511	679,323	14,474,658
2015	5,340	1,686,442	3,061,782	8,170,051	109,385	8,060,665	904,395	111,946	13,236	350,308	704,440	14,893,215
2016	5,112	1,738,275	3,225,057	8,603,822	111,707	8,492,114	948,556	112,420	10,267	358,627	742,466	15,627,781
2017	4,918	1,832,972	3,273,364	9,005,676	112,660	8,893,016	997,546	118,253	7,907	372,019	722,806	16,217,881
2018	4,717	1,617,301	3,318,729	9,459,888	113,718	9,346,170	1,191,995	122,106	6,282	385,306	740,214	16,728,103
2019	4,519	1,594,330	3,596,612	9,863,053	114,160	9,748,893	1,220,312	179,093	5,406	396,813	749,970	17,491,429

Source: Federal Deposit Insurance Corporation, 'Historical statistics on banking, commercial banks', **www2.fdic.gov/hsob/index.asp**

Table 15.8 Liabilities and equity capital of US commercial banks, 1995–2019 ($bn)

		Liabilities					Equity capital					
Year	No. of banks	Total deposits	Borrowed funds	Subor-dinated notes	Other liabilities	Total liabilities	Perpetual preferred stock	Common stock	Surplus	Undivided profits	Total equity capital	Total liabilities and equity capital
1996	9,530	3,197,139	68,162	51,167	276,657	4,206,578	2,001	35,105	167,751	170,729	75,586	4,582,165
1997	9,144	3,421,664	774,441	62,015	342,367	4,600,487	2,406	34,485	190,992	190,162	418,045	5,018,532
1998	8,775	3,681,391	853,188	72,785	373,010	4,980,373	2,698	34,713	217,730	207,090	462,231	5,442,604
1999	8,582	3,831,058	1,000,653	76,450	347,284	5,255,445	3,129	32,833	238,904	205,860	479,690	5,735,135
2000	8,315	4,179,567	1,047,273	87,043	401,320	5,715,204	3,377	31,245	260,557	236,496	530,356	6,245,560
2001	8,082	4,377,558	1,071,515	95,313	414,313	5,958,699	4,378	30,258	303,722	255,237	593,595	6,552,294
2002	7,887	4,689,788	1,171,186	94,744	473,735	6,429,453	6,000	30,005	320,339	291,047	647,391	7,076,844
2003	7,767	5,034,669	1,260,822	100,759	512,934	6,909,185	6,497	30,259	350,417	304,642	691,815	7,601,000
2004	7,628	5,596,572	1,316,300	110,138	546,503	7,569,512	6,237	29,811	493,566	320,973	850,587	8,420,099
2005	7,523	6,077,508	1,425,152	122,237	509,157	8,134,053	5,264	32,275	529,868	345,486	912,892	9,046,946
2006	7,397	6,735,639	1,590,463	149,790	591,317	9,067,209	5,122	33,836	625,686	365,889	1,030,533	10,097,742
2007	7,279	7,313,861	1,881,642	174,900	667,990	10,038,393	5,000	35,983	738,959	363,567	1,143,508	11,181,901
2008	6,829	8,085,710	2,079,451	182,982	810,517	11,158,660	6,391	45,406	850,940	251,744	1,154,481	12,313,141
2009	6,519	8,336,603	1,482,665	154,663	544,169	10,518,101	6,169	46,187	993,704	242,373	1,288,433	11,806,534
2010	7,077	8,517,723	1,448,507	144,824	593,891	10,704,945	6,479	45,947	1,026,824	258,602	1,337,852	12,042,797
2011	6,275	9,258,874	1,193,083	131,789	644,785	11,228,530	5,132	44,176	1,041,097	313,397	1,403,802	12,632,332
2012	6,072	10,012,098	1,140,219	117,533	615,299	11,885,148	4,789	43,417	1,064,014	374,609	1,486,828	13,371,976
2013	5,847	10,385,834	1,108,510	99,033	549,697	12,143,074	4,953	42,773	1,075,691	395,303	1,518,721	13,661,795
2014	5,607	10,938,733	1,195,166	96,842	629,809	12,860,550	4,718	42,877	1,092,634	466,529	1,606,758	14,467,307
2015	5,340	11,349,504	1,206,637	90,887	563,814	13,210,842	9,120	42,353	1,121,792	502,554	1,675,819	14,886,660
2016	5,112	11,982,312	1,222,346	83,884	595,154	13,883,697	9,804	41,868	1,142,568	543,706	1,737,946	15,621,643
2017	4,918	12,467,587	1,271,051	68,902	581,120	14,388,661	9,115	41,949	1,194,814	579,072	1,824,950	16,213,611
2018	4,717	12,898,467	1,265,742	68,662	603,183	14,836,054	8,733	41,700	1,218,123	620,058	1,888,615	16,724,669
2019	4,519	13,614,252	1,210,938	69,926	607,650	15,502,765	9,097	41,550	1,237,432	697,733	1,985,812	17,488,577

Source: Federal Deposit Insurance Corporation, 'Historical statistics on banking, commercial banks', **www2.fdic.gov/hsob/index.asp**

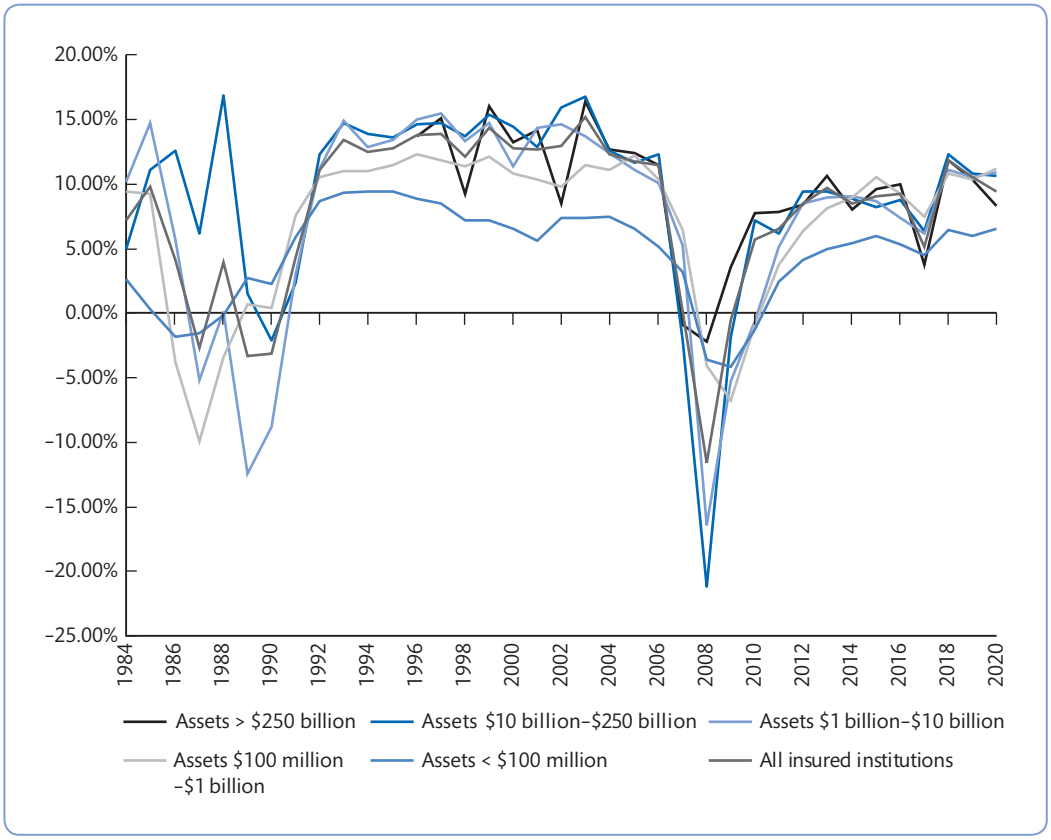


Figure 15.5 Performance of US commercial banks – return on equity (ROE), 1984–2020

Source: Federal Deposit Insurance Corporation, 'Historical statistics on banking, commercial banks', **www2.fdic.gov/hsob/index.asp**

2019. Following a similar trend, return-on-assets fell to 0.1 per cent in 2008 and then to 0.08 per cent in 2009 – the lowest levels since 1991. Around 20 per cent of US banks suffered losses in 2008 and these institutions accounted for about 35 per cent of industry assets, the highest share since 1987. The main reason for the collapse in profitability was the decline in non-interest income (particularly from securities trading losses) and the large increase in loan-loss provisions. The significant decline in profits is a clear indication of the adverse impact of the credit crisis.

During 2009 US commercial bank performance improved and by the start of 2010 some of the major recipients of TARP funds, as noted earlier (Bank of America, Bank of New York Mellon, Citigroup, JPMorgan Chase and Wells Fargo), had repaid all their borrowed funds. The same was the case for the top investment banks including Goldman Sachs and Morgan Stanley. Throughout 2009 there was growing evidence that the business of major US (and European) investment banks profits was improving. This eventually culminated in Goldman

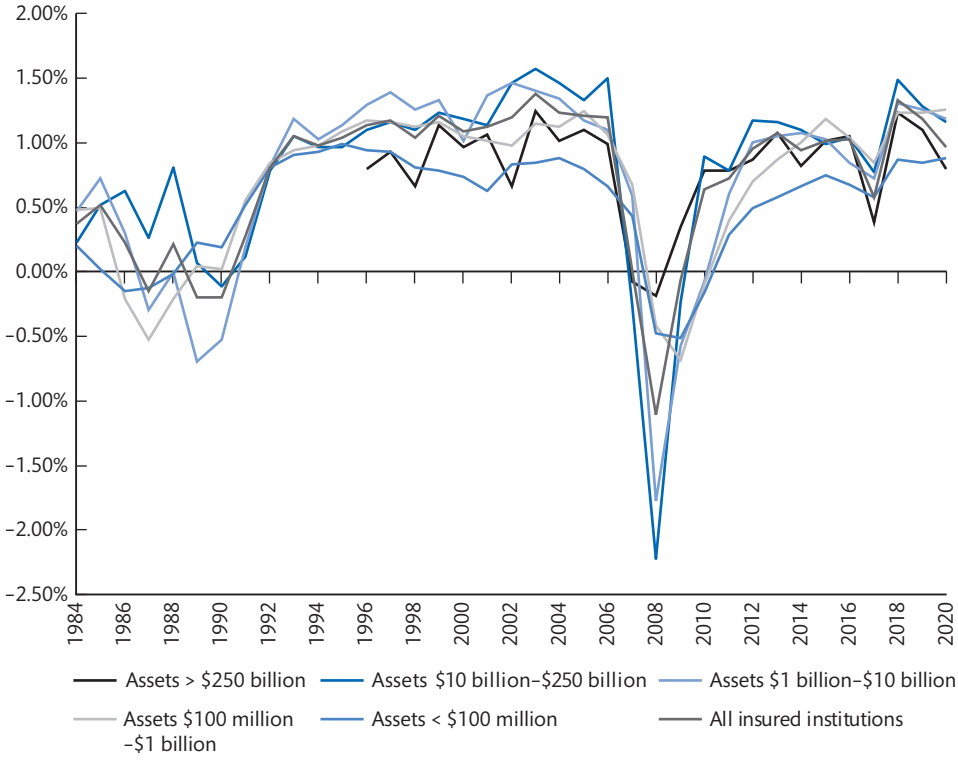


Figure 15.6 Performance of US commercial banks – return on assets (ROA), 1984–2020

Source: Federal Deposit Insurance Corporation, 'Historical statistics on banking, commercial banks', **www2.fdic.gov/hsob/index.asp**

Sachs reporting record profits of $13.4 billion for the year and helped further stoke political and public outrage at bankers' bonus excesses.

From 2010 onwards US banking has returned to modest levels of profitability and banks are continuing to develop business to adapt to the new more heavily regulated and slow economic growth environment. As noted earlier, ROE has been gradually increasing for the whole industry to around 10 per cent by 2019. Table 15.9 highlights the US states that had the most profitable banks – Utah, Arizona and Nevada; this just reflects the fast-growing nature of these particular states. Table 15.9 also highlights that the recovery in US banking has not happened everywhere in the country at the same speed, with some US states' banking sectors still lagging behind.

Table 15.9 Bank profitability by state, 2019

	State	No. of inst.	Total assets	Net income	ROA	ROE		State	No. of inst.	Total assets	Net income	ROA	ROE
1	Alabama	106	260,447,048	2,416,844	0.93%	7.14%	28	Nebraska	160	73,254,933	940,585	1.28%	11.65%
2	Alaska	4	6,329,792	85,359	1.35%	10.41%	29	Nevada	15	27,344,448	887,045	3.24%	18.24%
3	Arizona	14	31,210,017	554,984	1.78%	15.88%	30	New Hampshire	4	2,187,852	27,507	1.26%	9.00%
4	Arkansas	86	112,764,363	1,623,727	1.44%	9.70%	31	New Jersey	34	120,415,468	1,204,249	1.00%	8.79%
5	California	137	843,942,998	7,483,554	0.89%	7.57%	32	New Mexico	31	11,379,375	187,835	1.65%	15.30%
6	Colorado	67	57,160,356	778,074	1.36%	13.42%	33	New York	98	1,016,289,821	10,478,422	1.03%	9.01%
7	Connecticut	11	95,114,867	1,110,721	1.17%	9.61%	34	North Carolina	30	2,383,515,137	30,912,698	1.30%	10.90%
8	Delaware	18	993,520,912	11,429,275	1.15%	9.61%	35	North Dakota	72	31,916,103	426,670	1.34%	12.56%
9	District of Columbia	4	1,419,659	8,943	0.63%	7.21%	36	Ohio	136	3,320,316,201	45,501,045	1.37%	12.75%
10	Florida	99	159,637,990	1,851,720	1.16%	10.46%	37	Oklahoma	196	114,164,520	1,341,360	1.17%	10.52%
11	Georgia	150	145,515,674	1,860,818	1.28%	10.32%	38	Oregon	14	33,621,621	440,636	1.31%	8.54%
12	Hawaii	6	45,675,189	588,821	1.29%	12.90%	39	Pennsylvania	92	199,122,661	2,028,811	1.02%	8.52%
13	Idaho	10	5,708,568	76,117	1.33%	11.15%	40	Puerto Rico	4	69,483,750	897,807	1.29%	10.38%
14	Illinois	363	499,056,729	5,259,898	1.05%	9.61%	41	Rhode Island	5	173,762,169	1,910,414	1.10%	8.36%
15	Indiana	80	102,159,383	1,307,778	1.28%	10.40%	42	South Carolina	35	38,441,637	441,042	1.15%	8.51%
16	Iowa	270	87,523,798	1,130,010	1.29%	11.12%	43	South Dakota	58	3,250,052,845	37,804,616	1.16%	11.53%
17	Kansas	219	65,120,735	772,794	1.19%	10.14%	44	Tennessee	130	138,739,880	1,716,220	1.24%	9.59%
18	Kentucky	131	59,404,084	715,900	1.21%	10.30%	45	Texas	393	427,337,046	6,154,597	1.44%	11.65%
19	Louisiana	98	77,633,936	927,632	1.19%	9.54%	46	Utah	38	660,128,761	15,072,173	2.28%	20.84%
20	Maine	6	12,372,817	143,152	1.16%	10.31%	47	Vermont	6	2,839,438	33,058	1.16%	11.75%
21	Maryland	28	37,963,643	471,152	1.24%	9.54%	48	Virginia	68	722,789,832	7,279,686	1.01%	7.53%
22	Massachusetts	18	309,533,436	2,976,674	0.96%	8.87%	49	Washington	32	75,643,874	919,397	1.22%	9.61%
23	Michigan	83	41,955,008	551,191	1.31%	11.94%	50	West Virginia	46	35,452,757	425,504	1.20%	8.82%
24	Minnesota	268	71,139,275	932,987	1.31%	11.65%	51	Wisconsin	166	106,479,204	1,240,105	1.16%	9.70%
25	Mississippi	67	110,535,037	1,270,733	1.15%	9.12%	52	Wyoming	28	8,729,633	114,331	1.31%	12.06%
26	Missouri	239	171,424,678	2,234,697	1.30%	12.34%							
27	Montana	42	41,002,903	634,601	1.55%	11.68%							

Source: Federal Deposit Insurance Corporation.

15.7 Regulation of the US banking system

The current system for regulating and supervising financial institutions in the US is diverse, relatively complex and increasingly under scrutiny given the turmoil the banking system has faced since the onset of the 2008 financial crisis. At the federal level, commercial banking organisations are regulated and supervised by three agencies:

- **Office of the Comptroller of the Currency (OCC)**;
- **Federal Reserve System (Federal Reserve)**;
- **Federal Deposit Insurance Corporation (FDIC)**.

The 2008 global crisis highlighted a number of weaknesses in the US financial regulation framework. The roadmap for addressing these issues has been provided in the form of the Dodd–Frank Wall Street Reform and Consumer Protection Act.

The 2010 Dodd–Frank Act created the interagency **Financial Stability Oversight Council (FSOC)** and consolidated bank regulation from five agencies to four (it abolished the Office for Thrifts Supervision (OTS) and its responsibilities were transferred to other agencies). In addition, the Dodd–Frank Act granted the Federal Reserve oversight authority and the Federal Deposit Insurance Corporation (FDIC) resolution authority over the largest financial firms. The 2010 Act also consolidated regulatory oversight of consumer protection, which had been dispersed among several federal agencies, by establishing the **Consumer Financial Protection Bureau (CFPB)**.

Table 15.10 summarises the regulatory structure of the US financial system. In the US it is common to distinguish between 'prudential regulators' (which include the Fed, the OCC, the FDIC and the NCUA) and regulators that focus on 'disclosure' (that is, monitoring the information the financial firms and exchanges provide to market participants). In addition, other financial regulators have the function to facilitate the exchange of information and co-ordination among agencies; these include the Financial Stability Oversight Council (FSOC), the Federal Financial Institutions Examination Council (FFIEC) and the President's Working Group on Capital Markets.

15.7.1 Office of the Comptroller of the Currency (OCC)

The Office of the Comptroller of the Currency (OCC) charters, regulates and supervises all national banks. The OCC is an independent bureau of the Department of the Treasury, set up in 1863 to regulate all banks chartered by the Federal Reserve government. These banks, known as national banks, all have the word 'national' in their title or carry abbreviations 'NA' or 'NS&T'. The OCC also supervises the federal branches and agencies of foreign banks.

The OCC conducts on-site reviews of national banks and provides on-going supervision of bank operations. The agency issues rules, legal interpretations and regulatory decisions concerning banking, bank investments, bank community development activities and other aspects of bank operations. In regulating national banks, the OCC has the power to:

- examine the banks;
- approve or deny applications for new licences (or charters), branches, capital, or other changes in corporate or banking structure;

Table 15.10 US financial regulators

Type of regulator	Regulatory agency	Institutions regulated	Powers
Prudential bank regulators	Federal Reserve	• Bank holding companies • Financial holding companies • State banks that are members of the Federal Reserve System • US branches of foreign banks • Foreign branches of US banks	Lender of last resort (through the discount window). In 'unusual circumstances' the Fed may extend credit to non-member banks and provide liquidity to the financial system. It may also initiate a resolution process to close firms that pose a great risk to financial stability.
	Office of the Comptroller of the Currency (OCC)	• National banks • US federal branches of foreign banks	Examines the national banks and federal thrifts. Approves or denies applications for changes in corporate or banking structure. Takes supervisory actions against national banks and federal thrifts that do not comply with laws and regulations or that otherwise engage in unsound practices. Issues rules and regulations, legal interpretations, and corporate decisions governing investments lending and other practices.
	Federal Deposit Insurance Corporation (FDIC)	• Federally insured depository institutions, including banks that are not members of the Federal Reserve System	Operates a deposit insurance fund for federally and state chartered banks and thrifts. In case of systemic risk, the FDIC may invoke a broad authority to use the deposit insurance funds to provide assistance to depository institutions.
	National Credit Union Administration (NCUA)	• Federally chartered or insured credit unions	Serves as liquidity lender to credit unions experiencing liquidity shortfalls through the Central Liquidity Facility. Operates a deposit insurance fund for credit unions, the National Credit Union Share Insurance Fund (NCUSIF).
Securities and derivatives regulators	Securities and Exchange Commission (SEC)	• Securities exchanges • Brokers and dealers • Mutual funds • Investment advisers	Authorised to set financial accounting standards. May unilaterally close markets or suspend trading strategies for limited periods. Registers corporate securities sold to the public.
	Commodity Futures Trading Commission (CFTC)	• Futures exchanges • Brokers • Pool operators • Advisers	May suspend trading, order liquidation of positions or raise margins.

Table 15.10 continued

Type of regulator	Regulatory agency	Institutions regulated	Powers
Other regulators of financial activities	Federal Housing Finance Agency (FHFA)	• Fannie Mae • Freddie Mac • Federal Home Loan Banks	Acting as conservator (since September 2008) for Fannie Mae and Freddie Mac.
	Consumer Financial Protection Bureau	• Non-bank mortgage-related firms • Private student lenders • Payday lenders • Other 'larger consumer financial entities' entities* • Consumer business of banks with over $10 billion assets	Writes rules, supervises companies and enforces federal consumer financial protection laws. Restricts unfair, deceptive, or abusive acts or practices. Takes consumer complaints. Monitor financial markets for new risks to consumers. Enforces laws that outlaw discrimination and other unfair treatment in consumer finance.

Note: *Does not include insurers, SEC and CFTC registrants, auto dealers, sellers of non-financial goods, real estate brokers and agents, and agents and banks with assets of less than £10 billion.

Source: Adapted from Murphy (2013).

- take actions against banks that do not comply with laws and regulations or that otherwise engage in unsound banking practices. The agency can remove officers and directors, negotiate agreements to change banking practices, and issue cease and desist orders as well as civil money penalties;
- issue rules and regulations governing bank investments, lending and other practices.

By 2019 the OCC was responsible for regulating over 840 national banks, 303 federal savings associations and 57 federal branches and agencies in the US. On 21 July 2011, under provisions of the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010, the Office of Thrift Supervision (OTS) became part of the OCC. As a result, the OCC is now also responsible for the supervision of federal savings associations.

15.7.2 Federal Reserve System

In addition to its (central banking) monetary policy role (discussed in Chapter 6), the US Federal Reserve is also responsible for regulating and supervising various types of banks. These include:

- bank holding companies, including diversified financial holding companies formed under the Gramm–Leach–Bliley Act of 1999 and foreign banks with US operations;
- state-chartered banks that are members of the Federal Reserve System (state member banks);
- foreign branches of member banks;
- Edge Act and agreement corporations, through which US banking organisations may conduct international banking activities;
- US state-licensed branches, agencies and representative offices of foreign banks; and
- non-banking activities of foreign banks.

Typically, the Federal Reserve is responsible for regulating the largest and most complex US banks as it has responsibility for bank and diversified financial holding companies. It also regulates the operations of foreign banks many of which are engaged in relatively complicated investment and corporate banking activity.

The 2010 Dodd–Frank Act reformed the Federal Reserve. The Act made the Fed the principal regulator for systemically important financial companies. The emergency lending powers of the Federal Reserve (established in 1932 under Section 13(3) of the Federal Reserve Act) give it authority to lend to non-depository institutions (investment banks, insurers) in 'unusual and exigent circumstances'. Dodd–Frank now makes this lending conditional on approval from the Secretary of the Treasury. The Federal Reserve will have to disclose all its Section 13(3) lending details and will be subject to a one-time Government Accountability Office (GAO) audit of emergency lending during the crises times. A new post of the Federal Reserve Vice Chair for supervision will be created and the GAO will also examine governance issues and how directors are appointed.

15.7.3 Federal Deposit Insurance Corporation (FDIC)

The FDIC is the main federal regulator of banks that are chartered by the states that do not join the Federal Reserve System. It can also supervise the branches and agencies of foreign banks that take deposits. As an independent agency it is funded by premiums that banks and thrift institutions pay for deposit insurance coverage and from earnings on investments in US Treasury securities. By the end of 2019, the FDIC insured a record $10.24 trillion of deposits in over half a billion accounts at more than 5,256 institutions. In general, deposit insurance protects the deposits of retail customers in the event of a bank failure. Savings, checking and other deposit accounts, when combined, were insured up to $100,000 per depositor in each bank or thrift up to the credit crisis. Also deposits held in different categories of ownership – such as single or joint accounts – may be separately insured. Given growing concerns about the state of US banking, the deposit insurance coverage was increased in May 2009 to $250,000. The amount has remained unchanged since then.

The Dodd–Frank Act expanded the FDIC's role in liquidating troubled financial institutions that are considered to pose a 'systemic risk'.

15.7.4 Other regulatory agencies

In addition to three major federal regulatory agencies mentioned above there are a number of other agencies that have responsibility for the other types of deposit-taking institution in the US. These included the *Office of Thrift Supervision* (OTS), which was established in 1989 as the main regulator of all S&Ls whether federally or state chartered. As already mentioned, the Dodd–Frank Act abolished the OTS and thrifts are now regulated by the OCC. The credit union sector is supervised by the *National Credit Union Administration* (NCUA), which also insures credit union deposits.

Table 15.11 illustrates the regulatory responsibility of all the main bank regulatory bodies and highlights various overlaps. It can be seen that the regulatory structure is complex and apparently involves a duplication of resources. However, some have argued that this is a good thing as it allows for competition between regulators and acts against complacency. From the banks' point of view, however, it has been argued that the system is burdensome and overbureaucratic. The debate on the perceived costs and benefits of multiple regulators versus single regulators is far from resolved. As banks became larger, more complex and diversified

Table 15.11 Supervisors and regulators of US banks

Component	Supervisor and regulator
Bank holding companies (including financial holding companies)	FR
Non-bank subsidiaries of bank holding companies	FR/Functional regulator[1]
National banks	OCC
State banks	
Members	FR
Non-members	FDIC
Thrift holding companies[2]	OTS[4]
Savings banks	OTS[4]/FDIC/FR
Savings and loan associations	OTS[4]
Edge and agreement corporations	FR
Credit unions	NCUA
Government-sponsored enterprises	FHFA
Foreign banks[3]	FR/FDIC
Branches and agencies[4]	
State licensed	OCC/FR/FDIC
Federally licensed	FR
Representative offices	

Notes: FR = Federal Reserve; OCC = Office of the Comptroller of the Currency; FDIC = Federal Deposit Insurance Corporation; OTS = Office of Thrift Supervision; NCUA = National Credit Union Administration; FHFA = Federal Housing Finance Agency.

[1]Non-bank subsidiaries engaged in securities, commodities, or insurance activities are supervised and regulated by their appropriate functional regulators. Such functionally regulated subsidiaries include a broker, dealer, investment adviser and investment company registered with and regulated by the Securities and Exchange Commission (or, in the case of an investment adviser, registered with any state); an insurance company or insurance agent subject to supervision by a state insurance regulator; and a subsidiary engaged in commodity activities regulated by the Commodity Futures Trading Commission.

[2]The Dodd–Frank Act abolished the OTS and moved regulatory responsibilities to the OCC.

[3]Applied to direct operations in the US. Foreign banks may also have indirect operations in the US through their ownership of US banking organisations.

[4]The FDIC has responsibility for branches that are insured.

Source: Federal Reserve System (2005) and authors' updates.

into wider financial services areas (such as insurance, investment banking, pensions) through the financial holding company route, it had been argued that a more unified approach to bank regulation was needed. While this argument was hot on the agenda while US banks were performing well, the advent of the credit crisis raised questions as to whether a single regulator can do any better than a multitude of regulators. During the 2008 crisis, UK banks (which at the time were supervised by a single regulator, the Financial Services Authority) seem to have fared just as badly as their US counterparts (see Chapter 13 on the crisis in UK banking). The UK introduced a new regulatory structure, moving bank supervision away from the FSA (which was abolished in 2013) back to the Bank of England. What is in no doubt, however, is that regulation between bank and non-bank regulators will become increasingly co-ordinated. As banks have become larger and more complex, the adverse effects of failure have become more pronounced and the governance issues associated with banks being 'too-big-to-be-allowed-to-fail' has become a reality (for example, Citigroup).

In general, it is important to note that the supervisor of a US domestic banking institution is generally determined by the type of institution and the governmental authority that granted it permission to undertake business. Given that there are a number of regulatory agencies performing similar tasks, the US authorities established the *Federal Financial Institutions Examination*

Council (FFIEC). The FFIEC is composed of the chairpersons of the FDIC and the National Credit Union Administration, the Office of the Comptroller of the Currency (OCC) and the Consumer Financial Protection Bureau, and a governor of the Federal Reserve Board appointed by the Board Chairperson. The main purpose of FFIEC is to ensure uniform federal principles and standards relating to the supervision of depository institutions and also to promote co-ordination of bank supervision among the federal agencies that regulate financial institutions. Also FFIEC seeks to encourage better co-ordination of federal and state regulatory activities.

The *Federal Housing Finance Agency* (FHFA) was established in 2008 by the Housing and Economic Recovery Act to 'consolidate and strengthen' the regulation of housing finance-related government-sponsored entities. The FHFA was given similar powers to those of the federal bank regulators (including the ability to set capital standards; order the enterprise to cease any activity or divest any asset that pose a threat to financial stability; replace management and assume control if an entity becomes severely undercapitalised). One of the FHFA's first actions was to place Freddie Mac and Fannie Mae into conservatorship, in agreement with the US Treasury.

The *Consumer Financial Protection Bureau* (CFPB) was established by the 2010 Dodd–Frank Act (Title X)[9] to 'bring consumer protection regulation of depository and non-depository institutions into closer alignment'. The CFPB is an independent entity within the Federal Reserve and acts as the primary federal consumer protection supervisor with authority over a range of financial products.

The Dodd–Frank Act also addressed the systemic risk oversight gap in the US regulatory framework by creating the *Financial Stability Oversight Council* (FSOC). The Council is accountable to Congress and is charged with: (i) identifying risks to the financial stability of the US; (ii) promoting market discipline; and (iii) responding to emerging risks to the stability of the US's financial system. The Council consists of ten financial regulators (voting members) and an independent insurance expert appointed by the US President and five non-voting members. The Council is chaired by the Treasury Secretary. Key responsibilities of the Council are to recommend tougher capital, liquidity and risk management when banks get 'too big'. By two thirds' vote the Council can require systemically important financial intermediaries to be regulated by the Federal Reserve.

Concerns about the appropriate regulatory structure needed to avoid a second credit crisis are ongoing and far from resolved. As a first step, as in all banking crises, the system had to be re-capitalised and liquidity built up – but at the same time the new regulatory structure must not constrain banks excessively so they stop lending or innovating. Also, there needs to be much greater oversight of large banks so as to ensure that 'too-big-to-fail' subsidies become the exception rather than the norm.

Since the crisis the US authorities have moved to close various gaps and weaknesses in the system for bank regulation and supervision. The passing of the US Dodd–Frank Wall Street Reform and Consumer Protection Act in July 2010, the biggest financial reform in the US since the Great Depression, is a key reflection of this trend.

One of the key changes introduced by the Dodd–Frank Act of 2010 is the so-called Volcker Rule. Named after former Federal Reserve chairperson Paul Volcker, it prohibits banks from proprietary trading and limits investments in hedge funds/private equity fund sponsorship to three per cent of capital. Although the Volcker rule was passed as part of the Dodd–Frank legislation in 2010, it has faced difficulties in implementation, mostly due to opposition from the banking industry and was formally approved in December 2013 (see Box 15.3).

[9] **www.law.cornell.edu/wex/dodd-frank_title_x_-_bureau_of_consumer_financial_protection**

BOX 15.3 VOLCKER RULE COMES OF AGE IN SPITE OF PROTESTS

In the four years since Paul Volcker, former Federal Reserve chairperson, first called for a ban on banks trading with their own money, the rule named after him has survived challenges from Wall Street, foreign governments and inter-agency warfare before being ratified by US regulators on Tuesday.

As drafts have gone back and forth between regulators in the past three months, the rule has broadly got tougher and its restrictions on trading will change banks' activities in far-reaching ways. But it is not the knockout blow to bank profits that some had feared.

Mr Volcker told the Financial Times in an interview that regulators had done "pretty damn well" at drafting a rule that outlaws proprietary trading at banks. The idea is they should not be able to gamble government-insured deposits. Since proposing the rule in January 2010 Mr Volcker had dismissed the idea that it was complicated to identify proprietary trading, saying it was like the adage on pornography – you know it when you see it. "They've gone beyond that and said there are detailed rules about how you approach [this] and what is legitimate market making once you do that it gets complicated, there's no question."

The complexity of deciding what is market making – buying and selling stocks and bonds for clients – and what is proprietary trading has helped prolong the rulemaking. Too soft and banks will find ways to disguise proprietary trading; too harsh and activity essential to companies raising capital will be curtailed. Mr Volcker said some activity would doubtless move from banks such as JPMorgan Chase and Goldman Sachs to nimbler, less-regulated companies. But this was not necessarily a bad thing. "They have no pretence of being supported by the Federal Reserve. They are bound hopefully by market pressure to be well capitalised. They have no responsibility for providing an essential public service."

Though satisfied with the result, Mr Volcker was less happy about the protracted process. "That is on my mind," he said, adding that his new institute, the Volcker Alliance, would consider the issue. "One of our first projects is to review the multiplicity of agencies," he said. He said there was nonetheless value to having "more than one group" as it added "somebody else looking over your shoulder".

The rule-writing involved the Fed, the Federal Deposit Insurance Corporation, the Commodity Futures Trading Commission, the Securities and Exchange Commission and the Office of the Comptroller of the Currency, with the US Treasury also playing a role. Regulators say they had an unprecedented barrage of comments – 18,000 in all – to a proposed rule last year. Each had to be considered. There were also delegations of bankers and officials. At one meeting last year, six JPMorgan executives warned that the proposed rule threatened the bank's ability to conduct the banal work of "liquidity management", investing their funds in short-term assets.

Then, just a month later, the "London whale" trading scandal hit JPMorgan and the industry's chances of escaping a new, stricter trading environment evaporated. JPMorgan eventually lost $6bn trading credit derivatives. The affair damaged the bank's reputation and led to the departure of some of the same executives who had been lobbying the Fed.

The mess also made Wall Street's pleas for leniency on the Volcker rule harder to swallow. The credit derivatives strategy was a "hedge" against other risks in the division supposed to be managing the bank's liquidity, demonstrating that risky trades were not confined to easily identified areas of the bank. Although the London whale undermined Wall Street's plea for broad leniency on hedging, the final rule does allow so-called "portfolio hedging" – where banks take a broad offsetting position. But it forces them to meet numerous criteria to prove that the hedge is aimed at "specific, identifiable risks" and to supply a correlation analysis to show the relationship between the risk and the hedge.

Banks also argued that the prohibition restricting banks from investing in hedge funds and private equity funds was too broad because it appeared to sweep in joint ventures and wholly owned subsidiaries which did not seem to be the aim of the original proposal. As a result, the final rule contains more specific definitions for covered funds and excludes joint ventures and other entities that do not engage in investing money for others.

Box 15.3 Volcker rule comes of age in spite of protests (*continued*)

But the measure also allows agencies to rescind an exemption "if it is being used to evade the requirements of the statute". Banks were not the only ones asking for changes to the rule. Governments from Mexico to Japan dispatched officials to press the Fed. Their targets: a provision that exempted US banks from the proprietary trading restrictions for US government debt, but not foreign sovereign debt, and the suggestion that roaming US regulators would seek to impose restrictions on foreign banks. The initial proposal exempted activities "solely outside the US", but the definition was so narrow that it covered almost any trade elsewhere in the world.

The final version of the rule unveiled on Tuesday showed that the governments had been only partially successful in getting change. Deutsche Bank in New York will be allowed to take positions on German bonds but Goldman Sachs will not be able to do the same thing so easily. Overall, foreign banks' operations in New York are covered by the rule and, controversially, even the UK operations of a bank such as Barclays would be covered when it engages in transactions with a US-based entity – though the final rule is softer than once proposed.

The rule now allows foreign banks to trade with overseas offices of US banks, in addition to activity on US exchanges via clearing houses. David Hirschmann of the US Chamber of Commerce complained that the rulemaking process was flawed, warning it would "raise the costs of capital and place the United States at a competitive disadvantage in a global economy", and hinting at the prospect of legal action.

"We will now have to carefully examine the final rule to consider the impact on liquidity and market-making, and take all options into account as we decide how best to proceed," he said.

Mark Van Der Weide, a senior Fed official, acknowledged that similar rules were unlikely to be adopted in Europe: "Outside the US the major capital markets competitors of our big banks are unlikely to be subject to the Volcker rule and that is something that we'll have to watch."

Source: Braithwaite, T. and Chon, G. (2013) 'Volcker rule comes of age in spite of protests', *Financial Times*, 10 December.
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In addition to the key changes discussed above, the Dodd–Frank Act also included a number of additional provisions, particularly concerning systemically important institutions, which will have to provide 'living wills' (their plans for rapid and orderly shutdown in case of bankruptcy). The Act also created orderly liquidation mechanisms for the FDIC to unwind failing systemically significant companies.

Key provisions outside the banking sector include (i) improving transparency and accountability in derivatives, (ii) new rules for credit rating agencies and (iii) new rules on CEO compensation.

The Dodd–Frank Act dramatically altered the way in which the US banking system is regulated, with greater restrictions on the type of activities banks can undertake and continued pressure to bolster capital and liquidity strength with an end (in theory at least) to taxpayer bailouts. As illustrated in Box 15.4, however, the legislation is not without its critics, who argue that the new rules are unlikely to significantly reduce systemic risk in the system.

Since the passing of the Dodd–Frank Act, there have been various calls to partially or fully repeal the legislation. In May 2018, the **Economic Growth, Regulatory Relief and Consumer Protection Act** was passed, which relaxed various regulations imposed by Dodd–Frank. Namely, it increased the threshold to $250 billion from $50 billion under which banks are deemed too important to the financial system to let fail. The law also eliminated the Volcker Rule for small banks with less than $10 billion in assets. Small banks had long

BOX 15.4 FAILURES OF THE DODD–FRANK ACT

Last month, Friedrich Hayek's classic *The Road to Serfdom*, a warning against the dangers of excessive state control, was the number one bestseller on Amazon. At the same time, the foundation of much modern economics and capitalism – Adam Smith's *The Wealth of Nations* – languished around a rank of ten thousand. It is a telling reflection of the uncertain times we are in that precisely when confidence in free markets is at its all-time low that scepticism about the ability of governments and regulation to do any better is at its peak. It is thus no trivial task for Messrs Dodd and Frank to put up the Wall Street Reform and Consumer Protection Act and convince the suspecting audience that financial stability will be restored in the near future.

The backdrop for the Act is now well understood. When a large part of the financial sector is funded with fragile, short-term debt and is hit by a common shock to its long-term assets, there can be wholesale failures and disruption of intermediation to households and corporations.

Having witnessed such financial panics from 1850s till the Great Depression, Messrs Glass and Steagall enacted the Banking Act of 1934. They put in place the Federal Deposit Insurance Corporation to provide an orderly resolution of troubled depository institutions – "banks" – before they failed. To guard against the risk that banks might speculate at the expense of the FDIC, they ring-fenced their activities to commercial lending, requiring riskier capital markets activity to be spun off into investment banks.

Over time, however, the banking industry nibbled at the perimeter of this separation and traditional banks morphed into large and complex financial institutions. A parallel banking system evolved, consisting of money-market funds collecting uninsured short-term deposits and funding financial firms, investment banks performing many functions of commercial banks, and a range of derivatives and securitisation markets providing tremendous liquidity for hitherto illiquid loans but operating in the shadow of regulated banks, remaining opaque and highly leveraged. The Banking Act began to be largely compromised, a development only accentuated by the increasing size and connectedness of traditional and shadow banks, many of which became too big to fail.

Fast forward to 2004 and a perfect storm developed with large global banks seeking capital flows in the form of short-term debt, financed at historically low interest rates, all taking a one-way bet on the housing market, joined in equal measure by the US government's own shadow banks – Fannie and Freddie and AIG, the world's largest insurer. While these institutions seemed individually safe by prudential standards, collectively they fuelled the largest credit boom of modern times and crashed together when the bet went bad. The first big banks to fail were put on oxygen, but when that ran out, a panic ensued, making it clear they all needed – and markets expected them to be given – a lifeline.

Distilled to its essence, the Dodd–Frank Act's task is to address the increasing propensity of the financial sector to put the system at risk and be eventually bailed out at taxpayer expense.

Does the Act do the job? It certainly has its heart in the right place. It sets up a Council that can deem non-bank financial firms as systemically important, regulate them, and as a last resort break them up; requires funeral plans and orderly liquidation procedures for unwinding of such institutions, ruling out taxpayer funding of wind-downs and instead requiring that costs be borne by shareholders, creditors and other large financial firms; restricts emergency Federal assistance to individual institutions; limits bank holding companies to *de minimis* investments in proprietary trading activities such as hedge funds and private equity; provides for central clearing of standardised derivatives, regulation of complex ones, transparency of both, and separation of non-vanilla positions into well-capitalised subsidiaries; puts in place an office under the Treasury to collect, analyse and disseminate relevant information for anticipating future crises; and, introduces a range of additional reforms for mortgage lending practices, hedge fund disclosure, conflict resolution at rating agencies, skin-in-the-game requirement for securitisation, and shareholder say on pay and governance.

However, when read in its full glory, the 2,000 plus page script falls flat on at least three important counts, even ignoring its somewhat

Box 15.4 Failures of the Dodd–Frank Act (*continued*)

misplaced – likely populist – diversion into consumer protection issues.

First, the Act does not sufficiently discourage individual firms from putting the system at risk. Since the failure of systemically important firms imposes costs beyond their own losses, it is not sufficient to simply wipe out their stakeholders. They must pay in advance for contributing to the risk of the system. Not only does the Act rule this out, it makes the problem worse by requiring that other large financial firms pay for the costs, precisely at a time when they likely face the risk of contagion from failing firms. It makes little economic sense to charge neighbours for putting out a fire in the house of a habitual smoker.

Second, the Act falls into the familiar trap of regulating by form rather than function. For instance, it allows for provision of Federal assistance to bank holding companies under certain conditions, but restricts such assistance to other systemically important firms. This will create a push for the acquisition of small depositories when non-banks experience trouble, undermining the intent of restriction. And, if a large clearing house or swaps dealer were to face insolvency, the restriction on emergency liquidity assistance will prove disastrous, as any orderly liquidation must take several weeks, if not months.

Third, implicit government guarantees for large parts of the shadow banking sector remain unaddressed. Fannie and the Freddie are the most glaring examples of systemically important financial firms whose risk choices went awry given access to guaranteed debt. There is no attempt at reforming them in the Act. Orderly resolution of runs in systemically important markets – such as the sale and repurchase agreements ("repo") – that now constitute several trillion dollars of intermediation flows, remains unplanned. And ditto for dealing with runs on money market funds whose redemption risk following the collapse of Lehman brought finance to a standstill. All of these remain too big to fail.

In a somewhat less known passage from *The Wealth of Nations*, Adam Smith explains beautifully that those "exertions of the natural liberty of a few individuals, which might endanger the security of the whole society, are, and ought to be, restrained by the laws of all governments; of the most free, as well as of the most despotical. The obligation of building party walls, in order to prevent the communication of fire, is a violation of natural liberty, exactly of the same kind with the regulations of the banking trade which are here proposed."

The Dodd–Frank Act is right in charging depository banks – and their prudential regulators – to build party walls. But alas the party can – and did – happen elsewhere in the shadow banking system.

For all its ambition and copious attempt to crack down on taxpayer funded bailouts, it is somewhat unfortunate that the Dodd–Frank Act, the most ambitious overhaul of the financial sector regulation in our times, will be anachronistic in parts right from the day of its legislation.

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Source: Acharya, V.V. (2010) 'Failures of the Dodd–Frank Act', *Financial Times*, 15 July.
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complained about the increased compliance costs linked to Dodd–Frank. This legislation is regarded as the most significant change to US banking regulations since Dodd–Frank.

15.8 Conclusion

This chapter examines the structural features of the US financial system with a particular focus on the banking system. The industry has experienced marked changes over recent years characterised by a decline in the number of banks, growing concentration and an increasingly international focus (both in terms of foreign bank presence in the domestic market as well as

growing US bank presence overseas). The largest banks have transformed themselves into full service financial firms offering an increasingly diversified range of products and services to retail and corporate clients. US banks posted record profits up until the mid-2000s and were among the best performing financial institutions in the world. Recent official estimates suggest that the cost credit crisis may be less than expected – around 1 per cent of GDP although various commentators believe this estimate to be optimistic. Despite uncertainty about the true costs, however, the short-term policy responses appear to have been effective in minimising the likelihood of a deflationary spiral although there is still extensive policy debate surrounding the longer-term implications of the crisis for the future architecture of the banking and financial system. There has been much discussion about introducing new (simpler and tougher) capital and liquidity rules. There are new rules to restrict the securities activities of US banks. Banks have also de-risked their balance sheets, resulting in modest levels of profitability. Typically, investment banks have suffered the most, and major players have significantly reduced their size and scope of activities. Regulators are also seeking to put structures in place to try to develop better early warning systems that look to identify and curtail excessive credit growth and bank expansion in general. Whatever changes take place there is no doubt that bank and financial sector market features as well as regulation in the US have radically changed.

Key terms

- Automated clearing house (ACH)
- Check 21
- CHIPS
- Consumer Financial Protection Bureau (CFPB)
- Disintermediation
- Dodd–Frank Wall Street Reform and Consumer Protection Act
- Economic Growth, Regulatory Relief and Consumer Protection Act
- Federal Deposit Insurance Corporation (FDIC)
- Federal Reserve System (Federal Reserve or 'Fed')
- Fedwire
- Financial Stability Oversight Council (FSOC)
- Gramm–Leach–Bliley Act
- Office of the Comptroller of the Currency (OCC)
- Public-Private Investment Programme (PPIP)
- Savings and Loans Association (S&L)
- Sub-prime mortgage lending
- Term Asset-Backed Securities Loan Facility
- Troubled Asset Relief Programme (TARP)
- Volcker Rule

Key reading

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REVISION QUESTIONS AND PROBLEMS

15.1 What are the main features of the different types of depository institutions operating in the US?

15.2 What are the main savings institutions operating in the US?

15.3 Distinguish between different types of US investment institutions.

15.4 What is the disintermediation process that has characterised the US banking and financial sectors over the last decade?

15.5 How is the payment system organised for the wholesale and retail banking sectors?

15.6 How has the credit crisis impacted on the balance sheet structure and performance of US commercial banks?

15.7 What are the most important regulatory agencies in the US and how are they organised? Is there a case for a single banking sector regulator in the US?

15.8 What are the main challenges for the US banking sector post credit crisis?

15.9 Analyse how the US authorities injected liquidity into the banking system to help free-up interbank lending. Were these moves a success?

15.10 Outline the case for and against the state bail-out of major financial institutions like Citigroup and AIG.

Chapter 16

Banking in Japan

Learning objectives

- To distinguish between different types of financial institutions operating in Japan
- To understand the characteristics of the Japanese payment system
- To understand the main tasks and organisation of the Japanese regulatory authorities
- To understand the main trends in the performance of Japanese banks and the impact of the 1998–1999 banking crisis
- To understand the relevance of the 2007–2009 global financial crisis for the Japanese banking sector

16.1 Introduction

This chapter outlines the main features of the Japanese banking and financial systems. Japan has a bank-based financial system, where the banking system has traditionally played a more important role than the stock market. The banking system is also rather complex with a wide array of different types of private, co-operative and public banks, all undertaking a range of banking business. The main private deposit-taking institutions are the city banks and the largest public bank is the Japan Post Bank (the former Post Office Savings Bank that was privatised in 2007). The system has undergone dramatic changes over recent years, mainly as a result of the major financial crisis that occurred in 1997–1998 and resulted in the failure of a number of banks and a substantial build-up of non-performing loans (NPLs) in the banking system. The parlous state of the banking system in the late 1990s resulted in a wide range of reforms aimed at improving banking and financial sector soundness, as well as restructuring the banking system. This chapter discusses these issues and also highlights how Japanese banks have been impacted and are dealing with the outcomes of the 2007–2009 global financial crisis. The first part of the chapter outlines the structural features of the Japanese banking system and the various types of institutions that operate in the system. We then outline the main features of payment systems and cover the impact of the 1998–1999 financial crisis, its regulatory impact, and illustrate how the 2007–2009 global financial crisis only had a

modest impact on Japanese banks. We show how the banks have boosted their capital and liquidity positions, reduced non-performing loans and explain that the system has become safer. However, we finish off by looking at the main financial features of the Japanese banking system, highlighting how the weak economic environment, deflationary and other pressures (an ageing population) have resulted in very low margins and bank profitability.

16.2 Structure of banking system

The Japanese banking system has experienced difficult times over recent decades, mainly as a consequence of the downturn in the domestic economy that has resulted in bank failures and a mountain of bad debts for the banking system overall. The surge in bad debts in the 1990s resulted from a rapid increase in financial asset and property prices from the mid-1980s that led to excessive bank lending. The subsequent collapse in asset prices during the 1990s resulted in a high volume of non-performing loans, contributing to a major financial crisis between 1997 and 1998, when several large financial institutions went bankrupt. In 1998, laws were enforced to stabilise the financial system and measures that included temporary government control were developed to deal with bankrupt financial institutions (the Japanese banking crisis is discussed in detail in Section 16.4.1).

The late 1990s' crisis resulted in a large number of regulatory measures aimed at restructuring the banking sector, as well as protecting depositors; these issues will be covered in more detail later in this chapter. Given the weak operating climate, the Japanese banking system experienced a major transformation – especially noticeable by the decline in the number of banks and increasing number of mergers between the largest institutions. While the private financial institutions have suffered, various public financial institutions have expanded their lending and other activities.

The structure of the Japanese banking system is rather complex, with a wide range of deposit-taking institutions that perform particular functions. The structure at the time of writing (April 2021) is illustrated in Table 16.1. There are two main categories of financial institutions: private and public. The main distinction between the two relates to the fact that 'banks' are defined under the 1981 Banking Law, whereas other types of financial institutions (including co-operative banks) are regulated by different specialised regulation (namely, the Shinkin Bank Law, the Co-operatives and Small and Medium Enterprises Law, the Norinchukin Bank Law).

The major institutions operating in the financial system can be classified according to two main groups:

- private deposit-taking institutions;
- public financial institutions.

Private banks can be divided into several categories based on their business function or historical background. The distinction between city, regional banks and second-tier regional banks (referred to as members of the second association of regional bank) is not a legal one, but is a customary classification for the purposes of administration and statistics (Japanese

Table 16.1 Japanese domestic banking groups

	No of banks	Assets (Yen 100 m)	Asset (Market Share %)	Loan/ Assets (%)	Supervisory Authority
Private Banks					
City banks	5	5,386,768	36.3	0.35	FSA (Financial Services Agency)
Regional banks	64	3,104,493	20.9	0.62	FSA
Second tier regional banks	41	747,335	5.0	0.68	FSA
Trust banks	16	1,004,000	6.8	0.46	FSA
Foreign banks	53	463,480	3.1	0.16	FSA
Japan Post Bank	1	2,095,688	14.1	0.02	FSA
Other banks under the Banking Act	12	329,621	2.2	0.45	FSA
Shinkin banks	264	1,512,273	10.2	0.46	FSA
Credit cooperative	151	223,179	1.5	0.48	FSA
Agricultural cooperatives	679	1,177,958	7.9	0.18	Ministry of Agriculture, Forestry and Fisheries
Government Financial Institutions					
Japan Housing Finance Agency	1	263,202	1.8	0.37	Ministry of Land, Infrastructure and Transport
Development Bank of Japan	1	164,226	1.1	0.8	Ministry of Finance (MoF)
Shoko Chukin Bank	1	127,789	0.9	0.73	Ministry of Economy, Trade, and Industry
Micro Business and Individual Unit	1	69,966	0.5	0.99	Ministry of Health, Welfare and Labour and MoF
Agriculture, Forestry, Fisheries and Food Business Unit	1	27,334	0.2	0.97	Ministry of Agriculture, Forestry and Fisheries
Small and Medium Enterprise Unit	1	53,667	0.4	1.03	Ministry of Economy, Trade, and Industry
Japan Bank for International Cooperation	1	185,717	1.3	0.77	Ministry of Finance (MoF)
Total	1293	14,841,008	100		

Source: Various sources. Data year end 2017.

Bankers Association). Also classified as private banks are co-operative-type financial institutions including the **Shinkin banks**, agricultural and other types of co-operatives. The **Japan Post Bank** used to be defined as a public institution but since its privatisation in 2007 it has more recently been classified as a private institution.

16.2.1 Private deposit-taking institutions

A variety of **private deposit-taking institutions** operate in the Japanese banking system and their main features and functions are described in Table 16.1. The main banks include:

- city banks;
- regional banks;
- second-tier regional banks;
- trust banks;
- foreign banks;
- Japan Post Bank;
- co-operative type institutions (Shinkin and other co-operative banks).

City, trust, regional (tier 1 and 2), foreign, Shinkin banks and credit co-operatives, as well as bridge and internet banks, are included in the definition of 'narrow banking system'. The broader system additionally includes the Japan Post Bank and Norinchukin Bank.

16.2.1.1 City banks

The **city banks** are the largest banks in the Japanese banking system and account for over 32 per cent of total banking sector assets in 2017. As Table 16.2 notes, they are commercial banks that offer the full range of banking services including retail, corporate and investment banking services. Traditionally, they have focused on providing banking services to relatively large corporations and their retail banking activities are typically based in urban areas. All city banks offer nationwide branch banking services and have extensive foreign bank networks.

City banks have experienced substantial restructuring in recent years; these reorganisations have been aimed at bolstering the financial strength of the country's main banks and resulted in the creation of the three so called '*mega-banks*' (Mitsubishi UFJ, with $3 trillion of assets in 2021, Sumitomo Mitsui Financial with $2 trillion and Mizuho, with $1.8 trillion in assets).

16.2.1.2 Regional and second regional banks

Regional banks are medium-sized institutions whose banking activities are regionally focused. There are 64 of these banks and they have a much larger geographical presence than the city banks with over 6,200 branches nationwide and they tend to focus more on retail financial services and lending to small and medium-sized enterprises (SMEs) in the various regions (or prefectures). The majority of regional banks are publicly quoted and the largest offer a full range of banking and financial services although their business focuses on companies and households that operate within specific regions of Japan. Note that there are two types of regional banks, differentiated primarily by size (see Table 16.1), the second group being the **second-tier regional banks**. Historically these were set up as mutual (Sogo) banks whose purpose was to finance small and medium-sized enterprises. Although they are no longer restricted to this area it still remains their main focus. The 41 second-tier regional banks have over 3,000 branches and around 36,000 ATM and are important funders of small businesses.

Table 16.2 Licensed financial institutions in Japan (as of early 2021)

	Features and functions
A. Banks	
City banks	Major commercial banks, comprising Sumitomo-Mitsui Banking Corporation, Bank of Tokyo-Mitsubishi-UFJ, Mizuho Bank, Resona Bank and Saitama Resona Bank. These are also known as the domestic 'mega-banks'. The city banks are Japan's largest banks and provide a full range of banking, investment and other financial services. They are the main corporate banking service providers in Japan.
Regional banks	Regional banks focus on retail and SME (small and medium-sized enterprise) banking activity in different regions of Japan. The regional banks have large branch network, with some 6,800 branches and some 37,000 ATMs set up all over the country. While city banks' business has traditionally focused on urban areas the regional banks operate in various regions or 'prefectures' throughout the country. They account for around 18 per cent of banking sector assets and over 25 per cent of retail deposit taking. The three largest regional banks include Concordia Group (created in 2016 through the merger of Bank of Yokohama and Higashi-Nippon Bank), Fukuoka Financial Group, Chiba Bank and Hokuhoku Financial Group.
Second-tier regional banks (Sogo Banks)	Like traditional regional banks, these are smaller regional banks that also focus on retail and SME business within their immediate geographical regions. Most of these banks have converted from mutual savings banks to ordinary commercial banks.
Trust banks	Trust banks provide traditional commercial banking services and also offer money trusts (*kinsen shintaku*) to their customers, which are essentially a form of medium- to long-term time deposit. These money trusts enable the banks to make long-term commercial loans and investments in bonds and equities. All the city banks have trust banking subsidiaries, including Mitsubishi UFJ Trust and Banking and Mizuho Trust and Banking. The merger of Sumitomo Trust and Banking Corp., Chuo Mitsui Trust and Banking Co. and its affiliate Chuo Mutsui Asset Trust and Banking Co. in 2012 created Japan's largest trust bank, Sumitomo Mitsui Trust Bank Ltd (SMB).
Former long-term credit banks	These are banks established in accordance with the Long-term Credit Bank Law of 1999 that restructured/nationalised these banks. Long-term credit banks provided long- and medium-term finance to the corporate sector. They had long been a feature of large and long-term lending at low rates to the corporate sector. Due to various factors, these banks became technically insolvent and were reorganised: Mizuho Corporate Bank was created from The Industrial Bank of Japan and others, Shinsei Bank (from the Long-Term Credit Bank of Japan) and Aozora Bank (from the former Nippon Credit Bank). Note that Mizuho Corporate Bank is part of the city bank group Mizuho. Long-term credit banks no longer exist as a specific bank type and bond markets and other long-term lenders have replaced them.
Foreign banks	Foreign banks are mainly engaged in corporate and investment banking activity, although some undertake upscale retail (private banking) business.
Japan Post Bank	Banking arm of the Japanese post office that was split off from the post office and privatised in 2007. The bank has over 12 per cent of banking sector assets.
B. Co-operative financial institutions	
Shinkin banks	Shinkin banks are co-operative financial institutions. Their membership is composed of local residents and small and medium-sized companies. They are non-profit organisations that operate under the principle of mutual support. Shinkin banks limit their lending, in principle, to members. However, their functions are similar to commercial banks, and they also deal with many people who are not members, accepting deposits, providing exchange services, accepting various payments including those for public utilities, and engaging in over-the-counter sales of public bonds, investment trusts and insurance.

Table 16.2 Licensed financial institutions in Japan (as of early 2021) (*continued*)

	Features and functions
Credit co-operatives **Labour banks** **Agricultural co-operatives** **Fishery co-operatives**	A wide range of co-operative deposit-taking institutions operate in Japan. These provide services such as deposits, lending, bill discounting, domestic exchange and foreign exchange. As a rule, credit associations only lend to members (deposits may be taken from non-members). Members have typically to be resident, working or owning a business in the co-operatives area. Generally, membership is not open to large businesses. The co-operative banks serve various sectors, agriculture, fisheries and other groups.
C) Federations of co-operative financial institutions	
Shinkin Central Bank (Central institution for Shinkin banks) Shinkumi Federation Bank (National Federation of credit co-operatives) Rokinren Bank (National Association of Labour Banks) Norinchukin Bank (Central Bank for the Japanese Agricultural, Forestry and Fishery Co-operatives) Shoko Chukin Bank (the Central Co-operative Bank for Commerce and Industry)	These are the central organisations for the various co-operative banks listed above. They offer various products and services to their member banks, typically undertaking larger and more complex banking transactions. For instance, they provide investment and asset management services, as well as more sophisticated corporate banking services to their member banks.

Source: Compiled using information from various sources, including Community Bank Shinyo Kumiai, the Japanese Bankers Association, Japan Post, Japan Securities Dealers Association, Shinkin Central Bank Research Institute, The Norinchukin Bank,the Regional Banks Association of Japan and the Financial Services Agency.

16.2.1.3 Trust banks and long-term credit banks

In addition to the city and regional banks, there are also a number of **trust banks**. These perform commercial banking activity but their main function is asset management for retail and other customers. Japanese households place funds (or entrust funds) to these banks in the form of 'money trusts', which are a type of medium- to long-term time deposit. (Note that the Bank of Japan statistics for the banking sector distinguishes between banking account and trust account business when reporting features of the system.) These money trusts enable banks to undertake long-term commercial lending and investments in bonds, equities and other instruments. Trust banks have long-term liabilities that enable them to make long-term loans and as such they have played an important role in providing long-term credit to corporate borrowers.

The merger between Sumitomo Trust and Chou Mitsui Trust – announced in 2009 and which came into effect on 1 April 2012, created Japan's largest trust bank, Sumitomo Mitsui Trust Bank Ltd (SMTB) with total assets of 32,839 billion yen. As a trust bank, the value of assets entrusted to SMTB by companies and individuals stands at 122 trillion yen (about $1.5 trillion) in 2012, more than 10 per cent larger than the amount held by Mitsubishi UFJ Trust. At the time of its creation SMTB was ranked as the fifth-largest in Japan, and by 2017 it ranked sixth, behind the largest four city banks and Norinchukin Bank (a co-operative bank serving a large number of co-operatives throughout Japan). The integration of Sumitomo Trust and Chuo Mitsui represented the largest merger since Mitsubishi UFJ Financial Group, Japan's biggest banking group, was created in 2005.

The major **long-term credit banks** failed in 1999 and had to be reorganised as described in Table 16.2. The former three long-term credit banks have been restructured into the following entities: Mizuho Bank (created from the Industrial Bank of Japan and others), Mizuho Corporate Bank (created from the Industrial Bank of Japan and others), Shinsei Bank (formerly, the Long-Term Credit Bank of Japan) and Aozora Bank (formerly, the Nippon Credit Bank). In 2009 it was announced that Shinsei Bank and the Aozora Bank would merge, but the talks collapsed in May 2010. After the reorganisations, the banks have operated in a similar manner to other commercial banks and do not have special recognition as long-term credit banks. Their previous activities, namely lending large loans for long periods, has to a large extent been replaced by the greater use of domestic and international bond markets for this type of corporate borrowing.

16.2.1.4 Co-operative banks

The mutual co-operative banking sector also plays a major role in the Japanese banking system. These are co-operative organisations and non-profit-making financial institutions established for the benefit of SMEs in certain industries (such as agriculture and fisheries) and other groups including residents in various areas. They undertake mainly retail banking activity and SME services and are typically restricted to small areas (prefectures). Shinkin banks limit their lending, in principle, to members. However, their functions are almost the same as those of commercial banks. Total deposits outstanding at the 264 Shinkin banks (as of mid-2017), reached approximately 138 trillion yen (equivalent to about $1,270 billion), therefore making the Shinkin banks the third largest group of financial institutions in Japan, after city and regional banks (see Table 16.2). Shinkin banks also possess one of the largest branch networks among the financial business categories, forming a strong network throughout Japan.

The central organisations of the individual credit **co-operative banks** are relatively large banks in their own right and these provide services direct to their member banks. The main feature of co-operative banks is that they act as strong competitors to regional banks in local banking markets.

The Shinkin Central Bank serves as the central bank for Japan's 264 Shinkin banks as well as being an independent financial institution. The Shinkin Central Bank provides a wide range of financial services to support the Shinkin banking sector. In a similar manner, the Norinchukin Bank is a co-operative bank serving agricultural, fishing and forestry co-operatives. Its members include co-operative federations such as the Japan Agricultural and the Japan Fishery Co-operatives and the Japan Forestry (JForest) co-operatives. Its main function is to operate the co-operative banking business within the organisation. The bank is also one of Japan's largest institutional investors. By asset size, the Norinchukin Bank (the Nochu) is Japan's largest co-operative bank and by 2017 was more than 250 per cent larger than the Shinkin Central Bank. Figure 16.1 illustrates the complex web of connections of the co-operative system.

16.2.2 Private non-deposit-taking institutions

Private non deposit-taking financial institutions in Japan comprise a wide variety of securities, insurance and other firms. Securities firms include major broking and investment banking type operations that offer securities services to both the corporate and household sector. Their business is solely securities-related and they do not take deposits. In addition

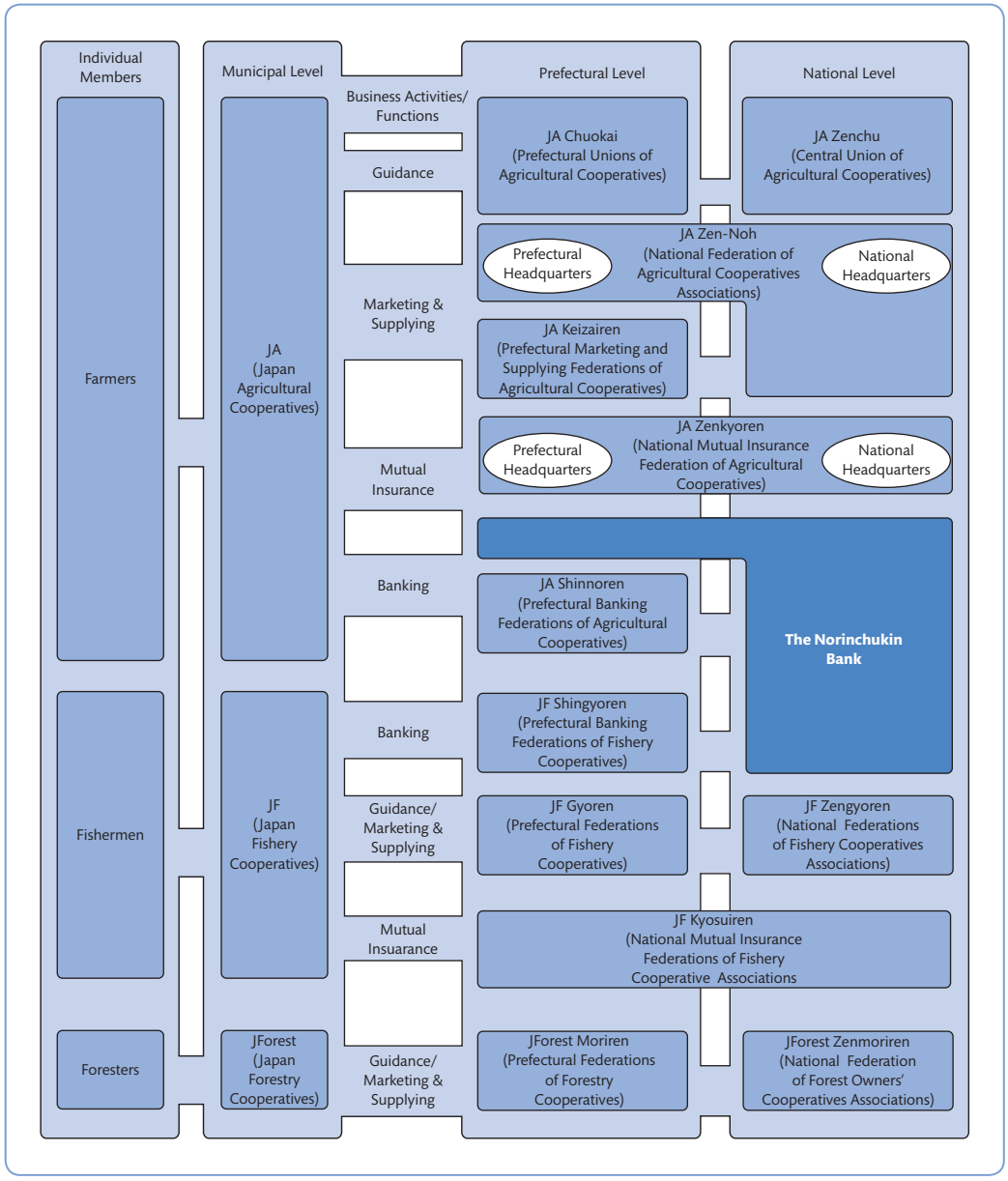


Figure 16.1 Structure of the Co-operative system

Source: The Norinchukin Bank (2017).

to these, there are insurance companies that transact life and non-life business as well as a range of other firms including consumer finance, leasing, money market dealers (firms that trade short-term wholesale money market instruments) and mortgage securities firms (companies that deal in mortgage-backed securities). In many respects, the range and type of non-deposit-taking institutions is similar to those in other developed financial systems.

16.2.3 Public financial institutions

Japan also has a range of **public financial institutions** that perform a significant role in the financial system. These are mainly **development banks** (close to government) that carry out direct lending (usually subsidised and medium- to long-term finance) to certain sectors of the economy. Such public institutions listed in Table 16.1 include:

- Japan Housing Finance Agency (uses securitisation to help finance long-term fixed-rate mortgage lending of private financial institutions. Also offers home loan insurance);
- Development Bank of Japan (long-term financing for regional development);
- Shoko Chukin Bank (lender to small and medium-sized enterprises);
- Japan Finance Corporation (established on 1 October 2008 with the passing of the Japan Finance Corporation Act). This Act led to the merger of four policy-based financing institutions:

  1 National Life Finance Corporation (NLFC) (lends to small businesses, students and others without access to traditional credit);

  2 Agriculture, Forestry and Fisheries Finance Corporation (AFC) (lending to firms involved in the respective industries and 'to maintain and develop the productivity of agriculture, forestry and fisheries, and to secure stable food supply through supporting the food industry');

  3 Japan Finance Corporation for Small and Medium Enterprise (JASME) (offers subsidised lending to SMEs);

  4 International Financial Operations of the Japan Bank for International Cooperation (JBIC). In 2012 the Japan Bank for International Cooperation Act was passed and this led to the separation of the Japan Bank for International Cooperation (JBIC) from JFC and since then it has operated as an independent entity;

- Japan Bank for International Cooperation (undertakes lending and other financial operations for the promotion of Japanese exports, imports or Japanese economic activities overseas).

Other major public institutions (not listed in Table 16.1) include:

- Government Housing Loan Corporation (mortgage loans to individuals that have difficulty obtaining residential property finance through banks);
- Japan Financial Corporation for Municipal Enterprises (subsidised lending to local authorities); and
- Okinawa Development Finance Corporation (subsidised loans for business development in Okinawa).

16.2.4 Japan Post Bank

Up until quite recently Japan's postal savings system was the world's largest financial institution in terms of deposits. Postal savings have long been an important element in Japanese household savings and, given the crises in the banking sector over the last decade

or so, the relative position of the Post Office in banking business increased. The Japanese government approved plans to privatise Japan Post in 2007, under the Postal Service Privatization Act. This resulted in the dissolution of Japan Post and the creation of the Japan Post Group and its five constituent companies: Japan Post Holdings, Japan Post Service, Japan Post Network, Japan Post Bank and Japan Post Insurance. Since it was established in 2007, the road towards the privatisation of the Japan Post Group has not gone as smoothly as planned.

In 2012, the Japanese government revived the privatisation plans: on 27 April, around four and a half years after the original privatisation, it enacted the 'Act for Partial Revision of the Postal Service Privatisation Act and others'. The amended legislation was passed on 8 May 2012. This amended law saw Japan's Post Service and Japan Post Network merge. The Japan Post Group was restructured from five companies to four companies. Moreover, the 2012 law required Japan Post Holdings Co., Ltd to dispose of all shares of Japan Post Bank Co., Ltd and Japan Post Insurance Co., Ltd. Figure 16.2 illustrates the main changes to the Japan Post Group. When part of the Post Office was floated in 2015 it was the largest privatisation that the country had witnessed since the 1980s – although only around 11 per cent was sold. As alluded to already, the floatation has been gradual – even in September 2017 the government sold another $12 billion of Post Office shares. A discussion of the key issues relating to the privatisation of Japan Post and Japan Post Bank can be found in Sawada (2013).

Japan Post Bank nowadays operates independently through a network comprising 230 branches and about 24,700 post offices across the country, as well as over 30,000 ATMs. This vast branch network allowed the bank to build up a deposit base of US$1.8 trillion in 2017, the fifth largest in the world (after the biggest Chinese banks) (see Figure 16.3). The bank has also continued to develop its activities, and even contemplated setting up its own hedge fund activities in an attempt to try and boost its low levels of profits (a feature of other major Japanese banks) (see Box 16.1).

16.3 Payment systems

There are four major payment systems for clearing and settling interbank payments in Japan. These include three clearing systems in the private sector and a funds transfer system operated by the Bank of Japan. These clearing systems include the following:

- **Zengin Data Telecommunication System** (Zengin System) is the main retail payments system in Japan and its main task is to clear retail credit transfers. Over 2,000 institutions participate in the system. The system clears transactions including remittances, direct credits such as the payment of salaries and pensions, and payments resulting from the inter-regional collection of bills and cheques. Small financial institutions, such as the Shinkin banks and other small co-operative and regional banks, have their own interbank clearing systems. (The structure of each of these systems is similar to that of the Zengin System.) The Zengin System is owned and managed by Tokyo Bankers Association.

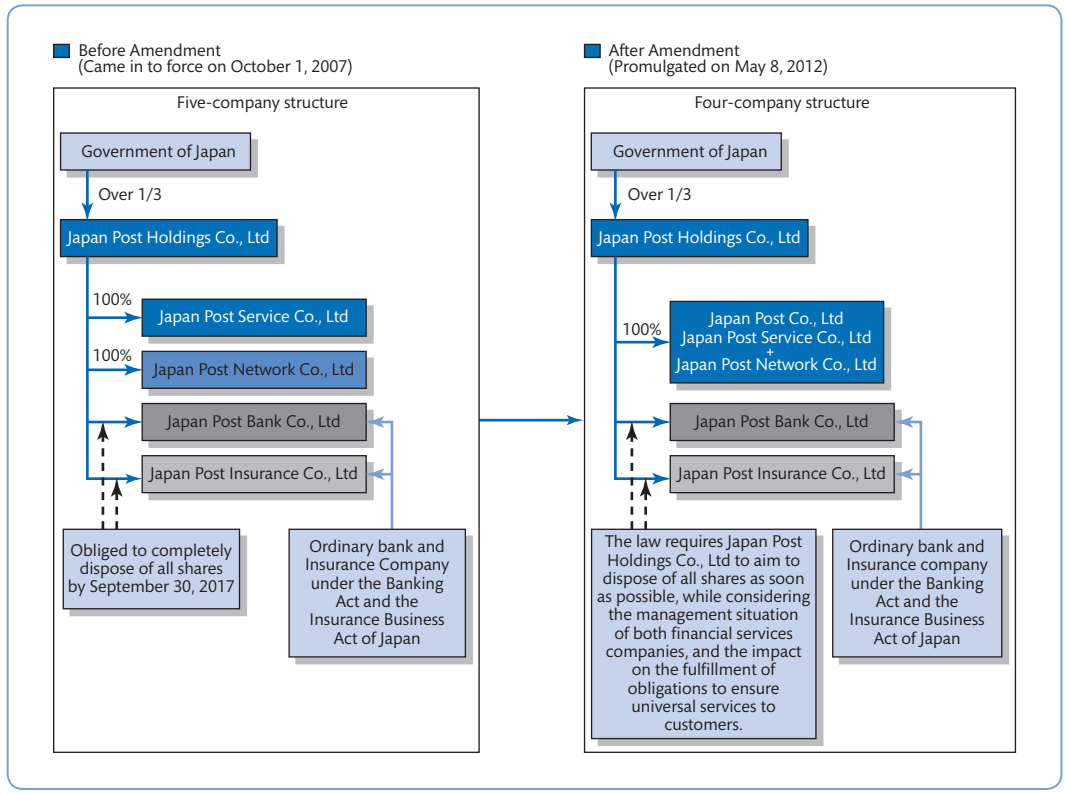


Figure 16.2 Changes to the structure of the Japan Post Group

Source: Japan Post Bank (2012), p. 25.

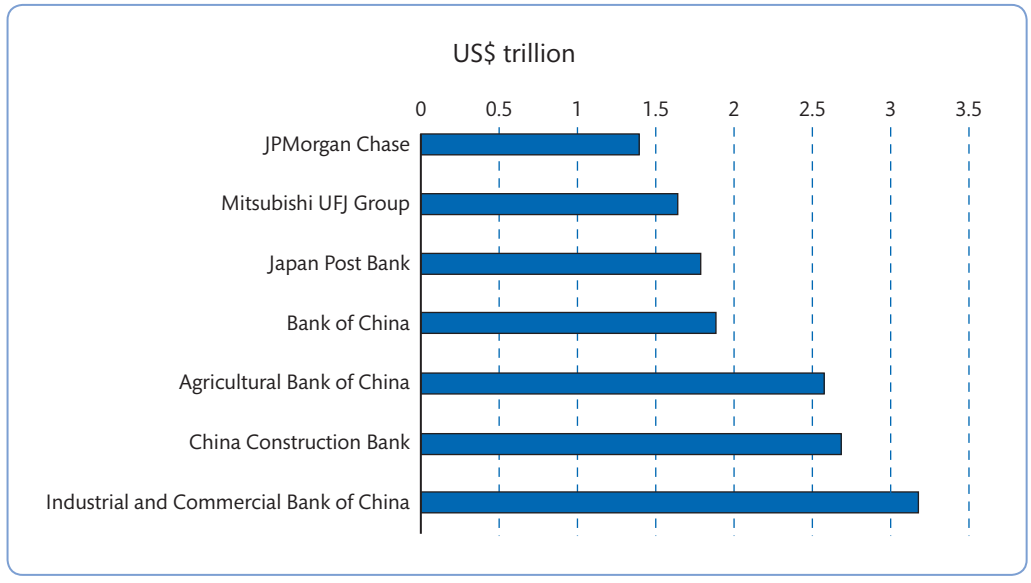


Figure 16.3 World's largest banks by total deposits

Source: Bank Focus. Data for 2018.

BOX 16.1 JAPAN POST BANK PLANS $1.5BN IN-HOUSE HEDGE FUND

Long-time passive investor is embracing risk in quest for greater return

Japan Post Bank is to launch a $1.5bn in-house hedge fund, according to people familiar with the plan, as an institution that once symbolised the nation's financial conservatism embraces a new level of risk in a quest for greater returns. The shift moves the bank from being a passive investor in externally managed funds to one that can actively hold, and potentially short-sell, individual stocks. That, say analysts, sets it apart from the massive Government Pension Investment Fund, whose efforts to secure the right to hold individual shares have been blocked by Japan's powerful business lobby.

Many Japanese would find it jarring to see a former state-owned bank betting against domestic companies. The move to set up its own hedge fund represents what one analyst described as a "clear signal of intent" by Japan Post Bank, which is planning a series of more aggressive moves into new business lines and investment portfolio diversification as the Japanese government sells down its 56 per cent stake in the bank's parent, Japan Post Holdings.

The hedge fund is scheduled to launch in October and will be based in a new office block in Tokyo's Otemachi financial centre. It has yet to be officially announced by Japan Post Bank, which was partially privatised in 2015 via listing on the Tokyo Stock Exchange. The bank, the country's second-largest by deposits, declined to comment on its plans for the new hedge fund. Since listing, shares in Japan Post Bank have proved a disappointment to the hundreds of thousands of retail investors at whom the mega-IPO was aimed. The bank and its domestic peers have struggled for profits under the Bank of Japan's negative interest rate policy and the broader demographic pressures affecting the domestic financial sector. Japan Post Bank's shares have staged a steady recovery from their lows of mid-2016, but still trade on a price-to-book ratio of 0.48× – slightly below the three Japanese megabanks and considerably lower than large US peers.

The hedge fund, say the people familiar with its planned structure, will be a multi-strategy long-short fund and will initially be managed by a team of about six people – a group quietly recruited over the past few months from Goldman Sachs, Barclays, Fidelity and at least one global hedge fund. The idea of an in-house fund, say brokers preparing to pitch ideas at its new managers, represents the most aggressive legacy of Katsunori Sago – the former Goldman Sachs Japan vice-chairperson hired by Japan Post Bank in 2015 as its chief investment officer, to inject a new approach to risk into its $1.9tn investment portfolio. On his watch, Japan Post Bank's alternative investment portfolio has diversified into a variety of asset classes including hedge funds, real estate and private equity. At the end of December 2016, the assets in the alternative portfolio stood at ¥131bn; by the end of December 2017, they had climbed to ¥1.27tn as the bank ploughed in more investment.



Source: Lewis, L. (2018) 'Japan Post Bank plans $1.5bn in-house hedge fund: Long-time passive investor is embracing risk in quest for greater return', *Financial Times*, 15 May.
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- **Bill and Cheque Clearing Systems (BCCSs)** clear bills and cheques collected at regional clearing houses. The BCCSs provide clearing services mostly for bills and cheques, which are exchanged between financial institutions located within the same geographical area. Clearing houses are established and managed by their respective regional bankers' association. Large and medium-sized financial institutions, including banks and branches of foreign banks in Japan, participate directly. Small financial institutions participate indirectly through direct participants. BCCSs predominantly handle bills and cheques used for commercial transactions between firms.
- **Foreign Exchange Yen Clearing System** (FXYCS) clears mainly yen legs of wholesale foreign exchange transactions. The FXYCS was established in 1980 to facilitate clearing of yen payments for cross-border financial transactions. Clearing is undertaken through the BOJ-NET and the main participants are large banks and branches of foreign banks.
- **BOJ-NET (Bank of Japan Financial Network System) Funds Transfer System** is the central bank's funds transfer system used to settle wholesale interbank obligations including those arising from the clearing systems. The BOJ-NET Funds Transfer System undertakes most of the payment services provided by the Bank of Japan, which are: (1) funds transfers among financial institutions stemming from interbank money market and securities transactions; (2) funds transfers between different accounts of the same financial institution; (3) settlement of net positions arising from privately owned clearing systems; and (4) funds transfers between financial institutions and the Bank of Japan, including those for monetary policy operations. Most funds transfers made through the BOJ-NET Funds Transfer System are credit transfers.

In addition, since November 2011, the Next-Generation RTGS (RTGS-XG) project was completed to bring new levels of safety and efficiency to large-value payments in Japan.

With regards to retail payments, a key feature of the Japanese system relates to the high proportion of cash transactions compared with other developed countries. As it can be seen from Figure 16.4, Japan has a much higher level of cash in circulation (as a percentage of GDP) compared with the US, the UK and the euro area. According to a report in *The Economist* (2017),[1] in 2016 cash accounted for 62 per cent of Japanese consumer transactions by value down from 65 per cent in 2015, which compares with figures of just 22 per cent in Britain, 34 per cent in America, 10 per cent in South Korea and 50 per cent in China.

Retail payments in Japan differ from other major economies because of the strong preference for cash payment of Japanese citizens. The use of cheques did not really develop in Japan and the large majority of non-cash payments are dominated by credit transfers

[1] 'A yen for plastic: In Japan, the move from cash to plastic goes slowly', *The Economist*, 2 November 2017.

Table 16.3 Payments processed by selected interbank funds transfer systems

Volume (thousands, total for the year)	2011	2012	2013	2014	2015
Large-value payment systems					
BOJ-NET Funds Transfer System					
Credit transfers sent	12,931	15,295	16,276	16,686	16,904
Foreign Exchange Yen Clearing System					
Credit transfers sent	6,331	6,286	6,697	6,489	6,766
Retail payment systems					
Zengin System					
Total national transactions sent	1,394,753	1,460,891	1,480,708	1,514,859	1,548,337
Tokyo Clearing House					
Total national transactions sent	26,635	24,965	23,475	22,034	20,591
Value (JPY trillions, total for the year)	**2011**	**2012**	**2013**	**2014**	**2015**
Large-value payment systems					
BOJ-NET Funds Transfer System	24,831	27,234	28,537	30,527	33,096
Foreign Exchange Yen Clearing System	2,821	2,460	2,913	3,055	3,841
Retail payment systems					
Zengin System	2,566.70	2,651.90	2,855.70	2,899.10	2,982.40
Tokyo Clearing House	280.7	272.4	269.8	238.4	209.8

Notes: For a detailed account of the operations of these systems see Bank of Japan (2012) 'Payment, clearing and settlement systems in Japan' available online at www.boj.or.jp/en/paym/outline/pay_boj/pss1212a.pdf.

Source: Bank for International Settlements (2016).

(known as giro payments) and card payments.[2] This contrasts with the US, where cheques account for nearly 30 per cent of the total number of retail transactions. Credit transfers are widely used, for example to pay wages, pensions, dividends and tax refunds. One area where Japan leads the world is in the use of smart card and mobile phone technology for retail payments. A wide range of smart cards are in use to make retail payments. Japanese households are the most avid users of smart cards and these have been introduced in a wide variety of applications such as transport ticket payments, access control, electronic money and credit cards.

[2] Unfortunately the figures for Japan do not provide a breakdown for credit transfers and direct debits. See Bank for International Settlements (2013c), available at **www.bis.org/publ/cpss112.htm**.

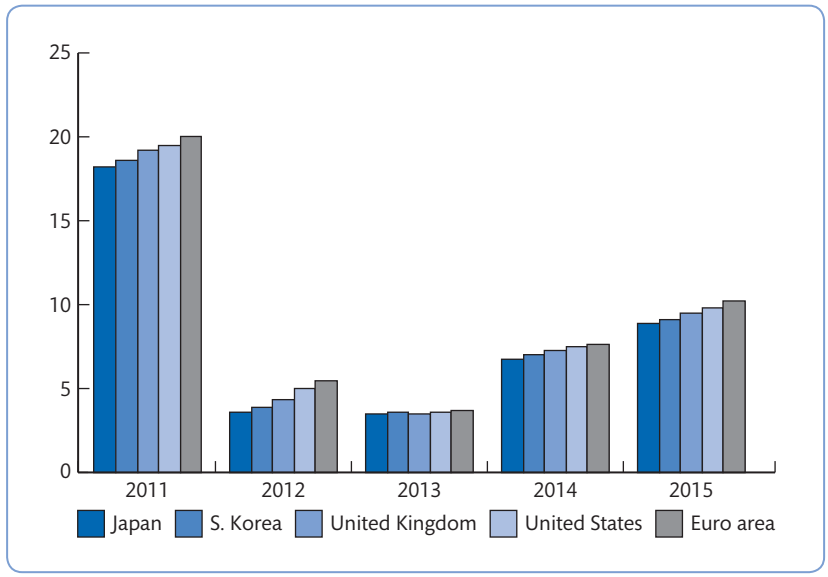


Figure 16.4 Banknotes and coins in circulation as percentage of GDP

Source: Data from Bank for International Settlements (2016a).

16.4 Banking crises in Japan

Throughout this chapter we have mentioned how the banking crisis in the late 1990s severely impacted on the Japanese financial system. The regulatory features of the system have dramatically changed as a consequence of these events and as such it is best to highlight the main features of this crisis and its impact on the regulatory structure before we look in more detail at the impact of the 2007–2009 global financial crisis.

16.4.1 The Japanese banking crisis

The banking collapse that ensued during the 1990s was mainly a consequence of three main forces:

- *Excessive lending* – bank lending, much of which was secured against land and property, grew rapidly in the late 1980s. Bank lending activity was concentrated in the wholesale and retail trade, real estate, finance and insurance, and construction sectors. The fall in stock prices and reversal in the performance of the economy in the early 1990s made highly indebted firms in these sectors unable to repay their loans due to a decline in collateral values, thus creating a large pool of bad loans. However, despite these problems, bank exposure to certain sectors, such as real estate and construction, continued to grow due to the low interest rate environment until the second half of the 1990s. This resulted in a further increase in bank NPLs and the banking system fell into a systemic crisis in 1997–1998.
- *Negative impact of asset price deflation* – the rapid credit growth during the 1990s had also been accompanied by a doubling of stock prices and a rapid rise in commercial estate

prices, particularly in major cities. A sharp increase in interest rates and the introduction of various credit ceilings (limits on the amounts banks could lend) to real estate-related activity led to the bursting of the asset price bubble. This created substantial losses for firms that held equities and had borrowed from banks with real estate as collateral. As a consequence, this had the effect of converting a substantial portion of banks' loans into non-performing assets, and asset price **deflation** resulted (and has been a feature of the Japanese economy for nearly a decade).

- *Policy failure to contain problem* – various commentators have argued that the main government authorities (Bank of Japan and the Ministry of Finance) were too slow in dealing with the build-up of problem loans in the banking system. Throughout the 1990s, banks were continuing to lend to the real estate sector despite signs of problems in their loan books as well as deflationary pressures in the economy overall. Interest rates had fallen to low levels and the government made various attempts to boost public spending in order to create demand in the economy although little action was taken to deal with problems in the banking system until the crisis hit. The initial government approach was to stimulate demand by fiscal policy in the economy; it was assumed that it would restore economic growth and thus return the banks to a healthy position. However, the fiscal stimulus had only a marginal impact on the economy. There was also little international pressure on the authorities to resolve their banking problem, which was viewed mainly as a domestic issue.

The gradual culmination of these forces led to the collapse of the so-called **'convoy system'**, where the Ministry of Finance 'encouraged' healthy banks to acquire those in trouble. In addition, while the Bank of Japan (the central bank) provided liquidity assistance to the banking system this was not enough to stem the crisis that ensued. Major events relating to the crisis are illustrated in Table 16.4.

Since the banking crisis, a wide range of reforms have been put in place. These have aimed to stabilise the banking system and to facilitate bank restructuring. The authorities introduced a blanket deposit insurance scheme (to protect all depositors in the event of bank failure), extended emergency liquidity assistance to troubled banks, provided financial assistance to promote mergers among troubled financial institutions, injected capital into weak but viable banks and allowed for the temporary nationalisation of non-viable banks.

Various features of reforms involved with bank restructuring include:

- public **recapitalisation** of various banks (in March 1998, March 1999 and May 2003) that amounted to around 9 trillion yen;
- more rapid recognition of NPLs (introduced in October 2002) – with tougher loan classification and loan loss provisioning rules that enabled the regulators to identify the size of bad loans but also encouraged faster disposals of NPLs (e.g. banks writing them off their balance sheets);
- disposal of bank NPLs, close to 90 trillion yen since 1998, although despite these disposals, bank NPLs have not declined as fast as expected due to the emergence of new NPLs;
- exit of a number of inefficient deposit-taking institutions;
- establishments of various public asset management companies that deal with the sale of bank NPLs.

In addition to these reforms, the authorities have also been active in encouraging bank mergers between the leading banks, they withdrew the blanket deposit insurance guarantee

Table 16.4 Japan's 1998 banking crisis – major events

Year	Event
Mid-1995	Two large credit unions and a regional bank fail as a result of bad loans.
1995	A substantial number of housing loan companies, known as Jusen, failed and were bailed out by a group of banks and government funds. As a result of the Jusen collapse and concerns about growing levels of non-performing loans, bank stock prices declined relative to other stocks around the end of 1995, and credit rating agencies began to downgrade the credit ratings of Japanese banks – increasing their cost of funds.
November 1997	On 3 November, Sanyo Securities defaulted in the interbank loan market, delivering another shock to the market.
November 1997	Hokkaido Takushoku Bank and Yamaichi Securities (one of the four large securities houses) failed, leading to a further downgrading of bank credit ratings.
March 1998	The Japanese government sought to deal with the under-capitalisation of banks by injecting capital to the banking sector in March 1998. A newly created Financial Crisis Management Committee handled this capital injection, which was successful in calming financial markets (until May).
Mid- to late 1998	The Government attempted to pass several reform bills. One of these bills was the Financial Revitalisation Act, which was designed to deal with failed financial institutions. Under this law, a failed bank could either be placed under Financial Reorganisation Administration (FRA), or could be temporarily nationalised. This law formed the basis for the government's decision in late 1998 to nationalise two major banks, the Long Term Credit Bank of Japan and Nippon Credit Bank, both teetering on the verge of bankruptcy.
Late 1990s to early 2000s	The establishment of the Financial Supervision Agency (FSA) in June 1998 shifted the responsibility of financial supervision of private deposit institutions from the Ministry of Finance to an independent entity. The Agency changed its name to the Financial Services Agency in 2001.

in spring 2005 and continued to focus on measures aimed to reduce the level of non-performing loans in the system. We will focus on the impact of the global financial crisis in Section 16.4.2.

16.4.2 Impact of the 2007–2009 financial crisis on Japanese banking

Japanese banks have been operating in a slow growing, near deflationary environment since the onset of the 1998 crisis. They have restructured their activities and reduced their levels of non-performing loans, although the system overall still posts low profitability by international standards (see Section 16.5.2). While still struggling to recover from the 1998 crisis, the Japanese banking system has been hit by the fallout from the US sub-prime crisis that emerged in mid-2007. Unlike the US, however, Japan did not have a high-risk segment of the mortgage market, securitisation of mortgages (or other loans) is not common and property prices had followed a different trend from those in the US and UK for nearly two decades. The Japanese real estate bubble burst in the early 1990s and after that prices in the major cities fell continuously. Although residential property prices in Japan did increase by around 25 per cent between 2004 and 2008, by the time the sub-prime bubble burst in 2008 prices were not at the level they had been in 2000. As a consequence, the country did not face a real estate bubble funded by securitisation and lending excesses. In addition, Japanese banks did not hold significant amounts of US sub-prime and other securitised securities. For instance, the largest three banking groups (Mizuho, Mitsui Sumitomo and Mitsubishi-Tokyo UFJ), are estimated to have had less than 1 per cent of their balance sheet invested in sub-prime

mortgage-backed securities (MBS) and sub-prime asset-backed securities (ABS) or collateralised debt obligations (CDOs) by the end of March 2008. No Japanese bank failed as a consequence of the global financial crisis, although the downturn in the global economy and the adverse impact on the already weakened Japanese economy contributed to put additional pressure on Japanese banks.

As noted above, although Japanese banks were not large buyers of sub-prime-related products, they have still suffered in the financial fallout from the crisis. Bank margins decreased further as did credit to the corporate sector, which forms the bulk of their business. When loan growth stalls then so does bank profitability. The stock market also fell 40 per cent between April 2008 and April 2009, creating losses that further reduced banks' capital. A major consequence was that all the main Japanese banks sought to raise more capital (some $34 billion through the issue of new equity and preferred stock between January 2008 and April 2009).

Despite the aforementioned setbacks, Japanese banks fared the credit crisis relatively well compared with their US and UK counterparts. Their loss-absorbing capacity was higher, asset quality was more stable and reliance on wholesale funding was lower compared to US and eurozone banks.

Post global financial crisis, Japanese banks still face a number of challenges related to profitability and business models (IMF, 2017; Bank of Japan, 2018). The IMF (2017, p. 6) summarises the situation as follows:

- Weak growth and low interest rates, together with underlying demographic headwinds, are posing chronic challenges for the financial system. Despite accommodative financial conditions, sluggish domestic demand [has] dampened investment and domestic credit growth. Combined with low interest rates and a flat yield curve, these factors are posing a sustained challenge for the financial system – one of the largest and most sophisticated in the world. To a significant extent, factors behind this environment are structural in nature, reflecting in particular demographic headwinds. Profitability of banks and life insurers is low, and net interest margins are shrinking.
- While the financial system has remained stable, the low profitability environment is creating new risks, and pressures are likely to persist. The search for yield among banks has led some to expand their overseas activities, and more generally to a growth in real estate lending and foreign securities investments. Efforts to increase risk-based lending to small and medium-sized enterprises (SMEs) are welcome, but many banks still need to develop commensurate credit assessment capacities.

  Stress tests suggest that the banking sector remains broadly sound, although market risks are increasing and there are some vulnerabilities among regional banks. Insurers have turned to foreign investments to provide the yield needed to meet the interest guarantees, but economic value based solvency positions of life insurers have declined substantially. Compared to ample liquidity in yen and on an all-currency bases, potential vulnerabilities exist in foreign currency positions, particularly for some internationally active regional banks.
- An aging and shrinking population is likely to imply gradual structural changes in the Japanese financial system. Empirical analysis suggests that aging will likely reduce the role of banks in financial intermediation. With low demand, domestic banking is more likely to evolve toward transactional and fee-based services. The impact of demographic headwinds is particularly strong for regional and Shinkin banks. Actions underway by these institutions to address these challenges are not without risks and may not be sufficient on their own.

The major ongoing concern remains the state of the domestic economy and this poses the greatest threat to the performance of the banks, and regional banks in particular. Box 16.2 highlights growing worries about the poor performance of Japan's regional banks.

BOX 16.2 JAPAN'S REGIONAL BANKS WARNED OF 'GRAVE' SITUATION

Fujiwara sounds alarm over competition, weak loan demand and negative rates

Japan's 105 regional banks are approaching "grave conditions" as loan demand remains weak, competition intensifies and the country enters its third year under a negative interest rate policy, the new head of the Japan Bankers' Association (JBA) has warned. In his first interview as chairperson of the JBA, Koji Fujiwara predicted an increase of mergers and alliances as a wave of defensive tactics reshaped a crowded banking sector suffering from thin profit margins. The structure of those partnerships, he added, would become more inventive as Japan's conservative financial industry embraces digital technology.

The JBA head's comments join a rising chorus of alarm bells on Japan's regional banking sector from both private and public sector analysts. Those include the Bank of Japan's recent declaration that the country's shrinking demographics burdened financial institutions with a common "chronic stress" and that its latest survey of the sector found "a considerable number of financial institutions had not objectively examined whether efforts to raise profitability were producing the expected results".

In a report published last November, the credit rating agency Fitch noted the vulnerability of many regional banks to relatively small increases in credit costs, and the rising sensitivity to market risk. Mr Fujiwara, who is currently the president and CEO of Mizuho Bank, part of the Mizuho Financial Group, highlighted the difficulties faced by regional banks in parts of the country, where loans could not be expected to grow significantly and pressure to produce profit pushed them towards higher risk investments. With the loan-to-deposit ratio around 70 per cent, there is still a "deposits surpass loans" structure, Mr Fujiwara said. "In a situation like this, the mega-banks can to some extent control things as they have – beyond the basic bank business – trust banks and brokerages in their groups. For regional banks, however, grave conditions are approaching."

The comments echo the findings of the BoJ in its March 13 policy statement, where it warned that many financial institutions had not considered and implemented a review of management frameworks despite changes in their risk profiles, or established frameworks "that allow flexible decision making in the event of sudden changes in financial markets at home and abroad".

The spectacle of regional Japanese economies in sharp decline has convinced many observers that Japan's sprawling, congested banking sector would be forced to accelerate a consolidation that has seen some 60 regional banks consolidate into 34 since 1991 and left 27 others loosely allied under 13 separate holding company structures. One bottleneck to mergers within particular regions has come from Japan's anti-monopolies regulator, but a broader difficulty has been identifying alliances that would actually produce profitable, efficient groups. The next phase of consolidation, said Mr Fujiwara, would see a richer variety of deal types: between mega-banks and regional players, between banks and non-banks or deals involving outsourcing of back-office activities.

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Source: Lewis, L. (2018) 'Japan's regional banks warned of "grave" situation: Fujiwara sounds alarm over competition, weak loan demand and negative rates', *Financial Times*, 2 April.
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16.5 Changing structure of the financial system

Given the turmoil the Japanese economy experienced in the late 1990s, it is perhaps of little surprise that financial activities have shifted from private financial intermediaries to public financial intermediaries between 1989 and 1999, although there has been a slight reversal since then. Table 16.5 illustrates that financial institutions hold around 52 per cent of the country's financial assets, with the household sector having around 25 per cent (17.5 trillion yen) and the non-financial firm holding around 15 per cent to 16 per cent of financial assets. Of the 15 trillion of assets held by households, over 50 per cent is in bank deposits. In the corporate sector, loans from private financial institutions comprise around 38 per cent of total debt and this is by far the most important source of debt. For instance, corporate bonds and commercial paper borrowings account for less than 7 per cent of debt combined. (In the US the corporate bond and commercial paper amount to some 20 per cent of corporate liabilities compared to only 11 per cent for bank loans.) Clearly Japan has a bank-based intermediation system where markets are much less important in funding the corporate sector. According to the Bank of Japan (2013), the fraction of financial assets held in banks has been on a downward trend throughout the past two decades, although this decline has slowed over recent years.

16.5.1 Regulation of Japanese banks

The regulatory environment under which Japanese banks operate has undergone substantial changes as a result of the 1998 crisis. Until the late 1990s, inspection and supervision of financial institutions, as well as the function of financial system planning, had been the responsibility of the Ministry of Finance. Traditionally, the Bank of Japan (the country's central bank) supervised the banking system and was instrumental in introducing various reforms known as the **'Big Bang'**, which effectively introduced the universal banking model. The deregulation that occurred between 1998 and 1999:

- allowed the use of financial holding companies;
- eliminated many barriers between banking and other financial service sectors;

Table 16.5 Financial assets of Japan by sectors 2015 and 2016 (billion yen)

Sectors	March 2015	March 2016	Annual growth (%)
Domestic sectors	7,026,341	7,141,767	1.6
Financial institutions	3,546,587	3,691,835	4.1
Domestic non-financial sector	3,479,754	3,449,932	−0.9
Non-financial corporations	1,085,407	1,092,207	0.6
General government	579,701	549,774	−5.2
Households (incl. sole proprietorships)	1,759,861	1,751,992	−0.4
Private non-profit institutions serving households	54,785	55,959	2.1
Overseas	589,434	573,617	−2.7

Source: Statistical Handbook of Japan (2017), p 46.

- liberalised stock brokerage fees;
- allowed banks to sell investment trust products.

As a result of these and other measures, financial institutions in Japan could offer a wide range of financial products and options to their customers. From April 1998, the Bank of Japan was given greater independence in relation to monetary policy and in June 1998, a new governmental agency called the Financial Supervisory Agency (which changed its name to the **Financial Services Agency** (FSA) in 2001) was established and given supervisory and inspection functions with respect to private-sector financial institutions. (Previously, both the Bank of Japan and Ministry of Finance had supervisory responsibilities.)

The FSA is responsible for the supervision and inspection of all private banks in Japan. The FSA monitors the financial soundness of banks, including the status and performance of their control systems for business activities. The main functions of the agency are:

- planning and policy making concerning the financial system;
- inspection and supervision of private-sector financial institutions including banks, securities companies, insurance companies and market participants including securities exchanges;
- establishment of rules for trading in securities markets;
- establishment of business accounting standards and others concerning corporate finance;
- supervision of certified public accountants and audit firms;
- participation in activities on financial issues of international organisations and bilateral and multilateral forums to develop internationally coordinated financial administration;
- surveillance of compliance of rules governing securities markets.

The FSA is responsible for dealing with failed financial institutions and general oversight of the soundness of private banks in the Japanese system. There is also a Deposit Insurance Corporation that protects depositors' funds in the event of a bank failure.

As discussed in Section 16.2, commercial banks in Japan are defined under the 1981 Banking Law. Although the FSA is the main supervisory authority for most financial institutions (with the exception of the Norinchukin Bank), other types of banks are defined under different legislation, as summarised in Table 16.6. More specifically, other types of financial institutions (including co-operative banks) are regulated by different specialised regulation (namely, the Shinkin Bank Law, the Co-operatives and Small and Medium Enterprises Law and the Norinchukin Bank Law).

16.5.2 Balance sheet features and performance

The Japanese economy has been stagnating since the late 1990s, when the country was hit by a deep economic and financial crisis (see Section 16.4.1). A mild recovery seemed to have started in the mid-2000s; however, the onset of the global financial crisis pushed Japan back into recession and deflation. Since then, the Japanese government has enacted various reforms to restore economic growth. The more recent of these reforms, a combination of monetary policy, fiscal stimulus and structural reforms, carried out by the Prime Minister Shinzo Abe, have earned the nickname of **'Abenomics'** and are considered the most aggressive policy moves in Japan's history. These reforms aim at restoring sustainable and growth seem to have been successful but not without risks.

Table 16.6 Regulation and supervision by bank type

Type of bank	*Central bank*	*Legal foundation*	*Supervisory authority*
Commercial banks	Bank of Japan (BoJ)	The 1981 Banking Law	Financial Services Agency
Shinkin banks	Shinkin Central Bank (SCB)	The 1951 Shinkin Bank Law (and 1981 revision)	Financial Services Agency
Credit co-operative banks (Shinkumi)	The Shinkumi Federation Bank (SFB)	The 1949 Small and Medium-Size Enterprise and Co-operative Act	Financial Services Agency
Labour banks	The Rokinren Bank (national federation of labour credit associations)	The 1953 Labour Bank Law	Financial Services Agency Ministry of Health, Labour and Welfare
Agricultural (JA), Fishery (JF) and Forestry (JForest) co-operatives	The Norinchukin Bank	The 1943 Norinchukin Bank Law	Ministry of Agriculture, Forestry and Fisheries of Japan

The balance sheet and performance features of the Japanese banking system have been severely affected by the recession in the economy as well as the financial sector crises. Between 1996 and the mid-2000s, bank lending portfolios declined by around 30 per cent, reflecting the lack of demand and the increasing number of bad loans that had to be written off. On average, however, the Japanese banking system has slowly been improving since the mid-2000s, although due to sluggish economic growth and loan demand profit levels remain low – Table 16.7 shows return-on-equity for the banking sector hovering at the 5 per cent level and this is low by international standards (see Figure 16.5). Yet, given the high fragmentation of the sector, bank performance differs significantly by bank segment. Several regional banks are afflicted by low core profitability and a relatively thin capital position, making them particularly vulnerable to slow growth, as illustrated earlier in Box 16.3 and emphasised by IMF (2016a) in their financial sector assessment evaluation.

Tables 16.8 and 16.9 illustrate the financial statements of Japanese banks in September 2017. Japanese banks hold large amounts of liquid assets as a share of both short-term liabilities (around 50 per cent) and total assets (cash and money due is about 20 per cent) (see Table 16.8). The high level of liquid assets held relates to the macroeconomic environment where loan demand is weak and the ageing demographics means that an increasing number of households do not borrow and hold sizeable portions of their retirement savings in bank deposits.

Japanese banks capital ratios for all types of banks have improved steadily over recent years as shown in Figure 16.6 and now the bank have capital levels similar to their Western counterparts. Concerns about the capital strength of some Japanese regional banks, however, are on-going and there is currently pressure on them to merge as well as boost their solvency.

Probably the most important factor influencing Japanese bank performance since the early 1990s has been the enormous levels of bad loans accumulated during the Japanese financial crisis. According to official figures from Japan's Financial Services Agency, the cumulative amount of losses by way of bad debts for all Japanese banks amounted to 100,263 billion

Table 16.7 Performance indicators of Japanese banking sector (2014–2016, Sept)

	2014	2015					2016 Sept				
	Total	City and Trust Banks	Regional banks	Shinkin banks	Others[1]	Total	City and Trust Banks	Reginonal banks	Shinkin banks	Others[1]	Total
Earnings and profitability											
Gross profit as percent of average assets (ROAA)[2]	0.4	0.5	0.4	0.3	0.2	0.4	0.5	0.4	. . .	0.2	0.4
Gross profit as percent of average equity capital (ROAE)[2]	5.4	6.7	5.2	3.9	3.4	5.2	7.3	5.2	. . .	3.5	5.6
Gross income as percent of average assets[2]	1.5	1.5	1.7	1.5	1.1	1.4	1.5	1.6	. . .	1.1	1.4
Net interest income as percent of gross income[2]	54.3	38.9	66.3	73.1	49.8	51.5	38.1	65.4	. . .	44.0	47.0
Non-interest income as percent of gross income[2]	32.8	45.9	28.4	21.1	17.4	33.9	44.7	29.9	. . .	22.4	36.3
Trading income as a percent of gross Income[2]	6.9	12.0	7.4	8.3	3.1	8.9	. . .	. . .	. . .	. . .	. . .
Non-interest expenses as percent of gross income[2]	56.4	53.9	68.5	74.3	41.9	57.3	52.2	70.7	. . .	41.5	55.0
Spread between reference loan and deposit rates	0.8	0.5	1.0	1.5	1.0	0.7	0.5	0.9	1.5	0.9	0.6

Table 16.7 Performance indicators of Japanese banking sector (2014–2016, Sept) (*continued*)

	2014	2015					2016 Sept				
	Total	City and Trust Banks	Regional banks	Shinkin banks	Others[1]	Total	City and Trust Banks	Reginonal banks	Shinkin banks	Others[1]	Total
Liquidity											
Loans as percent of deposits	68.1	64.7	73.2	49.9	. . .	67.9	64.1	73.6	49.5	. . .	67.9
Liquid Assets to Total Assets	26.9	. . .	. . .	. . .	. . .	27.2	. . .	. . .	. . .	. . .	27.1
Liquid Assets to Short-term Liabilities	48.1	. . .	. . .	. . .	. . .	49.1	. . .	. . .	. . .	. . .	48.2
Deposits as percent of assets (excl. interbank deposits)	69.2	. . .	. . .	. . .	. . .	68.8	. . .	. . .	. . .	. . .	68.5
Sensitivity to market risk											
Gross Asset Position in Financial Derivatives to Capital, percent	47.4	. . .	. . .	. . .	. . .	53.0	. . .	. . .	. . .	. . .	50.7
Gross Liability Position in Financial Derivatives to Capital, percent	48.6	. . .	. . .	. . .	. . .	50.2	. . .	. . .	. . .	. . .	45.6
Net open position in equities as a percentage of tier I capital[2]	34.4	50.8	30.5	8.5	6.6	30.6	48.9	29.9	8.8	6.3	29.9

Notes: 1 – including Japan Post Bank.

2 – data from Japanese Bankers Association and Shinkin Bank Research Institute.

Source: IMF (2016a), Appendix 3, p. 55.

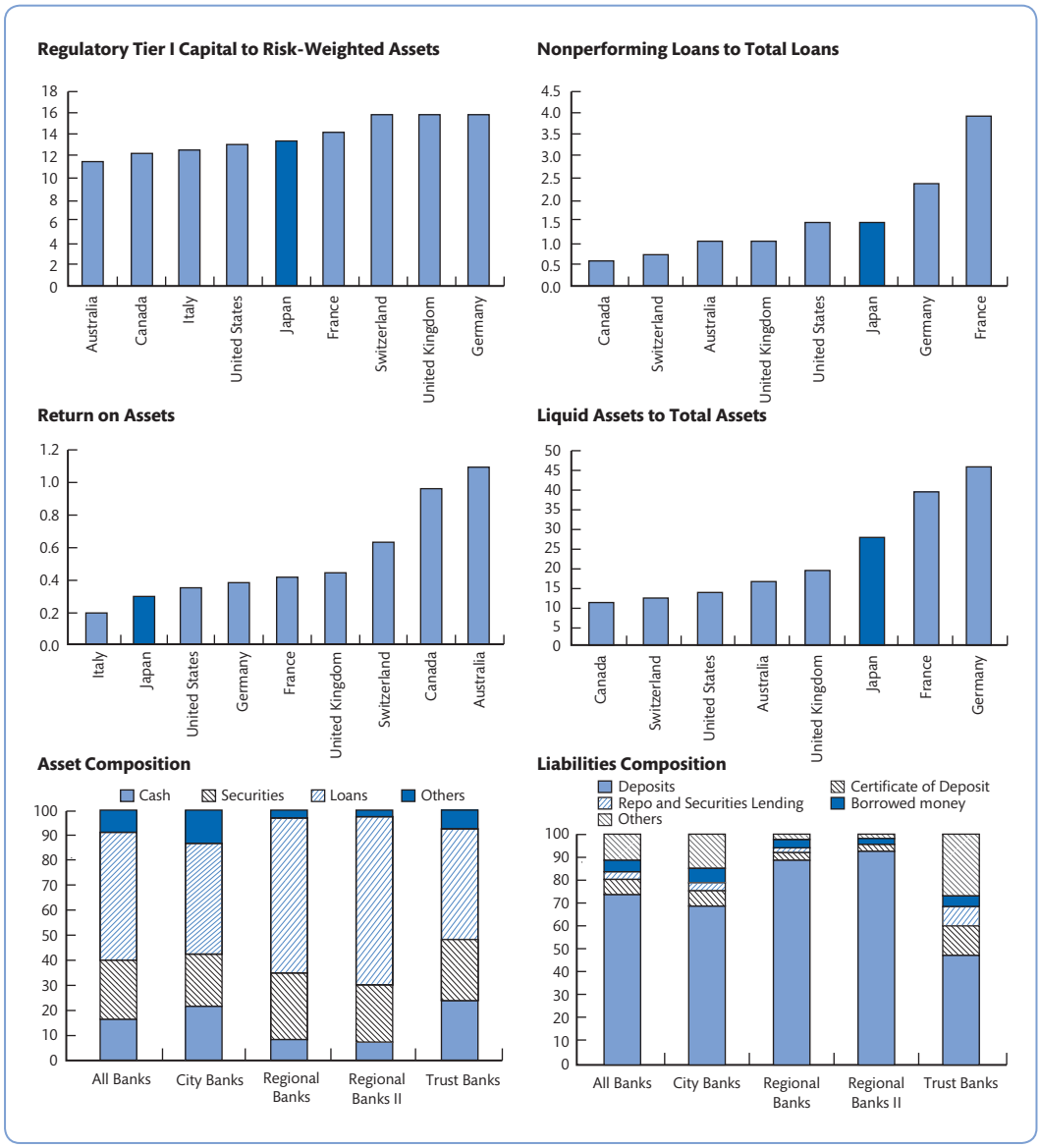


Figure 16.5 The performance of Japanese banks – some international comparisons

Source: IMF (2016a), Figure 4, p. 16.

yen by September 2008 (over $1 trillion in 2008 dollar terms). Following significant restructuring among the large banks and insurance companies (described earlier in Section 16.3), non-performing loans were reduced, and capital positions improved. The proportion of non-performing loans has fallen from 9.6 per cent of total gross loans to 2.4 per cent by late September 2008 and remained stable thereafter – provisioning has also fallen, reflecting this trend. The total losses from non-performing loans also decreased steadily, despite a brief increase in 2008–2010. As Figure 16.5 shows, by 2016 bad loan levels in Japan were relatively low compared with elsewhere (lower than in France and Germany).

Table 16.8 Balance sheet (September 2017, values in million yen)

	All banks	City banks	Regional banks
(a) Liabilities			
Deposits	775,045,576	396,040,438	256,123,996
Commercial papers	4,276,955	3,446,028	51,779
Trading liabilities	9,085,946	8,133,181	47,253
Borrowed money	13,734,870	2,181,053	35,245
Foreign exchanges	4,405,978	4,341,206	15,803
Short-term bonds payable	361,359	–	–
Bonds payable	12,352,096	9,825,762	289,598
Bonds with subscription rights to shares	167,555	–	142,277
Borrowed money from trust account	13,734,870	2,181,053	35,245
Other liabilities	15,434,507	11,367,459	1,756,999
Provisions and reserves	186,255,942	119,742,178	37,436,078
Total liabilities	1,034,855,654	557,258,358	295,934,273
(b) Equity capital			
Capital stock	10,279,225	5,236,974	2,603,765
Retained earnings	24,231,417	9,173,904	10,539,520
Shareholders' equity	45,275,257	21,973,763	14,525,903
Total liabilities and net assets	1,091,321,453	584,805,282	314,318,902
(c) Assets			
Cash and due from banks	223,206,712	152,778,484	34,393,306
Call loans	4,765,504	2,432,949	1,896,333
Receivables under resale agreements	1,556,971	1,466,662	14,999
Receivables under securities borrowing transactions	9,470,029	8,518,647	–
Trading assets	12,889,091	10,990,827	175,154
Trading account securities	64,859	9,739	41,888
Securities	215,301,003	100,772,393	73,962,941
Loans and bills discounted	554,490,608	253,216,582	196,416,935
Foreign exchanges	7,033,125	6,407,258	364,528
Other assets	23,849,052	16,908,113	2,749,643
Property, plant and equipment (tangible fixed assets)	6,617,011	2,768,201	2,611,863
Intangible fixed assets	1,991,077	1,422,947	287,285
Total assets	1,091,321,453	584,805,282	314,318,902

Source: Data from the Japanese Bankers Association, **www.zenginkyo.or.jp/en/stats/**.

Table 16.9 Income statement (September 2017, values in million yen)

	All banks	City banks	Regional banks
Ordinary income	8,361,349	4,428,179	2,306,634
Interest income	5,084,902	2,547,073	1,600,762
Fees and commissions	1,517,479	835,886	384,041
Trading income	117,871	93,626	1,719
Other ordinary income	545,517	357,769	91,688
Other income	961,390	583,667	228,070
Ordinary expenses	6,024,552	3,161,445	1,641,585
Interest expenses	1,445,122	1,053,839	129,809
Fees and commissions payments	589,200	266,734	171,428
Other ordinary expenses	208,383	66,757	95,692
General and administrative expenses	3,490,960	1,610,887	1,180,171
Other expenses	289,740	162,423	64,348
Ordinary profit	2,336,736	1,266,731	665,015
Extraordinary income	77,432	5,520	10,125
Extraordinary loss	45,039	19,825	10,725
Profit before income taxes	2,369,098	1,252,423	664,401
Total income taxes	571,424	275,590	182,636
Profit	1,797,615	976,832	481,730

Source: Data from the Japanese Bankers Association, **www.zenginkyo.or.jp/en/stats/**.

Turning to figures from the income statements of Japanese banks (see Table 16.9), net interest margins (NIM) have been low, given the low (and sometimes negative) interest rate domestic environment that has contributed to the overall level of bank performance, which remains below international peers. While NIMs have been decreasing steadily for several years in many advanced economies, the pressure on Japanese banks seems higher as they reported average NIMs of just over 1 per cent between 2013 and 2017, compared to 3.4 per cent for US banks and 2.4 per cent for UK banks.

To summarise, since the late 1990s, substantial progress has been made to strengthen and stabilise the Japanese banking system. The restructuring has resulted in a healthier banking sector, which withstood the output contraction deriving from the global financial crisis of 2007–2009. Capital positions have improved and NPLs were reduced. The Japanese banking sector is now in better health than it has been for the nearly three decades, although some vulnerabilities remain due to overall weak performance of the macro-economy. The exposure of the banking system to substantial government debt and credit quality of the regional banks remain a concern.

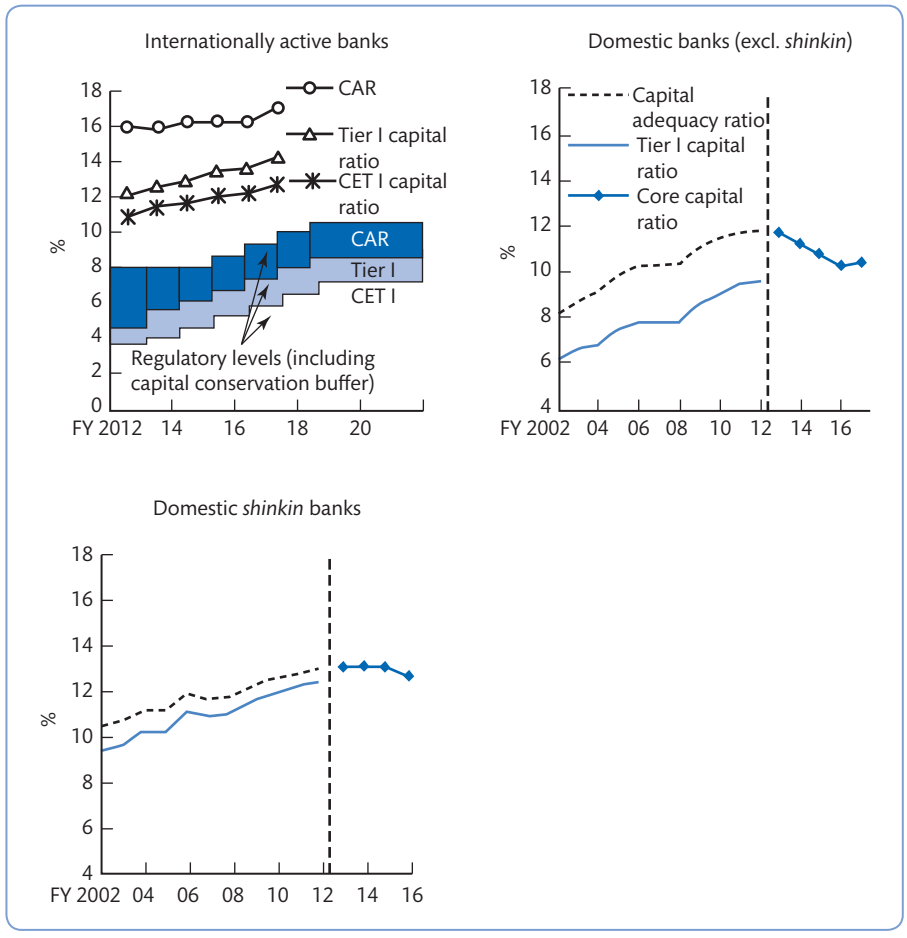


Figure 16.6 Capitalisation of Japanese banks

Notes: CAR indicates total capital adequacy ratio. Classifications of internationally active banks and domestic banks are as at each time point for Basel III's regulatory ratios, and are as at end-fiscal 2013 for regulatory ratios before Basel III. The data are calculated on a consolidated basis. The latest data in the left-hand and middle charts are at end-September 2017, and the latest data in the right-hand chart are as at end-March 2017. The data take the phase-in arrangements into consideration.

Source: Bank of Japan (2018), Chart 4.4.1, p. 49.

16.6 Conclusion

The Japanese banking sector has endured dramatic changes over the last 20 years, experiencing rapid growth during the 1980s and the mid-1990s, followed by a collapse between 1997 and 1998 and an ensuing long restructuring period thereafter, returning to respectable levels of profitability in the mid-2000s. The improvement in performance was short-lived and

Japanese banks' profitability declined in the mid-2000s, and remained flat over 2012–2017 with ROE hovering around 4 per cent to 5 per cent (mainly as a consequence of a slow growing economy, very low margins on corporate and other lending business and the limited demand for traditional lending services from an ageing population). There has been substantial consolidation between the largest banks with five major city banks and the Japan Post Bank vying for market share in a congested market that is putting pressure on all bank's margins and profits. Capital levels have improved and the system is well capitalised by international standards, yet there remain concerns about the longer-term viability of some regional banks, which appear to be on the verge of a consolidation trend. Unlike their US and European counterparts, Japanese banking, however, was much less affected by the 2007–2009 global financial crisis. Japanese banks were not heavily engaged in securitisation activities and did not invest in sub-prime and other securitised assets; as a result no Japanese bank failed or needed any form of direct support as a result of the global financial crisis. The main threat to the banking system is the state of the domestic economy, which still battles strong deflationary pressures.

Key terms

Abenomics
'Big Bang'
Bill and Cheque Clearing Systems (BCCSs) BOJ-NET (Bank of Japan Financial Network System) Funds Transfer System
City banks
'Convoy system'
Co-operative banks
Deflation
Development banks
Financial Services Agency
Foreign Exchange Yen Clearing System
Japan Post Bank
Long-term credit banks
Private deposit-taking financial institutions
Private non deposit-taking financial institutions
Public financial institutions
Recapitalisation
Regional banks
Second-tier regional banks
Shinkin banks
Trust banks
Zengin Data Telecommunication System

Key reading

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REVISION QUESTIONS AND PROBLEMS

16.1 What are the main features of the different types of financial institutions operating in Japan?

16.2 To what extent has the disintermediation process impacted the Japanese banking and financial sectors?

16.3 How is the payment system organised for clearing and settling interbank payments in Japan?

16.4 What features explain the low levels of profitability in Japanese banking?

16.5 Compare the impact of the 1998–2009 crisis to the 2007–2009 global financial crisis on Japanese banks?

16.6 Discuss why Japanese banks were less affected by the 2007–2009 global financial crises than US and UK banks? Can the latter learn any lessons from Japanese bankers?

16.7 Why are regional banks under pressure to reorganise and improve their efficiency?

16.8 Discuss Japan's economic prospects and how these are likely to impact the performance of Japanese banks.

Chapter 17

Banking in emerging markets

Learning objectives

- To understand how financial sector development aids economic growth
- To analyse the evolution of the finance and growth literature
- To provide an overview of the main structural features of banking systems in emerging markets
- To understand the main changes that have occurred in emerging banking markets in recent years
- To analyse the role of state ownership and foreign ownership in banking markets
- To understand how financial sector liberalisation and other forces have impacted banking sector consolidation and foreign entry in emerging markets

17.1 Introduction

Global banking markets have experienced major developments over the last two decades, in-line with a transformation of the macroeconomic features of many countries. The fall of the Berlin Wall and decline of the communist states of Central and Eastern Europe from 1991 onwards gave major impetus for reform, as did the gradual acceptance of market forces and liberalisation in many Asian and Latin American countries. State banking has, in many cases, been replaced with privately owned banks, and foreign banks now play a key role in many systems. Heightened competition and consolidation trends have also been commonplace. Where emerging economies' banks once lagged their counterparts from developed countries, they nowadays increasingly rival them across a broad array of financial services, although typically the former first build expertise in consumer and SME (small and medium-sized enterprise) financial services, developing more sophisticated commercial and investment banking services later. Some developing and transition economies have had to actively attract foreign banks to inject capital in their banking systems because of scarce domestic resources – as in Central and Eastern Europe after the collapse of Communism and in South East Asia after the banking crises of 1998–1999 (when the Malaysian, Indonesian and Thailand banking

systems collapsed). Other economies have been more cautious. China insists on foreign banks having domestic partners – it limits single foreign ownership of its banks to 20 per cent and total foreign ownership to 25 per cent. India has a 10 per cent limit for individual investors, although total foreign ownership is not to exceed 74 per cent. Other countries also have limits on foreign ownership that can be increased after Ministerial approval (such as Vietnam).

This chapter aims to address some of the important issues impacting the development of emerging banking markets. Deregulation and the general liberalisation of financial services at the national level and the opening up of many domestic sectors to foreign banks have all contributed to transforming economies as well as boosting competition and innovation (both financial and technological). Against the background of these developments, Section 17.2 examines the difference between bank-based and market-based financial systems and outlines different measures that can be used to compare financial sectors, with particular emphasis on emerging markets. The following Section 17.3 looks at the relationship between finance and growth, illustrating how a sound and efficient financial system can aid economic development – although it can also bring risks. In Section 17.4 we look at the macroeconomic outlook for emerging markets and highlight how following the 2007–2009 global financial crisis they have (typically) performed less well, although longer-term growth prospects still remain above their developed country counterparts. Section 17.5 investigates the main forces of change and how these have influenced the structure of the banking industries in terms of deregulation and the liberalisation process, the role of the state, M&As and the entry of foreign banks. Section 17.6 gives the conclusions.

17.2 Benchmarking financial development

Before we examine how banks and financial markets contribute to economic development it is important to outline the broad characteristics of financial systems, including the relative importance of financial institutions and markets. Joseph Schumpeter, the famous Austrian American economist, was the first to recognise that financial sector development contributed to economic growth (although he held the view that technological innovation was more important in the development process). From the early 1980s onwards there was also much debate as to what type of financial system best served growth – was it a financial system where banks dominated or one where capital markets/stock markets were more important? This debate, first identified by Tad Rybczynski (1983), led to the discussion about **bank-based** and **market-based financial systems** (see also Section 18.2). From the 1960s through to the mid-1980s the German and Japanese economies (that had large banking sectors but small stock markets) had performed better than their US and UK counterparts (who typically had relatively much bigger stock markets). Also the former had universal style banking, where banks owned substantial stakes in non-financial firms, both directly (Germany) or indirectly via a web of cross-holdings (Japan). It looked to some economists that the bank-based universal model was the type of financial system that best aided growth. This view, however, changed from the mid-to-late 1980s onwards as the political economy of developed economies emphasised pro-market reforms and widespread liberalisation. Obstacles to trade in goods and services were also dismantled, aiding international capital flows. Both the International Monetary Fund (whose brief primarily focuses on alleviating balance of payments

problems and general macroeconomic crises) and the World Bank (which aims to alleviate poverty and promote economic development) also increasingly emphasised deregulation and liberalisation in policy actions aimed at broad-based market reforms.

The debate as to whether a bank-based or market-based system best serves economic development ran its course – ultimately a consensus emerged that concluded that it did not seem to matter whether an economy had a large banking sector or capital market, what was most important was that there was a sizeable, efficient and competitive financial system overall. Key policy organisations like the World Bank have made major efforts to measure and classify the importance of different attributes of banking and financial market activities in all the world's economies. Table 17.1 illustrates a classification from the World Bank (2012), where they identify potential indicators to help benchmark the features of different financial systems. Note that the indicators for financial institutions relate mainly to banks and other deposit-taking institutions. The Čihák *et al.* (2012a) study provides '4 × 2 framework for financial sector benchmarking', which aims to summarise the characteristics of financial systems along four dimensions:

1 *Depth* – financial depth relates to the size of the banking sector or/and financial markets. Looking at the indicators for financial institutions, they relate to variables such as (i) private sector credit to GDP (this is mainly bank lending to GDP); (ii) financial institutions' assets to GDP (this relates to the sum of assets of banks, insurance companies, pension companies and other non-bank financial firms over GDP); (iii) M2/GDP (where M2 is a measure of money supply equalling the sum of cash and current account deposits plus savings account deposits); and (iv) gross value added of the financial sector to GDP (defined by how much financial institutions contribute to the economy overall – output minus intermediate consumption). The indicators for financial markets include measures of the size of the stock market (capitalisation – the amount of shares issued multiplied by the price) and debt markets, both private (bonds issued by companies) and public (bonds issued by governments). The stock traded/GDP indicator links the volume of shares traded to the size of the economy (GDP). Economists often talk about **financial deepening** when the financial sector overall gets bigger in relation to the overall size of the economy.

2 *Access* – this relates to how available financial services are to the population or the corporate sector. The proposed benchmark indicators for financial institutions relate to the proportion of the population that have access to banking services. These indicators include, for example, commercial bank accounts per 100,000 adults and the percentage of individuals with bank accounts. Other indicators look at the proportion of firms with bank credit (for all firms and/or just small firms). Financial market indicators of access relate to the availability of market-based finance for companies other than for the largest firms. In addition, indicators of access also include measures of stock market capitalisation outside the top ten firms; the value of stock/share trading outside the largest ten firms; new corporate bond issuance and the ratio of private to public debt (this latter indicator shows the relative importance of private company bond issuance to government bond issuance). Government bond yields are included as a market access indicator because the lower the rate the easier it is for a government to borrow and typically bank and company bond yields tend to follow government debt yields very closely (albeit higher) – so a low government debt yield implies easier access of financial and other private sector firms to external bond finance.

Table 17.1 The World Bank's '4 × 2 matrix of financial system characteristics'

	Financial institutions	Financial markets
Depth	• Private sector credit to GDP • Financial institutions' assets to GDP • M2 to GDP • Deposits to GDP • Gross value-added of the financial sector to GDP	• Stock market capitalisation plus outstanding domestic private debt securities to GDP • Private debt securities to GDP • Public debt securities to GDP • International debt securities to GDP • Stock market capitalisation to GDP • Stock traded to GDP
Access	• Accounts per thousand adults (commercial banks) • Branches per 100,000 adults (commercial banks) • % of people with a bank account • % of firms with line of credit (all firms) • % of firms with line of credit (small firms)	• % of market capitalisation outside of top 10 largest companies • % of value traded outside of top 10 traded companies • Government bond yields (3 months and 10 years) • Domestic securities to total debt securities • Private securities to total debt securities • New corporate bond issuance to GDP
Efficiency	• Net interest margin • Non-interest income to total income • Overhead costs (% of total assets) • Profitability (ROA; ROE) • Concentration indicators (HHI) • Competition indicators (Boone indicator; H-Statistics)	• Turnover ratio (turnover/capitalisation) for stock market • Price synchronicity • Private information trading • Price impact • Liquidity/transaction costs • Quoted bid/ask spread for government bonds • Turnover of bonds (private, public) on securities exchange • Settlement efficiency
Stability	• Z-score (or distance to default) • Capital adequacy ratios • Asset quality ratios • Liquidity ratios • Other ratios (net foreign position to capital, etc.)	• Volatility (standard deviation/average) of stock price index, sovereign bond index • Skewness of the index • Vulnerability to earning manipulation • Price to earnings (P/E) ratio • Duration • Short-term bonds to total bonds (domestic, international) • Correlation with major bond returns (US, EU)

Source: Adapted from Čihák *et al.* (2012a), Figure 6.

3 *Efficiency* – these benchmark indicators relate to a range of factors, including (i) net interest margin (interest *income* minus interest costs divided by earning assets); (ii) lending-deposit spreads (the difference between lending rates and deposit rates); and (iii) the proportion of non-interest income to total income. In the case of net interest margins and loan-deposit rate spreads, the smaller these are, the more competitive (and therefore efficient) the system is considered to be. The proportion of non-interest income

to total income can also be considered an indicator of efficiency, as banks can generate non-interest income derived from the cross-selling of financial services. Other efficiency indicators relate to profitability measures (ROA and ROE) and various competition and concentration measures. In theory, greater competition should be linked to more efficiency (although there are limitations) (see Chapter 20 for an explanation of the various competition and concentration measures and for a discussion of the relationship between competition and efficiency in banking). However, one has to be careful with profits – high profits may reflect efficiency (revenues are much higher than costs), but so can low profits (low revenues and low costs). In this context, one would need to know about bank pricing behaviour to accurately interpret the profits measures as efficiency indicators. Overhead costs over total assets is a traditional efficiency indicator (overhead costs includes staff, rent and other non interest costs); this latter is similar to the better known cost to income ratio – a measure widely used by the industry to gauge efficiency. The financial market indicators of efficiency relate to the volume of trading activity, namely turnover. The greater the volume of shares traded the more efficient the trading process. Other suggested indicators relate to pricing including bid–ask spreads, transaction costs and the speed with which transactions are processed (settlement efficiency). They are standard financial market efficiency indicators.

4 *Stability* – these indicators relate to bank capital and liquidity as well as asset quality. Lower capital and liquidity imply greater fragility. The Z-score, a distance to default measure, reflects the extent to which a bank's profit and capital levels can withstand volatile profitability (see Section 20.5.1.1). The higher the capital strength and profits the more stable the bank – so higher Z-scores mean greater stability. These can be calculated for the whole banking system by simply calculating the Z-score for individual banks and then calculate the weighted average by bank size (usually assets). Indicators of stability for financial markets relate to various volatility measures (the more volatile, the less stable), as well as price to earnings (P/E) and price to dividend (duration) measures. These measures are interpreted as follows: more volatile P/E and price/dividend ratios suggest greater fragility.

Table 17.2 highlights a selection of the financial institution indicators reported in the Čihák et al. (2012) study, showing countries with the highest and lowest measures for selected indicators. It is interesting to note that the economies with the deepest financial systems (using the private credit to GDP indicator) include the offshore financial centre of San Marino (a microstate surrounded by Italy in the north-east of the country) as well as Cyprus, Ireland, UK and Spain (countries that have all experienced major banking sector problems since 2008). This seems to indicate that having too big a banking system therefore can result in problems. On the other hand, some of the world's poorest economies – Chad and Myanmar – also have the least deep financial sectors.

Although at a first glance the different World Bank indicators may seem inconsistent, the study does show that the indicators for financial institution (and financial market) development tend to be highly correlated across all countries. However, advanced economies still dominate in terms of the size of financial sectors. This is illustrated in Figure 17.1, which shows a map of the world with countries drawn according to the size of their financial sectors – much of the developing world seems to shrink.

Table 17.2 Financial institution characteristics by country, 2008–2010 average

	Indicator	Lowest	Highest	Others
Depth	Private sector credit/GDP	Myanmar (3.3%) Chad (3.3%)	San Marino (361.7%) Cyprus (265.6%) Ireland (228.2%) UK (205.3%) Spain (203.7%)	Brazil (45.6%) China (111.1%) India (44.1%) Russia (41.3%) Germany (109.1%) Japan (103.7%) US (60%)
Access	Accounts per thousand adults (at commercial banks)	Central African Republic (2.4) Republic of Congo (16.1)	Japan (7,185.2) South Korea (4,374) Greece (3,799.7)	India (747.3) Singapore (2070.3) Ukraine (3,176.4)
Efficiency	Lending-deposit spread	Iran (0.1%) Netherlands (0.2%) Belarus (0.4%)	Democratic Republic of the Congo (41.5%) Madagascar (35.2%) Brazil (34.0%)	China (3.1%) Russia (6.0%) Japan (1.2%)
Stability	Z-score	Guinea (2.8) Latvia (3.0) Myanmar (3.2) Ireland (3.7) Lithuania (4.3) Kazakhstan (4.3)	Libya (77.3) Bahrain (48.6) Jordan (48.2) Namibia (41.1) Croatia (39.8)	Brazil (15.9) China (34.8) India (27.8) Russia (18.1) Germany (10.5) Japan (32.9) US (24)

Source: Constructed from Čihák *et al.* (2012a), Appendix 2.

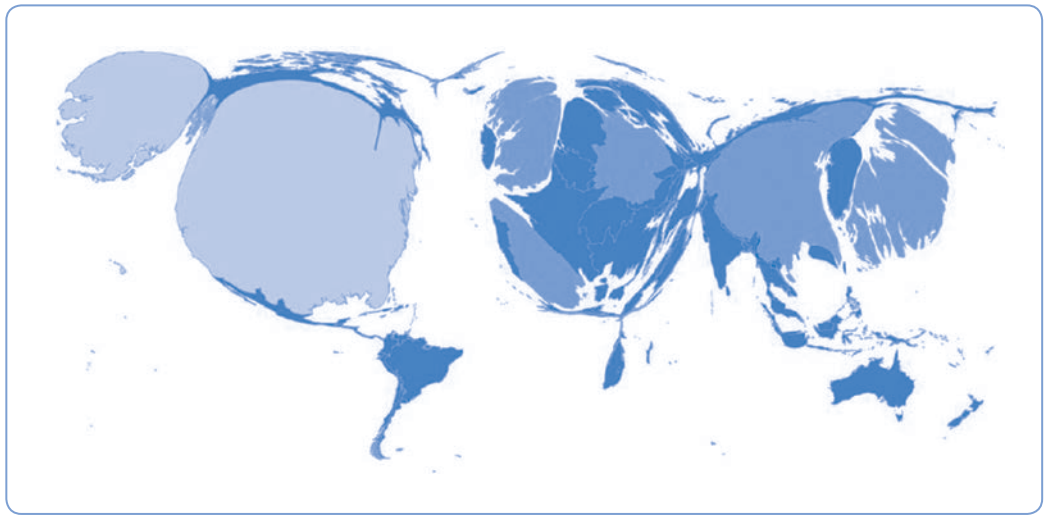


Figure 17.1 The uneven sizes of financial systems

Note: The map is for illustration purposes only. Country sizes are adjusted to reflect the volume of financial sector assets in the jurisdiction, measured in US dollars at the end of 2010.

Source: Čihák *et al.* (2012a), Figure 6, p. 31.

17.3 Finance and growth

Since the early work looking at the role of bank-based and market-based systems, economists have long been interested in how financial systems influence economic development. Seminal work by King and Levine (1993) investigated how features of financial sectors in 80 countries influenced development. Looking at the 30-year time period between 1960 and 1989, they found that growing financial systems had a strong positive influence on real GDP per capita (and also on the rate of physical capital accumulation). This key finding then spawned an array of (mainly) empirical studies that sought to explain how financial systems drive growth and other features of the development process.

17.3.1 How does finance boost growth?

Following on from the finding that financial systems spur economic development, research emphasis focused on the route through which this took place. The literature finds that financial sector development helps boost firm productivity and improves the efficiency with which resources are allocated. Companies with wider access to finance – either through the banking sector or via financial markets – appear to become more efficient and productive, and it is through this process that economies grow. There is also evidence that firms become more innovative and entrepreneurial when the financial system develops – presumably they have to become more ingenious in formulating business plans in order to raise external finance and this prompts the innovation/entrepreneurial process. Firms can use external finance to make acquisitions and improve the scale of operations, and this can also feed through into efficiency and productivity gains. In addition to promoting growth, there is also evidence that financial sector development reduces its volatility. Having a broader-based financial system makes the economy less susceptible to financing shocks (if a country has a well-established banking system and stock market, then reduced financing by one part of the system maybe counteracted with increased financing from the other part). There is also some evidence that a broader-based and well-developed financial system can aid policy formulation. According to the IMF (2012b), developed financial systems can promote the effectiveness of domestic monetary policy, create a wider base for fiscal policy and also can allow for a greater choice of exchange rate regimes.

While it is widely found that financial sector development positively impacts economic growth, the influence has been found to be non-linear; namely, the most developed economies and biggest companies benefit least. Financial sector development appears to have its biggest impact in the least developed countries and for smaller firms. Five main arguments have been proposed to explain this phenomenon:

1. *Catch-up to best practice productivity and efficiency* – developing economies, characterised by many small firms, may be significantly less productive and efficient than developed economies. As developing economies have further to go in terms of improving firm and economic performance, developments in the financial sector (such as improved access to bank credit and services and to the stock market for equity and other external finance) has a greater impact on firm investment and growth.
2. *Traditional measures of financial sector development are limited* – measures of financial sector development, such as bank credit to GDP, bank assets to GDP and stock market capitalisation to GDP (as well as the other measures shown in Table 17.1) are possibly too

basic to pick up the subtleties of financial sector development. This may be increasingly an issue with the emergence of the shadow banking sector, namely, financial institutions (hedge funds, private equity firms, investment companies) that undertake banking style activities – like buying and selling securitised assets – but are not regulated like banks and whose activities are not typically recorded regulatory organisations (see Chapter 18 for a discussion of shadow banking). Estimates of the size of the shadow banking industry vary: in the US in 2013 the estimated size of the shadow banking industry was about 50 per cent of the official banking sector assets, although prior to the crises of 2008 it was 120 per cent of banking sector assets (FSB, 2012a). By 2018, non-bank financial institutions controlled around 48 per cent of global financial assets and Europe had the largest shadow banking sector. Shadow banking has grown more rapidly in emerging markets compared to advanced economies in recent years, particularly in China (see the FSB's 'Global monitoring report on non-bank financial intermediation', 2020). Typically, measures of financial sector development do not pick up shadow banking activity and its subtle effects; this may result in the role of finance and its impact being understated in developed economies. However, it could also be argued that if one finds little influence of narrow definitions of financial sector development on growth, then the influence is going to be found to be weaker if broader measures are chosen.

3 *Finance to the corporate sector has a much bigger impact on growth compared to household finance* – there is strong evidence that the route through which finance impacts growth is via the corporate sector, and small to medium-sized firms in particular. Typically, lending to households – particularly residential mortgage lending – has been the major component of both the level and growth of commercial banks' credit portfolios in advanced economies. With a preference for retail/household financial services, this has a muted impact on economic growth compared to corporate lending.

4 *Developed financial systems extract talented employees that could be more productive working in other sectors* – as financial sectors become more developed, they tend to attract talented employees with high pay, for example in investment banking. The argument goes that this talented workforce would be better employed in other sectors, as it would yield greater productivity for the economy overall if they worked elsewhere. Here the focus is on the banking sector recruiting engineers, physicists, mathematicians and other scientists to develop increasingly complex products and systems that have little, or even negative, impact on economic performance. In other words, these skilled individuals would be more productively employed in other sectors. Recent research points to the 'absorption of talent into finance', and claims that as the banking and financial sectors grow, often following deregulation policies, the demand for skilled labour increases, thus diverting labour away from real sectors and therefore leading to overall productivity decline, particularly in those industries that are more reliant on a skilled workforce (Kneer, 2013).

5 *Exploitation of safety-net subsidies* – there is an incentive, as banks become larger, to seek to exploit safety-net subsidies (deposit insurance, lender of last resort facilities, too-big-to-fail) that provide protection to banks when they get into financial difficulties. Put simply, the senior managers of a very big (too-big-to fail) bank may decide to take on excessive risks to boost profits (and their bonuses) if they believe the government will bail them out if things go bad. They may also be reassured that depositors will not be too worried about the excessive risk taking as most have deposit insurance. In general, the incentives to grow and take on too much risk are exacerbated by safety-net benefits.

Rapid financial sector development and excessive risk taking is likely to lead to problems that ultimately reduce growth.

Finally, the mechanism through which financial sector development aids economic growth also makes economies more susceptible to shocks and financial fragilities. More open financial markets have greater capital flows that can exacerbate volatility in domestic capital markets. A fast-growing banking sector can result in excessive risk taking that may feed through into solvency and liquidity problems. In sum, recent evidence seems to point to the fact that the more developed the financial system, the greater the chance of having banking or financial sector crises.

The evolution of the aforementioned finance and growth literature is summarised in Table 17.3 and a practical example of the finance and growth link is presented in estimates from Oliver Wyman (2011) reported in Figure 17.2. A detailed review of this literature can be found in Beck (2012b).

Table 17.3 Finance and growth: a review of the literature

A. Financial development boosts economic growth	
• King and Levine (1993)	Seminal empirical study that sought to investigate the view of Joseph Schumpeter that financial sector development aided economic growth. Examining 80 countries from 1960 to 1989, the authors found (using a variety of indicators) that the level of financial system development was strongly associated with real per capita GDP growth, the rate of physical capital accumulation and improvements in the efficiency with which economies employ physical capital. The study also found that current financial sector development boosts future economic growth.
B. How? Finance drives growth by positively impacting the productivity, resource allocation and innovative nature of firms	
• Claessens and Laeven (2003) • Demirgüç-Kunt *et al*. (2006)	Financial sector development aids the efficiency of firms in choosing a better mix (more efficient and productive) assets and better organisational forms (such as limited liability and publicly listed companies).
• Beck *et al*. (2006) • Beck *et al*. (2008)	A more developed financial system characterised by a greater share of bank assets, or bank credit to GDP, or a larger stock market capitalisation to GDP, has a bigger impact on small and medium-sized than for large companies.
• Rajan and Zingales (1998) • Beck *et al*. (2006) • Beck *et al*. (2008)	A more developed financial sector enables existing firms to take advantage of various growth and investment opportunities, and to achieve larger (more optimal) scale.
• Beck *et al*. (2000)	A more developed financial sector has a bigger impact on economic growth by boosting productivity growth and the allocation of resources (optimally allocating land, labour and capital) than through pure capital accumulation (developing physical infrastructure).
• Klapper *et al*. (2006) • Aghion *et al*. (2007) • Ayyagari *et al*. (2011)	Greater availability of external finance is positively linked to entrepreneurship, greater firm entry and more innovation.
C. Financial development also reduces the volatility of economic growth and increases the effectiveness of policy	
• Aghion *et al*. (2010)	A developed financial system can reduce liquidity constraints on firms and increase long-term investment, ultimately reducing volatility of investment and growth.

Table 17.3 continued

• Aghion *et al*. (2009)	Financial sector development reduces the negative impact that exchange rate volatility can have on firm liquidity and therefore on their investment capacity.
• International Monetary Fund (2012d)	A more developed financial system can increase the effectiveness of domestic monetary policy, provide a broader base for fiscal policy and can allow for a bigger choice of exchange rate regimes.
D. But – the impact of financial sector development on economic growth is non-linear – developed economies and the largest companies benefit least	
• Rioja and Valev (2004a, 2004b) • Aghion *et al*. (2005)	The impact of financial sector development on economic growth is strongest among middle-income countries.
• Arcand *et al*. (2012)	Finance has a weaker impact on growth as countries grow richer.
E. Five reasons why developed economies and large firms benefit least from financial sector development	
1 Catch-up is faster the further economies are from best practice Aghion *et al*. (2005) 2 Traditional measures of financial sector development are too simple Bertay *et al.* (2013) 3 Finance to the corporate sector boosts growth more than household finance (the former is more prevalent in developed economies) Beck *et al.* (2012) 4 Developed financial systems extract talent that has more productive uses elsewhere in the economy Philippon (2010); Kneer (2013) 5 Exploitation of safety-net subsidies Carbó *et al*. (2013)	Financial sector development may facilitate catch-up to more efficient levels of productivity, but provides little impetus for growth to those countries already producing at the most productive level. Traditional measures of intermediation are too limited to pick up the subtle impact of non-intermediated finance (shadow banking, other capital markets activity) that tend to be more important in more developed economies. Financial development/deepening in emerging markets mainly relates to greater access to credit and finance for the corporate sector and (up until recently at least) less to the consumer/household sector. This may explain why developed economies benefit less from financial sector development. Financial systems may grow too big in relation to the real economy extracting too much young talent and other resources that become increasingly less productive. Or to put simply, mathematicians, engineers and other scientists employed in the financial sector are less productive (in economic growth terms) than if employed in the real sector. As economies develop, financial systems eventually start to grow excessively as banks seek to exploit various so-called safety-net subsidies (deposit insurance, lender of last resort facilities, too-big-to-fail subsidies). As banks grow faster, they take on excessive risk believing that regulators and the taxpayer will bail them out if they fail. This moral hazard problem creates incentives for senior managers to take on excessive risk to boost returns (from which they benefit in terms of bigger pay and bonuses) whereas the downside is somewhat limited (although it can end in executive job loss). Incentives to grow and take on too much risk are exacerbated by safety-net benefits. Rapid financial sector development and excessive risk taking are likely to lead to problems that ultimately reduce growth.
F. Mechanisms through which finance promotes economic growth also makes the economy susceptible to shocks and fragility	
• Laeven and Valencia (2008) • Reinhart and Rogoff (2011)	The impact of systemic banking crises can be large reaching over 50 per cent of GDP in various cases in fiscal costs and over 100 per cent in output loss. It has been shown that in these cases, industries that depend more on external finance are hurt disproportionately more, and this effect is stronger in countries with developed financial systems. Banking sector crises usually precede a broader sovereign debt crisis.

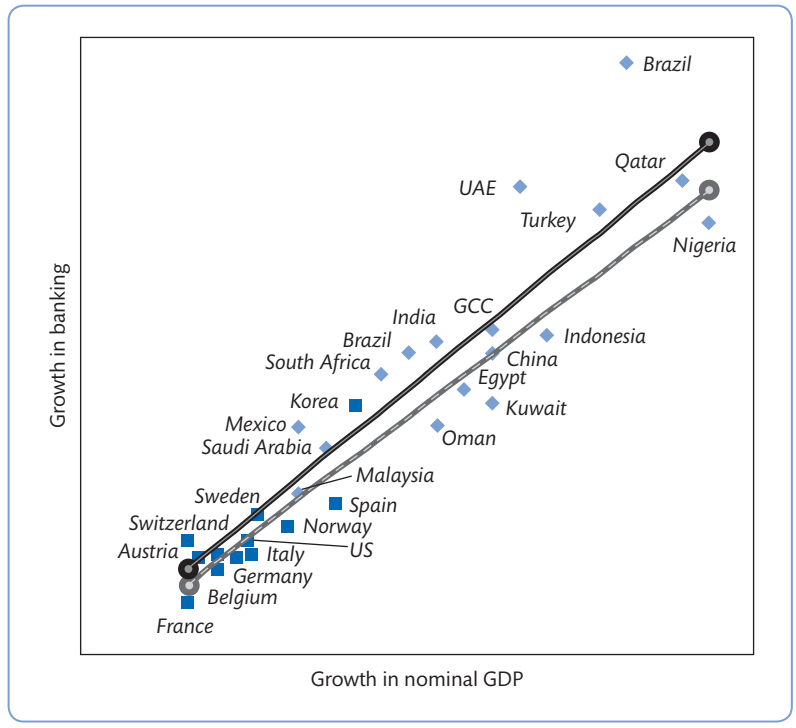


Figure 17.2 Banking and economic growth

Source: Oliver Wyman (2011), Exhibit 4, p. 4.

17.4 The macroeconomic outlook

Before we describe the macroeconomic outlook of emerging economies, it is important, in this context, to provide some terminology. The term **emerging market** was originally coined by the International Finance Corporation (IFC) to describe a fairly narrow list of middle- to higher-income economies among the developing countries, with stock markets in which foreigners could buy securities.[1] The term's meaning has since been expanded to include more or less all developing countries. **Developing countries** are those with a gross national income (GNI) per capita of $12,535 or less. As per 2019, the World Bank classifies economies as low income (GNI $1,035 or less), lower-middle income (GNI $1,036–4,045), upper-middle income (GNI $4,046–$12,535) and high income (GNI $12,536 or more). Low-income and middle-income economies are sometimes referred to as developing countries.[2] The label '**transition economies**' is also sometimes used to describe former communist countries that have been transforming their planned economies to market economies. As a result, and for the purpose of this chapter, transition countries are considered emerging economies. In other words, the label 'emerging economies' encompasses all countries that are not included in the developed world.

[1] The International Finance Corporation (IFC) is a member of the World Bank Group and is headquartered in Washington, DC. The IFC's aim is to promote sustainable private sector investment in developing countries as a way to reduce poverty and improve people's lives.

[2] At the start of 2014, the World Bank had 188 member countries and also identified other economies with populations of more than 30,000 (another 26, making 214 countries/economies in the world in total).

Table 17.4 shows the geographical composition of countries that are included in the above definition of 'emerging and transition economies' and Table 17.5 classifies them according to income. From the number of countries in Tables 17.4 and 17.5, it is apparent that it would be impossible to describe in detail the banking sector and associated issues of each country. For this reason, we will briefly analyse the major emerging markets regions.

The performance of emerging economies has varied substantially since the mid-1990s, and although there is big variation in growth prospects from country to country, some clear pictures emerge. First, virtually all emerging economies grew faster than advanced

Table 17.4 Emerging economies – geographical region

East Asia and Pacific		
American Samoa	Malaysia	Samoa
Cambodia	Marshall Islands	Solomon Islands
China	Micronesia, Fed. Sts	Thailand
Fiji	Mongolia	Timor-Leste
Indonesia	Myanmar	Tuvalu
Kiribati	Palau	Tonga
Korea, Dem. Rep.	Papua New Guinea	Vanuatu
Lao PDR	Philippines	Vietnam
Europe and Central Asia		
Albania	Hungary	Romania
Armenia	Kazakhstan	Serbia
Azerbaijan	Kosovo	Tajikistan
Belarus	Kyrgyz Republic	Turkey
Bosnia and Herzegovina	Macedonia, FYR	Turkmenistan
Bulgaria	Moldova	Ukraine
Georgia	Montenegro	Uzbekistan
Latin America and the Caribbean		
Argentina	Ecuador	Nicaragua
Belize	El Salvador	Panama
Bolivia	Grenada	Paraguay
Brazil	Guatemala	Peru
Colombia	Guyana	St. Lucia
Costa Rica	Haiti	St. Vincent and the Grenadines
Cuba	Honduras	Suriname
Dominica	Jamaica	Venezuela, RB
Dominican Republic	Mexico	
Middle East and North Africa		
Algeria	Jordan	Tunisia
Djibouti	Lebanon	West Bank and Gaza
Egypt, Arab Rep.	Libya	Yemen, Rep.
Iran, Islamic Rep.	Morocco	
Iraq	Syrian Arab Republic	

Table 17.4 continued

South Asia		
Afghanistan	India	Pakistan
Bangladesh	Maldives	Sri Lanka
Bhutan	Nepal	
Sub-Saharan Africa		
Angola	Gambia, The	Rwanda
Benin	Ghana	São Tomé and Principe
Botswana	Guinea	Senegal
Burkina Faso	Guinea-Bissau	Seychelles
Burundi	Kenya	Sierra Leone
Cameroon	Lesotho	Somalia
Cape Verde	Liberia	South Africa
Central African Republic	Madagascar	South Sudan
Chad	Malawi	Sudan
Comoros	Mali	Swaziland
Congo, Dem. Rep.	Mauritania	Tanzania
Congo, Rep	Mauritius	Togo
Côte d'Ivoire	Mozambique	Uganda
Eritrea	Namibia	Zambia
Ethiopia	Niger	Zimbabwe
Gabon	Nigeria	

Source: World Bank (2019a).

Table 17.5 Emerging economies – income classification

Low-income economies ($1,035 or less)		
Afghanistan	Gambia, The	
	Guinea	
	Guinea-Bisau	Niger
Burkina Faso	Haiti	Rwanda
Burundi		Sierra Leone
	Korea, Dem Rep.	Somalia
Central African Republic		South Sudan
Chad	Liberia	Sudan Syrian Arab Republic
	Madagascar	Tajikistan
Congo, Dem. Rep	Malawi	Togo
Eritrea	Mali	Uganda
Ethiopia	Mozambique	Yemen, Rep.
Lower-middle-income economies ($1,036 to $4,045)		
Angola Algeria Bangladesh Benin	India Kenya	

Table 17.5 continued

Bhutan	Kiribati Kyrgyz Republic	São Tomé and Principe
Bolivia Cabo Verde Cambodia		Senegal
Cameroon	Lao PDR	Solomon Islands
Comoros	Lesotho	Sri Lanka
Congo, Rep.	Mauritania	Tanzania
Côte d'Ivoire	Micronesia, Fed. Sts.	
Djibouti	Moldova	
Egypt, Arab Rep.	Mongolia	Timor-Leste Tunisia
El Salvador Eswatini	Morocco Myanamar Nepal	Ukraine
	Nicaragua	Uzbekistan
Ghana	Nigeria	Vanuatu
	Pakistan	Vietnam
	Papua New Guinea	West Bank and Gaza
Honduras		
	Philippines	Zambia Zimbabwe
Upper-middle-income economies ($4,046 to $12,535)		
	Fiji	North Macedonia
Albania	Gabon Georgia	Paraguay
	Grenada Guatemala Guyana	Peru Russian Federation
American Samoa	Indonesia	Samoa
Argentina Armenia	Iran, Islamic Rep.	
Azerbaijan	Iraq	
Belarus	Jamaica	South Africa
Belize	Jordan	St. Lucia
Bosnia and Herzegovina	Kazakhstan Kosova	St. Vincent and the Grenadines
Botswana	Lebanon	Suriname
Brazil	Libya	Thailand
Bulgaria		Tonga
China	Malaysia	
Colombia	Maldives	Turkey
Costa Rica	Marshall Islands	Turkmenistan
Cuba		Tuvalu
Dominica	Mexico	Venezuela, RB

Table 17.5 continued

Dominican Republic Equatorial Guinea	Montenegro	
Ecuador	Namibia	
High-income economies ($12,536 or more)		
Andorra	French Polynesia	Norway
Antigua and Barbuda	Germany Gibraltar	Oman Palau Panama
Aruba	Greece	Poland
Australia	Greenland	Portugal
Austria	Guam	Puerto Rico Romania
Bahamas, The	Hong Kong SAR, China Hungary	Qatar
Bahrain	Iceland	
Barbados	Ireland	San Marino
Belgium	Isle of Man	Saudi Arabia Seychelles
Bermuda British Virgin Islands	Israel	Singapore
Brunei Darussalam	Italy	Sint Maarten
Canada	Japan	Slovak Republic
Cayman Islands	Korea, Rep.	Slovenia
Channel Islands	Kuwait	Spain
Chile	Latvia	St. Kitts and Nevis
Croatia	Liechtenstein	St. Martin
Curaçao	Lithuania	Sweden
Cyprus	Luxembourg	Switzerland Taiwan, China
Czech Republic	Macao SAR, China	Trinidad and Tobago
Denmark	Malta Mauritius	Turks and Caicos Islands
Estonia	Monaco Nauru	United Arab Emirates
	Netherlands	United Kingdom
Faroe Islands	New Caledonia	United States
Finland	New Zealand	Uruguay
France	Northern Mariana Islands	Virgin Islands (US)

Source: World Bank (2019a).

economies between 1995 and 2004, with the East Asian and Pacific region (including China) growing the fastest, followed by South Asia, Sub-Saharan Africa and the Middle East and North Africa. The fastest growing country from the advanced economies was the US. Since 2004 pretty much the same trend has continued with the two main Asian regions

posting even faster economic growth (around 5 per cent to 7 per cent annually) over the period 2005–2019. Growth in Latin America and the Caribbean and Europe and Central Asia (including mainly transition economies) also improved their economic performance over this period. In contrast, the advanced economies were hit by the financial crises that fed through into negative growth in 2009, resulting in the US, euro area and UK barely posting single-digit growth. For instance, countries in the euro area only grew by an average annual rate of around 1.2 per cent from 2005 to 2019, while the US fared better with 2.1 per cent growth. Clearly the banking collapse had a negative economic impact that was mainly felt by advanced economies – it was their banking systems that collapsed – however, the substantial bailout costs and subsequent economic downturn in 2009 and 2010 in many developed economies has fed through into weaker growth elsewhere. Growth prospects for the global economy made by the IMF (2020) (https://www.imf.org/en/Publications/WEO/weo-database/2020/October) and reported in Table 17.6 illustrate the aforementioned trends and highlight that between 2020 and 2025 emerging markets are expected to grow at the rates experienced prior to the global financial crisis – and at typically double the growth rate of advanced economies. The faster growing economies globally are those in Asia. The fastest growing economies over 2019 to 2024 according to FocusEconomics are expected to be Rwanda (7.7 per cent), Bangladesh (7.5 per cent), Senegal (7.3 per cent) and Ethiopia (7 per cent).

Figure 17.3 illustrates the stronger economic performance of emerging markets compared with advanced economies in recent years. One can see that emerging and developing countries have grown faster than advanced economies since the early 2000s and were not hit as hard by the global financial crisis. Also they are forecast to have stronger growth up to 2025. Given these forecasts, it is hardly surprising that many banks as well as other businesses are strategically targeting emerging markets for expansion.

Table 17.6 Nominal GDP growth (at constant prices) (%) – emerging and other economies

Country group	2005–2010	2011–2015	2016–2020	Forecast 2021–2025
World	4.0	3.7	1.8	4.1
Advanced economies	1.5	1.8	0.5	2.5
Euro area	1.0	0.8	−0.1	2.7
Major advanced economies (G7)	1.0	1.7	0.3	2.4
Other advanced economies (Advanced economies excluding G7 and euro area)	3.5	2.7	1.3	2.9
European Union	1.3	1.1	0.3	2.9
Emerging and developing Asia	9.2	7.1	4.7	6.5
Emerging and developing Europe	4.0	3.0	1.4	3.1
ASEAN-5	5.3	5.2	3.5	5.6
Latin America and the Caribbean	3.9	2.4	−1.3	2.8
Middle East and Central Asia	4.8	3.7	1.3	3.4
Sub-Saharan Africa	5.9	4.7	1.6	4.0

Source: International Monetary Fund, World Economic Outlook Database, October 2020.

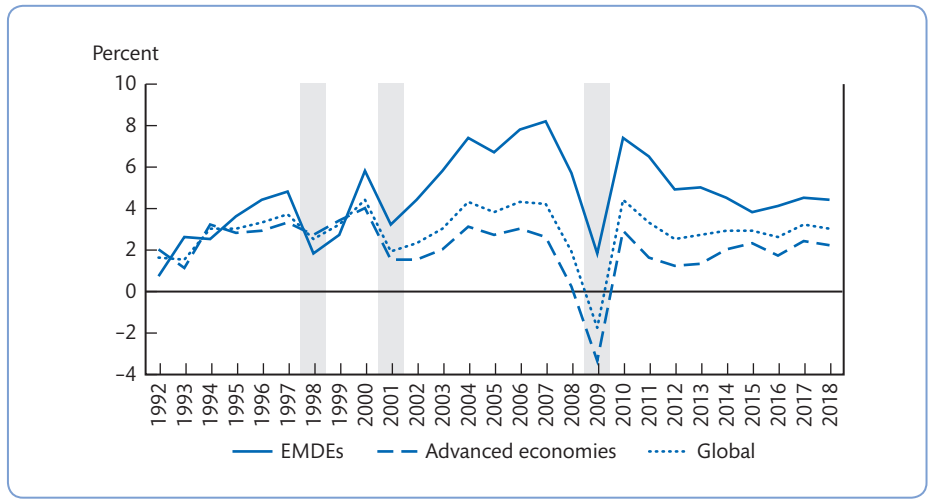


Figure 17.3 Economic growth in advanced and emerging economies

Note: Grey bars indicate periods of global recession. EMDE = emerging markets and developing economies.

Source: Kose and Ohnsorge (2019).

17.5 Structural features and trends

This section provides an overview of recent trends that have contributed to shape the current structure of banking systems in emerging markets. First we examine some general trends as well as regulatory developments. We then look at the impact these forces of change have had on the structure and performance of selected banking systems.

The banking systems in emerging countries are heterogeneous, in terms of number and size of institutions, ownership structure, profitability and competitiveness, use of IT and other structural features. In most countries, a few large commercial banks have the majority of the market share and co-exist with a large number of small private (family owned) banks as well as various savings and co-operative banks. Foreign ownership in the banking sector of emerging markets has increased substantially over the last decade and various banking systems – particularly those in Central and Eastern Europe – are dominated by foreign banks.

Another interesting feature is the widespread role of the state in government finance – the majority of the Chinese banking system, for instance, is under direct state control. Of course, since 2008 many advanced economies have seen the role of the state in the banking sector increase, as governments had to rescue banks in the crisis: by the start of 2014 around 45 per cent of the UK retail market was under state ownership. Some of these characteristics are illustrated in the snapshots of Asian and transition banking systems shown in Tables 17.7. Table 17.7 shows that ATM coverage has increased dramatically in Asian banking systems between 2007 and 2017, although it is still low compared with many advanced economies. Branch growth has been stagnant or declining.

Table 17.7 Banking in Asia

	Bank assets to GDP (%)		Private credit to GDP (%)		Overhead cost to assets (%)		Net interest margins to assets (%)		Branches (per 100,000 people)		ATMs (per 100,000 people)		ATMs (per 1000 square km)	
Country	2007	2017	2007	2017	2007	2017	2007	2017	2007	2017	2007	2017	2007	2017
China	109.5	174.5	99.7	150.0	1.5	0.86	3.7	2.3	7.6	8.8	12	84.4	13.6	102.3
Indonesia	31.5	38.1	22.7	32.4	3.8	3.26	6.5	6.0	5.9	7.5	11.3	55.1	10.4	13.2
Korea, Rep.	99.5	141.5	93.1	144.8	1.2	1.8	1.9	2.0	18.4	15.4	235.4	38.0	967.1	1334.0
Malaysia	102.9	131.9	97.0	107.6	1.4	1.5	3.2	2.3	10.7	10.2	39.4	47.6	22.2	34.0
Philippines	35.0	58.3	22.4	28.7	3.6	2.5	4.2	4.1	7.7	9.0	12.7	28.1	24.0	68.0
Thailand	100.9	139.0	89.6	95.9	2.4	2.1	3.6	3.5	9.6	11.9	46.9	117.8	48.7	131.9
Bangladesh	51.8	57.4	34.6	37.7	3.4	2.3	2.5	2.4	7.0	8.8	0.5	8.4	3.7	73.6
India	57.7	68.4	41.1	44.6	2.1	2.2	3.1	3.0	9.0	14.5	3.4	22.0	9.1	71.8
Pakistan	38.8	44.6	27.2	23.8	2.5	2.3	5.1	3.3	7.9	10.2	2.7	10.0	3.6	17.4

Source: Adapted from Klapper *et al*. (2014), Table 1; with additional information from World Bank Open Data and FRED St Louis Fed Database.

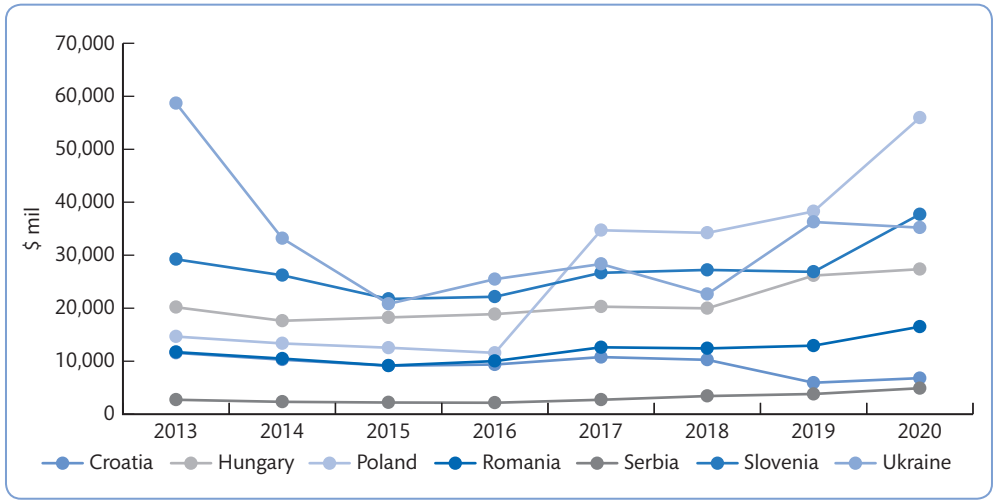


Figure 17.4 Total assets of state-owned banks in selected central European countries

Source: Authors' elaborations, data from Bank Focus.

The characteristics of banking systems vary from country to country, and it is impractical to discuss each system individually. In this varied environment, however, it is important to analyse the main forces of change affecting the structure and efficiency features of banking systems.

An interesting trend in recent years, as reported by the EBRD (2021) is the increased importance of state-owned banks in Central Europe and in the former Soviet Union, reversing a privatisation trend which began in the 1990s. Following the global financial crisis, some private banks were brough back into state ownership, for example in Poland, Hungary, and the Ukraine.

In many of the economies of the former Soviet Union, state banks accounted for more than half of all banking assets in 2016 (67 per cent in Belarus, 59 per cent in Russia and 53 per cent in Ukraine). Levels of state ownership in the banking sector are also high in China (59 per cent), Ethiopia (61 per cent), India (67 per cent) and Syria (71 per cent). In Brazil and Argentina, more than 40 per cent of banking assets remain state owned.

In recent years, state-owned banks have expanded both their assets (see Figure 17.4) and their branch network. Many state banks apply less stringent lending standards, operate with smaller net interest margins and accept higher risks and higher levels of non-performing loans. However, the increased presence of state banks may also come at a cost, as discussed in Section 17.5.2.

17.5.1 Deregulation and financial liberalisation

Banking in emerging markets was traditionally characterised by high levels of government control, with restrictions on borrowing and lending rates and on domestic and foreign entry. In some countries the levels of restriction on financial activities and government intervention in financial markets were so strong (for example, during the Soviet era in the former USSR) that they could be better described as **financial repression**. The main way governments were

pursuing financial repression was to maintain the monopoly of the financial sector by state banks, restricting entry of both banks and non-deposit-taking financial institutions and by strictly controlling new financial instruments that could compete with bank deposits. Financial repression could vary from mild to severe, and included:

- controls over interest rates;
- controls over lending;
- directed lending (loans made at subsidised 'uneconomic' rates to specific politically preferred sectors);
- high reserve requirements;
- restrictions on entry of new banks and other financial intermediaries;
- restrictions on entry of foreign financial intermediaries;
- nationalisation of financial institutions.

Traditionally, there was little incentive to alter these protective banking environments and foster competition. During the 1990s, however, a combination of changes in the global financial markets, macroeconomic pressures resulting from various banking crises and fast technological developments forced governments to deregulate the industry at the domestic level and to open up to foreign competition. These forces continued at a pace until the late 2000s, when the deregulation trend was reversed as a consequence of the global financial crisis. Although emerging banking systems were least impacted by the crisis, the realisation that many banks had been taking on excessive risks in a light-touch regulatory environment caused both domestic and international bank regulators to reassess the situation. For example, new capital and liquidity rules were put in place under the Basel III regulations, requiring banks to hold more capital and reduce risky assets (see Chapter 7 for details). This regulatory activity (in addition to weak economic growth) is particularly hindering banking sector growth in advanced economies, but it is also having an influence on the emerging world. The growth prospects for many emerging economies have been sluggish; in addition, as regulators are generally becoming more cautious, foreign bank expansion has also slowed down. Despite this, the prospects for banking sector growth, and the opportunities afforded to financial sector investors, still remain substantially stronger in the emerging markets (particularly in Asia) compared with in the advanced world.

In the liberalisation period preceding the global financial crisis, structural changes occurred in the banking industries of many countries. The main changes at the domestic level, in most emerging banking markets, have been the removal of ceilings on deposit rates and the removal of the prohibition of interest payments on current accounts. These changes were very significant because they implied that banks could no longer rely on sources of cheap funding and this put pressure on their profits, thus encouraging them to reorganise their activities and become more market-oriented.

The opening up of banking markets in emerging economies has led to a growing presence of foreign banks (as well as non-bank financial firms) in search of profit opportunities. As a result, most banking markets in emerging countries now depend on foreign institutions to provide capital, technology and managerial expertise. These issues will be discussed in Section 17.5.4.

Deregulation and **financial liberalisation** have long been considered positive forces, as they are supposed to increase banking sector efficiency by imposing competition and

removing regulations that distort economic activity. The perceived benefits of deregulation include:

- expansion of financial markets;
- increased competition;
- more choice and cheaper financial products;
- increased innovation as a result of technology developments;
- enhanced consumer welfare;
- fostering of economic growth.

However, beyond the positive aspects, there is now widespread recognition that if deregulation goes too far, it can trigger instability and lead to crisis. On a positive note, financial deregulation has certainly made it easier for intermediaries to cross industry and national boundaries. It has also fostered technological progress, which in turn has reduced costs while stimulating innovation. For example, the computer and telecommunications revolution rendered geographic branching restrictions obsolete. Financial innovation includes the development of new financial instruments, which are now extensively used by emerging countries' banks. Owing to technological advances, emerging economies' banking markets are in a position to 'skip a stage of financial development', rapidly moving from a rather rudimentary system to a fairly advanced one. For example, the rapid development of ATMs, debit and credit cards, telephone and internet banking has pushed developing economies from cash-based transactions to electronic-based transactions, skipping the 'cheques stage'. A good illustration is given in Box 17.1, which shows the 'war' for deposits between Chinese banks

BOX 17.1 CHINA BANKING WAR HEATS UP WITH LAUNCH OF ONLINE INVESTMENT APP

The fight for deposits in the Chinese banking system, already at its fiercest in years, has intensified in the past week with the launch of an online investment fund tied to the most popular messaging app.

The fund, which is open to users of WeChat, Tencent's's messaging app, is the latest entrant in China's booming market for online investment products that got started half a year ago. For Chinese banks, which have long faced little competition, the Internet funds are eating into their customer base and pressuring them to offer higher deposit rates.

Within two days of its official launch on January 22, Tencent said that its Licaitong fund had attracted more than Rmb1bn ($165mn) of inflows. It has not published any statistics since but the Shanghai Securities News, an official financial newspaper, estimated that Licaitong has topped Rmb10bn.

It is the most formidable challenge yet to the online investment fund launched in June by ecommerce group Alibaba which has grown to become China's biggest money market fund. As of mid-January, Alibaba said its Yu'E Bao fund had attracted 49m investors and more than Rmb250bn in cash. Although officially classified as money market funds, the Alibaba and Tencent products are increasingly being used by Chinese savers as an alternative to bank accounts.

While banks offer demand deposit rates of 0.35 per cent – a level that is capped by the central bank – Alibaba and Tencent have been offering rates in excess of 6 per cent. At 7.5 per cent,

BOX 17.1 China banking war heats up with launch of online investment app (*continued*)

Tencent's rates are about 1 percentage point higher than Alibaba's. That appears to be damping deposit growth at Chinese banks. Bank deposits rose by Rmb9tn in the first half of 2013 but then climbed just Rmb3tn in the second half of the year, after the online investment products began luring cash away. The total invested in the online funds is still less than 1 per cent of the overall amount deposited in Chinese banks, so the short-term impact on banks is expected to be limited.

"But they will soon become a too-big-to-ignore part of the economy," said Victor Wang, an analyst at Credit Suisse. "They are eating banks' desserts today. If the banks don't react, they will take banks' meals tomorrow."

Banks are beginning to fight back against the online funds. The five biggest banks have raised one-year deposit rates to the maximum allowable level – 3.3 per cent, 10 per cent above benchmark rates – but that still leaves them at nearly half the rates offered by the Alibaba and Tencent funds. "It's out of control," an unnamed executive at a top bank told Caixin, a leading financial magazine. The Alibaba and Tencent funds are able to achieve higher returns by directing their customers' cash into the hands of money market funds, which invest in the interbank market and higher-yielding bonds. Alibaba's fund is managed by Tianhong Asset Management, while four companies, including China Asset Management, look after the Tencent fund. Both the Alibaba and Tencent funds have attracted large numbers of new customers in the run-up to the lunar new year, which begins on Friday.

Tencent this week debuted a money-giving function on its WeChat app, playing on the tradition of giving friends and family red envelopes of cash for the new year. This feature has proved popular, allowing it to introduce millions more people to its online payment system and investment fund. Alibaba's Yu'E Bao investment fund attracted 4m new users over the past seven days and daily cash inflows of Rmb10bn, well above its normal average. "Many people were depositing their annual bonuses," said Alibaba.

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Source: Rabinovitch, S. (2014) 'China banking war heats up with launch of online investment app', *Financial Times*, 30 January.
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and various money market funds, attempting to attract customers by offering much higher rates and facilitating transactions by using state-of-the-art mobile phone apps.

Emerging markets see the development of new delivery channels as an important part of the development of their retail and commercial banking activities, both because of the growing availability of IT and telecommunication technologies and the relatively lower cost of delivery compared to bank branches. One particular source of concern in emerging economies related to technological improvements is the so-called **digital divide** in the access to banking services. There is a fear that better-educated and wealthier customers will be able to obtain competitive banking services through the internet whereas the quality of services provided to poorer customers will deteriorate as bank branches are closed, particularly in rural areas. For a detailed discussion on these issues see the work done at the World Bank on constructing the 'The Global Financial Inclusion (Global Findex) Database' and discussed by Demirgüç-Kunt and Klapper (2012). The Global Findex database has been updated in 2017 (see https://globalfindex.worldbank.org/).

17.5.2 Role of the state

In the 1980s and early 1990s, in most emerging economies, state-owned banks accounted for the majority of banking sector assets. The banking industry, together with utilities, telecommunications, railways and airlines was considered too important for the national economy to be left in private hands. Nearly two decades later, governments' share in the banking system has witnessed a substantial reduction. More recently, although state ownership is less prevalent in advanced economies, the fall in the role of the state is noticeable, as shown in Figures 17.5 and 17.6.

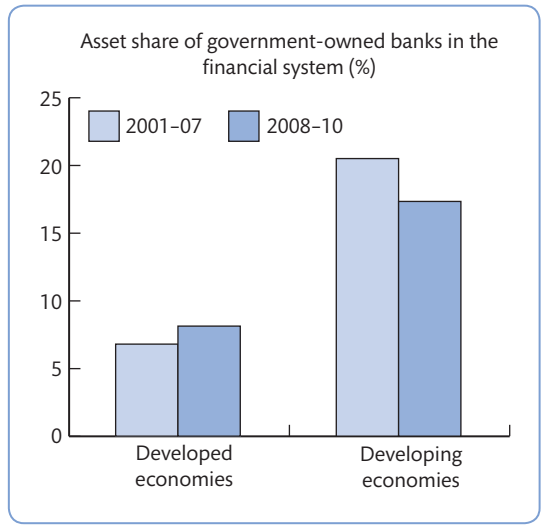


Figure 17.5 Trends in government ownership of banks

Source: World Bank (2013), Figure 4.1.

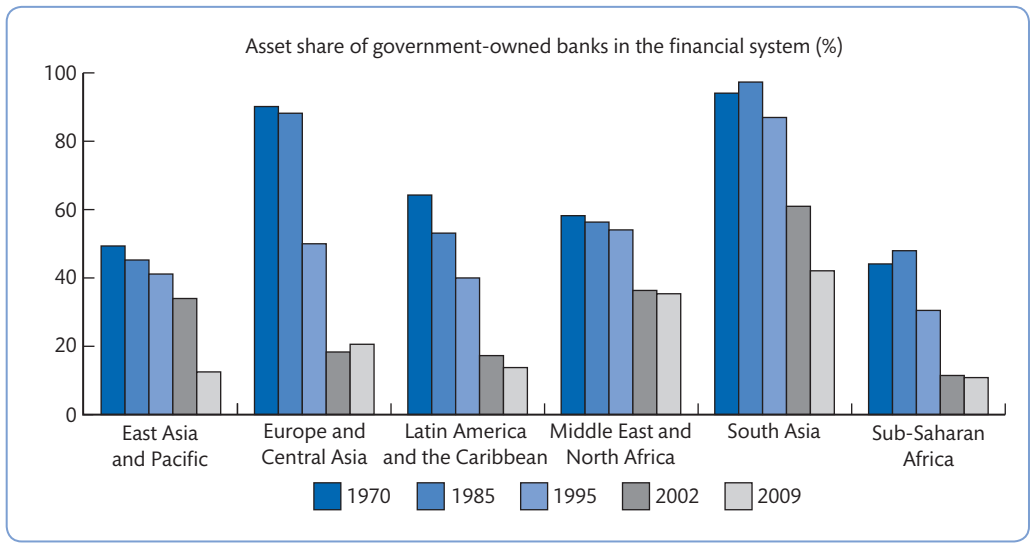


Figure 17.6 Government ownership across developing regions, 1970–2009

Source: World Bank (2013), Figure 4.2.

In many countries, the decline in state banking is generally attributed to poor performance as a consequence of undue political influence, weak management and the expectation that they would lend (irrespective of cost) to under-performing, state-owned enterprises. This led to a number of bankruptcies of state-owned banks in the banking crises of the 1980s and 1990s and to vulnerable and weak banking sectors. As a response, the governments of many emerging economies introduced reforms that led, among other things, to the gradual privatisation of banking sectors. This helped to restore stability, particularly in Latin America and Central Europe.

Each emerging economy had its own motives for undertaking a process of privatisation of state-owned banks; however, the aims of such programmes were to encourage competition and enhance efficiency of the sector.

Latin American countries launched bank privatisation programmes at different stages during the 1990s; these programmes were part of larger long-term public sector reforms, with the aim of restructuring public finances, cutting borrowing requirements and deepening the role of the stock markets. The emerging Asian economies, on the other hand, were facing the challenge of returning to private ownership the banks that were nationalised during the 1997–1998 crises. By the early to mid-2000s, policy makers had become sceptical about the merits of state-owned banking in emerging markets, especially due to their general poor performance and regular bailouts. Also, financial sectors with a strong state ownership presence were typically associated with underdeveloped and inefficient systems. In addition, a large state presence was linked with 'politically motivated' lending, lower banking-sector outreach, wider intermediation spreads and slower economic growth.[3] However, state banking can have some merits:

- Lending by state-owned banks is less pro-cyclical than lending by private banks.
- State-owned banks may be willing to serve customers in remote areas that private banks do not serve.
- Some countries, such as Thailand, Brazil and Argentina, have used state-owned banks to channel lending to farmers and small and medium-sized enterprises outside the largest cities.
- Lack of basic market and legal infrastructure may be so severe that state-owned banks are the only viable alternative.

Policy makers in most emerging economies seem to consider state ownership of banks as a second-best solution, in 'normal' times at least – during a crisis they may well have to nationalise banks to save them – and are increasingly subjecting the public banking sector to market discipline, treating them in a similar manner to private banks in terms of supervision and other factors. See Box 17.2 for a detailed discussion of the pros and cons of state ownership in banking.

Although the merits of private sector banks may outweigh those for state ownership, it remains the case that in some countries the role of government in the banking system predominates. For example, state banking still accounts for more than 50 per cent of banking sector assets in Algeria, China, Egypt and India. In other countries like Argentina, Brazil, Indonesia, South Korea, Poland, Russia and Turkey government-owned banks have a market share between 20 per cent and 50 per cent. The regions of the world with the highest level of banking sector state ownership include Southern Asia and the Middle East and North African regions (see Figure 17.6).

[3] See the World Bank (2013) Chapter 4, for a detailed discussion of the pros and cons of state banking.

BOX 17.2 TWO VIEWS ON THE ROLE OF STATE BANKS

In a recent debate published in the World Bank's All About Finance blog, two academics expressed contrasting views about the role of state-owned banks in promoting financial stability and access.

Franklin Allen, Nippon Life Professor of Finance and Economics, Wharton School, University of Pennsylvania, argues that, despite being outperformed by their private counterparts in terms of long-term resource allocation, 'public banks may enjoy an advantage over private banks in times of crisis and, hence, their merits need to be reassessed.' He goes on to say that 'the real advantage would come when there is a crisis. Rather than having central banks intervene in commercial credit markets, where they have little expertise, the state-owned commercial bank can temporarily expand its role both in terms of assets and loans. This should considerably improve the functioning of the economy and overcome credit crunch problems.'

'The financial system can be safeguarded during times of crisis through a mixed system with mostly private banks but one or two are state-owned commercial banks. They would compete with private banks in normal times to ensure a competitive cost structure and prevent corruption, and they would provide useful information to regulators by signalling excess risk-taking or exercise of monopoly power by private banks. However, their real advantage would become evident during a financial crisis. State-owned commercial banks would be a safe haven for retail and interbank deposits, act as a fire break in the process of contagion, and provide loans to businesses – particularly small and medium size enterprises – through the crisis. They could expand and take up the slack in the banking business left by private banks. Listing such banks will ensure full information on them is available and their stock prices will indicate how well they are performing.'

'Public banks can play another important role in increasing access to financial services. If the government wishes it to pursue this agenda then it may be helpful to subsidize this kind of activity. In many European countries in the nineteenth and twentieth centuries, the post office provided access to savings accounts and other kinds of financial services that many customers would not otherwise have had. A good example of a public bank that plays these roles is Chile's Banco del Estado, which is entirely owned by the Chilean Government. It is the country's third largest lender and operates in all major segments of the banking market. The fact that it has to compete with private banks ensures it is well run. Banco del Estado also has a long history of promoting access in all parts of the country and to all people. Many other countries might benefit from this type of bank.'

In contrast, Charles Calomiris, Henry Kaufman Professor of Financial Institutions at Columbia University, argues that academic work 'indicates powerfully the negative effects of state-controlled banks on the banking systems of the countries in which they operate and that the winding down of state-controlled banks was rightly celebrated in many countries in the 1990s as creating new potential for economic growth and political reform.' He goes on to say that there are three main reasons that explain the dismal performance of state-controlled banks. 'First, government officials do not face incentives that are conducive to operating well-functioning banks. They are typically not incentivised to maximise economic effectiveness and they tend not to be trained in credit analysis as well as private bankers. They face incentives that reward politically rather than economically motivated allocations of credit. Second, the politically motivated allocation of funds to crony capitalists has adverse consequences for the political and social system of a region or country. State-controlled banks are a breeding ground for corruption of elected and appointed government officials, the financial regulatory authorities, and the courts. Not only do they stunt the growth of the economy, they also weaken the core political and bureaucratic institutions on which democracy and adherence to the rule of law depend. Third, state-controlled banks are "loss-making machines." Because they are not geared toward profitability or the aggressive enforcement of loan repayment, but rather toward rewarding political cronies with funding, the losses of state-controlled banks pose a major fiscal cost for governments. Those fiscal costs crowd out desirable government initiatives, and given the large size of the losses, can be a threat to the solvency of government and a source of inflationary deficit financing.'

'The crisis has only reconfirmed the extreme damage that politically motivated lending can inflict. The quasi-state-controlled US entities Fannie Mae and Freddie Mac accounted for more than half of the

BOX 17.2 Two views on the role of state banks (*continued*)

funding of subprime and Alt-A mortgages leading up to the crisis. There is evidence that political motivations drove the intentional risk taking and deterioration of underwriting standards at those institutions after 2003 – a crucial ingredient in the subprime boom of 2004–2007. Government quotas dramatically increased the funding that Fannie and Freddie had to supply to low-income and underserved borrowers, but the supply of creditworthy low-income and underserved borrowers was limited. Inevitably, lending standards were relaxed. The US experience is not unique. Political motivations drove Spanish Cajas to support a real-estate boom that ended in a massive bust. In Germany, state-controlled banks also made horrible investment decisions, thus reflecting incompetence more than corruption or political motives for channelling funds. Looking back historically, it is clear that state-controlled lending has been a major contributor to unwise and politically motivated risk taking that has ended badly over and over again.'

'The huge crisis-related losses of equity capital in the banking system and the subsequent stepping up of regulatory oversight over banks have resulted in a short-term contraction in the supply of credit. This credit crunch magnified the decline of GDP during the recession, and slowed the pace of the recovery. In such an environment, it may seem appealing to pass a law creating a state-owned bank with the goal of re-starting the rapid flow of loanable funds. But such an initiative would be short-sighted. Rather than promoting sustainable growth, it would slow growth over the medium or long run, as funds would be channelled to low-productivity users. A move to support state-controlled banks would also raise systemic risk (as Fannie and Freddie, and the Spanish Cajas clearly show), promote corruption of government officials and institutions, and lead to fiscal losses that could threaten the solvency of government and lead to high inflation.'

Source: The World Bank (2013), Box 4.6; 'All about finance' (blog), World Bank.

17.5.3 Mergers and acquisitions

Market-driven consolidation in the form witnessed both in Europe and the US during the 1990s came later to emerging economies. Before the general liberalisation trend, most banking sector mergers resulted from government efforts to restructure inefficient banking systems (as in many Latin American countries) or from intervention following banking crises (as in East Asian countries). However, following the deregulation and privatisation processes, competition has increased in a number of markets and the M&A trend is becoming more market driven. Cross-border activity is a major feature of M&A in emerging markets since foreign ownership is usually established through the purchase of existing enterprises, rather than 'greenfield investment' (new companies).

Consolidation in the financial sector tends to follow broad trends; most noticeably, it tends to be higher when stock markets and bank valuations are high or when banking systems have collapsed and need restructuring via forced consolidation. Total value of global bank M&As peaked in 2008 and 2009 as a result of the global financial crisis, and has fallen back substantially since then. The prospects for increased consolidation in emerging markets emulate expected economic growth prospects:

- Asian economies are likely to see the largest amount and growth in bank M&As up to 2020. Most of this is expected to be domestic deals. There will also be continued inter-regional deals with banks from Japan, South Korea, Singapore, Malaysia and also Australia looking to build a broad-based commercial banking presence in the region. Other global banks are more likely to look at developing specialist investment banking, asset management

and private banking acquisitions. It has been noted that regulators are increasingly putting limits on foreign acquisition, to constrain domestic purchases, and also Basel III asks for more capital on minority stakes, therefore this may inhibit foreign expansion to some extent. It is important also to note that big banks from the region – especially Chinese banks, are following their large corporate customers around the world, and have made both acquisitions and set up greenfield (new) sites.

- Latin America remains the second most attractive market for bank M&As with most activity taking places in the biggest banking system – Brazil. In addition, some large Latin American banks are following trade flows and making acquisitions in major trading partner countries. Foreign activity in Brazil typically focuses on specialist areas like private banking, prime brokerage and asset management. However, there has been some consolidation by medium-sized Brazilian banks since 2009. It is interesting to note that Chinese and other Asian banks have entered Brazil but not via M&As and mainly through the set-up of greenfield operations. Elsewhere, the prospect for consolidation are a more limited, although some argue there is still potential for more domestic consolidation in Mexico and other Latin American countries such as in Colombia and Uruguay.
- Africa also presents major M&A opportunities, although many markets already remain highly concentrated. The two countries that have experienced most activity include Nigeria (that had a government-forced consolidation aimed at cleaning up the system) as well as more market-based deals in South Africa. Other countries such as Kenya offer potential, but political and other risks remain high in many African markets and this tends to deter foreign acquirers.
- Russia and Central Europe also experienced some M&A activity. Russia, with around 1,000 banks, offers big opportunities for restructuring – particularly between small and medium-sized institutions. Sberbank, one of Russia's biggest banks, has made acquisitions in the region and also in Turkey. The large number of banks in Poland also offers consolidation prospects in the future.
- Middle East and Gulf region – the prosperity in Gulf countries and elsewhere in the Middle East means that banks from the energy-rich countries are looking to expand into other markets, the recent activity of the Qatari banks being most noticeable in this respect.

Consolidation has been a feature of both advanced and emerging economies and this trend ultimately feeds through into greater industry concentration, with the usual concerns about big banks and too-big-to-fail safety-net subsidies. However, big banks are often needed to meet the scale of activities demanded by large corporations. As industry in the emerging world expands, so will the banks and other financial firms – it is an inevitable feature of the market process.

17.5.4 Foreign banks

Over the last 20 years foreign banks have become increasingly important in many banking systems and most noticeable in emerging markets. The desire of banks to move to other markets is influenced by factors that are wide and varied. Some of the main reasons put forward for foreign bank entry in emerging (and other) markets have been discussed in Chapter 4.

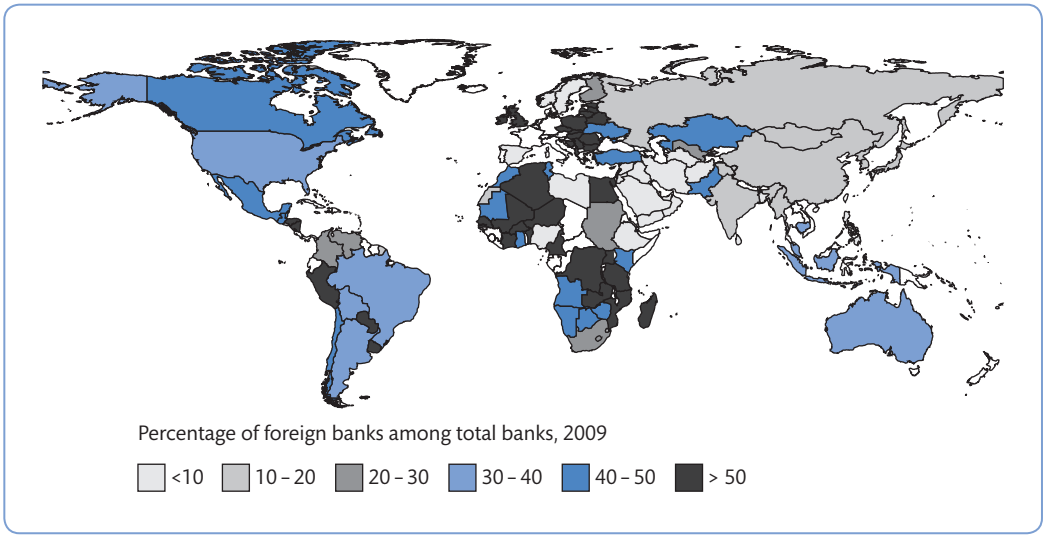


Figure 17.7 Foreign bank presence, 2009

Source: Claessens and van Horen (2014b), Figure 3.

Claessens and van Horen (2012) present an account of global foreign bank activity examining the features of 5,324 banks operating in 137 countries over the period 1995–2009. Figure 17.7 highlights the extent of foreign bank activity globally and Table 17.8 shows that all regions have witnessed an increase in foreign bank presence since 1995, with Central and Eastern Europe and Sub-Saharan Africa having the highest proportion of foreign bank operators. Foreign banks are generally believed to contribute to a greater efficiency and resilience of the financial sector, both because foreign presence implies greater borrowing in local currency (therefore minimising currency mismatches) and because foreign banks can help emerging economies recapitalise their banking systems. Foreign banks may also help enhance financial stability by enabling greater lending diversification and by improving risk management practices. Despite the fact that the benefits that foreign banks can offer to emerging economies are now more widely accepted, there remain, however, a number of concerns:

- A large foreign banking presence can reduce the information available to host country supervisors.
- A large foreign banking presence can expose a country to shocks due purely to external events affecting the parent bank.
- Foreign banks 'cherry pick' the best firms, leaving the domestic banking sector with a weakened lending portfolio.
- Foreign banks concentrate on large and more profitable firms, leaving small and medium-sized enterprises for domestic banks.

Overall, however, the significant empirical literature that focuses on foreign bank behaviour (and summarised in Claessens and van Horen, 2012) concludes that increased foreign presence has a positive impact on economic development, apart from in the poorest countries – and this may be because the scale of foreign bank activity in the poorest countries is not too large.

Table 17.8 Number of banks by host country, aggregates by income level and regions

	1995		2000		2005		2009	
	Number	Share	Number	Share	Number	Share	Number	Share
All countries								
Domestic	3,192	0.80	3,064	0.74	2,861	0.71	2,617	0.66
Foreign	788	0.20	1,069	0.26	1,165	0.29	1,330	0.34
Total	3,980	1	4,133	1	4,026	1	3,947	1
Income groups								
OECD								
Domestic	1,067	0.82	1,092	0.80	1,102	0.78	1,068	0.76
Foreign	238	0.18	280	0.20	311	0.22	329	0.24
Total	1,305	1	1,372	1	1,413	1	1,397	1
Other high income								
Domestic	79	0.66	74	0.66	63	0.60	62	0.60
Foreign	40	0.34	38	0.34	42	0.40	41	0.40
Total	119	1	112	1	105	1	103	1
Emerging markets								
Domestic	1,484	0.82	1,313	0.74	1,159	0.70	1,011	0.64
Foreign	328	0.18	473	0.26	486	0.30	572	0.36
Total	1,812	1	1,786	1	1,645	1	1,583	1
Developing countries								
Domestic	562	0.76	585	0.68	537	0.62	476	0.55
Foreign	182	0.24	278	0.32	326	0.38	388	0.45
Total	744	1	863	1	863	1	864	1
Region								
East Asia and Pacific								
Domestic	261	0.82	277	0.81	296	0.81	290	0.76
Foreign	56	0.18	64	0.19	68	0.19	93	0.24
Total	317	1	341	1	364	1	383	1
Eastern Europe and Central Asia								
Domestic	673	0.85	610	0.72	510	0.62	418	0.53
Foreign	115	0.15	235	0.28	310	0.38	374	0.47
Total	788	1	845	1	820	1	792	1
Latin America and Caribbean								
Domestic	604	0.75	485	0.66	400	0.65	369	0.61
Foreign	197	0.25	254	0.34	215	0.35	233	0.39
Total	801	1	739	1	615	1	602	1
Middle East and North Africa								
Domestic	147	0.82	135	0.77	120	0.72	103	0.64
Foreign	32	0.18	40	0.23	46	0.28	57	0.36
Total	179	1	175	1	166	1	160	1
South Asia								
Domestic	134	0.93	144	0.91	149	0.91	141	0.87
Foreign	10	0.07	15	0.09	15	0.09	22	0.13
Total	144	1	159	1	164	1	163	1

Table 17.8 continued

	1995		2000		2005		2009	
	Number	Share	Number	Share	Number	Share	Number	Share
Sub-Saharan Africa								
Domestic	227	0.69	247	0.63	221	0.58	166	0.48
Foreign	100	0.31	143	0.37	158	0.42	181	0.52
Total	327	1	390	1	379	1	347	1

Source: Claessens and Van Horen (2014a), Table 1, p. 302.

17.5.5 Foreign ownership and regulatory reform

Probably the single most important driving force behind the increase in foreign activity and foreign ownership in emerging banking markets is regulatory reform. During the 1990s and early 2000s many countries engaged in liberalisation programmes aimed at encouraging foreign bank entry. Sometimes this deregulation was due to reform after crises as well as general moves to open up economies to wider access in terms of capital flows and foreign direct investment. Regulatory reforms were designed to strengthen competition, and expansion of trade liberalisation also gave additional impetus for structural reforms. Some of the early policy initiatives were designed to achieve a more open capital account and transparent FDI policies and this also facilitated greater foreign banks entry.

A noticeable example of how trade liberalisation can have a substantial impact on an economy is the case of China, and the impact of its joining the World Trade Organization (WTO) in December 2001. Membership of the WTO involves a major commitment to facilitate freer trade in capital, goods and services through the reduction of trade and entry barriers. Under the WTO, China had to make an array of commitments to open its domestic markets to foreign competition – although even by 2014 foreign banks were not permitted to hold a stake of more than 20 per cent in any one banks – and therefore foreigners still cannot have majority control. Table 17.9 illustrates similar limits and other nuances linked to bank entry in Asia.

Table 17.9 Foreign ownership limits in South East Asian banking

Forms	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Acquisition of shares	Since 1992 limited to 49% (51% for ASEAN banks) and increased to 99% in 1999. There are ownership limits which apply to a single shareholder, namely 40 per cent maximum ownership for a shareholder in the form of a bank or financial institution, 30 per cent maximum ownership for a non-financial institution shareholder and 20 per cent maximum ownership for an individual shareholder.	Since 1989 limited to 30%, increased to 49% in 2007 and subsequently increased to 100% for all foreign banks - Islamic and conventional.	Since 1994, limited to 60%, increased to 100% in 2000, for new entry on a seven-year window basis. Fully liberalised in 2014. No foreign bank is allowed to control more than 40% of the total banking sector (in 2019 foreign banks owned under 8% of total banking system assets)	Not less than 75% per cent of the total number of issued voting shares of a financial institution must be held by persons of Thai nationality. In special cases the Bank of Thailand can allow up to 49% foreign ownership	Foreign ownership remains capped at 30% for commercial banks. Also: a) A strategic foreign investor may hold no more than 20%; b) An institutional investor and its related persons may hold no more than 20%; and c) An institutional investor may hold no more than 15%. For joint ventures, limited to 49%

Table 17.9 continued

Forms	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Wholly owned Subsidiary	No	Yes	Yes	Yes	Yes
Full-service branch	Yes	Yes	Yes	Yes	Yes
Domestic branch-ing for branches and subsidiaries	Up to 10 cities prior to 1999, since 1999 fully open	Fully open since 2007	Fully open since 1994	Restrictions are in place for subsidiaries of foreign banks (no more than 40 branches) and for branches of foreign bank the limit is set at four branches.	No formal restrictions in place

Source: Adapted Molyneux et al. (2014) and authors' updates.

17.6 Conclusion

After over two decades of liberalisation and reform, the banking systems of emerging economies remained fragmented in terms of size, ownership structure, competitive conditions and profitability. Despite these varied characteristics, most countries continued to engage in deregulation and financial liberalisation, in the adoption of new information and telecommunication technologies, as well as extensive privatisation programmes. This has resulted in profound structural changes, ranging from a decrease in the number of banks, an increased presence of foreign financial institutions and a general decline in the role of the state. Since the global financial crisis of 2007–2009 the trend toward liberalisation and deregulation has reversed, with greater pressures on banks to boost their capital and liquidity and reduce their higher risk activities. Policy makers in both advanced and emerging markets are more concerned about maintaining safe banking systems rather than liberalising it further. It is difficult to foresee how long this more cautious banking environment will persist. In some countries a slowdown in the domestic economy is also exacerbating financial sector development. Nevertheless, the economies of a number of emerging markets (China, India, Indonesia, Mexico and Russia) are widely expected to be bigger than the seven largest advanced economies (G7 – Canada, France, Germany, Great Britain, Italy, Japan and US) by 2050 – so the prospects for banking and financial firms in the former remain significant.

Key terms

Bank-based financial systems
Developing countries
Digital divide
Emerging markets
Financial deepening
Financial liberalisation
Financial repression
Market-based financial systems
Transition economies

Key reading

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REVISION QUESTIONS AND PROBLEMS

17.1 How does financial sector development aid economic growth, and why is the impact larger in less developed countries?

17.2 Outline the main structural features of emerging banking systems. In general, how do they differ from their advanced economy counterparts?

17.3 Why is the link between finance and growth non-linear? Outline the five main reasons that explain this non-linearity.

17.4 Why does state ownership of banks tend to be associated with a poorly developed financial sector?

17.5 In what circumstances is state ownership preferable to private bank ownership?

17.6 How do foreign banks impact the performance of financial systems? Explain why their influence is found to be greater in emerging markets compared to advanced economies.

17.7 What are the main concerns raised by the role of foreign banks as well as the consolidation process in emerging markets?

17.8 Explain how technology can rapidly impact the behaviour of banks and their customers. In your answer specifically refer to recent mobile phone app development in China.

PART 5

Advanced topics in banking

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Chapter 18

Banks and markets

Learning objectives

- To outline the main linkages between banks and markets
- To understand the increasing integration of banks and markets and the growth of 'shadow banking'
- To examine the evolution of the mortgage-backed securities (MBS) business in the US and the role of government-sponsored enterprises (GSEs)
- To identify the key processes involved in securitisation
- To discuss the future for the securitisation market, in line with the proposed financial reforms

18.1 Introduction

Banks are inextricably linked to markets. They obtain their funding not only from traditional retail and corporate deposits but also from other banks via the interbank market. Banks also manage their short-term funding requirements by accessing money markets (which not only include interbank business but also the issue of short-term securities, such as commercial paper). Traditionally banks have also been major operators in trading (buying and selling) short-term money market instruments, including treasury bills, trade bills and other short-term instruments such as repurchase agreements (repos). All this activity is undertaken so that banks can manage their predictable (and unpredictable) liquidity positions. In addition, banks have also been the mainstay of the foreign exchange market.[1]

Over the last decade, banks' involvement in markets has increased dramatically, partially as a reflection of the trend towards universal banking and also because technological

[1] The foreign exchange market (commonly known as forex) is a network of individual investors, businesses, investment management firms, hedge funds, brokers, banks, central banks and governments to buy and sell the currencies of different countries to finance international trade, invest or do business abroad, or speculate on currency price changes. The forex market is considered to be the largest financial market in the world. As of 2019, the average daily turnover in global foreign exchange markets is estimated at $6.6 trillion, up from $5.4 trillion in 2013 (BIS, 2019).

advances have made it easier to price and trade an increasingly broader array of complex financial products. Banks have experienced an increasing dependence on financial markets not only as a funding source but also for risk management (hedging) purposes and for undertaking various transactions for their clients. What has emerged is a complex web of interdependence between banks and markets. The past decade has also witnessed the rapid development of a distinct form of financial intermediation: **shadow banking**. In general terms, shadow banking refers to all activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated banking system.

The aim of this chapter is to outline the key linkages between banks and markets with a particular focus on the recent rise and fall of securitisation. Section 18.2 examines the bank intermediation process and compares this to market transactions, highlighting the role of informational asymmetries. It also briefly discusses a new form of financial intermediation, between banks and markets, the shadow banking system. Section 18.3 looks at the evolution of securitisation activity, focusing on the key role played by the US government-sponsored enterprises (GSEs) in promoting the development of a mortgage-backed securities market. We then move on to explain the main processes involved in issuing mortgage-backed securities (MBS) (and other asset-backed securities, ABS). Section 18.4 introduces the modern securitisation process while Section 18.5 discusses the second wave of securitisation with the emergence of collateralised debt obligations (CDOs) and asset-backed commercial paper (ABCP), highlighting how banks were involved in this activity and how it led to big losses. Section 18.6 examines the role of credit-rating agencies and monoline insurers in the securitisation process and in Section 18.7 we note the broad impact of bank securitisation activity and highlight how such activity has been placed under greater regulatory scrutiny. Finally, in Section 18.8 we discuss the future for the securitisation market, and we outline the proposed financial reforms that aim to restrict bank market activity. Section 18.9 is the conclusion.

18.2 Bank intermediation, markets and information

The main function of banks is to undertake financial intermediation, whereby they take low-risk, small and highly liquid deposits and transform these into larger, longer-maturity and riskier loans. Transforming deposits into loans has been the traditional role of commercial banks for centuries (see also Chapter 1). The theory of financial intermediation has emphasised the special role played by banks in screening and monitoring borrowers in the lending process (see Section 1.4.3). For instance, banks have to ensure that they do not lend to bad borrowers (those that will default) and as such they invest substantial resources into systems and procedures (like credit evaluation of customers, credit scoring and so on) in order to minimise the likelihood of lending to bad customers. More formally, screening is said to reduce adverse selection problems in the loan granting process. The argument goes that borrowers that want to borrow large sums (even at high interest rates) are the most risky and therefore should be screened out as they are the most likely to default. Once bad borrowers have been screened out then the bank can make loans. However, borrowers' behaviour may change: once granted loans they may then have an incentive not to repay (for instance, if their economic circumstances change) – this is known as moral hazard. As such, banks have to monitor borrowers over the life of the loan so as to minimise the likelihood of moral hazard

problems in the lending process. Successful screening reduces adverse selection problems, whereas appropriate monitoring reduces moral hazard.

Put together, screening and monitoring help banks reduce information asymmetries as it provides them with unique (proprietary) information about potential and actual borrowers. Banks are generally regarded as better than markets in reducing information problems as they can get closer to their borrowers over time and adjust their lending (and other) behaviour accordingly. In contrast, market-based financing (bonds and other debt financing) is mostly based on analysts' assessment around a specific point in time. For example, once bonds are issued their terms cannot be renegotiated and information is in the public domain. Market-based financing (and investment banking for that matter) has typically been viewed as transaction-based whereas commercial banking focuses more on relationships (see Section 1.4.3.4 on transaction and relationship banking).

Much of the discussion above focuses on asymmetric information issues between banks and borrowers. In general, where information asymmetries between borrowers and financers are large, then traditional bank intermediation is likely to be more important. When such asymmetries are less important, then market-based financing (based on hard information) will be greater. Some have argued that bank financing is important for small firms whereas as firms become larger they become better suited to market finance. This could be because banks undertake a certification role by signalling a successful medium- to long-term lending relationship. This successful relationship in turn suggests there are minimal adverse selection and moral hazard issues associated with the borrowing firm, therefore making it an appropriate candidate for capital market finance. In other words, bank lending certifies that particular firms have the appropriate information features to be able to tap the financial markets for funding.

Traditionally, banks have been seen to be in competition with the capital market. This spawned a debate as to whether economies that had large banking sectors relative to the size of the economy (so-called *bank-based systems*) resulted in better macroeconomic performance compared to *market-based systems* (those where stock market capitalisation to economy size is relatively large) (see also Section 17.2).

In a bank-based system, banks are the most important source of external financing for firms, although at a various extent. Bank–client relationships are close and the universal banking model is widespread. Informational barriers are more significant, as incumbent banks have informational advantages over new entrants. In a market-based system, meanwhile, capital markets usually are the main source of firm financing. Bank–client relationships are typically at arm's length and thus have less contractual flexibility than relationship-based finance.

The US and the UK are viewed as traditional market-based systems whereas Japan and Germany (and most of continental Europe and emerging economies in general) are viewed as bank-based systems. In recent years, the demarcation lines of this common classification of financial systems have become increasingly blurred and it is nowadays normally accepted that bank intermediation and capital market funding activities are complementary. The general consensus that has emerged out of the bank-based versus market-based debate is that it does not really matter whether an economy is bank- or market-based for economic performance – what is most important is that the economy has well-developed banking and financial systems overall. This view has pretty much informed IMF policy actions aimed at promoting financial sector development globally.

18.2.1 The shadow banking system

In addition to the traditional distinction between bank and capital market activities, the growth of shadow banking has strengthened the inter-linkages between banks and markets. Despite a growing interest of both academics and policy makers, there is no comprehensive definition of what constitutes shadow banking.[2] The Financial Stability Board (2011c) defines shadow banking as credit intermediation involving entities and activities outside the regular banking system.[3] Pozsar *et al.* (2010) define shadow banks as financial intermediaries that conduct maturity, credit and liquidity transformation without explicit access to central bank liquidity or public sector credit guarantees. These include finance companies, asset-backed commercial paper (ABCP) conduits, structured investment vehicles (SIVs), credit hedge funds, money market mutual funds, securities lenders, limited-purpose finance companies (LPFCs) and government-sponsored enterprises (GSEs). According to the relevant literature, the main components of the shadow banking system (in the US and in the eurozone) include (i) securitisation activities; (ii) collateral intermediation; (iii) money market funds; (iv) the repo market; and (v) hedge funds. In its broader definition, shadow banking also includes investment banks and mortgage brokers.

While measures of shadow banking differ considerably, in the US the system is large and comparable in size to the traditional banking system. In the euro area, the shadow banking system is smaller, representing less than half of the total assets of banking sector, with some relevant difference among countries (Bakk-Simon *et al.*, 2012). The Financial Stability Board (2018) uses a narrow measure to monitor shadow banking over 29 countries and they report that the sector grew by 7.6 per cent in 2016 to $45.2 trillion. This represents 13 per cent of the total financial systems assets of these jurisdictions. China contributed $7.0 trillion to the narrow measure (15.5 per cent) and Luxembourg $3.2 trillion (7.2 per cent).[4]

Probably the main recent development that reflects the complementarities between bank lending and capital market activities is the increasing importance of securitisation. The evolution and features of the securitisation phenomena are discussed in Section 18.3 and following. Below we briefly review the other components of shadow banking.

Collateral intermediation

A key function of shadow banking is supporting collateral-based operations within the financial system. This involves the intensive re-use of collateral (which can involve assets of different quality, from investment-grade AAA-rated bonds and treasury bills, to speculative grade bonds or equities) so that it supports as large as possible a volume of financial transactions (this is also known as *re-hypothecation*, which is the right to re-use the assets received as collateral for other purposes). Collateral intermediation is carried out by a small number of 'dealer banks', most of them classified as systemically important financial institutions (SIFIs) by the Financial Stability Board. The key players in this type of activity are Goldman Sachs, Morgan Stanley, JP Morgan, Bank of America-Merrill Lynch and Citibank in the United States; and Barclays, BNP Paribas, Crédit Suisse, Deutsche Bank, HSBC, Royal Bank of

[2] For a taxonomy of shadow banking see Pozsar *et al.* (2010).

[3] A definition of shadow banking is not straightforward. For a review of the current academic and regulatory attempts to define shadow banking see, among others, Claessens *et al.* (2012), Bakk-Simon *et al.* (2012) and Adrian *et al.* (2019).

[4] Financial Stability Board (2018), available at **www.fsb.org/wp-content/uploads/P050318-1.pdf**

Scotland, Société Générale and UBS in Europe. Outside the US and Europe, only Nomura is active in this market.[5]

Money market funds (MMFs)

Money market funds (MMFs) developed as an alternative to bank deposits and to circumvent regulatory caps on bank interest rates in the United States. MMFs invest in short-term debt, through purchases of certificates of deposits (CDs) and commercial paper (CP) and through repo transactions. Outside the United States, MMFs are less relevant: in the euro-area MMFs' balance sheets represent under 2 per cent of the balance sheets of monetary financial institutions (MFIs), although there are substantial country differences (for example, according to ECB statistics, MMFs represent 38 per cent of the total balance sheet of Luxembourg's MFIs and just under 45 per cent of Ireland's. The latter is the European centre for MMFs with around €460 billion assets under management in 2016).

The repo market

The repo market is another key component of the shadow banking system, particularly in the United States. A repurchase agreement (repo) is an agreement to sell securities (referred to as 'collateral') at a given price, coupled with an agreement to repurchase these securities at a pre-specified price at a later date. A reverse repo is the same set of transactions seen from the perspective of the party lending cash and receiving the securities as collateral. A repo is similar to a collateralised loan since the securities provide credit protection in the event that the seller (the cash borrower) is unable to complete the second leg of the transaction. Collateral haircuts and regular margin payments further protect the lender against fluctuations in the value of the collateral. Repo transactions offer flexibility to counterparties. For instance, the party receiving the collateral can reuse it (it can sell the securities outright, obtain cash through another repo and use them for margin calls).

According to the Bank for International Settlements (BIS, 2017) the size of the global repo market (linked only to government bonds) amounted to $8.8 trillion in mid-2016.[6] The euro area had the largest market ($2.8 trillion) followed by the US ($2.7 trillion) and Japan ($2.2 trillion). Broader measures, including repo transactions using both government bonds and other instruments as collateral, were estimated to be around $12 trillion.

Hedge funds

Hedge funds are also key players in financial markets, although whether they are part of the shadow banking system is debatable.[7] However, hedge funds were part of the complex network of financial intermediaries that was instrumental to the growth of shadow banking, either through their involvement in securitisation activities or in the repo market (Financial Services Authority, 2012). According to the Financial Stability Board (2018), hedge funds' assets amounted to about $3.7 trillion, some 1 per cent of the shadow banking system. The

[5] For more detail on collateral intermediation, see Singh and Aitken (2010), Claessen *et al*. (2012) and Singh (2017).

[6] BIS (2017), Table 1, p. 5.

[7] A hedge fund is an investment fund open to a limited number of wealthy investors and (because of its focus on wealthy/professional investors) is permitted to undertake a wider range of investment and trading activities than other investment funds. There are many different types of hedge funds pursuing a range of activities: in macro funds, for instance, investment and trading strategies are based on movements in macroeconomic indicators such as interest rates, exchange rates and so on.

Cayman Islands continues to be the preferred domicile for hedge funds, accounting for about 87 per cent of total hedge fund assets.

18.3 The development of the securitisation market

The origins[8] of the **securitisation** business can be traced to the failure of the US Savings and Loans (S&Ls) institutions in the mid-1980s. Traditionally, the S&Ls' main business was to collect retail deposits and use these to finance long-term residential mortgages. In the mid-1980s the S&L sector faced collapse because market interest rates increased and therefore the S&Ls had to pay higher deposit rates to maintain funding. However, because of various restrictions, they could not adjust rates on mortgages to cover the increased cost of funding. As such, S&Ls moved into higher-risk commercial property lending to try and generate higher returns, but this resulted in substantial losses. Recall that during the 1980s, the US had restrictions on interstate banking so many S&Ls had very concentrated lending portfolios, which focused on particular geographical areas. This lending concentration resulted in high default rates. The crisis situation faced by the S&L sector led the US authorities to set up the **Resolution Trust Corporation**, an entity that took assets off the S&Ls books, and then sold them on to investors and other banks. This process was not costless – US taxpayers faced losses of around $150 billion – although it did manage to avoid a system-wide collapse.

The process outlined above was the first major securitisation. The process was viewed as a solution to the problem faced by the S&L sector as it freed mortgage lenders from liquidity constraints imposed by their balance sheets. Through the securitisation process, banks no longer had to rely on deposits to make loans; they could make loans and then sell them on to investors in the form of securities to finance the lending activity.

These two different approaches to funding credit have been referred to as the:

- **originate-to-hold model** – where lenders find borrowers, originate loans and then hold these on the balance sheet until maturity (the traditional approach); and
- **originate-to-distribute model** – where lenders find borrowers, originate loans but then sell the loans (re-packaged as securities) on to investors (the securitisation approach).

Prior to securitisation, banks could only make a limited number of loans based on the size of their balance sheets. The new form of financing, however, allowed lenders to sell off their loans to other banks or investors, and the funds raised could be used to increase lending (see Section 18.4.1 for a detailed discussion of the securitisation process).

A major push to the US securitisation trend was led by the development of **mortgage-backed securities (MBS)** promoted by the **government-sponsored enterprises (GSEs)**, notably **Fannie Mae** (Federal National Mortgage Association) and **Freddie Mac** (Federal Home Loan Mortgage Corporation). MBS issued by these three institutions are referred to as **agency MBS**.

[8] Baily *et al.* (2008) provide an excellent insight of the evolution of the securitisation business. This section draws information from their work.

The GSEs had been established some years earlier to promote home ownership in the US.[9] Mortgages that fit certain rules (known as *conforming mortgages*) could be sold to Fannie Mae and Freddie Mac (see Box 15.1 for US mortgage basics). The GSEs then packaged a geographically dispersed mortgage loan portfolio and sold mortgage-backed securities (MBS) in financial markets. Over the 1990s and early to mid-2000s, the securitisation activities of the GSEs were very profitable and their business boomed. The GSEs were key participants in the mortgage market, accounting for much of the expansion of prime mortgage lending in the early 2000s. They also bought sub-prime (higher-risk) loans, and expanded that portfolio after 2003.[10] With the rise in sub-prime mortgage defaults (culminating in the credit crunch of 2007–2008) their portfolios suffered major write-downs, pushing them into losses — Fannie and Freddie had nearly $15 billion of write-downs at the end of 2007 according to their regulator (**Office of Federal Housing Enterprise Oversight, OFHEO**). However, despite these problems, by the end of 2007 they remained by far the largest buyers of mortgages originated, and some 75 per cent of new mortgages written in the fourth quarter of 2007 were placed with Fannie Mae and Freddie Mac. Growing concerns about the value of the massive portfolio of mortgage-backed securities held by the main GSEs (estimated at $5 trillion) led to a collapse of their share prices in July 2008, and the Federal authorities had to step in and bail them out in September 2008, as explained in Box 18.1.

BOX 18.1 A HISTORY OF FREDDIE MAC AND FANNIE MAE

1938: Fannie Mae is created during the Great Depression as a government agency to ensure supply of mortgage funds. The aim is to boost banks' capacity to offer home loans by buying up existing loans in exchange for cash.

1968: Fannie Mae is re-chartered by Congress as a shareholder-owned company, funded solely with private capital.

1970: Freddie Mac is created to provide competition in the secondary mortgage market and end Fannie Mae's monopoly.

1971: Freddie Mac introduces the first mortgage-related security.

2003: US policy interest rates hit a low of 1 per cent, further stoking the booming US housing market.

2004: Following an accounting scandal, Fannie and Freddie's regulator, OFHEO, requires the companies to raise their level of core capital 30 per cent above previous levels, in effect capping their ability to purchase mortgages.

2006: A steep rise in the rate of sub-prime mortgage defaults and foreclosures leads a number of sub-prime mortgage lenders to fail. The failure of these companies causes prices in the mortgage-backed securities market to slip.

[9] The GSEs were established by Congress to direct funds to specific sectors in the economy. Those most involved in mortgage finance include the Federal Home Loan Mortgage Corporation (Freddie Mac) (established in 1970); the Federal National Mortgage Association (Fannie Mae) (established in 1938); and the Government National Mortgage Association (Ginnie Mae) (established in 1968). In September 2008, Fannie Mae and Freddie Mac had to be rescued by the US government.

[10] This is in part because the US Congress encouraged (some critics say pushed) them to provide more loans to low-income borrowers in order to justify the capital advantage they had because of the implicit federal guarantee.

BOX 18.1 A history of Freddie Mac and Fannie Mae (*continued*)

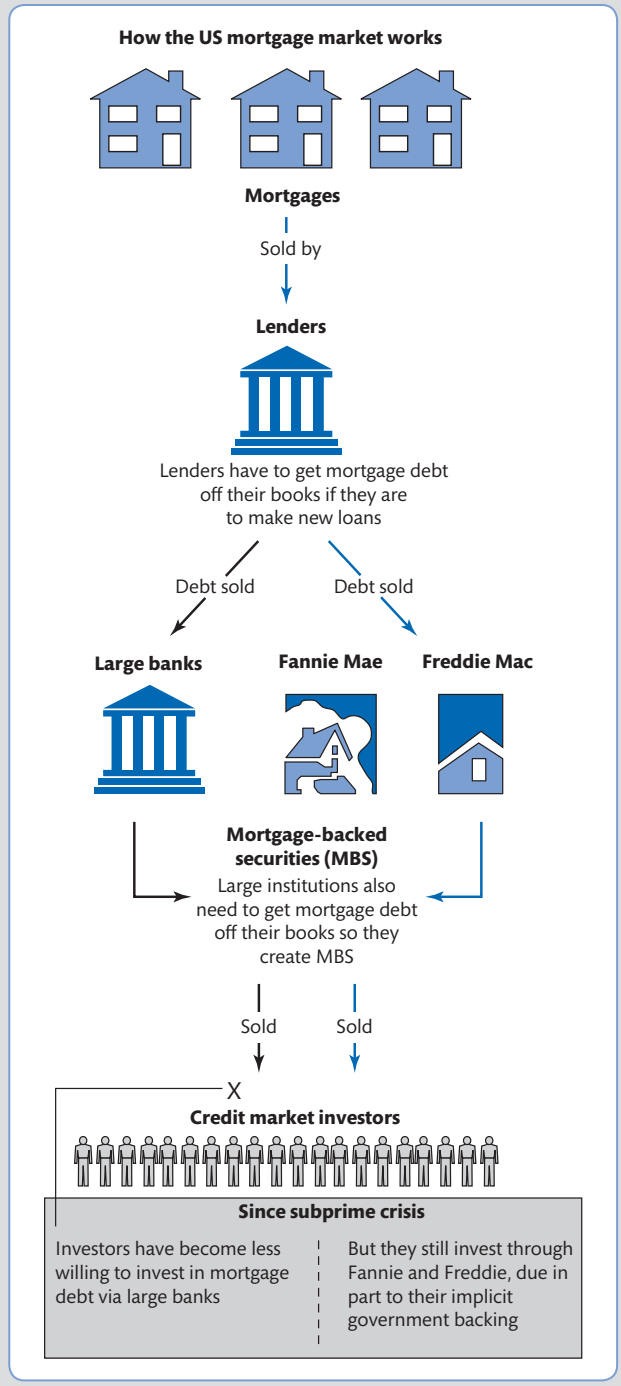


Figure 18.1 How the US mortgage market works

Source: 'A history of Freddie Mac and Fannie Mae', **FT.com**, 8 September 2008.

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BOX 18.1 A history of Freddie Mac and Fannie Mae (*continued*)

August 2007: Rising defaults on sub-prime mortgages trigger a global credit crunch.

March 2008: OFHEO gives both companies permission to add as much as $200bn financing into the mortgage markets by reducing their capital requirements.

April 2008: OFHEO report reveals that Fannie and Freddie accounted for 75 per cent of new mortgages at the end of 2007 as other sources of financing pull back on lending.

July 2008: Shares in Freddie Mac and Fannie Mae plummet amid speculation that a bail-out of the government-sponsored mortgage financiers may be required, and that such a bailout would leave little if any value for current shareholders. Frantic trading . . . in New York drags shares in both companies down to their lowest levels since 1991.

September 2008: The US government seizes control of the troubled mortgage groups in what could become the world's biggest financial bail-out. The government's move, its most dramatic since the start of the credit crisis, is aimed at ensuring the two groups' woes do not cripple the country's housing market or worsen to the point that they fail and send shockwaves through global markets



Source: 'A history of Freddie Mac and Fannie Mae', FT.com, 15 July and 8 September 2008.
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It is important to note that while the above discussion has focused on the GSEs, other financial institutions also issued MBS. As the GSEs original remit was to promote home ownership to US citizens, they only dealt with mortgages up to a certain size and those that had moderate credit risk features. As such other institutions were involved in securitising larger 'jumbo' mortgages or those in the higher-risk sub-prime market (see Box 15.1 for definitions).

The growth in the US sub-prime mortgage business (and related securitisations) deserves special mention as this has been attributed as a major culprit of the 2007–2009 financial crisis. Sub-prime mortgage originations grew rapidly from around $200 billion in mid-2003 to more than $500 billion by mid-2004, peaking at around $600 billion in 2005–2006 when they accounted for about 20 per cent of all new US residential mortgages. The attraction of sub-prime mortgages was that they offered higher interest rates than prime (or conforming) mortgages – typically 2 per cent more than fixed-rate prime mortgage lending. In a low interest rate environment this became attractive to banks.

Figure 18.2 illustrates the increasing importance of securitisation particularly in the sub-prime and Alt-A mortgage market in the run-up to the 2007–2009 financial crisis. By 2006, around 81 per cent of sub-prime mortgages had been securitised. The tremendous growth in securitisation activity from the early 2000 onwards meant that by 2006 it was driven mostly by non-prime mortgage loans and when sub-prime mortgage borrowers began to default then the securitisation business of such loans collapsed and fuelled the credit crisis. Section 18.4 outlines the securitisation process and shows how particular MBS and ABS structures were created, while Section 18.5 explains the features of CDOs and other instruments.

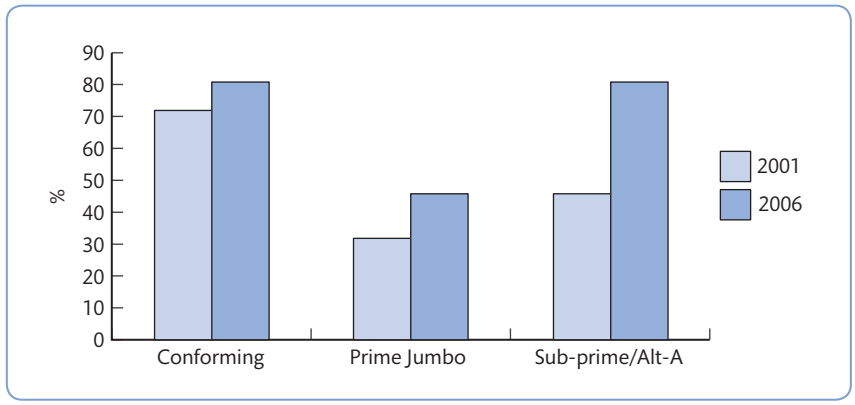


Figure 18.2 Securitisation rates by type of mortgage, 2001 and 2006

Note: Conforming mortgages are those that conform to GSE guidelines and this means that they can be originated and sold to Freddie Mac, Fannie Mae etc. (Loans that do not meet guidelines are known as non-conforming loans.) A jumbo mortgage is a mortgage with a loan amount above the industry-standard definition of conventional conforming loan limits (typically around $420,000 in 2006, and $417,000 in 2011). An Alt-A mortgage is a type of US mortgage that is viewed as riskier than prime mortgages but less risky than sub-prime.

Source: Baily *et al*. (2008), Figure 5.

18.4 Modern securitisation process

Securitisation began in the US in the 1970s with structured financing of mortgage loans by a government-sponsored agency, the Government National Mortgage Association (Ginnie Mae). However, the growth of the securitisation markets started in the mid-1990s: the US market increased from $2.9 trillion in 1996 to $11.6 trillion outstanding at year-end 2007 but by 2016 the market had shrunk to $10.25 trillion and by 2021 it increased to $13 trillion, over pre-crisis volumes.[11] The EU market reached $1.97 trillion at year-end 2007 but it has since declined to $1.3 trillion by the start of 2017.[12]

After the extended period of growth, global securitisation markets collapsed during the financial crisis of 2007–2009, when securitisation was considered one of the primary causes of the credit market turmoil. Since then, following the generalised loss of investor confidence, most of the new issues have been retained by banks and used as collateral in government refinancing operations. However, despite the weaknesses in the securitisation process revealed by the crisis, policy makers as well as market practitioners have acknowledged the potential of securitisation in credit risk transfer and diversification and attempted to revive securitisation by increasing transparency in the market and introducing changes to the securitisation model in terms of simplicity and standardisation (EP, 2018).

Traditional securitisation can be defined as the pooling of risky assets and their subsequent sale to a **special purpose vehicle (SPV)**, which then issues securities. These securities are

[11] The Securities Industry and Financial Markets Association (**www.sifma.org**) publishes annual reviews of the US securitisation market.

[12] The Association of Financial Markets in Europe (**www.afme.eu**) publishes a quarterly European securitisation data report.

usually fixed income instruments; where the principal and interest depend on the cash flow produced by the pool of underlying assets.

More in detail, the process of securitisation can be defined as: the process whereby loans, receivables and other financial assets are pooled together, with their cash flows or economic values redirected to support payments on related securities. These securities, which are generally referred to as 'asset-backed securities' or 'ABS,' are issued and sold to investors – principally, institutions – in the public and private markets by or on behalf of issuers, who utilise securitisation to finance their business activities.

ABS (asset-backed securities) and MBS (mortgage-backed securities) are the 'original' fixed income securities resulting from the securitisation of the underlying pool of assets. In Europe and in US the largest components are the RMBS (residential mortgage-backed securities). These are considered traditional 'granular' instruments (i.e. ABS pools have been a large number of small-sized, relatively homogenous consumer-related assets).

18.4.1 Creation of an ABS security: participants and functions

Figure 18.3 shows the process of creation of an asset-backed security (ABS); securitisation removes financial assets (for example, a pool of mortgage loans) from the balance sheet of the bank. The assets that underlie securitisation transactions are first created when an 'originator', say a bank, makes a loan to a borrower, the 'obligor'. Typically, once the financial asset is created and funded, the bank continues to service the loan, which is a provision of a collection and management function in connection to that loan. As argued by Heffernan (2005), the bank could issue a bond with a bundle of pooled assets acting as collateral, but the credit rating of the bank would be assigned to the new security, the proceeds of the bond would be subject to reserve requirements and the assets included in the computation of the bank's capital ratio. The bank can circumvent these constraints with the process of securitisation.

As illustrated in Figure 18.3, the main participants in a securitisation issue are the following:

- *originator*: the institution (bank) seeking to securitise its assets;
- *sponsor*: the institution that initiates the securitisation process. Sometimes the same as the originator; sometimes an agent earning a fee.
- *special purpose vehicle* (SPV): entity created with the sole purpose of the transaction. The SPV acquires the assets and issues its securities to investors; it is also called 'securitised product issuer';
- *trustee*: impartial third party that monitors the whole deal;
- *custodian*: a party that holds the assets on behalf of the purchaser of the securitised products;
- *servicer*: a party that collects cash flow on assets and distributes it to either SPV or custodian;
- *underwriter*: an investment bank that markets, distributes and sells the securitised products issues by the SPV.

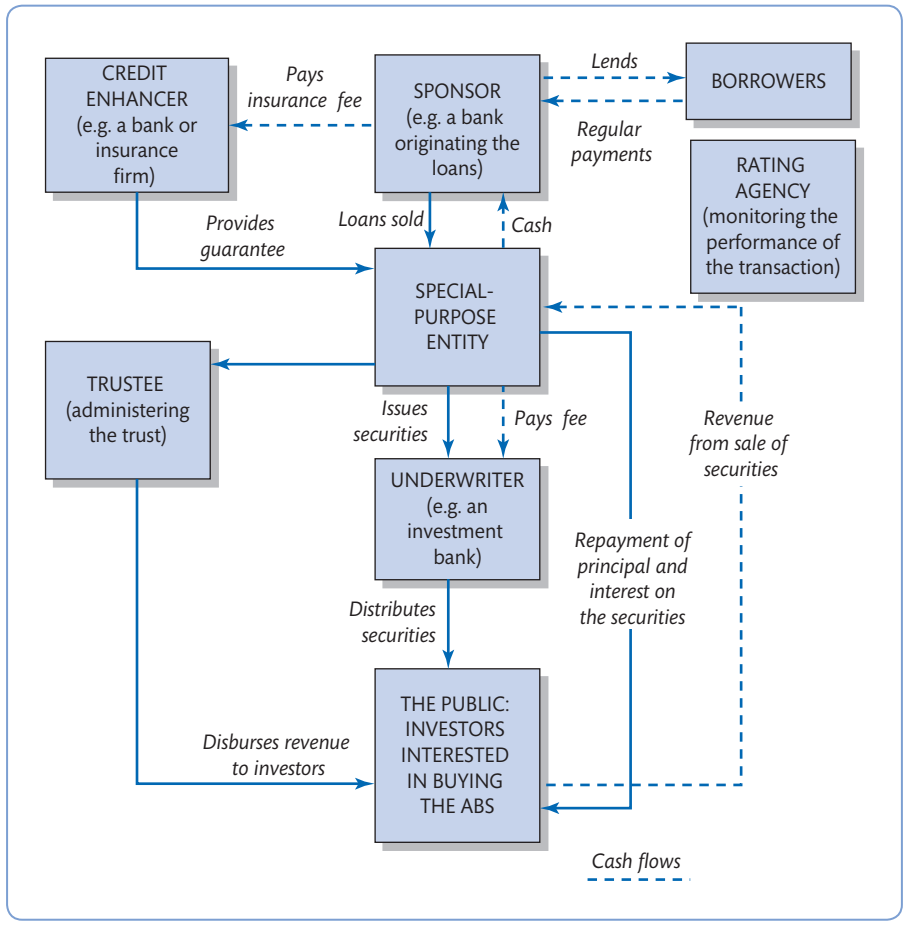


Figure 18.3 Creation of an ABS security: participants and functions

The following highlights the main stages of the process illustrated in Figure 18.3:[13]

- Stage 1 – the originator makes the mortgage (or other types of) loans.
- Stage 2 – the SPV buys the mortgages (or other loans) from the originator in what is known as a 'true sale'. (Note that many large banks created their own SPVs for this purpose.) The true sale aims to guarantee the separation or 'remoteness' of the cash flows from the underlying assets (mortgages or other loans that have been acquired) from the solvency of the originator. More simply, if the bank that made the loans becomes insolvent then the SPV remains (in theory) legally separate and the loans that have been purchased are protected. The SPV usually has no other function apart from holding the purchased underlying assets and issuing securities backed by the pool of assets (mortgages or other loans) being held. This structure reduces the likelihood of the SPV being placed into bankruptcy.

[13] A good exposition of the securitisation process can be found in Marques-Ibanez and Scheicher (2010) and in Casu and Sarkisyan (2019).

- Stage 3 – the cash received from investors who buy the (credit-rated) securities issued by the SPV is then passed back on to the originator via the SPV.
- Stage 4 – the SPV also appoints a servicer to collect interest and principal payments on the underlying loans.
- Stage 5 – two other key parties to the transaction are the **credit enhancer** (or *swap counterparty*) (normally any interest rate risk or currency risk associated with the pool of underlying assets is hedged (or reduced) using a variety of swap transactions). The second party is the trustee, who performs the function of ensuring that money is transferred from the servicer to the SPV and that investors are paid in accordance with the promised priority (investors in the ABS or MBS are paid at different times, at different rates and in accordance with varying rules depending on how the securities being backed by the assets are 'sliced and diced') – different tranches of assets back different securities, from low risk to high risk, as explained below.

As can be seen from Figure 18.3, this all seems rather complicated (and it can be) but one must remember that a critical feature is that if the originator (the bank making the loans) goes bust, there is no recourse to the collateral (the underlying assets) held by the SPV and the servicer ensures that payments on the underlying assets continue to be made and investors that have bought the securities from the SPV still receive interest and principal payments. So (in theory) investors do not have to worry about the risks the bank is taking in its lending activity, all they have to worry about is the credit quality of the underlying assets held in the SPV – and because the regulators in the US and elsewhere classified such SPVs as 'bankruptcy remote' they were viewed as legal structures that held low-risk pools of diversified mortgages (or loans) and as such were seen to be corporate structures containing high-quality collateral.

Another important feature (see Stage 3 above) is that most securities issued by SPVs were rated by **credit-rating agencies** – Standard & Poor's, Moody's and Fitch. Credit-rating agencies evaluate the credit risk of financial instruments issued by companies (as well as governments and other public bodies). The higher the credit (default) risk associated with a security then the lower the rating and more investors will demand to hold such instruments. (Recall that Standard & Poor's credit-rating scale rates the lowest risk and therefore highest quality investments as AAA. The credit rating ranges from the aforementioned excellent rating down to poor as such: AAA, AA, A, BBB, BB, B, CCC, CC, C, D. Anything lower than a BBB rating is regarded as high risk, referred to as speculative grade or a junk bond – see Chapter 4, Table 4.4.)

To assure investors that the ABS or MBS are of a high quality, the SPVs require the credit-rating agencies to rate these securities to reflect the credit risks of the pools of assets backing these securities. While the credit quality of individual loans in the underlying pool of assets may be low, the credit quality (and therefore the credit rating) of the overall portfolio held in the SPV can be increased by pooling the portfolio of risky assets so as to gain various diversification benefits. In addition the risks of the portfolio could further be improved by various **credit-enhancement** techniques, such as third-party guarantees (insurance cover to protect the value of assets), **over-collateralisation** (holding a larger pool of assets than securities issued) and by something known as **excess spread** (originators, namely banks, inject cash into the SPV that will bear certain early losses). All the aforementioned practices, getting

the ABS or MBS rated and the various credit-enhancement techniques, were put in place to increase the attractiveness of the securities issued to investors.

There are several methods of credit enhancement, and it is not uncommon to see more than one type in a single structured finance transaction. The most common forms are subordination, over-collateralisation and excess spread.

Subordination

Subordination is the process of prioritising the order in which mortgage loan losses are allocated to the various layers of bonds so that the lower-rated junior bonds serve as credit support for the higher-rated senior bonds. More specifically, all principal losses on the underlying mortgages go to the most junior bonds first, resulting in a write-down of their principal balance. Similarly, any interest shortfalls will affect the most junior bonds first (see Section 18.4.2 for more details).

Over-collateralisation

Under the over-collateralisation method, the face value of the underlying loan pool is larger than the par value of the issued bonds. So even if some of the payments from the underlying loans are late or default, the transaction may still pay principal and interest payments on the bonds.

For example, if a particular collateral pool's expected performance indicates that the pool would need 40 per cent credit enhancement to support an 'AAA' rating, that rating could not be obtained unless the transaction had 40 per cent more collateral above and beyond the par value of the securities issued.

Excess spread

Excess spread is the additional revenue generated by the difference between the coupon on the underlying collateral (such as a mortgage interest rate) and the coupon payable on the securities.

For example, borrowers whose mortgages are in a given collateral pool may be paying 7 per cent interest, while the coupon of the mortgage-backed security may be 4 per cent. The transaction can then use the excess spread to absorb collateral losses or build over-collateralisation to its target level.

BOX 18.2 WHAT IS CREDIT ENHANCEMENT?

Credit enhancement (or credit support) is a risk-reduction technique that provides protection, in the form of financial support, to cover losses under stressed scenarios. Think of credit enhancement as a kind of financial cushion that allows securities backed by a pool of collateral (such as mortgages or credit card receivables) to absorb losses from defaults on the underlying loans.

Thus, it is not the case that through securitisation, poor credit assets somehow 'transform' into solid investments; instead, credit enhancement helps to offset potential losses. Credit enhancement is used in project financings, public–private partnership transactions, and structured finance to help mitigate risk for the investors, and has been an accepted practice in bond financing for more than two decades.

Whatever method a transaction uses, credit enhancement allows for more resources or financial backing for a security than would be available from the underlying assets alone. That way, if the pool ends up experiencing losses, the credit enhancement supporting the bonds should still provide enough buffer to allow for payment to the bonds. Because it provides a kind of safety net, credit enhancement increases the likelihood that bonds with a higher payment priority (senior bonds) will receive their full repayment of principal and timely interest.

18.4.2 Tranching

Another important feature relates to the **tranching** of the liabilities of the SPV so that different types of securities with varying risk and maturity features can be offered to meet varying investor demands. Tranching (from the French for slice) means issuing securities of different risk, duration and other characteristics. In its simplest form, securities issued by the SPV can be broken down into three main 'tranches' and these have different risk–return features: the *senior tranche* (least risky with the highest credit ratings, typically AAA and AA), the *mezzanine tranche* (which are both rated, usually BBB and below) and the unrated *equity tranche*. The latter is the most risky tranche of the securitisation deal and is commonly retained by the originating bank on its balance sheet.

In practice, the number of tranches is much higher than three and the senior tranche can be broken into further sub-tranches, which often have the same credit rating but different maturity dates. All tranches are backed by the same pool of risky assets but, if some of the underlying assets default, there is a 'waterfall' of payments such that the equity tranche is the first to suffer losses, followed by the mezzanine tranche and lastly the senior tranche.

In parallel, all payouts coming from the pool first go to the holders of the senior notes, then the mezzanine tranche and only then would any residual payouts be transferred to equity holders. At least in theory, tranching enables an SPV to split the credit risk and place it with parties that are willing or best able to absorb it.

Example:

An SPV sells four tranches of credit linked notes with a 'waterfall' structure whereby:

- tranche A absorbs the first 25 per cent of losses on the portfolio;
- tranche B absorbs the next 25 per cent of losses;
- tranche C the next 25 per cent;
- tranche D the final 25 per cent.

Tranches B, C and D are sold to outside investors while tranche A is bought by the bank itself. See Figure 18.4 for an example of this tranching process associated with an SPV asset pool.

Because of the high-risk nature of the equity tranche traditionally the originators (banks) would hold part of this on their balance sheets to enhance the credit risk of the underlying pool of assets. It also maintains the incentive for originators to continue to monitor the credit quality of the borrowers. However, in the years prior to the 2007–2009 financial crisis, the equity tranche securities have increasingly been sold on to speculative investors such as hedge funds. As such, originators (banks) have had less incentive to monitor the credit quality of borrowers after the loans have been made because all the risks have been passed on to investors (via the SPV) in the form of securitised assets (MBS and ABS).

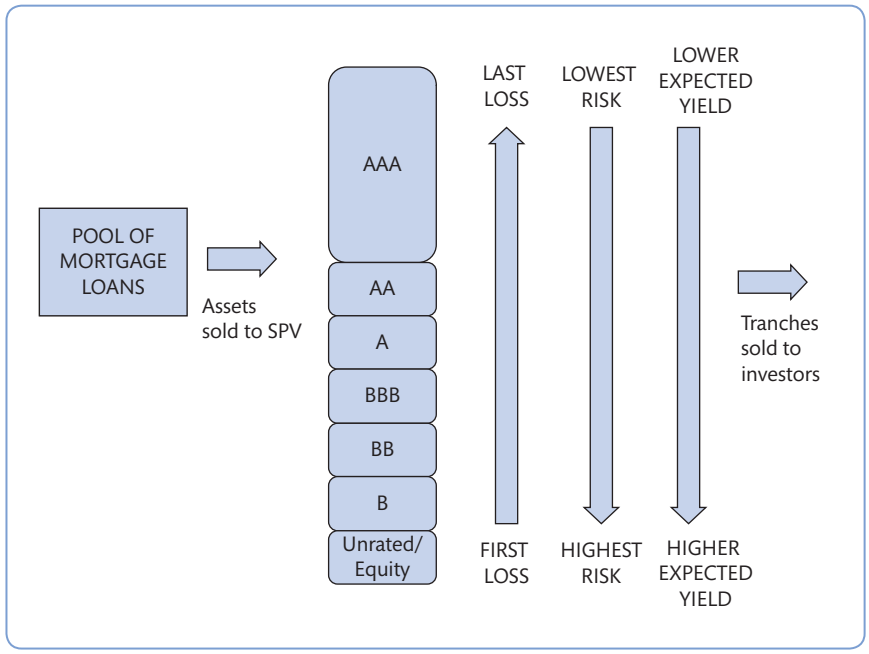


Figure 18.4 Capital structure and prioritisation

Tranching has some advantages and some disadvantages.

Advantages:

- It allows creating one or more classes of securities whose rating is higher than the average rating of the underlying collateral asset. This is achieved through the use of credit enhancements, most of which typically come from the originating banks and can be provided in various forms from standby letters of credit to the purchasing of the most junior securities issued by the SPV.
- The equity/first-loss tranche absorbs initial losses, followed by the mezzanine tranches. Thus, the most senior claims are expected to be insulated – except in particularly adverse circumstances – from default risk of the underlying asset.
- Tranching allows investors to further diversify their portfolio.

Disadvantages:

- It adds complexity to deals.
- With increased complexity, less sophisticated investors have a harder time understanding the products offered and therefore are less able to make informed investment decisions.
- Modelling the performance of tranched transactions based on historical performance may have led to the over-rating (by ratings agencies) and underestimation of risks (by end investors) of asset-backed securities. These factors have come to light in the sub-prime mortgage crisis

In the example in Figure 18.5, if there are losses on the pool, those losses would first be allocated to the excess spread. If the losses were greater than the available excess spread, they would be allocated to over-collateralisation. If the losses were greater than both credit enhancements, they would be allocated to the most junior tranche first.

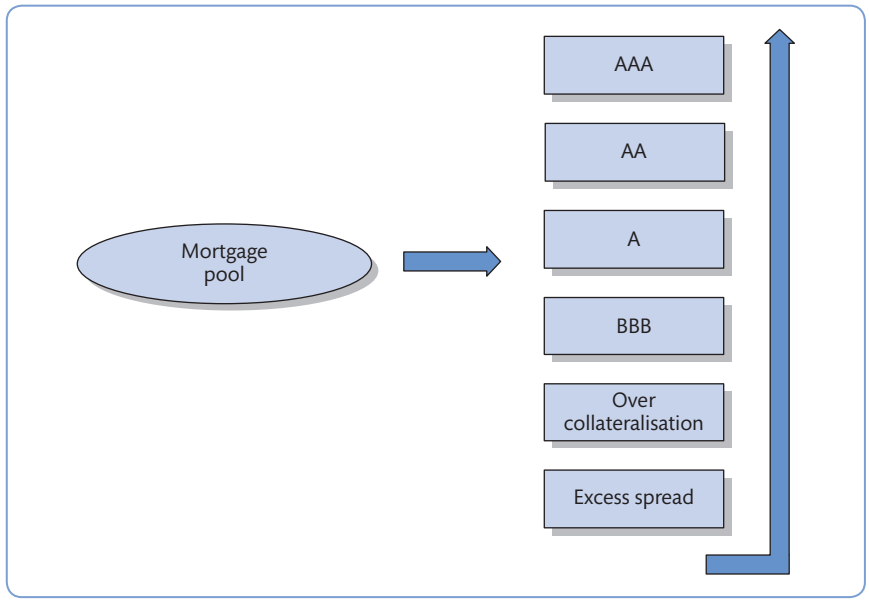


Figure 18.5 Example of tranching and credit enhancement

18.5 The 'new wave' of securitisation

The creation of securities known as **collateralised debt obligations (CDOs)** formed a new wave in the securitisation process. In the years preceding the 2007–2009 financial crisis, the tendency had been a departure from the traditional granular securitisation towards the creation of instruments backed by fewer but larger and more heterogeneous assets. The assets backing the new securities, the CDOs, can include high-yield bonds, tranches of other ABS transactions, leveraged loans and often combine securitisation techniques with innovation in credit risk management, such as the use of **credit default swaps (CDS)**.

CDO issuers purchased different tranches of MBS and pooled them together with other ABS (backed by car loans, student loans, credit card payments and other assets). They were tranched in a similar fashion as noted above: 'senior' CDOs were backed by highly rated MBS and other ABS, while 'mezzanine' tranches pooled together a higher proportion of junior tranches.

In contrast to an MBS where the underlying pool of assets was actual mortgages, in the case of CDOs the assets were the securities that received mortgage payments. CDOs, therefore, can be viewed as re-securitised securities. CDOs issued before the financial turmoil frequently were themselves backed by structured securities. This resulted in so-called 'two-layer' or 'double leveraged' securitisations in which structured products were used to fund other structured products. These products are extremely difficult to value in normal times, let alone in periods of turmoil.

Once the ABS and MBS were pooled, these then could be tranched and CDO securities could be issued via SPVs with varying risk-return and maturity profiles. CDOs have been constructed with a variety of assets and have earned different titles, including:[14]

- corporate bonds – collateralised bond obligations (CBOs);
- corporate/leveraged loans – collateralised loan obligations (CLOs);

[14]See Marquez-Ibanez and Scheicher (2010).

- BBB ABS – mezzanine CDO;
- tranches of other CDOs – CDO squared (CDO^2).

Again, credit-rating agencies were actively engaged in rating the tranches of CDOs and similar securities, and issuers used credit-enhancement techniques to lower the credit risk associated with the various tranches to make them more attractive to investors. The size of US CDO issuance amounted to $300 billion in 2006 and 2007. During 2007, many high-grade CDOs suffered losses, reflecting the mirage associated with the high credit rating of these instruments.

18.5.1 Asset-backed commercial paper

Another important securitised product is **asset-backed commercial paper (ABCP)**. ABCP is (to a certain extent) similar to traditional ABS as they use a variety of ABS funded by the issue of commercial paper. Marques-Ibanez and Scheicher (2010) note that typically an ABCP uses short-term debt (with maturities starting from one day to several months) to finance a pool of credit assets such as trade receivables, corporate loans, mortgage loans, CDO tranches, or other credit assets obtained from the market, including US sub-prime mortgages.

The underlying assets have relatively long maturities compared with the funding liabilities and as such ABCP structures have large maturity mismatches (or less formally, specific types of SPVs set-up by banks known as **structured investment vehicles (SIVs)**, issue short-term asset-backed commercial paper to finance the assets in the pool and must continue to roll-over the issues).

These SPVs that purchase medium- to long-term assets, which they finance by issuing short-term asset-backed commercial paper (ABCP) are also known as *conduits*. A conduit is special purpose vehicle set up by a sponsoring financial institution whose sole purpose is to purchase and hold financial assets from a variety of asset sellers. The conduit finances the assets by selling ABCP to outside investors. The outside investors are primarily money market funds and other 'safe asset' investors. Typically the originator will provide liquidity support (enhancement and other guarantees) to allay investors' fears about the liquidity mismatch. Many banks (particularly in the US) used this type of structure to hold large pools of medium-term loans in SPV financed by the issue of short-term paper. They could raise short-term finance at attractive terms to hold higher yielding assets in their SPVs that were not subject to onerous capital requirements (which would have been the case if they had been held on-balance sheet). With the onset of the sub-prime crisis in 2007, liquidity in the ABCP market collapsed, forcing banks to honour the liquidity guarantees that they had made to their SPVs, with many banks having to take these back onto their balance sheets (bearing massive losses as a consequence). Given that the size of the ABCP market was estimated at $1.4 trillion in 2007, the collapse of this activity had serious implications for bank performance. Between July and December 2007, the ABCP market experienced the equivalent of a bank run, when the ABPC outstanding dropped from $1.3 trillion to $833 billion, as documented by Acharya *et al.* (2013) and Covitz *et al.* (2013).

18.6 Types of securitisation

Market professionals agree that securitisation is a structured product, but agreement usually ends there. There are two main different types:

- true sale securitisation;
- synthetic securitisation.

18.6.1 True sale securitisation

In true sales securitisation transactions the originator repackages a pool of assets into tradable securities, which are backed by the assets themselves, and sells them to investors. This is a genuine sale with title passing to the issuer SPV.

The separation of the SPV from the originator also means the third-party investors have no recourse to the originator if the SPV is unable to meet its liabilities to them, aside from any separate security or credit-enhancement arrangements included in the securitisation. The 'true sale' process helps to guarantee the separation of the expected cash flows from the underlying assets from the solvency of the originator.

In these cases, the SPV does not have any other function apart from issuing the securities and owning the underlying assets. If the originator goes bankrupt, there is no recourse to the collateral held by the SPV and the servicer ensures that payments on the collateral continue to be made and investors still receive their interest and principal. The credit quality of the securities issued by the SPV is thus delinked from the solvency of the originator, e.g. the bank.

18.6.2 Synthetic securitisation

Synthetic securitisations are issued by banks in order to manage their regulatory capital. In this case the originators do not need funding, their goal is to transfer the credit risk of their portfolio. Synthetic securitisations combine securitisation arrangements with credit derivatives (credit default swaps). In these transactions, the portfolio of assets is not sold to the SPV. Instead the originator enters into a credit default swap (CDS) or similar arrangement with the SPV (see also Section 18.7).

In synthetic securitisations, the transactions are highly flexible in terms of the asset mix and risk-return characteristics, enabling investors to choose 'tailor-made' tranches to suit their needs. The underlying assets remain on the balance sheet of the originator or arranger, while the SPV holds a pool of CDS that reference the assets.

In a synthetic securitisation, the CDS generates a premium payment from the originator or arranger to the SPV. In the event that any of the underlying assets default, the SPV would be responsible for any losses. On the liability side, the SPV still issues fixed-income securities to investors.

Table 18.1 True sale vs. synthetic securitisation

	True sale	Synthetic
Sale of Assets	Yes	No
Purpose for the bank	Funding	Credit risk hedging/Capital management
SPV required	Yes	Possible, not required
Ownership of assets	SPV	Originating bank
Asset types	Consumer loans, credit card receivables, mortgages	Corporate exposures, SME lending, trade finance
Investors' returns	Based on cash flows from underlying loans	Based on pre-agreed credit risk premium

18.7 Securitisation, credit-rating agencies and monoline insurers

Banks' increasing involvement in markets via the securitisation process could not have taken place without the role of two important players – credit-rating agencies and **monoline insurers** (that is, entities that provide CDS for specific types of assets).[15]

The credit-rating agencies (CRA) were instrumental in boosting the attractiveness of many securitised assets by assigning rating to the different tranches of securities issued via SPVs (or SIVs). However, the lack of transparency of various securitised assets – particularly CDOs and ABCP – meant that investors became reliant on the ratings as a guide to the risk–return features of these asset-backed securities. The main agencies – Moody's, Fitch and Standard & Poor's – used complex models to assess the probability of default of the securitised assets and also advised issuers on how to structure the securitised assets (CDOs and the like) so as to minimise funding costs. Put simply, unlike in the corporate bond and other debt markets (syndicated lending) where issues are passively rated, the agencies actively engaged in advising on the creation of increasingly complex structures from which they earned substantial consulting fees. Issuers could shop around to get more attractive ratings. All this resulted in a boom in profits for the credit-rating firms – Moody's profits increased threefold between 2002 and 2006 to $750 million – mainly as a result of fees from advising on securitisation structures.

Since the onset of the crisis, rating agencies have been accused of being too lenient in rating various tranches in securitisation transactions (particularly the senior tranches). In addition, (and as inferred above) various commentators have made allegations about major conflicts of interest arising from the fact that advising and rating securitised assets became a major source of rating agency income and this may have corrupted their incentives for accurately rating the issuers involved in such structures.

As discussed earlier, many of the securitisation structures benefited from credit-enhancement techniques that reduced the perceived risks of the underlying assets backing the ABS, MBS and/or CDO issues. One of the main providers of such enhancement is the so-called monoline insurance companies, major operators being MBIA and Ambac. These had emerged in the US in the 1970s as offering insurance to back municipal bonds. The insurance companies had very strong balance sheet and sold default insurance to issuers of municipal bonds – the municipalities purchased this insurance to obtain higher credit ratings (typically AAA) on the bonds they were issuing and therefore managing to borrow at lower cost. The monoline insurers earned fees for their services.

Over time, the monoline insurers expanded their activities into the securitisation of MBS and then other ABS and CDOs. At the start of 2008 it is estimated that seven (AAA-rated) monoline insurance companies insured $100 billion in CDOs linked to sub-prime MBS.

Monoline insurers can provide credit enhancements via two main channels, traditional credit insurance and through the use of CDS. A CDS is similar to credit insurance, but there are major regulatory differences between the two. A CDS transaction (like credit insurance) involves a *protection buyer* (for example, a CDO bond issuer trying to raise ratings and reduce

[15] Monoline insurance is an insurance company that provides guarantees to issuers, often in the form of credit wraps or credit default swaps, to enhance the credit of the issuer. These insurance companies first began providing wraps for municipal bond issues, then specialised in providing credit enhancement for other types of bonds, such as mortgage-backed securities and collateralised debt obligations.

BOX 18.3 CDS: MODERN DAY WEAPONS OF MASS DESTRUCTION

As the invasion of Iraq was planned, Warren Buffet pointed to real weapons of mass destruction: derivatives. Reporting earlier this year, the US Financial Crisis Inquiry Commission concluded that over-the-counter derivatives had contributed significantly to the 2007–09 crisis.

Credit default swaps (CDS) came in for particular criticism, for their roles in risky mortgage securitisation and in (toxic) synthetic collateralised debt obligations, and for being central in the $180bn bail-out of AIG [see Box 18.4].

CDS resemble insurance. Buyers receive payouts from sellers on a credit event of a particular entity, and in return pay premiums to sellers. CDS are useful for hedging insurable interests. Unlike insurance, however, buyers do not have to have an interest in the entity, and such "naked" CDS have become an efficient way of shorting sovereign bonds.

Ignored by regulators, CDS contracts soared, with gross notional values of CDS positions rising from $1,000bn in 2001 to $62,000bn in 2007. Since then "compression", that is the elimination of redundant positions, has reduced gross values to $26,000bn in 2010, but CDS activity has continued to grow. There is little information about the buyers and sellers of CDS – an information gap the G-20 nations want to close.

Last year academics and commentators pointed to speculators using CDS to attack European sovereign bonds (e.g. "Time to outlaw naked credit default swaps", Wolfgang Munchau, FT, February 28, 2010). An EU Commission task force was set up to investigate, and its released but unpublished report sought to play down the issue.

The task force concluded changes in spreads of CDS and bond markets were mainly contemporaneous, and were equally likely to lead or lag; that there was no evidence of mispricing in sovereign bond or CDS markets; and that there was no conclusive evidence that developments in the CDS market cause higher funding costs for member states.

Unsurprisingly, the task force judged that "in the light of the evidence of the functioning of CDS markets and challenges to implementing a ban (e.g. definition of insurable interest), it may not seem entirely appropriate to consider a ban as a permanent rule". Instead, the still draft EU directive on short selling and CDS calls for transparency and temporary bans in emergency situations.

But were the Commission's findings way off the mark? In a paper* published in July, Giovanni Calice of Southampton University, Jing Chen of Swansea University, and Julian Williams of Aberdeen University came to different conclusions. They investigated potential spillover effects between credit and liquidity spreads in the eurozone sovereign bond market and the sovereign CDS market in the 2010 European sovereign debt crisis.

They found that, prior to the crisis, spreads of bond yields determined CDS spreads, but during the crisis CDS spreads led bond yields. For Ireland, Greece, Portugal and Spain, the transmission effect from the CDS market to bond spreads was large and significant. The authors also found "explosive trends" emanating from the CDS market that, without official intervention, would have resulted in complete market failure for the sovereign debt instruments for several European countries.

Another study** published this year from Joshua Aizenman and Michael Hutchison of the University of California, and Yothin Jinjarak of the University of London, also presented a different picture. Here the authors investigated whether high sovereign debt default risks of financially distressed eurozone countries could be explained by "fiscal space" (government debt/tax ratios) and other economic fundamentals.

They developed a model of pricing sovereign risk, using CDS spreads, for over 50 countries before and after the crisis, related to fiscal space and other factors. They then calculated how actual CDS spreads compared with spreads predicted by the model.

*Liquidity spillovers in sovereign bond and CDS markets. This paper was published as: Calice, G., Chen, J. and Williams, J. (2013) 'Liquidity spillovers in sovereign bond and CDS markets: An analysis of the Eurozone sovereign debt crisis', *Journal of Economic Behavior & Organization*, 85, 122–143.
**What is the risk of European sovereign debt default? Fiscal space, CDS spreads and market mispricing of risk. This paper was published as: Aizenman, J., Hutchison, M. and Jinjarak, Y. (2013) 'What is the risk of European sovereign debt default? Fiscal space, CDS spreads and market pricing of risk', *Journal of International Money and Finance*, 34. pp. 37–59.

BOX 18.3 CDS: modern-day weapons of mass destruction (*continued*)

They showed that the fiscal space of Greece, Ireland, Italy, Portugal and Spain in 2010 was high compared with other countries, so predicted CDS spreads were also higher. But actual CDS spreads were even higher than those predicted, by ratios ranging from Ireland 1.3, Italy 1.4, Spain 1.9, Portugal 2.8 and Greece 3.3. The authors concluded that "the extraordinarily high CDS spreads in [the peripheral economies] in 2010 may be attributed to excessive pessimism and an overreaction to the fiscal deterioration" (though theoretically it might instead reflect future fundamentals).

These two studies suggest that CDS aggravate the eurozone debt crisis. Buyer pressure on CDS spreads can have explosive effects necessitating intervention – bail-outs, support from the new European Financial Stability Facility (EFSF), or purchases of sovereign bonds by the ECB (or soon the EFSF). Moreover, such buyer pressure on CDS appears excessive in relation to the economic fundamentals.

The cost of bail-outs or other support triggered by CDS attacks may largely fall on German shoulders. Last month the German Finance Ministry indicated it would be seeking a Europe-wide ban on naked short-selling of stocks, sovereign bonds and CDS to counter "destructive speculation". Zapping naked CDS may cost much less than bail-outs.

FT *Source*: Chapman, J. (2011) 'CDS: Modern day weapons of mass destruction', *Financial Times*, 11 September.
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default risk) and a *protection seller*, a counterparty who receives a fixed income stream in return for assuming the default risk. CDS, however, are not overseen by any regulatory authority and as such there is no guarantee that in the case of default the seller will have sufficient funds to make full payment.

In general, the purchase of credit protection (either via insurance or CDS) reduces the credit risk of mortgage-backed securities, allowing them to obtain AAA ratings for their bonds. In addition, the credit insurance was provided at relatively low expense because it was believed that the risks were low. All went well until various asset-backed securities went bust following the start of the sub-prime crisis. When, for instance, a CDO issued by the Swiss bank Credit Suisse defaulted during 2006, virtually all its $341 million was wiped out. However, Credit Suisse had bought credit insurance protection from MBIA for its senior tranches (but not mezzanine). While the mezzanine bond holders lost everything, most AAA holders were reimbursed as MBIA had to pay $177 million to cover the losses. During 2007 the monoline industry made massive losses in the light of the collapse of the sub-prime market and securitised issue business in general. The two top firms posted combined losses of around $4.5 billion and their own AAA ratings were removed. (Ambac's ratings were reduced to speculative grade by Standard & Poor's in July 2009, to CC from triple BBB, after it warned that it would report a $2.4 billion loss.)

As well as monoline insurers, hedge funds as well as other major insurance companies were very active in the credit protection business. The best example is probably AIG (the second largest general insurance firm in the US in 2008) that reports that it sold a staggering $446 billion in credit insurance (mainly in the form of CDS). See Box 18.4 for details of the AIG involvement in CDS. By the end of 2008, losses on the CDS book amounted to $30 billion and prompted a rescue by the Federal Authorities in September 2008.

BOX 18.4 AIG SAGA SHOWS DANGERS OF CREDIT DEFAULT SWAPS

In retrospect, a glance at AIG's second quarter 2008 financial statement makes for an interesting read. Buried in that report is a cautionary tale showing just how dangerous credit derivatives can be when combined with insufficient risk management and regulatory oversight – or both sides of these transactions. Unfortunately, few people read the report when it would have been relevant.

The report fully discloses the $446bn in credit insurance AIG sold. The swaps were written out of AIG Financial Products, a non-bank hidden at the heart of the insurance giant. But because AIG wasn't regulated as a bank, it wasn't saddled with any requirements to hold capital against these massive potential liabilities.

A large part of those credit default swaps, about $307bn worth, was bought by European banks in endearingly named "regulatory capital forbearance" trades. By buying such insurance, these banks didn't have to hold capital against their long-term holdings of securities. Another large chunk went to Wall Street firms to hedge their holdings of complicated securities backed by subprime mortgages.

By the end of the year, just this part of this massive book of credit default swaps would cause almost $30bn in losses and trigger what is likely to prove one of the most costly bail-outs ever. Meanwhile, the $307bn "forbearance" book produced a mere $156m in revenue for the first half of last year. These exposures probably represent one of the most skewed risk-reward equations of all time.

AIG did such a booming business selling credit protection because it offered to post generous collateral if the value of the insured securities dropped or if its own credit rating fell. (Other providers, such as the monoline insurers, balked at such terms.) That collateral was meant to give AIG's clients assurance that they were safely hedged. In fact, that sense of safety was always an illusion. Clients hadn't reduced their risk; they had increased it.

That's because the hedges depended on the health of a single institution, AIG, that could never fully compensate counterparties for a big drop in the value of these securities. It might offer to post collateral but, if the market plunged, would AIG even be there to post collateral?

"Derivatives were meant to disperse risk," says Dino Kos, a former Fed official who is now at research boutique Portales Partners. "But at AIG, derivatives were used to concentrate risk."

As the value of the securities insured by AIG plunged, AIG faced a bottomless pit of plunging values and collateral calls that was draining the firm of its cash. By the time AIG was downgraded in mid-September and the Fed had to step in, AIG needed to post $32bn in collateral in the following 15 days – on top of $20bn it had already posted just over the summer. In other words, by demanding the ability to protect themselves through collateral calls and the right to terminate transactions, these counterparties unwittingly triggered AIG's near-death experience.

As the market continued to plunge, AIG and the Fed approached 20 counterparties with an offer to buy these CDOs at a price determined by an independent valuer and then cancel the credit protection on these CDOs. Because these counterparties ultimately received 100 cents on the dollar, the process was reasonably harmonious. That meant both sides were able to avoid another pitfall of the credit default swap market, valuation disputes.

As of year-end, Maiden Lane, a vehicle established by the Fed and AIG, bought about $62bn in face value of these CDOs for nearly $30bn while AIG terminated the credit default swaps, spending $32.5bn recognising $21bn in losses in the process. (In bailing out AIG, the Fed was also handing out tens of billions of dollars more to Wall Street.)

Many players in the financial market stay away from credit derivatives because of the issues the AIG saga raises, including pricing uncertainties, valuation disputes and counterparty risk. "People took risk, which the market never fully reflected in prices, and then looked the other way," says Mark Mckissick, with Denver Investment Advisors. "The whole CDS market was part of the bubble."



Source: Sender, H. (2009) 'AIG saga shows dangers of credit default swaps', *Financial Times*, 6 March.
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18.8 The future of securitisation

The growth in securitisation activity has clearly increased the linkages between banks and markets. From a positive perspective the securitisation trend offers the potential for banks to manage their balance sheets more effectively and to move risks to those most willing to bear it. This can result in a more efficient use of capital resources and a better allocation of risks in the system overall. It also enables banks and other financial intermediaries to generate extra revenue and therefore helps boost financial performance.

While securitisation, well managed and appropriately overseen, can offer such benefits, we know since the advent of the sub-prime crisis that there is a serious negative downside to such activity. Unbridled securitisation activity, misaligned pricing and the emergence of complex innovations made the market increasingly non-transparent. Risks were not priced appropriately, banks' incentives to screen and monitor borrowers' creditworthiness evaporated, and a spiral of securitisation continued unabated based on the view that property prices would continue to climb.

Since the collapse of the sub-prime lending market from 2007 onwards, the securitisation business has collapsed and banks that were heavily engaged in this activity (both issuing and investing in CDOs and other ABS on their own account) have suffered major losses.

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As a result, the primary issuance of complex products has almost disappeared and there has been a return to simplicity or 'back to basic' in terms of the characteristics of the securitisation products, which is expected to continue (Casu and Sarkisyan, 2019). Figure 18.6 illustrates the US mortgage-backed securities issuance (in billion $) between 1996 (Q1) and 2020 (Q4) and Figure 18.7 illustrates US ABS issuance (in million $) over the same period, by asset classes. In the US, total new ABS issuance in 2010 amounted to $125 billion, down from the 2007 peak of $795 billion – reflecting the collapse in the securitisation market. However, since then the market has improved, with issuance amounting to $559 billion in 2017, then decreasing to $304 million in 2020. The MBS issuances, on the other hand, have returned to pre-crisis levels, with a total issuance of 3,996 billion in 2020 (higher than the total issuance in 2007). Securitisation markets in the US have recovered more strongly than in the EU. This has been mainly driven by the publicly-sponsored segments: almost 80% of

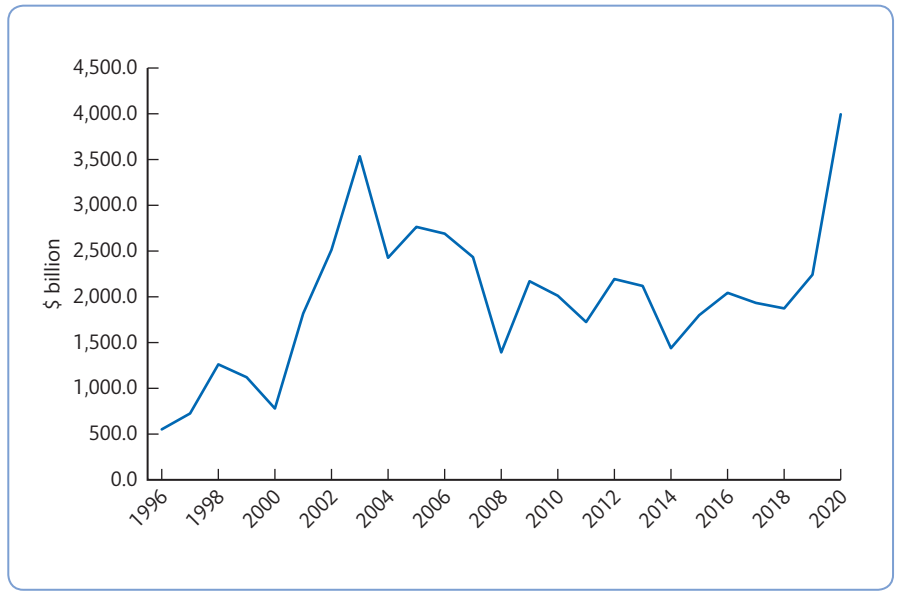


Figure 18.6 US Mortgage-Backed Securities issuance ($ billion) 1996–2020

Source: Authors' elaboration. Data from https://www.sifma.org/research.

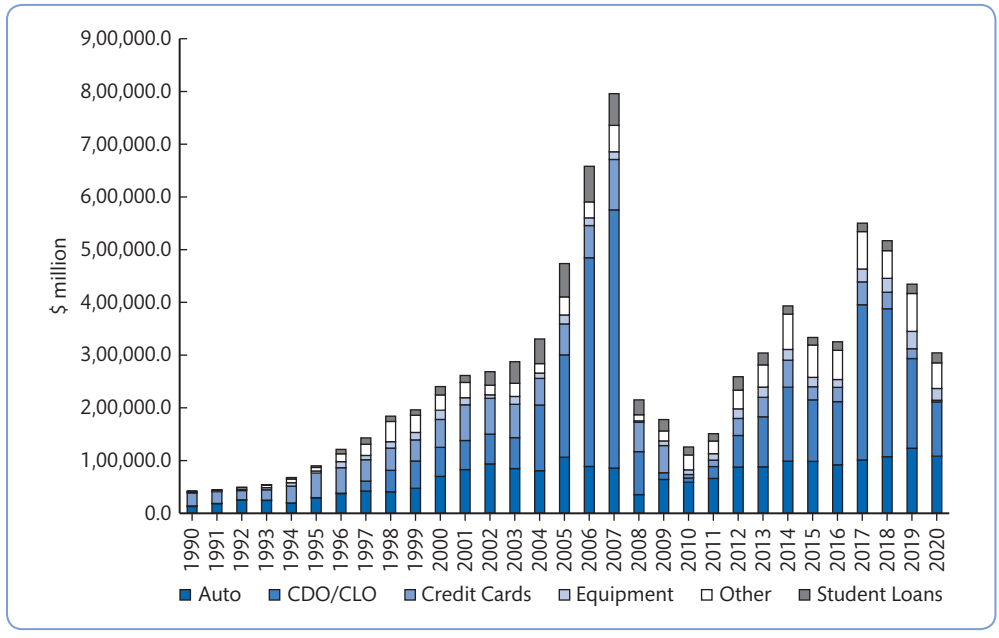


Figure 18.7 US Asset-Backed Securities issuance, by asset classes ($ million) 1990–2020

Source: Authors' elaboration. Data from https://www.sifma.org/research.

securitisation instruments in the US benefit from public guarantees from the US Government Sponsored Enterprises (e.g. Fannie Mae and Freddy Mac). Banks investing in these products consequently also benefit from lower capital charges.

In Europe, total new issuance over 2020 amounted to EUR 194.7 billion, down from a peak of $1.2 trillion in 2008 (see Figure 18.8). The European securitisation market has been significantly affected by the financial crisis and sovereign debt crisis (see Chapter 14 for a detailed discussion) and continues to be affected by the current macroeconomic volatility. Moreover, investment in the market has stalled due to uncertainty and negative signaling surrounding the new set of regulatory measures.

Reviving the securitisation market in the EU is among the objectives of the Capital Markets Union. The aim is to strengthen banks' ability to finance the economy, provide additional funding sources for companies, and enhance private risk sharing. To this end, a new securitisation framework was published at the end of 2017 and adopted on 1 January 2019. The aim of the new framework is to simplify the existing regulation for all securitisations by replacing the various rules on the process with a uniform regime, and to create a framework to identify simple, transparent, and standardised securitisations, with the final aim to increase investor confidence and restore market activity.[16] Nonetheless, the Simple Transparent and Standardised (STS) framework for securitisation has yet to fulfil its ambition.

Within Europe, the largest issuing jurisdictions are the UK (19 per cent of issuance by value), France (15 per cent), Italy (13 per cent) and Spain (11 per cent). Pan-European issues have a similar market share to that of the UK.

Despite the problems with securitisation that became apparent during the 2007–2009 financial crisis (including an overreliance on ratings, lack of due diligence by investors and

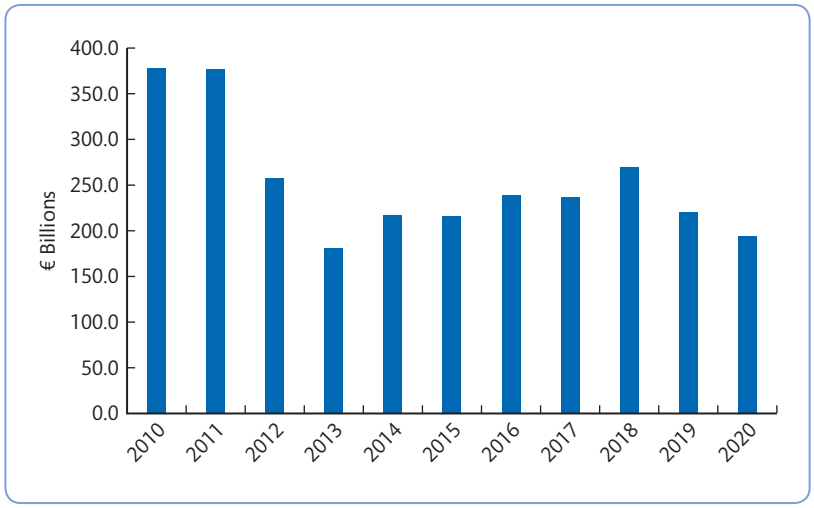


Figure 18.8 European Securitisation Issuance (€ Billions) 2010-2020

Source: Authors' elaboration. Data from https://www.afme.eu.

[16]European Parliament (2018) Common rules and new framework for securitisation. https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/608777/EPRS_BRI(2017)608777_EN.pdf

inadequate pricing of risk), regulators and policy makers agree that securitisation is also a valuable funding technique and an efficient means of diversifying risk. Securitisation is seen as a viable alternative source of funding for the banking sector at a time when it needs funding diversification. As a consequence, a well-functioning securitisation market would, in turn, support recovery in the real economy. However, there is also concern among issuers that securitisation continues to be stigmatised by sub-prime crisis events. To overcome these problems, regulators have focused on the following areas:

- risk retention;
- disclosure;
- securitisation processes; and
- credit-rating agencies (CRA) issues.

Risk retention or **'skin in the game'** requirements have been a key focus of regulatory responses since the financial crisis (see Sarkisyan and Casu, 2013). These requirements are intended to avoid misaligned incentives that may be embedded in the 'originate to distribute' model of some securitisation products. This resulted in the introduction of 'risk retention rules' that require banks to maintain an interest in their own securitisations, based on the assumption that retaining 'skin in the game' induces banks to improve screening and monitoring of borrowers. Examples of the rules requiring securitisers to retain a portion of the credit risk in the assets that they securitise include Article 261 of the Capital Requirements Regulation in the EU and Section 941 of the 2010 Dodd–Frank Act in the US.

In terms of improved *disclosure*, in 2010 IOSCO released 'Disclosure principles for public offerings and listings', and in 2012 it released 'Principles for on-going disclosure for public offering and listings for Asset-Backed Securities"(IOSCO, 2012). Industry initiatives are also focused on improving disclosure through standardisation of documentation and greater transparency of granular data.

In terms of improving securitisation processes, development is sought with particular reference to underwriting and origination practices (such as procedures for accurate assessment of borrower's capacity to repay), the selection of assets for the pool and investor due diligence. For example, the Financial Stability Board has developed an international principles-based framework for sound underwriting practices of residential mortgages (see FSB, 2011, 2012).

Overall, a variety of regulatory and political actions have led to several new requirements for the sale of credit risk in securitisation markets. The 'skin-in-the game' concept gained universal acceptance with regards to preventing future irresponsible lending, as regulators felt that requiring originators to retain risk would lead to improved controls on credit-related underwriting. Other regulatory responses included tougher capital requirements, increasing issuer information disclosure requirements and imposing formal oversight on rating agency procedures. For many markets, the new regulations (in both the US and Europe) have changed the way in consumer and commercial loans and mortgages are originated. In addition, new capital controls have affected where and in which form they are held. The recent re-bound in the growth of ABS (including CDS) issuance in the US has mainly been driven by buoyant capital markets and institutional investors seeking to earn reasonable yields in a low interest rate environment.

18.9 Conclusion

This chapter provides an insight into the involvement of banks in market activities. This involvement can reduce risks (for example, using markets to hedge and manage credit risk a more effectively) or it can increase risk (via increased proprietary trading, offering liquidity guarantees for securitised securities, CDS positions, etc.). Nowadays the consensus is that the integration of banks and markets created too much risk in the run-up to the global financial crisis and as a consequence regulations have been put in place to limit such risks. Banks need to hold more capital and liquidity to back securitisation and other market activity (see Chapter 7 on the introduction of Basel III). Financial innovation will come under greater regulatory scrutiny and there are moves to heighten disclosure in order to boost market transparency. Securitisation issues are substantially less complex than in the past. Other participants involved in markets activity closely linked to banks – such as hedge funds, private equity firms, credit-rating agencies and monoline insurers – have also been subject to tougher regulatory oversight.

Key terms

Agency-MBS
Asset-backed commercial paper (ABCP)
Asset-backed security (ABS)
Collateralised debt obligation (CDO)
Credit default swaps (CDS)
Credit enhancements
Credit-rating agency
Excess spread
Fannie Mae (Federal National Mortgage Association, FNMA)
Freddie Mac (Federal Home Loan Mortgage Corporation, FHLMC)
Government-sponsored enterprises (GSEs)
Money market funds (MMF)
Monoline insurer
Mortgage-backed security (MBS)
Office of Federal Housing Enterprise Oversight (OFHEO)
Originate-to-hold model
Originate-to-distribute model
Over-collateralisation
Resolution Trust Corporation
Risk retention
Securitisation
Shadow banking
Skin-in-the-game
Special purpose vehicle (SPV)
Structured investment vehicle (SIV)
Tranching

Key reading

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REVISION QUESTIONS AND PROBLEMS

18.1 Outline the main differences between bank intermediation and market transactions.

18.2 Explain how relationship lending reduces information asymmetries for banks. Consider whether market transactions can reduce such asymmetries.

18.3 Briefly define shadow banking and the main players in the shadow banking system. Discuss the main drivers for the growth of shadow banking.

18.4 Outline the how government-sponsored enterprises (GSEs) were instrumental in creating the mortgage-backed securities market in the US.

18.5 Explain the main processes involved in any types of securitisation, whether it be an ABS, MBS or CDOs.

18.6 Discuss the main reasons why banks became so heavily involved in securitisation activity prior to the global financial crisis. Highlight the advantages and disadvantages associated with the securitisation phenomena.

18.7 In the light of the 2007 sub-prime crisis explain why the credit risks associated with securitisation issues were mispriced.

18.8 Explain the role of credit-rating agencies and monoline insurance companies in securitisation activity.

18.9. Discuss the future of securitisation in light of the regulations that seek to improve processes, transparency and disclosure.

18.10. What is the aim of the implementation of risk retention rules in the context of securitisation?

Chapter 19

Mergers and acquisitions

Learning objectives

- To define bank mergers and distinguish between different types of M&As
- To understand the main trends in bank M&As
- To understand the impact of consolidation on bank performance
- To understand the main drivers of M&As
- To understand the impact of mergers on bank customers (both retail and business)
- To examine whether large bank mergers are motivated by opportunities to exploit implicit too-big-to-fail guarantees

19.1 Introduction

Over the last 30 years, one of the major features affecting global financial systems has been the merger and acquisitions (M&As) trend.[1] This has primarily been a consequence of deregulation and innovation (technological and financial). Deregulation has allowed banks to enter new geographical markets and product areas. Technological advances have revolutionised the way banks process transactions (back-office processing), deliver their services to customers (via branches, by phone or the internet) and make payments.

Financial innovation, characterised by the widespread use of new financial engineering and risk management tools, coupled with the significant involvement of financial institutions in new and broader derivatives and other markets (asset-backed securities, credit default swaps and so on), have also been another factor changing the financial landscape.

[1] Mergers and acquisitions are usually talked about interchangeably but there is a difference. A merger is usually between firms of roughly equal size and often post merger the name will change to emphasise certain equality. For instance, when Chase Manhattan merged with JP Morgan in the US in 2000 the new name became JP Morgan Chase. In the case of acquisitions this is usually when a firm is bought out by a larger company and its operations are subsumed under the acquirers name/brand. For instance, in 2008 Wells Fargo acquired the failing Wachovia. The corporate name Wells Fargo was retained unchanged.

These forces have been very relevant in promoting a wave of merger activity and this trend has been well documented in the consolidation literature.[2] While there is a general agreement on the broad forces that have encouraged growth in M&A activity in the banking sector, there still remains a lack of consensus as to whether banks in general benefit from M&A activity in terms of improved performance and enhanced shareholder value. In addition, there is also a varying picture on other dimensions of the consolidation process such as the impact of M&As on risk, access to finance, the features of acquisition targets and so on.

The aim of this chapter is to provide some useful definitions and a classification of the different types of bank mergers as well as a summary of the main reasons as to why banks merge. In Section 19.2 we define the different types of mergers activities; in Section 19.3 we outline recent M&A trends. In Section 19.4 we discuss the influence of M&A on bank performance. Given that there is a rather mixed picture as to whether bank consolidation boosts performance, this has encouraged researchers to look at alternative reasons as to why banks engage in mergers – so-called managerial motives. Section 19.5 therefore focuses on the (non-value-creating) managerial motives for M&As. Section 19.6 outlines the impact of mergers on bank customers. Section 19.7 examines features of product and geographical diversification M&A strategies. Section 19.8 outlines whether the consolidation process has affected systemic risk and also whether large bank mergers are motivated by opportunities to exploit government safety-net subsidies (implicit too-big-to-fail guarantees). Finally, Section 19.9 is the conclusion.

19.2 Mergers and acquisitions: definitions and types

Mergers and acquisitions (M&As) refer to the combining of two or more entities into one new entity. They are often explained by the equation that one plus one equals more than two, because a common motive is to increase the value of the new entity. Although the terms 'mergers' and 'acquisitions' are sometimes used interchangeably to refer to the combination of two (or more) separate enterprises, they have slightly different connotations:

- A *merger* is when two, usually similarly sized, banks (or any other firms) agree to go forward as a new single entity rather than remain separately owned and operated. Such operation implies the combination of all the assets and liabilities of the two banks.[3]
- An *acquisition* or *takeover* is when a bank (the acquirer or bidder) takes over another one (the target or acquired bank) by purchasing its common stock or assets and clearly becoming the new owner.[4]

[2] See Berger *et al.* (1999), Group of Ten (Group of Ten, 2001) and DeYoung *et al.* (2009).

[3] In this chapters we refer to 'banks' rather than 'firms' in general, although most definitions are not specific to banks.

[4] Occasionally an individual or group of (usually institutional) investors take over a firm by means of leveraged buyouts (LBOs). The buyout is *leveraged* because typically a significant amount of LBO financing is borrowed. The acquisition is called an MBO (management buyout) if the group is led by the company's management. For more see details Brealey *et al.* (2019) or Berk and DeMarzo (2011).

It is also common to distinguish between *horizontal*, *vertical* and *conglomerate* mergers:

- A *horizontal bank merger* refers to the merger or the acquisition of a banking firm that operates in the same market and thus produces competitive financial services. A horizontal merger may pose concerns if it creates excessive market power and thus can be blocked by antitrust authorities. Horizontal mergers have been commonplace in the commercial banking industry over the last two decades or so. They are sometimes referred to as horizontal *integration* and they are fundamentally different from vertical mergers.
- A *vertical merger* refers to a concentration between firms that have different roles in the same industry. It can take two forms: *forward integration* and *backward integration*, depending on whether the firm acquires either a distributor or a supplier. Banks typically have higher vertical integration than other firms. Naturally, *vertical disintegration* runs in the opposite direction, i.e. it occurs when a firm finds it strategically valuable to 'outsource' (purchase from outside vendors) rather than producing certain services in-house. In other words, banks, like any other firms, can decide to sell (*divest*) businesses. A common type of *divesture* is the *spin-off*, i.e. when a bank sells a business or division to a separate independent firm, created through the sale or distribution of new shares. The process of 'deconstruction' of banking services from the originate-to-hold to the originate-to-distribute model (see Chapter 18) can be considered as an example of vertical disintegration.
- A *conglomerate merger* is one that takes place between companies in unrelated lines of business and which does not result in vertical integration. While US antitrust law is not concerned about conglomerate mergers (as they are considered at the worst *neutral* to competition), EU competition law clearly distinguishes between three types of conglomerate mergers: (a) product-line extension, (b) geographical and (c) pure conglomerate merger:[5]
  (a) A *product line extension* occurs when a firm adds a new product to its existing ones by merging with another firm, as in the case of Bancassurance.
  (b) *Market extensions* take place when the institutions involved in the merger are in the same product market but operate in different geographical markets.
  (c) Finally, a *pure conglomerate merger* occurs in all other cases, i.e. there is no functional connection between the merging institutions.

Mergers and/or acquisitions imply a change in management and this is one of the main reasons why they occur. Agency costs, inadequate management and loose monitoring may result in the failure of the bank's internal controls and suboptimal firm value. In such situations, the *market for corporate control* provides an external governance mechanism and a source of discipline for the managers of publicly held banks. As Henry Manne (1965, p. 113), straightforwardly put it: 'The lower the stock price, relative to what it could be with more efficient management, the more attractive the takeover becomes to those who believe that they can manage the company more efficiently. And the potential return from the successful takeover and revitalization of a poorly run company can be enormous.' Indeed it is not uncommon nowadays for poorly managed banks to become targets of unfriendly and unsolicited takeovers (so-called *hostile* takeovers).

[5] Kaczorowska (2013) *European Union Law*, Taylor & Francis.

BOX 19.1 THE EMERGENCE OF FINANCIAL CONGLOMERATES

Consolidation in the global banking industry has resulted in the emergence of financial conglomerates that conduct an extensive range of businesses with a group structure. In the European Union, **financial conglomeration** was encouraged by the Second Banking Directive (1989), which enabled banks to operate as universal banks offering the full range of financial services including commercial banking, investment banking, insurance and other services. In United States, the passing of the Gramm–Leach–Bliley Act of 1999 enabled banks to establish financial holding companies that can now engage in a full range of financial services (as did the 'Big-bang' reforms in Japan).

Financial conglomerates are defined as a group of enterprises, formed by different types of financial institutions, operating in different sectors of the financial industry. Group organisational structure is believed to bring about, on the one hand, the possibility of exploiting greater cost economies and, on the other hand, the capacity of the group to isolate risk from its different activities. On the revenue side, the ability of financial conglomerates to distribute a full range of banking, securities and insurance services may increase their earning potential and lead to a more stable profit stream. Customers may value a bundled supply of financial services more than separate offers for reasons of transactions and information costs. On the other hand, it is argued that such structures may have drawbacks, such as conflicts of interest and concentration of power (Casu and Girardone, 2004).The process of conglomeration in financial services is mainly bank-driven, as banks have been actively expanding into other areas, in particular asset management.

Similar to, but different from, conglomeration is the establishment of jointly owned enterprises offering specialised financial services. In some European countries, for example, savings banks and co-operative banks have set up such jointly owned enterprises that provide asset management, stock-broking and settlement activities as well as insurance, all of which are sold to or distributed by the member institutions of the sector. An example would be the jointly owned investment management firm of the savings bank sector in a country. In economic terms, such jointly owned enterprises provide equal opportunities of marketing and servicing as financial conglomerates. The development of such enterprises as well as co-operation agreements is common in countries such as Austria and Germany. The trend towards conglomeration can be considered part of a larger trend towards disintermediation and globalisation of financial markets, fostered by financial liberalisation, domestic financial development and new technological possibilities. However, there were also several Europe-specific factors that provided a further boost the growth of financial conglomerates to foster intra-European integration (Allen *et al.*, 2011). Indeed, EU banking and insurance markets are dominated by large pan-European groups. A typical EU financial conglomerate has over 400 licenses in several jurisdictions and several sectors: banking, life and/or non-life insurance, asset management.

Globally systemically important financial institutions (G-SIFIs)

The consolidation trend has resulted in a small number of systemically important financial institutions (SIFIs), most of them with a large share of cross-border activity. To address the shortcomings revealed by the crisis, the G20 heads of state committed to enhancing regulation and supervision in a globally consistent way (Basel Committee on Banking Supervision, 2011a). In 2011, the Financial Stability Board (FSB) released a list of 29 systemically important banks, which are now known as G-SIFI or G-SIBs (globally systemically important banks).

The list – which is to be updated every year – indicates the G-SIBs and shows their allocation to buckets, corresponding to their required level additional loss absorbency. G-SIFIs are required to meet higher supervisory expectations for risk management functions, data aggregation capabilities, risk governance and internal controls (see Section 7.11.4).

The regulation of financial conglomerates

The issues relating to the regulation of large, complex groups combining several banking and insurance licenses, was recognised in the early 1990s. Following recommendations by the Joint Forum, the G10 body of supervisors, the European Union adopted the Financial

Box 19.1 The emergence of financial conglomerates (*continued*)

Conglomerates Directive in 2002. Since 2002, markets have further developed in a direction where the distinction between banking business and insurance business is not always easily discernible and where the largest groups are active in many countries. The 2007–2009 financial crisis highlighted the difficulties in the regulation of large financial conglomerates and the weaknesses of the existing legislative framework therefore making a revision of the regulatory framework a priority.

In November 2011, the European Council adopted a directive amending the Financial Conglomerates Directive in order to close loopholes and ensure appropriate supplementary supervision of financial entities in a financial. The new directive also adapts the supervision of financial conglomerates to the EU's new supervisory structure.

In the next section we follow the report by the Group of Ten (2001) and provide a systematic list of the main motives, at least in theory, behind consolidation in financial services. Any merger or acquisition should be treated as an investment therefore the banking firm should be evaluated. This is usually done by calculating the present discounted value of expected future profits. A distinction can therefore be made between value-maximising motives and non-value-maximising motives.

19.2.1 Why do banks merge?

Mergers can affect the value of the banking firm by either reducing expected costs or increasing expected revenues. Table 19.1 reports some of the most common motives for M&As in financial services.

19.3 Recent trends in bank M&As

Banking sector consolidation has been a major recent trend in the US and Europe in the run up to the 2007–2009 financial crisis, as illustrated in Figure 19.1. One can see that the volume of bank M&A activity increased rapidly from the mid-1990s, peaking in 1998 in the US and a year later in Europe. This trend coincided with the internet boom that fuelled global stock markets over the same period. Bank shares also increased over the period and the increased valuations of banks made it easier for them to finance their acquisitions – at the start of the 1990s the bulk of deals were financed by cash purchases but by the end of the 1990s most acquisitions were financed by banks offering the shares to purchase other banks. (Generally, cash purchases are thought to be a better indicator of a good deal compared with share issue financed deals.)

The downturn in markets reversed the late 1990s consolidation trend, although this seemed to pick-up thereafter. Table 19.2 notes some major US bank deals that took place since 2000 – note that four of the deals listed in Table 19.2 (JPMorgan Chase/Bear Stearns; Bank of America/Merrill Lynch; JP Morgan Chase/Washington Mutual; Wells Fargo/Wachovia) were all a consequence of the financial crisis. While a number of banks run large losses

Table 19.1 Motives for bank M&As

Value-maximising motives		Non-value-maximising motives
Reduction in costs	**Increase in revenues**	
• Economies of scale and scope	• Increased size allowing firms to better serve large customers	• Management motives: – pursuing personal goals; – own job security; – defensive acquisitions; – increase size to imitate peer firms; etc.
• Replacement of inefficient managers with more efficient managers or management techniques	• Increased product diversification allowing firms to offer customers 'one-stop shopping' for a variety of different products	
• Reduction of risk due to geographic or product diversification	• Increased product or geographic diversification expanding the pool of potential customers	
• Reduction of tax obligations	• Increased size or market share making it easier to attract customers (visibility or reputation effects)	• Government motives: – minimisation of social costs associated with bank failure; – crisis resolution; – willingness to create global national champions; – deregulation; etc.
• Allowing a firm to become large enough to gain access to capital markets or to receive a credit rating	• Increased monopoly power allowing firms to raise prices	
• Providing a way for financial firms to enter new geographical or product markets at a lower cost than that associated with the de novo entry	• Increased size allowing firms to increase the riskiness of their portfolio	

Source: Adapted from Group of Ten (2001).

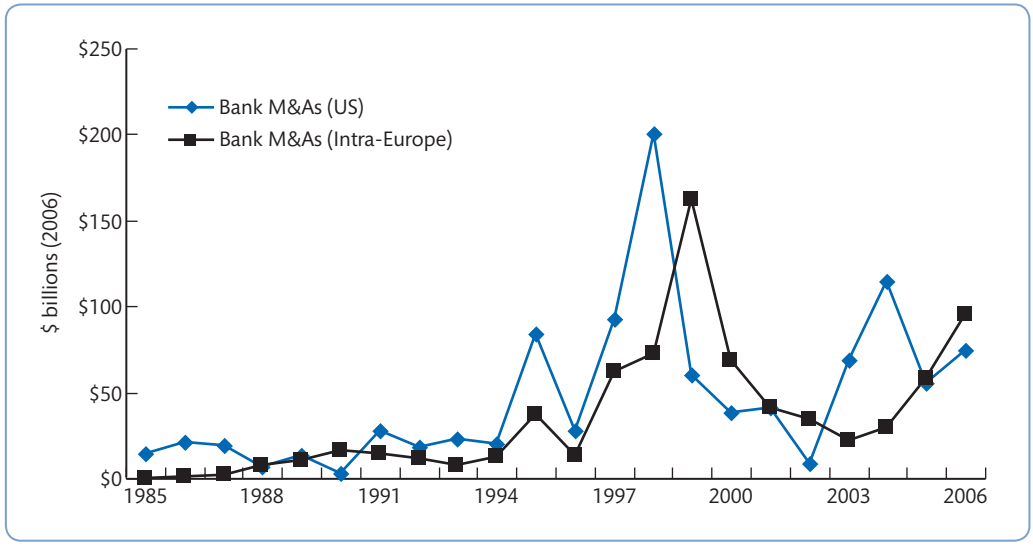


Figure 19.1 Bank M&As in Europe and the US (value of transactions $bn), 1985–2006

Source: DeYoung, Evanoff and Molyneux (2009) Mergers and Acquisitions of Financial Institutions: A Review of the Post-2000 Literature, Figure 1.

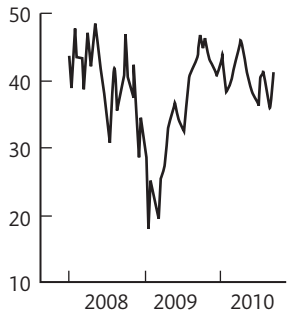
Table 19.2 Major US bank mergers & acquisitions since 2000

Year of Deal	Acquirer bank	Acquired bank	Name of merged bank	Value of deal ($bn)
2000	Chase Manhattan Corporation	J.P. Morgan & Co. Inc.	JPMorgan Chase & Co.	33
	Washington Mutual	Bank United Corp.	Washington Mutual	1.5
2004	Bank of America Corp.	FleetBoston Financial Corp.	Bank of America Corp.	42.7
	Regions Financial Corporation	Union Planters Corporation	Regions Financial Corporation	5.9
	SunTrust	National Commerce Financial	SunTrust	7.0
	Wachovia	SouthTrust	Wachovia	14.3
2005	Capital One Financial Corporation	Hibernia National Bank	Capital One Financial Corporation	4.9
	Bank of America	MBNA Corporation	Bank of America Card Services	35
2006	Wachovia	Westcorp Inc.	Wachovia	3.9
2007	Citizens Banking Corporation	Republic Bancorp	Citizens Republic Bancorp	1.0
	Bank of America	LaSalle Bank	Bank of America	21.1
	Banco Bilbao Vizcaya Argentaria USA	Compass Bancshares	BBVA Compass	9.8
	State Street Corporation	Investors Financial Services Corporation	State Street Corporation	4.2
	Bank of New York	Mellon Financial Corporation	Bank of New York Mellon	18.3
	Wachovia	World Savings Bank	Wachovia	25
2008	TD Bank Financial Group	Commerce Bancorp	TD Bank	8.5
	JPMorgan Chase	Bear Stearns	JPMorgan Chase	1.1
	Bank of America	Merrill Lynch	Bank of America	50
	JPMorgan Chase	Washington Mutual	JPMorgan Chase	1.9
	Wells Fargo	Wachovia	Wells Fargo	15.1
2011	Capital One	ING Direct USA	Capital One	9.0
2012	M&T Bank Corporation	Hudson City Bancorp, Inc.	M&T Bank Corporation	3.8
2012	FirstMerit Bank	Citizens Republic Bancorp	FirstMerit Bank	0.91
2013	PacWest Bancorp	CapitalSource Inc.	PacWest Bancorp	2.4
2015	M&T Bank	Hudson City Bancorp	M&T Banks	3.7
2016	Key Bank	First Niagara Financial	Key Bank	4.1
2017	Canadian Imperial Bank of Commerce	The PrivateBank	CIBC Bank USA	17.7
2019	BB&T	SunTrust Banks	Truist Financial	66.0

Source: Various editions of the *Financial Times*, *Federal Reserve Bulletin* and SNL Financials.

and others failed, some banks benefited. For example, Figure 19.2 illustrates how JPMorgan Chase took advantage of the opportunities that arose during the financial crisis in terms of M&As activities.

Many commentators believed that banking systems that suffered most from the crisis (particularly the UK and the US) would eventually experience a major consolidation wave – just to clean up their financial systems – although this has not happened on a major scale.



Then and now

	Q4 2007	Q2 2010
Market value	**$146.9bn**	**$145.0bn**
Total assets	**$1,562bn**	**$2,014bn**
Tier one capital ratio	**8.4%**	**12.1%**
Branches	**3,100**	**5,159**
Employees	**180,667**	**232,939**

Dec 20 2007 Bear Stearns reports third-quarter loss of $859m on hedge fund losses. Shares slide on worries over the bank's liquidity

Mar 16 08 JPMorgan Chase buys stricken Bear Stearns for $2 a share, later raised to $10 a share, after receiving encouragement from the US government

Sep 25 08 JPMorgan acquires banking operations of Washington Mutual for $1.9bn in another government-brokered transaction

May 27 09 Warns on credit card losses related to Washington Mutual

Sept 29 09 Announces shake-up of JPMorgan's top management. Out goes Bill Winters, co-head of investment banking, and in comes Jes Staley, a veteran banker

Nov 19 09 Unveils £1bn deal to buy Cazenove, the UK broker

Feb 15 10 Buys units of RBS Sempra Commodities – a joint venture between RBS, the rescued UK bank, and US utility group Sempra Energy – for $1.7bn to challenge other banks in raw materials trading

May 12 10 Agrees to give $4bn to Washington Mutual to resolve a dispute that arose after JPMorgan bought the bank

Jun 20 10 Enters talks to buy Gávea Investimentos, a large Brazilian hedge fund and private equity group, in spite of US legislation designed to limit the involvement of commercial banks in such activities

Figure 19.2 JPMorgan's US acquisitions

Source: 'JPMorgan's US acquisitions pack punch', *Financial Times*, 21/09/10 (Francesco Guerrera).

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Figure 19.3 illustrates US bank growth for the top four banks and all other institutions between 1990 and 2016. The figure decomposes the growth of the top four banks into that derived from organic growth as well as M&A activity. M&A-related growth accounts for a substantial amount of growth of the largest four banking organisations over the period – more than half for all but one of them. Much of the M&A-related growth, as we just mentioned, occurred prior to, and especially during, the financial crisis. Also, there is some evidence that large banks that made major losses during the 2007–2009 financial crisis have had to sell chunks of their international operations in order to boost their capital – from 2009 onwards and the overseas expansion of the top US and UK banks (at least) have stalled. Consolidation became a more limited national affair up to 2020.

In Europe, the overall volume of privately driven M&A deals (especially their segment) declined significantly post-crisis. The number of bank M&As in 2008 was at the lowest point in a decade. In terms of the total value of transactions, and leaving aside the special

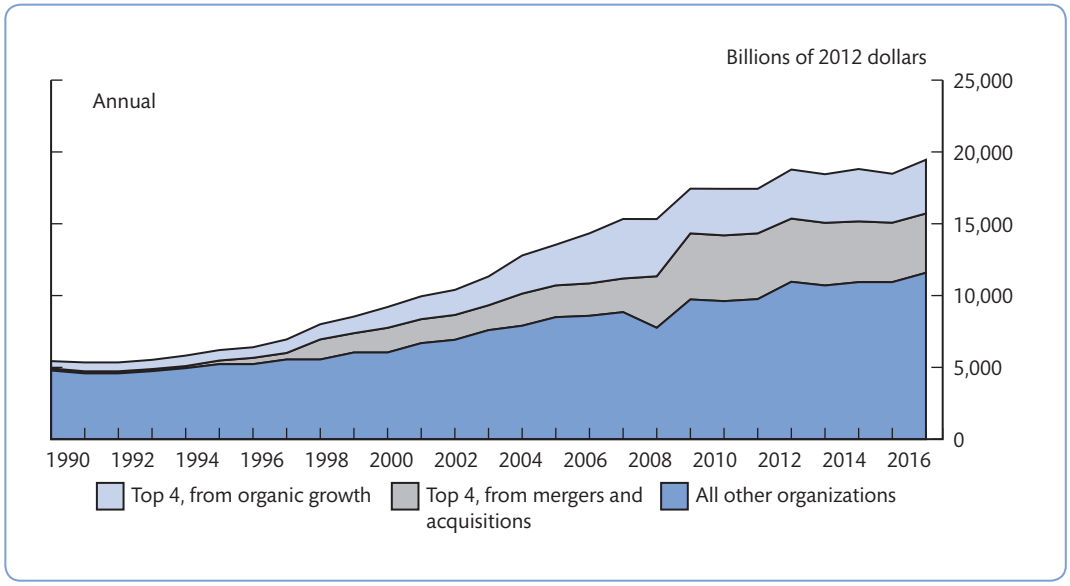


Figure 19.3 Real assets of US banking organisations, 1990–2016

Source: Board of Governors of the Federal Reserve System, FEDS Notes, December 2018.

effect of the acquisition of ABN Amro by the consortium of Royal Bank of Scotland, Fortis and Santander in 2008 (the peak in transaction values in 2007 reflects this deal, as well as the merger of Italian banks Sanpaolo IMI and Banca Intesa), the M&A data revealed a significant decline, with EU cross-border and outward transactions being most affected (see Figure 19.4). In 2012, the number of non-domestic transactions dropped to less than half the number recorded in 2008, and decreased fourfold in terms of value to just €10 million. Significantly, no large cross-border intra-European transaction or transaction with a buyer from another EU country took place in 2012 and 2013 (European Central Bank, 2013) and this trend continued afterwards. In addition to the decline in cross-border M&As, the trend towards divesting non-core activities has been compounded by troubles in the euro area, as several large EU banks are facing renewed problems (see Box 19.2).

The European Commission (2011) identifies various factors that contributed to the contraction in EU banks M&A activities. On one hand, the re-assessment of risk that was increasingly carried out on a country-specific basis and led to distortions in the money and wholesale markets. On the other hand, the role of governments in the reorganisation of the banking sector, that post crisis largely replaced private M&A activity and resulted in a high level of public ownership.

Table 19.3 summarises the total number of deals (whole company and minority deals – both **domestic** and **cross-border mergers**) of European banks between 2007 and 2013.

EU banks' M&A activity picked up in 2009, particularly with domestic deals. The values of the deals remained modest, however, indicating a clear tendency towards smaller deals. Larger deals in 2009 and early 2010 include the acquisitions of Dresdner Bank by Commerzbank and HBOS by Lloyds TSB as domestic deals, but also the acquisition of Fortis by BNP Paribas, of Mellon United National Bank by Banco Sabadell and of UK banks Bradford & Bingley and Abbey by Santander as examples of outward deals. Most of these deals were accelerated or induced by the financial crisis (European Central Bank, 2010c). However,

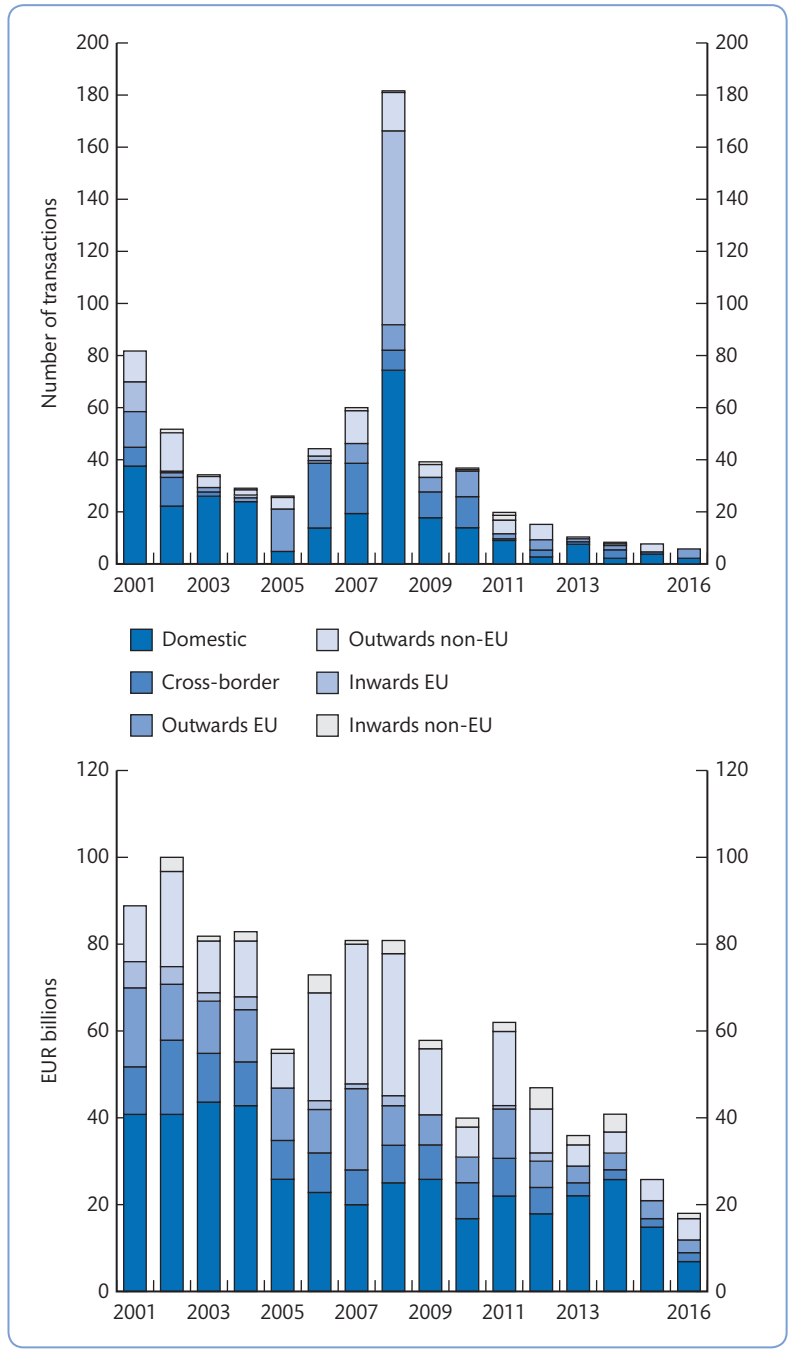


Figure 19.4 EU Bank M&A number and value of transactions

Source: European Central Bank (2016).

large deals have since dried up as EU banks were badly hit by the sovereign debt crisis from late 2010 onwards and M&A activity plummeted again (see also Chapter 14 on the crises in European Banking). There are, however, some parts of the financial sector that are benefitting from the troubles that affect large banks (see Box 19.2).

BOX 19.2 EUROPEAN BANK DEALMAKING RAISES HOPES FOR CROSS-BORDER M&A

Average size of tie-ups between continent's lenders hits highest level since 2008.

The average size of deals between European banks hit a 12-year high in 2020, a trend that dealmakers expect to accelerate this year as the industry seeks greater scale to compete with bigger US rivals.

The bulk of European deals in 2020 were struck between domestic competitors, as the continent's lenders turned to consolidation to cope with negative interest rates and the economic disruption unleashed by the pandemic.

Last year's signature deal came in July, when Intesa Sanpaolo became Italy's largest bank by assets through buying domestic rival UBI for €4.2bn. It was the biggest European bank transaction since the financial crisis.

Further domestic consolidation is expected this year, with more transformative cross-border unions forecast to follow.

"In-market consolidation is a more likely and an easier first step, as we have seen in 2020, even though the industrial logic of more pan-European deals may be sound," said Guillermo Baygual, co-head of mergers and acquisitions for Emea at JPMorgan Chase.

"Once we see the right conditions emerge in Europe, including more harmonised regulation, then cross-border deals will make more sense," Mr Baygual added.

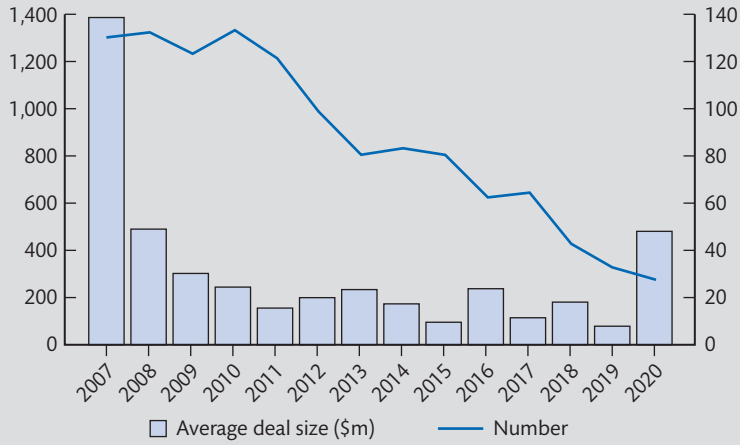


Figure 19.5 Average deal size between Europe's banks at 12-year high

Source: Dealogic

@ FT

According to data provider Dealogic, the average value of the 27 M&A deals between European banks announced last year hit $477m, up from just $74m the year before and the highest since the financial crisis erupted in 2008.

While the volume of transactions was down on recent years, the significant increase in the deal size reflected banks beginning to shift their focus from bolt-on acquisitions to transformational deals.

Europe's banking market has long been seen as too fragmented, with low interest rates hitting profitability and adding to the pressure to cut costs. Regulators and policymakers have urged banks to consider combining to improve economies of scale.

Last summer, the European Central Bank sought to prompt further consolidation by saying it would recognise an accounting gain — known as badwill — that can be generated when a bank buys a rival for less than the fair value of its assets minus its liabilities.

Box 19.2 European bank dealmaking raises hopes for cross-border M&A (*continued*)

Intesa said one of the main attractions of the UBI transaction was the badwill it would gain. Alongside Italy, Spain has also seen an increase in dealmaking. In September, CaixaBank agreed to buy Bankia in a $5.1bn deal, and last month Unicaja launched a $928m bid for smaller rival Liberbank.

Slow progress in implementing a European banking union has so far held up cross-border deals. But industry executives believe the coronavirus pandemic has made such transactions more likely.

"I would expect to see some bolder cross-border consolidation emerging in the second half of the year as banks get comfortable with the impact the pandemic has had on their balance sheets," said Nigel Moden, banking and capital markets leader for Emea at EY, the consultancy.

"The sector generally remains very well capitalised but the last 12 months has favoured scale players so expect to see them looking for well-priced acquisitions as we move into the summer months," he added.

Source: Walker, O. (2021) 'European bank dealmaking raises hopes for cross-border M&A' @ Financial Times, 19 January 2021.

Table 19.3 European banks M&As, 2007–2013

Country/area	Total		Domestic		Cross-border	
	No. of deals	Deal value (€mil)	No. of deals	Deal value (€mil)	No. of deals	Deal value (€mil)
Eastern Europe	825	64	549	9.5	276	54.5
France and Benelux	96	1025.2	32	676.0	64	349.2
Central Europe	119	439.4	63	300.0	56	139.4
Nordic countries	77	423	55	37.0	22	386
Southern Europe	222	415.3	127	64.5	95	350.8
UK and Ireland	77	1298.6	30	310.1	47	988.5
TOTAL	**1416**	**3665.5**	**856**	**1397.1**	**560**	**2268.4**

Notes: Domestic M&A when both bidder and target are from the same country. Cross-border M&A when the bidder or the target are from different countries.

Eastern Europe (Bosnia & Herzegovina; Bulgaria; Croatia; Czech Republic; Estonia; Hungary; Latvia; Lithuania; Macedonia; Moldova; Poland; Romania; Russia; Serbia; Slovakia; Slovenia; Turkey; Ukraine); France and Benelux (Belgium; France; Luxembourg; Monaco; Netherlands); Central Europe (Austria; Germany; Liechtenstein; Switzerland); Nordic Countries (Denmark; Faroe Islands; Finland; Greenland; Norway; Sweden); Southern Europe (Cyprus; Greece; Italy; Malta; Portugal; Spain).

Source: SNL Financials and authors' estimations.

In Asia the market is more active than in Europe as M&As are seen as a key strategic tool for financial institutions, both domestically and cross-border. The growth in financial services demand is driven by increasingly wealthy, educated and financially sophisticated middle-class customers, sustained economic growth and competitive pressures. In terms of the most attractive M&A markets in Asia, China, Singapore and Hong Kong are the big winners (KPMG, 2019).

The wholesale banking and wealth management sectors are most likely to strategically follow their corporate customers abroad, through cross-border M&As. The other sub-sectors of financial services that are most likely to engage in M&As to enter new markets are investment management and private banking.

Table 19.4 Bank acquisition of FinTech companies, 2010–2018

Country	Banking technology	Business process outsourcing	Digital lending	Financial media and data solution	Human resources and payroll technology	Insurance and healthcare technology	Investment and capital markets-technology	Payments	Security technology	Number of acquisitions	Percentage
Australia				1				3 (1 NZL)		4 (1)	2.80 (4.00)
Austria								1 (1 CZE)		1 (1)	0.93 (4.00)
Canada								2 (1 USA)		2 (1)	1.86 (4.00)
France	1						2 (1 ITA)	6 (1 BEL)		9 (2)	8.41 (8.00)
Germany	1 (1 IND)					1	1	2 (1 GBR)		5 (2)	4.67 (8.00)
Iceland								3 (2 GBR)		3 (2)	2.80 (8.00)
Japan	1	1 (1 USA)	1 (1 USA)				1 (1 LUX)	4 (2 USA)		8 (5)	7.47 (20.00)
Netherlands	1		3 (1 GBR) (1 DEU)					3		7 (2)	6.54 (8.00)
New Zealand								1		1	0.93 (0.00)
Norway							1	1		2	1.86 (0.00)
Spain								3 (1 BRA)		3 (1)	2.80 (4.00)
Sweden								2 (1 NOR)		2 (1)	1.86 (4.00)
Switzerland	2						1 (1 AUT)	2 (1 SVN)	1	6 (2)	5.60 (8.00)
UK	1							2		3	2.80 (0.00)
US	6	9 (1 NLD)	3		5	4 (1 CAN)	15 (1 GBR) (1 CHE) (1 IRL)	8	1	51 (5)	47.66 (22.00)
Total	13(1)	10(2)	7 (3)	1	5	5(1)	21(6)	43(12)	2	107 (25)	100 (100)
Percentage	12.14 (4.00)	9.34 (8.00)	6.54 (12.00)	0.93 (0)	4.67 (0)	4.67 (4.00)	19.62 (24.00)	40.18 (48.00)	1.86 (0)	100 (100)	

Table presents the distribution of the considered sample of FinTech acquisitions by country (rows) and by FinTech specialisation (columns). For the total figures, the numbers in parentheses represent the cross-border deals.

Source: Kwon, K.Y., Molyneux, P., Pancotto, L. and Reghezza, A. (2020) 'Banks and FinTech acquisitions', working paper.

One area where there has been substantial M&A activity, however, has been banks acquiring FinTech firms. Usually the scale of these purchases is much more modest than bank–bank deals and typically under $500 million. Table 19.4 reports bank acquisitions by country and FinTech specialisation from 2010 to 2018. FinTech firms specialising in payments represent the most attractive targets for bank acquisitions, accounting for nearly 40 per cent of the overall sample. Acquisitions of payment-specialised FinTech firms are also fairly equally spread across countries. In addition, while FinTech companies specialising in investment and capital markets technology represent a substantial portion of the total number of acquisitions in our sample (20 per cent) they are predominantly targeted by US banks.

19.4 M&A and bank performance

A major motivation for bank M&As is the desire to boost performance (increased profits and higher market valuation via share price increases). Senior executives engaged in M&A activities have to convince the bank owners (shareholders) that the deal will boost performance, either by increasing revenues or reducing costs. It is unlikely that shareholders will sanction a deal if they believe the acquisition or merger will reduce performance! As such, CEOs make a big deal about the performance enhancing features of any acquisitions they aim to put in place. Performance gains from mergers emanate from either efficiency improvements or ways in which revenues can increase – namely via market power. The latter relates to bigger banks being able to set prices above competitive levels due to market dominance in particular areas.

A large array of literature has sought to investigate these relationships directly or indirectly. Direct tests seek to establish whether there are cost or/and profit improvements post merger. Studies use either accounting ratios or more sophisticated efficiency estimates to compare pre- and post-merger performance. The consensus view from studies that (mainly) examined bank M&As during the 1980s up to the mid-1990s was that cost and profit improvements resulting from bank mergers tended to be elusive (Berger *et al.*, 1999; Group of Ten, 2001) although evidence since then (particularly for European bank M&As) appears to find stronger evidence of performance improvements (DeYoung *et al.*, 2009). Another major part of the literature uses the 'event-study' methodology to gauge market reactions to M&A announcements. The event-study approach aims to evaluate shareholder reactions to merger announcements. The combined effects of the abnormal returns (see Box 19.3) to bidders and targets around the announcement date reflect value creation or destruction for shareholders. This approach is regarded as an indirect measure of the impact of M&As because even if positive abnormal returns are generated (e.g. combined share prices of the acquirer and acquired banks are higher on the M&A announcement date than predicted by the model) it is not clear as to whether the positive shareholder reaction is due to perceived improvements in performance resulting from greater market power (higher prices) or improved efficiency. The view that has emerged from the event studies that examine bank M&As in the 1980s and during the 1990s is that, while target shareholders tend to earn strong positive abnormal returns, bidder stockholders earn marginally negative returns – the combined effects being insignificant.

Up until the early 2000s, the general consensus was that there was no strong evidence that bank M&As were performance enhancing and this view directed researchers' attentions to other motives to explain the consolidation phenomena – including objectives geared to maximising CEO remuneration, choosing a 'quiet life' and maximising asset size – as alternative explanations for M&A activity (explained in more detail in Section 19.5).

BOX 19.3 HOW TO PERFORM AN EVENT STUDY

Event study analysis is a valuable tool in empirical finance. It attempts to measure the impact of merger (or earning) announcements on the value of the firm under the assumption that markets are efficient. A key stage in this analysis is to measure abnormal returns for the acquiring and target banks. This is done by using the difference between the actual bank's stock price and that predicted by a model that extrapolates previous share prices and attempts to indicate what the bank's share price would have been in the absence of the event (the 'normal' return). The most popular model for normal returns is the 'market model' of the form:

$$R_{it} = \alpha_i + \beta_{im} R_{mt} + \epsilon_{it} \tag{19.1}$$

where R_{it} and R_{mt} are the return on stock i at time t and the return on a country's bank sector index m at time t, respectively. α_i and β_{im} are coefficients to be estimated using regression analysis and are obtained using returns over a period of time *prior* the event (e.g. a year), while ε_{it} is the error term. The abnormal returns (AR) can then be calculated as the difference between the actual return and the expected normal return using the following formula:

$$AR_{it} = R_{it} - (\alpha_i + \beta_{im} R_{mt}) \tag{19.2}$$

To make inference about the merger announcement event, abnormal returns should be aggregated into cumulative abnormal returns (CAR) over an arbitrary (and short) time interval (the event 'window') of j days (usually three days before and after the event). CAR can be defined as the sum of the abnormal returns in the chosen interval as follows:

$$CAR_{it} = \sum AR_{it} \tag{19.3}$$

T-test statistics will then be used to test, for both the bidder and the target, the null hypothesis of an expected $AR = 0$, i.e. that the event has no impact on the mean (or the variance) of the returns.

However, a recent survey of over 150 bank M&A studies conducted since 2000 tends to yield a different picture to that outlined above. In general, the more recent literature provides support to the view that North American bank mergers are (or can be) efficiency improving although the event-study literature (as before) presents a mixed picture. However, there is incontrovertible evidence that European bank deals have resulted in widespread efficiency gains and value enhancement for shareholders (DeYoung *et al.*, 2009).

One point that should be emphasised is that most academic studies rely on a relatively large sample of bank M&As to investigate whether they boost performance (either profits or stock/share prices) on average. The finding that bank M&As in the US may not boost shareholder returns is just indicating that (on average across all the deals studies) owners may lose out. There will of course be deals that boost shareholders returns. Therefore one has to be careful in discussing the impact of M&As – overall they may not be performance improving but there may be certain deals that are. As such, the expected performance impact of an individual bank M&A needs to be considered on a case-by-case basis.

As we noted above, there is evidence that (on average) European bank mergers have been good for bank investors although there are some deals that have clearly been problematic. Box 19.4 highlights how M&As can be value destroying and very risky – and notes the case of the 2007 ABN Amro deal. In this case a group of banks comprising the Royal Bank of Scotland, Fortis and Santander acquired the Dutch bank. All banks have run into trouble since then and RBS and Fortis had to be bailed out.

BOX 19.4 A WINNER'S CURSE THAT HAUNTS THE BANKING BEHEMOTHS

As governments across the world roll out their plans to re-regulate the financial system, one aspect of the financial debacle receives far too little attention. This is the speed with which great institutions of national importance can be destroyed by ill-judged takeovers.

The phrase "*winner's curse*" barely does justice to the plight of Bank of America after its takeover of Merrill Lynch. So, too, with RBS's acquisition of ABN Amro; and even more so with Lloyds TSB, where the disastrous purchase of HBOS came after years of prudent behaviour and pedestrian performance.

This is not, of course, a phenomenon that occurs exclusively in the financial world, although the systemic consequences there are often worse because banks are highly leveraged. In the previous cycle, two great pillars of the British industrial establishment, Marconi and Imperial Chemical Industries, reduced themselves to shadows of their former selves with injudicious, badly financed takeovers. At much the same time in the dotcom bubble, Time Warner saw multi-billion value destruction as a consequence of the merger with AOL.

A recurring feature of such disasters is that they are often associated with an overly dominant chief executive. Because of the age-old problem of information asymmetry, it is always difficult for non-executive directors to check and balance a determined CEO. When the CEO is in charge of a complex international financial institution, it is even harder, especially where he has stocked the board with people who lack experience in high finance and cannot understand the financial plumbing.

If it is difficult for non-executives, it is even more so for shareholders who are at one remove from the board. Keith Skeoch of Standard Life, who chairs the UK's Institutional Shareholders Committee, says the shareholder agenda needs to be robust on these issues. Yet it is a measure of how difficult it is for shareholders to restrain a dominant CEO that at RBS most institutions voted in favour of the ABN Amro deal in spite of the fact that the banking crisis provided an excuse to retreat or renegotiate. In the case of Marconi, the institutions notoriously egged on the management in carrying out the risky North American cash acquisitions that wrecked the company.

Did banks' risk committees highlight the dangers of rushed acquisitions and inadequate due diligence? But not all banks had risk committees. And one of the problems of these bodies is that they tend to be dominated by accountants who produce splendid matrices of all manner of risks, neatly categorised into hierarchies and pigeonholes.

The danger here is that common sense discussion of the obvious can give way to detailed technical discussion that is remote from the real threats. How many bank risk or audit committees asked simple questions on what had happened to leverage and whether the marked increase in leverage over the past decade posed a serious threat? Another simple, obvious question relates to banks' capacity for collective memory loss. In cycle after cycle, real estate has provided an easy but lethal opportunity for banks to expand loan books. For all the complexity of the current crisis, it remains substantially rooted in real estate. And while the issues to do with toxic paper continue to fester, we are now reaching the point where bad debts in conventional residential and commercial property are exacerbating an already dangerous situation.

What needs to be done to prevent mergers and acquisitions wreaking further damage? First, we need to recognise that it is a very peculiar feature of the so-called Anglo-American model of capitalism that it puts so much resource into an activity that countless academic studies have shown to be generally value destroying for the acquiring shareholders. The evidence seems to suggest that the net effect of mergers and acquisitions is wealth distribution from buyer to seller rather than the efficient capital allocation that its proponents claim. Yet as Lord Myners, City minister, points out, the thrust of the UK Takeover Code is overwhelmingly directed at protecting shareholders in the target company, not those in the acquirer.

In banking, the economic costs of M&A can be even greater because, as currently, it can increase

Box 19.4 A winner's curse that haunts the banking behemoths (*continued*)

concentration and produce banks that are too big to fail or, as in the combined Travelers-Citicorp, too big to be managed effectively. Part of the solution lies in robust competition policy. Yet non-executive directors and institutional shareholders also need to raise their game. A key to doing that is to recognise M&A for what it is: a very high risk business activity. That is not to say that good takeovers are a chimera. Sir Fred Goodwin did, after all, do a fine job with the acquisition of NatWest. But that led to hubris, which takes us back to where we started.



Source: Plender, J. (2009) 'A winner's curse that haunts the banking behemoths', *Financial Times*, 12 July.
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19.5 Managerial motives for M&As

The previous section illustrates that – at least from 2000 onwards – there is stronger evidence (particularly in the case of European deals) that M&A activity tends, on average, to increase performance and **shareholder value**. The fact that many earlier merger studies found little evidence of performance improvements encouraged researchers to investigate alternative explanations for the consolidation phenomenon with a particular attention paid to **managerial motives**. Here the argument goes that managers engage in M&As in order to maximise their own utility at the expense of shareholders. Managers' utility may relate to growth if their pay and other benefits are linked to firm size. Similarly, manager's utility may also be related to size if they wish for a **quiet life**.[6] Larger firms may be able to exert greater market power and insulate themselves from various competitive pressures, allowing them to choose a *quiet life*. Another managerial explanation as to why mergers may destroy value is Roll's **hubris hypothesis**, which argues that over-confident managers systematically overestimate the benefits of an acquisition and therefore results in them over-bidding (paying too much) for targets, leading to value destruction/no performance improvements (Roll, 1986).

Managerial motives for M&As have been investigated in US banking and there does seem to be some evidence that CEO compensation increases with changes in asset size. There is also evidence that CEOs tend to engage in merger programmes more frequently when they can expect to have large compensation increases from acquisitions. Outside the US, the literature on managerial motives for bank mergers is scant, possibly because of the overriding recent evidence that bank mergers are performance enhancing.

[6] The quiet life hypothesis was first proposed by John R. Hicks (1935), who noted that the best of all monopoly profits is the quiet life. The quiet life hypothesis posits that banks (firms) with greater market power are less efficient as they are more risk averse than firms in competitive markers. The literature puts forward several reasons to explain managers' choice of a quiet life: (i) if firms can charge prices in excess of competitive levels, managers do not have incentives minimise costs, thus enjoying a 'quiet life'; (ii) market power may allow managers to pursue objectives other than profit maximisation; (iii) in a non-competitive environment, managers can devote resources to obtaining and maintaining market power, which raises cost and reduces efficiency; (iv) market power allows inefficient behaviour to persist (Berger and Hannan, 1998).

19.6 The impact of M&As on bank customers

A substantial literature investigates the impact of consolidation on bank customers. The early survey literature typically finds that US bank consolidation in the 1980s resulted in lower deposit rates and higher loan rates in more concentrated markets. Studies that focus on the 1990s tend to indicate a weaker relationship between local market concentration and deposit rates. These studies also find evidence that large banks allocate a smaller proportion of their assets to small business loans compared to small banks, and this effect becomes more pronounced for merging banks. These adverse effects on credit availability, however, appeared to be counteracted by the increased credit supply to firms by small incumbent banks. Overall, the early literature suggests that the impact of bank mergers on both the price and availability of banking services are relatively modest.

More recent US studies focus on the effect of bank consolidation on small businesses, with reference to the availability and price of bank services post merger. This stream of research has been influenced not only by the desire to examine possible anti-competitive pricing effects resulting from bank mergers, but also by the recent interest in relationship lending and the role of soft (qualitative) and hard (quantitative) information processing in banks' credit decisions. There is some evidence that bank mergers tend to increase rates on unsecured personal loans charged by all banks in the markets in which the merger takes place (although the opposite effect has been observed for interest rates charged on automobile loans). One study examines the specific case of the merger between two US banks (Fleet and BankBoston) and finds that post merger higher spreads are charged for medium-sized mid-market borrowers (although spreads for small-sized, mid-market borrowers remain unchanged) (Calomiris and Pornrojnangkool, 2005). While consolidation is found to have led to lower credit availability for small borrowers, there is also evidence that large banks' decreased lending has, however, been compensated by increased credit from other incumbent (small) banks as well as increased entry of newly chartered (licensed) banks. One interesting (some may say unconventional) study finds that bank mergers in the US relate to higher loan (as well as crime) rates (Garmaise and Moskowitz, 2006)!

Mergers can enable banks to acquire proprietary information both to soften lending competition and to increase market share. It has been suggested that as competition increases, the cost of acquiring information about borrowers falls and this can lead to lower loan rates but also inefficient lending decisions. These findings appear to be partially supported by work on Japanese bank consolidation that finds that big bank mergers increase banks' ability to acquire soft information about their corporate borrowers (Ogura and Uchida, 2014).

Evidence on the impact of consolidation on small business lending in Europe (albeit limited) also appears to present rather mixed findings (Montoriol-Garriga, 2008). Various studies on Italian banking have found that interest rates on loans fall when banks with small shares of local banking markets merge, although in the case of large bank deals the results are reversed. Italian bank mergers have also been found to have a substantial adverse effect on credit availability that lasts at least three years after the merger (Bonaccorsi di Patti and Gobbi, 2007). Other work looking at German banking has found that the consolidation trend had no impact on small firm credit availability (Schmieder *et al.*, 2010).

19.7 M&As and bank diversification

An important feature of the consolidation trend in the financial sector has been the strategic focus on both **geographical** and **product diversification**. In the US the Gramm–Leach–Bliley Act 1999 (also known as the Financial Services Modernization Act) effectively repealed the Glass-Steagall Act of 1933 and granted broad-based securities and insurance powers to commercial banks. Similarly, Japan's 'Big-Bang' reforms (also completed in 1999) removed the separation of commercial and investment banking. The 1992 EU Single Market Programme also legislated for a universal banking system. By 2000, therefore, all major financial systems had removed the main product barriers in the financial services sector (although some restrictions still remain and vary relating to financial firms involvement with the non-financial sector – otherwise known as 'commerce').

Product deregulation followed the earlier removal of national bank branching restrictions in various countries. The Riegle-Neal Interstate Banking and Branching Efficiency Act 1994 repealed the McFadden Act of 1927 that inhibited nationwide branching in the US, and similar restrictions were removed in both Italy and Spain in 1992.[7] Deregulation allowed banks the freedom to expand nationally, internationally and across product lines. These changes led to a substantial literature that has sought to identify the impact of these various diversification features.

Diversification (whether geographical or product) was supposed to lead to reductions in risk, although these positive benefits could be offset by shifts to higher-risk portfolios (income streams) or/and greater operational risks. While conventional wisdom in banking argues that diversification tends to reduce bank risk and improve performance, the 2007–2009 financial crisis suggests that aggressive diversification strategies may have resulted in increased risk taking and poor performance (see Box 19.5). Existing studies on the effects of bank diversification have not yet come to a consensus. One approach to investigating the possible impact of diversification is to study the accounting or stock return features of hypothetical bank–non-bank mergers. The studies that use this approach (mainly investigating the US market) tend to find evidence of risk diversification benefits, particularly in the case of hypothetical bank and life insurance company deals. A study by Goetz (2012) investigates how a bank's diversification affects not only its own risk-taking behaviour but also the risk-taking behaviour of competitors, who have not diversified. The author concludes that a bank's risk taking is lower when competitors also have a more diversified business model.

Another strand of the diversification literature uses stock-return event-type studies (see Box 19.3) and these typically reveal mixed findings. Some studies focus on US bank bidder returns and find that significantly higher returns accrue for geographical and product focused deals. This means that M&As between banks that have a similar business mix, strategies and are based in the same markets tend to do better than diversification based deals. A number of cross-country European bank merger studies also tend to find that focused mergers do better

[7] One of the main motivations of the Riegle-Neal Act of 1994 was to allow banks to diversify geographic risk. This branching deregulation resulted in the highest-ever five-year run of bank mergers in the country's history in terms of both the number and the value of the banks acquired.

BOX 19.5 BANK DIVERSIFICATION

With the benefit of hindsight, a big banking riddle looks closer to being solved. For years banks insisted on becoming larger and more diversified, stretching their tentacles right around the globe. Yet finance theory, not to mention plenty of proof on the ground, concluded that universal banking could not, and should not, work. Now that banks are in shrinkage mode again, with the likes of Citigroup literally tearing itself in two, does this spell victory for the latter camp?

Both sides, it seems, were right, but not for the reasons they supposed. Sure, the case against global banks is pretty solid. Executives would bash heads together and boast about cross-selling but in reality there were few synergies across products and borders. And, in theory at least, shareholders should not pay a dime for diversification: they can achieve it far more efficiently within their own portfolios by owning, for example, a UK retail bank here and a fast-growing Asian lender over there.

But global banking shares almost doubled in value over the decade to the end of 2007. Of course, a number of factors such as rampant economic growth and bubbles in many asset classes helped financial companies make a stack of money. But so did leverage. Bernstein, for example, estimates that from 2000 to 2008 the correlation between gross leverage and return on equity for Goldman Sachs was 88 per cent (excluding outlier quarters).

As carry traders appreciate, leverage requires a stable funding platform. A wide geographic

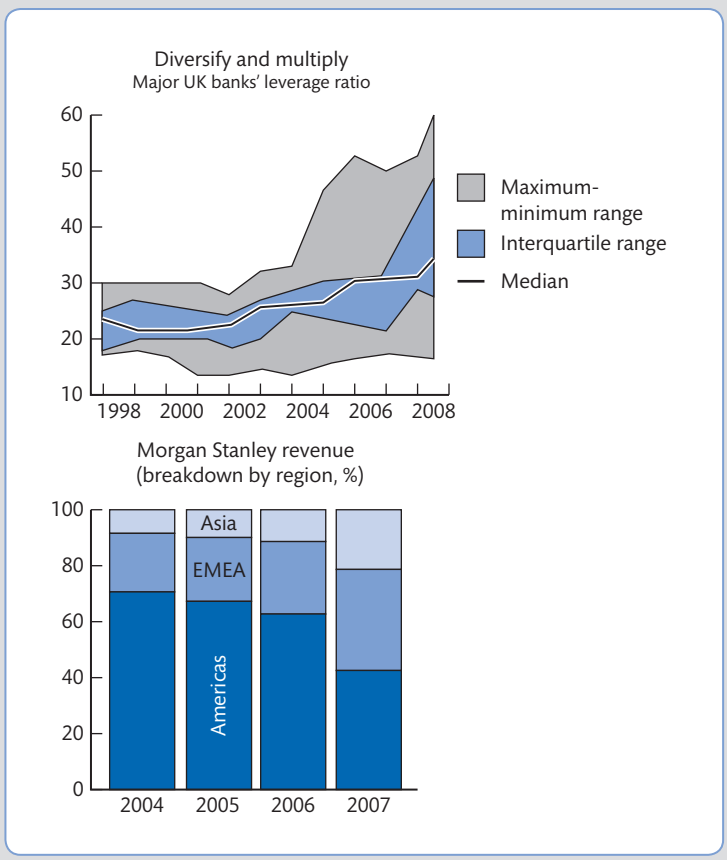


Figure 19.6 Banks diversify and multiply, 1998–2008

Source: Bank of England; Bloomberg.

Box 19.5 Bank diversification (*continued*)

spread, therefore, may not have yielded universal banks synergy benefits, but thousands of diversified business streams lowered the volatility of profits. That is handy when gearing up tangible equity by more than 30 times. The trouble was, however, that the combination of lower volatility and benign markets resulted in banks thinking they had a low cost of equity. Thus bigger risks were taken until even the most geographically diversified banks became exposed. Now that excessive leverage is history, so perhaps is the case for universal banking.



Source: Lex column: Bank diversification, *Financial Times*, 19 February.
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than diversifying deals in terms of returns to stockholders, although there is also evidence that diversifying deals do well – so evidence for Europe is rather mixed.

The recent literature on cross-border mergers involving US and European banks tends to find evidence of no cost efficiency improvements although there is some evidence of profit efficiency or accounting returns improvements. Other studies that examine diversification focus on a wide range of issues, including:[8]

- potential conflicts of interest associated with commercial bank/investment bank mergers;
- whether banks with securities arms lend more or less to small firms;
- how liquidity shocks and other effects can limit diversification;
- evidence of substantial **conglomerate discounts** (investors value diversified firms less than focused companies, as such conglomerate or diversified firms are not valued as highly as focused firms);
- whether the benefits from diversification are generally offset by fee-income volatility.

In the light of the 2007–2009 financial crisis and the barrage of bailouts and other support provided for 'diversified banks', various legislative moves have sought to restrict bank diversification activity. The most prominent are provisions laid out in the US Dodd–Frank Wall Street Reform and Consumer Protection Act of July 2010, which seeks (among other things) to end 'too-big-too-fail'. The Act clearly states that 'taxpayers will not be on the hook' and the FDIC is prohibited from losing money on systemically important financial intermediaries. In addition, the Volcker rule prohibits banks with federally guaranteed deposits from proprietary trading (i.e. trading using their own capital) and limits investments in hedge funds/private equity fund sponsorship to 3 per cent of capital. [9] This clearly seeks to limit bank trading activity as well as involvement in hedge fund/private equity areas – although there is no strong evidence that any of this activity led to major bank collapses.

In the UK, an Independent Banking Commission was asked to consider reforms to the UK banking sector to promote financial stability and competition. On 12 September 2011,

[8] See Stiroh (2014) for a review of the diversification literature.

[9] The Volcker rule was finally adopted, after several legal wrangles (including a lawsuit by community banks) in December 2013, nearly three years after Dodd–Frank was signed into law and two years after the first draft of the rule was put out by the bank regulators (the final version of the Volcker Rule can be found at **www.sec.gov/rules/final/2013/bhca-1.pdf**).

the Commission released its Final Report, which sets out views on possible reforms, stating that retail banking is to be ring-fenced from wholesale and investment banking (see Chapter 13 for regulatory changes in UK banking). Also risk management should become a self-contained, less complex business for retail banking, but remain complex for wholesale/investment banking. Again this inhibits diversified banks' ability to operate in wholesale/investment banking areas.

The common aim of all these proposals for regulatory reforms is to foster financial stability and to ensure that banks are both resilient and resolvable in case of problems. In addition, they aim to limit the implicit guarantees to their respective banking sectors. The predominant view – particularly in policy circles – is that the higher complexity and excessive agency problems associated with large and complex financial institutions outweigh the benefits of diversification. However, there are also merit to diversification and both sides of the diversification debate are grounded on solid theoretical arguments (see Box 19.1). There is, to date, little empirical evidence that large and diversified financial institutions have fared worse (or indeed that they have cost the taxpayers more money) than smaller institutions with a narrower range of assets and activities. While some activities might be increasing banks' overall risk profile, others are not and may offer financial institutions the opportunity to re-balance their risk exposure and to diversify their revenue streams.

19.7.1 The impact of consolidation on bank entry and other effects

Merger activity can have a significant influence on not only the participants but also on other banks and also potential entrants to the market. The US literature suggests that mergers encourage new bank charters (licences) and that even the presence of a large bank stimulates new entry into rural banking markets. New entry via merger has also been found to increase the cost efficiency (but not the profit efficiency) of incumbent banks. It has also been found (in Italy) that competition in local markets increases the likelihood of M&As (as do higher loans-to-deposits ratios).

Deregulation's positive influence on merger activity is also found. In the US the deregulation process has been found to increase bid premiums for target banks – as banks are allowed to enter new markets, this pushes up the price of new targets. However, it should be remembered that even though banking systems have been deregulating, the regulatory approval process can act as a constraint on bank merger activity.

19.8 The exploitation of safety-net subsidies and systemic risk

Even prior to 2007, the increased size of banking firms had raised concerns about the risk implications and the repercussions for systemic stability. As banks become larger, irrespective of the performance implications, they may have the opportunities to exploit **safety-net subsidies** if they are viewed as 'too-big-to-fail' (TBTF) or 'too-big-to-discipline-adequately' (TBTDA). While it is generally recognised that TBTF subsidies are difficult to evaluate, evidence (prior to the financial crisis) from the US suggested that these were likely to be substantial. Since late 2007, the number of bank bailouts (including Citigroup in the US, RBS and Lloyds in the UK, Fortis and Dexia in the Benelux countries, Depfa in Germany, and the main banks in Ireland, Iceland, Spain and Greece) provided further evidence of possible

TBTF subsidies. Now we know that some banks are TBTF and the consolidation trend helped feed the system, creating banks that had implicit safety-net subsidies.

Earlier studies on the subject of bank size and safety-net subsidies pointed in this direction. One early study suggested that because the top ten largest US banks paid less for funds than smaller banks and operated with lower capitalisation rates, this indicated advantages of TBTF implicit guarantees (Shull and Hanweck, 2001). After the US authorities named 11 US banks as TBTF in 1984 this increased the ratings on new bond issues of these banks relative to other (unnamed) banks.

A literature has emerged focusing on the **merger premium** paid for mega-banks as an indicator of the safety-net subsidy – the argument being that higher premiums will be paid for banks that have implicit bailout guarantees. There is some evidence that significant premiums are paid in mega-conglomerate (over $100 billion) deals and also large premiums have been paid for targets that have critical size. Overall, even prior to 2007, there were growing concerns about TBTF subsidies resulting from the consolidation process (in the US at least). Now we know that TBTF is a reality that has led to many commentators to question the efficacy of bank size and consider the break-up of mega-sized institutions, as illustrated in Box 19.6.

BOX 19.6 OUT TO BREAK THE BANKS

US regulators and lawmakers fear large institutions are still too big to fail. The 2010 overhaul of financial regulation known as the Dodd–Frank Act was supposed to have dealt with the problem. A financial group's failure has been made less likely by limiting risky trading and requiring more loss-absorbent equity capital. Failures have been made easier to handle by allowing the government to wipe out shareholders and forcibly convert debt to equity. International efforts to come up with a global plan to deal with large bank failures are well under way. Higher international capital requirements in a deal known as Basel III are being phased in for banks around the world. But there is a new-found zeal among members of Congress from both parties and from some senior regulators to go further. They want to eradicate the possibility of new bailouts or disastrous collapses and to end the phenomenon of too big to fail.

Barney Frank, the former Democratic congressman who co-authored Dodd–Frank, says the renewed debate is unnecessary. "There is a strange view that if a large institution fails, even though the law doesn't allow for bailouts, there will be overwhelming public pressure to keep them alive," he says. "The notion that there will be an overwhelming demand to keep these firms alive – I just don't know what planet these people have been living on." But Mr Frank has left the stage, along with Sheila Bair, the chairperson of the Federal Deposit Insurance Corporation, and Tim Geithner, Treasury secretary. As architects of the post-crisis response, all were invested in the idea that too big to fail had been dealt with. Their departure gives proponents of going further a greater chance of success.

Last week Mr Brown and Mr Vitter unveiled their latest draft legislation on the topic, which would sharply increase the capital requirements on the largest banks with assets of more than $500bn, forcing them to hold 15 per cent equity against their assets.

Analysts at Goldman Sachs calculate the increased capital is worth about $1.2tn, which would equate to the largest banks forgoing dividends and share buybacks for up to 15 years. If shareholders accepted that, they would also have to accept a permanently lower return on equity. Many in the industry believe the economics would not work: the biggest banks might have to break up to escape the tougher regime. Mr Vitter and Mr Brown could live with that – and believe others can, too. "If we took that vote today, we'd get upwards of 40 senators," Mr Brown says, adding that he is working with 10 Republican senators

Box 19.6 Out to break the banks (*continued*)

to drum up additional support. A majority of the Senate is within reach, he says, though industry lobbyists dispute that count.

What appeals to the members of Congress who might eventually back such legislation is the wave of enthusiasm across the country, particularly in rural districts served by small community banks struggling to compete with their biggest rivals. Camden Fine, who heads Independent Community Bankers of America, the association for the country's 7,000 small banks, says he will expend "every ounce of influence we have in this town" to get legislation passed. There have been several catalysts for action, including JPMorgan's $6bn trading losses last year, which led many to question whether any large institution was truly safe if one of the world's best-managed banks could inflict such damage on itself.

Unlikely cheerleaders for breaking up the banks have emerged, including Sandy Weill and John Reed, who in the 1990s assembled Citigroup, the archetypal financial supermarket. Both have disowned the model, with Mr Weill calling for splits that would leave banks in businesses that are "not going to risk the taxpayer dollars, that [are] not too big to fail".

But the moment that crystallised the sentiment was the admission by the country's top legal official that some banks were "too big to jail". Eric Holder, the US attorney-general, has come under stinging criticism for not prosecuting banks or top bank executives in the wake of the financial crisis.

Asked at a March 2013 hearing whether some banks had escaped prosecution because of their size, Mr Holder surprised the room by conceding the point. "I am concerned that the size of some of these institutions becomes so large that it does become difficult for us to prosecute them when we are hit with indications that if you do prosecute, if you do bring a criminal charge, it will have a negative impact on the national economy, perhaps even the world economy," he said. Mr Holder's statements are considered to be the most explicit admission of concern by a senior Obama administration official regarding the risks posed by big financial groups. "That's what you'd expect to hear from some little tinhorn republic, where certain families that have done wrong escape prosecutions because of their connections," says Mr Fine. "You don't expect to hear something like that in the US."

The more profound unfairness, critics say, is that the biggest banks can borrow more cheaply, feeding a vicious cycle of ever-greater dominance. "I can't find anybody who argues that Dodd–Frank solves too big to fail, other than the big banks who would have to adjust [to a new regime]," says Richard Fisher, president of the Federal Reserve Bank of Dallas. The concern is that banks such as JPMorgan enjoy implicit government guarantees: creditors believe that, as with Bank of New England in 1991 and Citigroup in 2008, the government will find a way to rescue them rather than take the risk that the new tools created by Dodd–Frank could fail, leading to credit freezes and a breakdown in payment networks.

For years this held true. In the past three years credit rating agencies have started to downgrade banks on the assumption that the possibility of a bailout is lower and the funding differential has narrowed. Some analyses find it has disappeared. But even respected figures in the middle, such as Ben Bernanke, chairperson of the US Federal Reserve, say it is still apparent.

"Clearly there are grounds for continuing concerns about subsidies associated with too big to fail," says Larry Summers, the former Treasury secretary and economics adviser to President Barack Obama and now a professor at Harvard University. "The steps contained in Dodd–Frank are clearly constructive. But I think we have a long way to go with respect to issues associated with international resolution, with respect to assuring sufficient capital levels, and with respect to appropriate risk systems. Market evidence does provide some grounds for concern about too-big-to-fail subsidies."



Box 19.6 Out to break the banks (*continued*)

The renewed debate over the size and power of the big banks has alarmed Wall Street lobbyists, who are spending heavily to fight back. "It is of the highest risk and concern," says one top industry lobbyist. Groups are spending millions of dollars to combat the perception that they are protected by the government. The Clearing House, Financial Services Forum and Financial Services Roundtable, three of the biggest trade associations, are all engaged. While both sides have been fighting over the facts, there is also much faith-based rhetoric. "The too-big-to-fail issue has become theological," says Paul Saltzman, head of the Clearing House, which represents the biggest banks. "That is my biggest worry – a debate where facts don't matter. In order to conclusively prove your point, we have to have a crisis, a large bank has to fail and the shareholders, creditors and culpable management need to suffer the consequences without any taxpayer-funded support. No one wants that counterfactual event to occur."

The concern for the banks is that opponents on this issue are not just Democrats such as Mr Summers but also Republicans, including Kevin Warsh, a former Fed governor. Mr Warsh argues that by trying to force the banks into safer activities and branding them systemically important, the problem is getting worse. "If the government chooses select firms to be public utilities atop the business of banking, it is very difficult for the other 7,000 banking institutions to lend and compete," he says. "That is an obstacle to economic growth."

Banks might favour less regulation but they would not favour Mr Warsh's alternative: far more capital and simple leverage ratios that do not allow banks to put less capital against safer assets. Another concern is that the actors are not just former officials or lawmakers but active regulators who have power to force changes. Among them is Tom Hoenig, vice-chairperson of the FDIC, who has also called for significantly higher and simpler capital requirements on large banks. What is new, and what is most worrying for the banks, is that the most powerful regulators at the Fed show little desire to quell the calls from their more feisty colleagues.

Fed officials are considering higher capital requirements, according to people familiar with the discussion, which they could impose without any input from Congress. The FDIC is also considering using its new powers under Dodd–Frank to force divestitures if banks deliver "living wills", designed to show how they could be liquidated, that are deemed inadequate. "The living wills are the thin end of the wedge," says a banker who fears they might be the start of regulators demanding more sweeping changes. In Europe, politicians such as Angela Merkel, the German chancellor, and Michel Barnier, the European commissioner in charge of financial services, warn against going too far, too fast on reform, afraid that the economic recovery will be derailed.

Perhaps, ultimately, Republican leaders in the House of Representatives, Mr Obama or Mr Bernanke will step in and block attempts to hobble the biggest banks, fearing wider repercussions. Members of Congress might be swayed by the grassroots lobbying of small bankers in their districts. But they also like the donations of the biggest groups and are susceptible to the argument that breaking up banks such as JPMorgan would push their business to foreign groups, such as Deutsche Bank or Barclays, that can offer a full suite of products. "I think it's dangerous," says Bill Demchak, chief executive of PNC Financial Services, a bank that, with $300bn in assets, is not large enough to qualify for most of the proposed curbs. "As a selfish competitor does it help us if the bigger banks get hurt more than we do? Yes. But I think it harms our economy." For now the upper hand is with the reformers. It might be that they have too much momentum to fail.



Box 19.6 Out to break the banks (*continued*)

Three ways to tame Wall Street		
Cap size	**More capital**	**Shed risky business**
		
The US already prevents banks from making acquisitions if they possess more than 10 per cent of the nation's deposits. This is true of JPMorgan Chase, Bank of America and Wells Fargo. Proposals to impose further caps on assets or liabilities are, therefore, not without some change of success. Regulators are focusing more on providing incentives to get smaller, with higher capital requirements for larger institutions. Opponents say that the issue is not really too-big-to-fail but too-interconnected-to-fail and that chopping up Bank of America, with its $2.2 trillion of assets, into five separate companies, does not make the system safer.	With more loss-absorbent equity, banks become less likely to fail and the pressure to deal with failure decreases. The question is how far to go. The Basel III rules agreed internationally already force much more capital into the system. Sceptics argue it is still too little and the system of risk weights is too complicated. Even relatively moderate Fed officials believe that leverage limits, the blunter measure of bank indebtedness, should be lowered. Congressional proposals would go further, with draconian capital levels likely to encourage large banks to break up. Some further tightening of the capital rules has good chances.	Every large institution now needs to submit 'living wills' to regulators to describe how they could be liquidated in the event of a crisis. If regulators find the plans implausible, they can force banks to divest risky operations. Some within the FDIC are keen to start using their new powers, arguing that some banks appear too complex to be dismantled quickly and safely. JPMorgan or Citigroup are unlikely to be told to sell their investment banks tomorrow, but some forced reorganisation, ring-fencing or divestitures, are quite likely.

Source: Adapted from Nasiripour, S. and Braithwaite, T. (2013) 'Out to break the banks', *Financial Times*, 30 April.

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Closely related to the arguments linking consolidation to safety-net subsidies are those that consider systemic risk – an area of current major concern in global banking systems. Some have found that correlations of big-bank stock returns have increased, suggestive of potentially greater systemic risk (e.g. bank share prices move increasingly in the same direction at the same time). Trends in international consolidation (as well as conglomeration)

are also likely to increase risks for large complex financial firms. It has also been shown that financial sector consolidation can influence liquidity in money markets and the influence depends on divisional capital allocations post merger.

19.9 Conclusion

This chapter provides an insight into recent M&A trends in banking and also examines the impact of the consolidation process on bank performance. We show that the consolidation trend grew both in the US and Europe in the mid-1990s, peaking at the end of the decade then falling back as a result of the burst of the IT bubble. M&A activity then picked-up from the early 2000s with European deal activity lagging that of the US by around a year or so. In examining the impact of M&As on bank performance we show that the evidence from the 1990s was pretty mixed (from both stock return event studies and/or cost and profit ratio studies) although in the 2000s there is strong evidence that European M&A activity has been performance enhancing – and evidence on recent US deals remains mixed. We also discuss managerial motives associated with the consolidation process. There is some evidence that small business borrowers may lose out post merger, finding it more difficult to borrow or obtaining credit at higher interest rates. Retail customers may also end up earning less on their deposits and paying more on loans. The deregulation trend has enabled banks to engage in universal activities, spawning a wave of consolidation between banks and non-bank financial firms (including insurance companies, securities firms and so on). Also banks have expanded cross-border to enhance their international activities. Overall there is mixed evidence as to whether such diversification is performance enhancing. From the US the consensus appears to be that diversification benefits may accrue if non-traditional income reaches around 25–30 per cent of total income but thereafter any benefits are dissipated by the increased volatility of non-interest income (especially if the bank is engaged in securities activity). Conglomerate discounts appear to be common in universal banking.

Finally, we examine whether large bank mergers are motivated by opportunities to exploit implicit too-big-to-fail guarantees. Evidence prior to mid-2007 pointed in this direction – we now know that this is the case and regulators and politicians are actively discussing restricting mega-bank activity – as reflected in US legislation and proposals in the UK to limit commercial bank securities activity.

Key terms

Conglomerate discounts
Cross-border mergers
Domestic mergers
Financial conglomeration
Geographical diversification
Hubris hypothesis
Managerial motives
Merger premium
Product diversification
Quiet life
Safety-net subsidies
Shareholder value

Key reading

Buch, C. and DeLong, G. (2019) 'Banking globalization: Cross-border entry, complexity and systemic risk', in Berger, A.N., Molyneux, P. and Wilson, J.O.S. (eds), *Oxford Handbook of Banking*, 3rd edition, Oxford: Oxford University Press, Chapter 29.

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REVISION QUESTIONS AND PROBLEMS

19.1 Outline the main trends in banking sector consolidation since the mid-1990s. What have been the main effects of the consolidation trend?

19.2 Outline the key motives for bank mergers. In your answer discuss whether managerial motives are important.

19.3 Explain the quiet life hypothesis and Roll's hubris hypothesis.

19.4 Compare the impact of domestic bank deals compared with cross-border deals. Of these two types of consolidation, which are more likely to performance enhancing?

19.5 Discuss the impact of mergers on bank customers. Do small businesses lose out as a consequence of the merger trend?

19.6 Examine the influence of product and geographical diversification deals and discuss how such deals may impact on bank performance.

19.7 How are mergers affecting new entry in banking markets?

19.8 Examine whether large bank mergers are designed to exploit safety-net subsidies (implicit too-big-to-fail guarantees).

Chapter 20

Bank competition and financial stability

Learning objectives

- To appreciate how to measure the competitive features of banking systems using structural indicators, including concentration ratios and the Herfindahl index
- To understand non-structural indicators of banking sector competition, including the Panzar–Rosse statistic, the Lerner index, the Boone indicator and the persistence of profits (POP) indicator
- To understand accounting- and market-based measures of bank risk
- To understand the link between competition and bank risk
- To understand the empirical evidence on the relationship between competition and risk in banking markets

20.1 Introduction

Competition is generally considered an essential force in the economy as it should encourage firms to be more efficient in the way they produce outputs and consequently promote a better allocation of resources. In the banking industry, higher efficiency should entail lower costs, which should then be passed onto bank customers in the form of lower charges, higher deposit rates and reduced lending costs. In addition, competition should have a positive impact on the economy, influencing a broad array of factors that can (i) improve access to finance; (ii) increase competitiveness in other sectors of the economy; (iii) foster innovation and the improve the quality of products and services offered; (iv) promote economic growth; and (v) widen consumer choice.

However, the issue of the perceived benefits derived from increased competition has always been controversial in banking, as these have to be weighed against the risks of potential instability. As a consequence, the banking industry has been historically heavily regulated. Furthermore, the existence of frictions in banking markets (for example, entry barriers and asymmetric information), cause the welfare theorems associated with perfect competition not to be directly applicable and allow room for the exercise of market power (Vives, 2001).

Nevertheless, a healthy degree of rivalry is considered necessary for the dynamic efficiency of an industry and this principle is at the basis of the trend towards fostering greater competition in banking markets all over the world. The presence of a possible trade-off between competition and stability has always played an important role at the policy level and gained even more prominence in light of events culminating in the global financial crisis of 2007–2009. Questions remain as to whether a certain degree of market power would be beneficial in banking markets, to provide incentives for banks to undertake less risky strategies. In this context, the evaluation of competitive conditions and market power becomes increasingly important for policy makers and regulators.[1] Competition authorities often rely on the validity of the **structure-conduct-performance (SCP)** paradigm and proxy competition with measures of market concentration, such as the *n*-firm concentration ratio (CR-*n*) or the Herfindahl–Hirschman index (HHI). On the other hand, recent academic studies have shown concentration to be a poor proxy for competition.

In this chapter, we review the different methods proposed in the academic literature to assess the competitive conditions of banking markets. The research on bank competition has evolved mainly in two directions: the structural and non-structural approaches. Traditional industrial organisation theory focuses on the (SCP) paradigm. Market structure is reflected in concentration ratios for the largest firms and the Herfindahl–Hirschman index. This literature is essentially based on the assumption that concentration weakens competition by fostering collusive behaviour among firms. In Section 20.2 we provide an overview of the (SCP) paradigm, which uses measures of industry structure, and links these to measures of bank performance. The non-structural approaches posit that factors other than market structure and concentration may affect competitive behaviour, such as entry/exit barriers and the general contestability of the market. In Section 20.3 we briefly discuss some of the non-structural indicators of competition including the Panzar–Rosse H-statistic, the Lerner index, the Boone indicator and the persistence of profitability (POP) measures. In Section 20.4 we present a comparative analysis of the different measures of competition to establish whether they yield consistent results. In Section 20.5 we outline the link between competition and risk in banking and we introduce different indicators of bank risk, including accounting indicators and market-based measures of risk. We then explore the link between competition and risk in banking systems and bring in the debate between the competition-fragility view, which posits that competition induces increased risk taking and therefore is detrimental for stability, and the competition-stability view, which argues the opposite, that is that competition promotes financial stability. We review the results of selected academic studies and attempt to shed some light on this controversial issue. Section 20.7 concludes.

20.2 Structure-conduct-performance (SCP)

The existence of a link between market structure and efficiency was first proposed by Hicks (1935) and the **quiet life hypothesis**. Hicks (1935) argued that monopoly power allows managers a *quiet life* free from competition and therefore increased concentration should bring

[1] These issues are covered in more detail in Bikker and Spierdijk (2017). A narrower discussion on market power issues is also found in Shaffer and Spierdijk (2017a).

about a decrease in efficiency. Leibenstein (1966) argued that inefficiencies are reduced by increased competition as managers respond to the challenge.

The analysis of the link between profitability and market structure has a long tradition, although economists have proposed a different interpretation of the results. The alternative theories can be summarised as:

1 market power theories, which include the traditional structure-conduct-performance (SCP) paradigm and the relative market power (RMP) hypothesis; and
2 efficiency theories, which include the efficient structure hypothesis (x-efficiency (ESX) and scale efficiency (ESS)).

These are reviewed below.

20.2.1 The traditional SCP view

Traditional industrial organisation theory suggests that increased industry concentration lowers the cost of collusion, thus resulting in anti-competitive behaviour and excess profits. The SCP paradigm seeks to explain aspects of the conduct and performance of firms in terms of the structural characteristics of the industries or markets in which they operate. The *structure* (the S in SCP) refers to the structure of the market and includes: the number of firms and their absolute and relative sizes, the level of concentration, the extent of product differentiation and the nature of entry conditions.

According to this approach, market structure is expected to influence the way in which firms behave, namely their *conduct* (the C in SCP). The conduct of firms relates to factors such as their pricing behaviour (whether they fix prices through collusion and other forms of strategic behaviour; how they behave in terms of product differentiation, advertising, entry and exit strategies). Conduct, dictated or influenced by structure, in turn determines *performance* (the P in SCP). Firm performance can be measured by a variety of indicators including profitability, growth, market share, technological progress and efficiency. The most common measures of performance in banking either focus on profitability (return-on-assets or return-on-equity) or prices (loan rates, deposit rates). The traditional SCP is essentially a theory of collusion, its main insight is that the smaller the number of firms in an industry (the more concentrated the industry), the easier it is for firms to collude. Equally, large banks could exploit their market power by setting prices at uncompetitive levels (RMP hypothesis). Shepherd (1982, 1986) argues that differences in performance can be explained either by superior efficiency and/or by the influence of factors related to market power. Under this hypothesis, individual market share is the proxy variable for assessing market power.

The theory of the firm literature tells us that the most competitive market outcome is perfect competition where price equals marginal cost. The further price is from marginal cost, the greater the firm's market power and overall profitability. Features of the SCP relationship are illustrated in Figure 20.1.

Early empirical work based on the SCP paradigm focused on the relationship between concentration and performance, measured by profitability. A positive link between concentration and profit was interpreted as evidence that firms act collusively in order to achieve high profits or that dominant firms abuse their market position by acting in an uncompetitive manner to the detriment of consumers. The early empirical work applying the SCP dates back to the seminar work by Bain (1951). A review of the earlier literature is provided by Gilbert (1984); this literature highlights a positive relationship between industry concentration and profits, thus confirming the SCP paradigm.

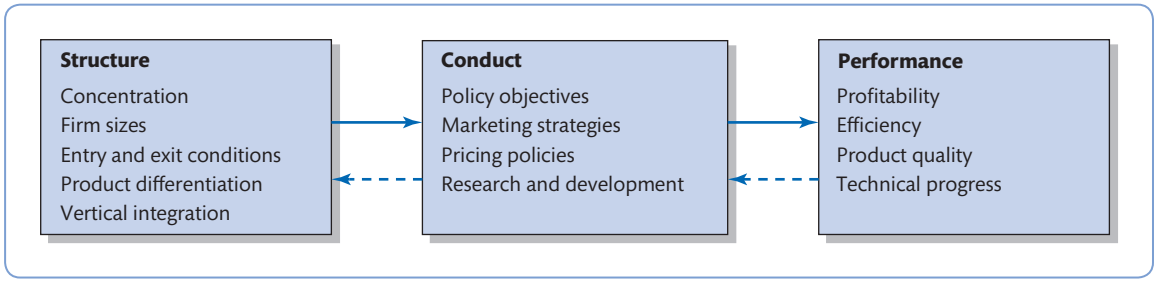


Figure 20.1 The structure-conduct-performance (SCP) paradigm

20.2.2 The efficient structure hypothesis

Proponents of the SCP paradigm tend to view markets as imperfect in terms of their competitive structure, and therefore advocate some form of regulation in order to prevent the abuse of market power. The Chicago School, however, argued that government interference tends to lead to less competition rather than more. A positive link between concentration and profits does not necessarily imply collusive behaviour on the part of firms. It may simply reflect the fact that the larger firms tend to operate more efficiently and therefore make higher profits. This view, which has become known as the **efficient structure hypothesis** (Demsetz, 1973), posits a reverse causality between competition and efficiency: more efficient firms have lower costs, which in turn lead to higher profits. More efficient firms tend to attain large market shares, and consequently the industry becomes concentrated. If all firms operated at similar levels of efficiency, concentration and average profitability would remain low. Because, by definition, concentrated industries contain firms with high market shares, the average level of profit also tends to be higher. However, this correlation between profit and concentration is the result of the underlying relationship between efficiency and profitability. This suggests that regulation or intervention aimed at limiting industry concentration is not an appropriate policy prescription, since it penalises the largest and most efficient firms.

An alternative interpretation of the efficient structure hypothesis suggests firms might have equally good management and technology, but some firms produce at a more efficient scale and therefore have lower unit costs and higher profits. Again, such firms have large market share, which may result in high levels of concentration (this is the *scale efficiency* hypothesis). More concentrated banking sectors will tend to have higher profitability, on average, because large banks are more efficient than their smaller counterparts.

The existence of competing interpretations of the concentration-profitability relationship has produced a vast body of research, which seeks to resolve the issue using empirical criteria. The first application of the **efficiency hypothesis** to banking is the study of Smirlock (1985). Berger (1995), however, was the first to explicitly test the efficiency hypothesis by including specific measures of bank efficiency in his model estimations (previous studies had simply used market share variables to infer efficient behaviour).

20.2.3 Testing the SCP paradigm

To evaluate the SCP paradigm, the first step relates to the measurement of the industry structure. Researchers tend to rely on alternative measures of industry structure characterised by the size distribution of firms. No doubt the choice is strongly influenced by the relative

ease with which firm size can be observed – the size of a bank can easily be obtained from a balance sheet (total assets or total deposits). While measures of bank size might be easy to obtain, more complex is the definition of the market firms are operating in. Traditionally, banking studies consider the national banking market: here the market is defined by the size of total banking sector assets or deposits in a country. This is relatively simple to calculate but a rather crude measure, as it provides only one concentration indicator for the banking system under study. In reality we know that banks engage in a variety of business areas – consumer loans, mortgages, credit cards, lending to small firms and so on. However, it is difficult to obtain market share information for banks in many of these specific areas and even if this could be obtained, it would be even more difficult to identify the profitability of these specific market segments over time. That is why most studies resort to national market structure indicators and broad bank performance indicators to undertake SCP analysis.

The simplest and most widely used indicator of market structure is the n-firm **concentration ratio** (CR-n), which measures the market share of the top n firms in the industry:

$$\text{CR-}n = \sum_{i=1}^{n} S_i \tag{20.1}$$

where S_i = market share of the ith firm, when firms are ranked in descending order of market share.

To put less formally, the 3-firm concentration ratio (CR-3) measures the sum of market shares of the largest three firms; CR-5 is the market share of the biggest five firms; CR-10 is the combined market share of the top ten firms and so on. The n-firm concentration ratio (CR-n) has the advantage of being easily measurable; one needs to know only the total size of the industry and the individual sizes of the top n firms. By focusing only on the share of the top n firms, however, it takes no account of the size distribution of the remaining firms and therefore could lead to biased comparisons. One banking system may look highly concentrated if one considered, say the CR-3, but it may look less concentrated than a country that had a higher CR-10, as shown in Table 20.1. Here we can see that CR-3 for Country

Table 20.1 Bank size and concentration

Top ten banks, ranked from 1st to 10th	COUNTRY A assets market share (%)	COUNTRY B assets market share (%)
1	20	15
2	20	15
3	10	10
	CR-3 = 50%	CR-3 = 40%
4	5	15
5	5	10
6	5	10
7	5	10
8	5	5
9	5	5
10	5	2
	CR-10 = 85%	CR-10 = 97%

A equals 50 per cent compared with 40 per cent for Country B, thus suggesting the former is more concentrated than the latter. However, if we chose the CR-10 to compare market structures we find that Country A has a CR-10 of 85 per cent but Country B has a higher CR-10 at 97 per cent – suggesting that the latter is less competitive than the former. This indicates is that the choice of the number of the largest firms used to calculate the CR-*n* ratio can lead to inconsistent comparisons of industry market structure.

To deal with this limitation of concentration ratios, one can chose the more data-intensive **Herfindahl–Hirschman index** (HHI) – often just referred to as the Herfindahl index – which (in theory at least) uses information on all firms in the industry.[2] It is defined as the sum of the squares of the market shares of all firms:

$$\text{HHI} = \sum_{i=1}^{N} S_i^2 \tag{20.2}$$

where S_i is market share of firm i as before and N is the total number of firms in the industry. In the calculation of HHI, the larger firms receive a weighting heavier than their smaller counterparts, reflecting their relative importance. For example, in an industry with one firm with 100 per cent market share the HHI equals $100 \times 100 = 10{,}000$. Where there are two firms, both with 50 per cent market shares the HHI is $(50 \times 50) + (50 \times 50) = (2{,}500) + (2{,}500) = 5{,}000$. If there are five firms with 50 per cent, 20 per cent, 10 per cent, 10 per cent and 10 per cent market shares then the HHI $= 2{,}500 + 400 + 100 + 100 + 100 = 3{,}200$. The less concentrated the market, the smaller the HHI. In theory, to calculate the HHI index accurately researchers are supposed to have information on every single firm (or bank) in the industry. While central banks and other regulators have this information, it is often difficult for researchers to obtain information on all banks. It is therefore common to use large samples of banks provided from databases such as SNL Financial, Bank Focus or Thompson One Banker.

Table 20.2 illustrates the HHI and CR-5 assets measures for EU banking systems between 2008 and 2016. The top five banks account for 97 per cent of banking assets in Greece, making it the most concentrated banking system, followed by Estonia (88 per cent) Lithuania (87 per cent) and the Netherlands (85 per cent). Luxembourg and Germany have the lowest levels of concentration. However, if we use the preferred indicator – the Herfindahl index – one can see that Estonia is ranked as most concentrated (with an HHI index of 2,406) followed by Greece (2,332) and the Netherlands (2,097).

Figure 20.2 illustrates the HHI for foreign exchange derivatives trading – FX forwards and FX swaps and currency options. One can see that in 2009–2010 the FX derivatives market was more concentrated than in 2017, and there has been a sizeable fall in concentration in UK sterling business.

High levels of industry concentration raise authorities' concerns. Competition authorities (also known as *antitrust* authorities) tend to investigate high concentration levels to ensure that an acceptable level of competition is taking place (see also Box 20.1). However, as we have already noted, just because an industry is concentrated does not necessarily mean that firms are behaving in a monopoly manner – there can be intense competition between the top firms.

Bank conduct is difficult to observe. Tests of the SCP relationship typically aim to relate market structure to performance from which firm conduct is inferred. Once the measure of

[2] Hirschman (1945); Herfindahl (1950).

Table 20.2 Herfindahl index and 5-bank concentration ratio (by assets)

Herfindahl index for credit institutions and share of total assets of the five largest credit institutions																		
	Herfindahl index for credit institutions[1] (index ranging from 0 to 10,000)									Share of total assets of the five largest credit institutions[2] (percentage share of the five largest credit institutions)								
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2008	2009	2010	2011	2012	2013	2014	2015	2016
Belgium	1,881	1,662	1,439	1,294	1,061	979	981	998	1,017	81	77	75	71	66	64	66	65	66
Germany	191	206	301	317	307	266	300	273	277	23	25	33	34	33	31	32	31	31
Estonia	3,120	3,090	2,929	2,613	2,493	2,483	2,445	2,409	2,406	95	93	92	91	90	90	90	89	88
Ireland	661	714	700	647	632	674	677	678	644	50	53	50	47	46	48	48	46	44
Greece	1,172	1,183	1,214	1,278	1,487	2,136	2,195	2,254	2,332	70	69	71	72	79	94	94	95	97
Spain	497	507	528	596	654	719	839	896	937	42	43	44	48	51	54	58	60	62
France	681	605	610	600	545	568	584	589	572	51	47	47	48	45	47	48	47	46
Italy	307	298	410	407	410	406	424	435	452	31	31	40	39	40	40	41	41	43
Cyprus	1,017	1,085	1,125	1,030	1,007	1,645	1,445	1,443	1,372	64	65	64	61	63	64	63	68	66
Latvia	1,205	1,181	1,005	929	1,027	1,037	1,001	1,033	1,080	70	69	60	60	64	64	64	65	67
Lithuania	1,714	1,693	1,545	1,871	1,749	1,892	1,818	1,939	1,938	81	80	79	85	84	87	86	87	87
Luxembourg	309	310	343	346	345	357	330	321	260	30	29	31	31	33	34	32	31	28
Malta	1,236	1,250	1,181	1,203	1,313	1,458	1,648	1,620	1,599	73	73	71	72	74	76	81	81	80
Netherlands	2,167	2,034	2,049	2,067	2,026	2,105	2,131	2,104	2,097	87	85	84	84	82	84	85	85	85
Austria	454	414	383	423	395	405	412	397	358	39	37	36	38	36	37	37	36	34
Portugal	1,114	1,150	1,207	1,206	1,191	1,197	1,164	1,215	1,181	69	70	71	71	70	70	69	72	71
Slovenia	1,268	1,256	1,160	1,142	1,115	1,045	1,026	1,077	1,147	59	60	59	59	58	57	56	59	61
Slovakia	1,197	1,273	1,239	1,268	1,221	1,215	1,221	1,250	1,264	72	72	72	72	71	70	71	72	73
Finland	3,160	3,120	3,550	3,700	3,010	3,080	3,310	2,730	1,790	83	83	84	81	79	84	80	75	66
Euro area	676	649	688	710	677	689	730	720	697	44	44	47	47	47	47	48	48	48
EU	648	629	669	685	662	674	692	677	661	44	44	47	47	47	47	47	46	46

Source: European Central Bank (2017), Table 11, p. 81.

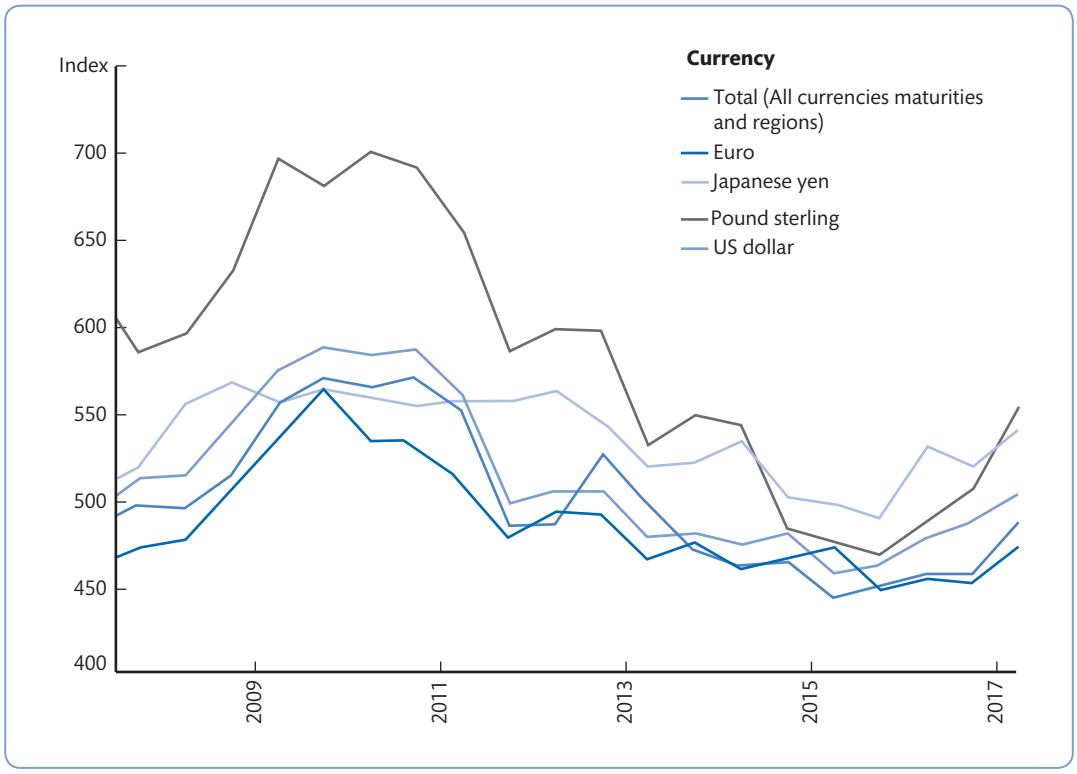


Figure 20.2 Herfindahl index: foreign exchange derivatives markets

Note: Herfindahl index for FX forwards, FX swaps and currency swaps combined.

Source: Bank for International Settlements (2017), Graph 3, p. 4.

market structure is chosen, the next step is to choose a bank performance indicator. Usually profits measures such as return-on-equity (ROE) or return-on-assets (ROA) are chosen. However, if a specific sector is being analysed, it may be possible to obtain product prices such as the interest rates charged in different markets. Unfortunately, it is often difficult to obtain product prices in different banking markets so researchers stick to bank profitability as the main performance indicator. Most of the empirical banking literature uses simple ordinary least squares (OLS) to estimate the following type of regression:[3]

$$P_{ij} = a + a_1 CONC_j + a_2 MS_{ij} + a_3 \sum BS_{ij} + a_4 \sum MKT_j + u_{ij} \qquad (20.3)$$

where P_{ij} is the profit measure, often the return on equity of bank i in market j; $CONC_j$ is a measure of market structure (HHI or CR-n firm ratio) in market j; MS_{ij} is a measure of the market share of firm i in market j; BS_{ij} is a vector of bank-specific variables known to have an impact on bank performance for bank i in market j; MKT_j is a vector of market-specific variables that can influence bank performance in market j; and finally u_{ij} is the error term.

Recall that the model seeks to explain variation in bank performance with a range of bank-specific and market (or country) specific variables. The finding of a positive and statistically significant coefficient on $CONC_j$ (a_1) confirms the positive link between profits and

[3] For more detail on the measurement of competition in banking, see Liu *et al.* (2013).

concentration, confirming evidence of the traditional SCP paradigm. However, the findings of a positive relationship between concentration and profitability cannot be interpreted unambiguously as the result of collusion and the exercise of monopoly power. If the coefficient of the $CONC_j$ variable loses its explanatory power (a_1 equals to zero or negative) when the variable MS_{ij} is considered (a_2 is positive and significant), this can be read as evidence that bank performance is positively related to firm size and not market concentration, therefore providing support for the efficiency hypothesis, which argues that more concentrated banking sectors containing a high proportion of large banks will tend to have higher profitability on average, because large banks are more efficient than their smaller counterparts operating in more competitive sectors. Berger and Hannan (1998) suggest an alternative interpretation of the SCP relationship: they argue that if banks exploit market power, prices should be higher in concentrated sectors than in competitive ones, as banks are able to exercise market power and pay lower rates of interest to depositors (relative market power hypothesis). Berger (1995) proposed to test the efficiency hypothesis by extending the traditional SCP equation (equation 20.3) to include specific measures of bank efficiency as follows:[4]

$$P_{ij} = a + a_1 CONC_j + a_2 MS_{ij} + a_3 ESX_{ij} + a_4 ESS_{ij} + a_5 \sum BS_{ij} + a_4 \sum MKT_j + u_{ij} \quad (20.4)$$

where P_{ij} is the profit measure, often the return on equity of bank i in market j; $CONC_j$ is a measure of market structure (HHI or CR-n firm ratio) in market j; MS_{ij} is a measure of the market share of firm i in market j; ESX_{ij} is a bank-specific x-efficiency measure; ESS_{ij} is a bank-specific scale economies measure; BS_{ij} is a vector of bank-specific variables; MKT_j is a vector of market-specific variables; and finally u_{ij} is the error term.

The results are interpreted by looking and the sign and significance of the coefficients (a_1 to a_4). In Berger's (1995) study, the MS_{ij} and ESX_{ij} variables are found to be statistically significant in explaining US bank performance, both having a positive effect on profitability. Berger (1995) interprets these results as providing evidence that larger banks can do better because they have relative market power, brought about partly through product differentiation. More efficient banks (irrespective of size) earn higher profits because they have superior management and technology. Market concentration and economies of scale are found to be unimportant in influencing bank performance. In interpreting these results, however, Berger sounds a note of caution, by pointing to the weak explanatory power of his models.

While there have been other studies that examine SCP and efficiency hypotheses in different countries and regions of the world, the approach broadly taken has pretty much been in line with the methodology suggested by Berger (1995). As in the earlier SCP literature, concentration indicators are still used as the main **structural indicators**. Furthermore, empirical research based on the SCP paradigm often finds the anticipated direction between structure, conduct and performance, although such relationships are usually weak in terms of their statistical significance. To reiterate, an overriding finding from this literature is that market structure does not appear to matter much in explaining bank performance and as such questions whether concentration indicators really can be interpreted as indicators of competitive behaviour.

[4] There is a very large and well-established literature on the measurement of efficiency frontiers which can be divided in two main streams: parametric techniques, such as stochastic frontier analysis (SFA) and non-parametric techniques such as data envelopment analysis (DEA). A review of the early literature is provided by Berger and Humphrey (1997), while a more recent literature is reviewed by Hughes and Mester (2019).

BOX 20.1 COMPETITION IN UK BANKING

UK regulators are not too happy with competition in the UK banking sector. In 2000, the report 'Competition in UK banking' (also known as the Cruickshank report) highlighted a number of concerns about the lack of effective competition. In particular, the Cruickshank report found that:

- the market was highly concentrated, especially for SME banking;
- there was a lack of information provided to personal customers and SMEs, and customers perceived significant barriers to switching current accounts, and
- the banks were effectively in control of the money transmission service, resulting in barriers to entry, poor service levels, high charges and a lack of innovation.

Since then, a number of regulatory interventions have sought to address the problems. A number of investigations were carried out, focusing on particular aspects of banking, including personal current accounts, SME banking and cash ISAs. The European Commission also conducted a sector inquiry into retail banking in 2007.

Nonetheless, more than a decade later, there has been only limited progress. In addition, the global financial crisis of 2007–2009 has contributed to a worsening of the situation, with concentration increasing in most banking markets. Specifically, as highlighted by the Independent Banking Commission (IBC), most banking markets experienced little change between 2000 and 2007 and saw a marked increase in concentration from 2008 onwards [see Figure 20.3]. For example, the total market share of main Personal Current Account of the four largest banks – Barclays, HSBC, Lloyds Banking Group and Royal Bank of Scotland – fell from 74% in 2000 to 64% in 2008, but increased to 77% in 2010 as a result of the Lloyds/HBOS merger (IBC, 2011).

More recently though, some new competitors have entered the UK retail banking market, for example the establishment of new banks, Metro Bank and of Virgin Money through the acquisition of Northern Rock. And

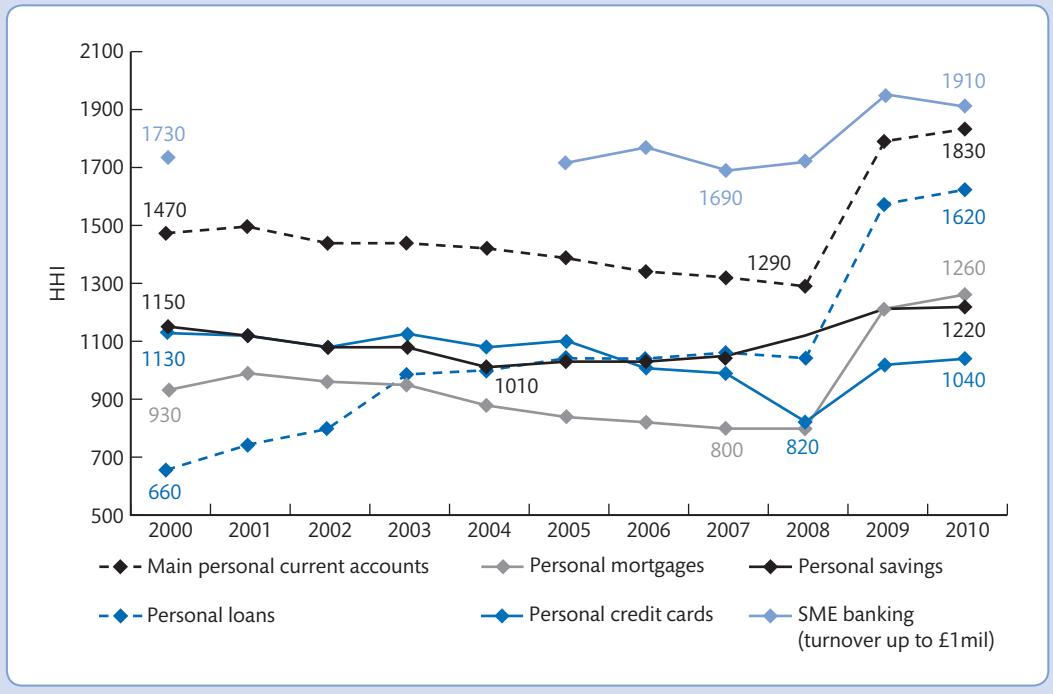


Figure 20.3 Concentration levels in UK retail banking (measured by HHI)

Source: Independent Commission on Banking (2011), p. 167.

BOX 20.1 Competition in UK banking (*continued*)

the Lloyds Banking Group divestments are intended to create an effective 'challenger' bank. The Office of Fair Trading (2012) believes that these changes are a potential turning point for the sector. Coupled with a new regulatory approach by the Financial Conduct Authority, State Aid divestments and new entry should help make the market more dynamic and drive strong customer-focused competition.

Source: Independent Banking Commission (2011); Office of Fair Trading (2012). Speech given by John Fingleton (Chief Executive, Office of Fair Trading) at the seminar on 'A competitive banking sector: Challenges in a post-crisis environment', organised by MLex in association with Lloyds Banking Group.

20.3 Non-structural measures of banking sector competition

Limitations in the SCP approach have led to the development of the so-called **non-structural indicators**, which have their roots in the **new empirical industrial organisation (NEIO)**. The NEIO approaches are based on the direct observation of conduct. More specifically, NEIO studies attempts to evaluate how firms set their prices and quantities. The most widely used non-structural indicators of competition in the banking literature are the Panzar–Rosse H-statistic, the Lerner index and more recently the Boone indicator. Another strand of literature examines the dynamics of banking business using POP indicators of competition.

20.3.1 Panzar–Rosse H-statistic

Rosse and Panzar (1977) and Panzar and Rosse (1987) developed models of oligopolistic, competitive and monopolistically competitive markets and derived a test statistics to distinguish among them. This test has become known as the **Panzar–Rosse statistic** (also known as the **H-statistic** and the *revenue test*). This test is based on the empirical observation of the impact on firm-level revenues of variations in the prices of the factors of production. Built into the test is an explicit assumption of profit-maximising behaviour on the part of the firms. The intuition is straightforward in the cases of perfect competition and monopoly.

Let's consider the impact of a simultaneous equiproportionate increase in all of the firm's factor input prices (cost of production). This implies an equiproportionate increase in the total cost of producing any given level of output, and an upward shift in the positions of the LRAC (long-run average cost) and LRMC (long-run marginal cost) functions.

If the market is operating under perfect competition, when a firm's cost of production increases, the market price must increase in exactly the same proportion, so that each firm continues to earn only a normal profit in the long run. The increase in market price will cause a reduction in the level of demand, which is in turn will require a decrease in the quantity of output. The required adjustment in the total quantity of output is achieved by a reduction in the number of firms. However, for those firms that survive, total revenue increases in the same proportion as total cost; and in the same proportion as the original increase in factor prices. Therefore in perfect competition, total revenue changes by the same amount as changes in input costs.

Let's now observe firms' behaviour under monopoly conditions (assuming horizontal LRAC and LRMC functions). In this case, to maximise profits, the monopolist must adjust

price and output (recall that for profit maximisation, marginal revenue equals marginal cost). As a consequence, an increase in costs (factor prices) causes a decline in the monopolist's total revenue. Therefore, in monopoly, the sum of the elasticities of revenue (with respect to each factor price) is negative.

The empirical observation of the behaviour of firms in response to a change in input prices is at the base of the Panzar–Rosse test. More specifically, it measures the impact on the firm revenues of changes in costs. The H-statistic is calculated from a reduced form revenue equation and measures the sum of elasticities of total revenue of the firm with respect to the firm's input prices, which can be written as follows:

$$H = \sum_{k=1}^{m} \frac{\partial R_i^*}{\partial w_{ki}} \frac{w_{ki}}{R_i^*} \tag{20.5}$$

where R_i is the revenues of bank i (* indicates equilibrium values); w_i is a vector of m factor input prices of bank i. Market power is measured by the extent to which a change in factor input prices ∂w_{ki} is reflected in the equilibrium revenues ∂R_i^* earned by bank i . More specifically, H is equal to zero or negative when the competitive structure is a monopoly or a perfectly colluding oligopoly. When H is equal to 1, it indicates perfect competition and $0 < H < 1$ indicates monopolistic competition. Table 20.3 summarises these effects and provides a guide to the interpretation of the H-statistic. Although this was not specified by Panzar and Rosse (1987), it can be shown that under stronger assumptions (in particular a constant price elasticity of demand across bank-size markets and countries), it is also possible to interpret the H-statistic 'continuously' in particular between 0 and 1, in the sense that higher values of H indicate stronger competition than lower values.

The Panzar–Rosse approach has found widespread application in the banking literature due to its modest data requirements, single-equation linear estimation and robustness to market definition. In applying the H-statistic to the banking sector a methodological choice needs to be made on how to define a bank's production process. The approach to input/output definition traditionally follows the intermediation approach, which was originally developed by Sealey and Lindley (1977) and posits that loans and securities are outputs, whereas deposits, labour and capital are inputs to the production process of banks. Specifically, the input variables commonly used in this type of studies are the average cost of labour,

Table 20.3 H-statistics: interpretation

H-statistics	Competitive environment
$H \leq 0$	Monopoly or collusive oligopoly. In this case, an increase in costs causes output to fall and price to increase. As firms are profit-maximising, they must be operating on the price-elastic portion of their demand function. As a consequence, total revenue will fall.
$H = 1$	Perfect competition. In this case, an increase in costs causes some firms to exit the market. Price will increase and the revenue of the survivor firms will increase at the same rate as the increase in costs.
$0 < H < 1$	Monopolistic competition. In this case, an increase in costs causes revenues to increase at a rate slower than the rate of increase in costs.

deposits and capital. The Panzar–Rosse revenue test is usually implemented through estimation of the following regression, using bank-level data:

$$\ln(\text{Revenue}_{i,t}) = \alpha + \sum_{j=1}^{J} \beta_i w_{j,i,t} + \Theta' X_{i,t} + \eta_{i,t} \quad (20.6)$$

where $\text{Revenue}_{i,t}$ is the total revenue of bank i in year t; $w_{j,i,t}$ is the price of factor input j for bank i in market j; $X_{i,t}$ is a vector of exogenous control variables; and $\eta_{i,t}$ is a random disturbance term.

The Panzar–Rosse H-statistic is then defined as:

$$H = \sum_{j=1}^{J} \beta_j \quad (20.7)$$

where $j = 1, \ldots, J$, and J is the number of inputs included in the calculations.

The dependent variable is defined as the natural logarithm of total revenue (or total revenue over total assets). The decision to consider the total revenue, rather than only the interest part is to account for the fact that non-interest income has increased dramatically in recent years, as has been the share of non-interest income from fee-based products and off-balance-sheet activities to total revenue. As discussed above, following the intermediation approach, it is commonly assumed that there are three inputs to the bank production process: deposits, labour and capital. Given these three inputs, the factor input prices are generally defined as follows: (1) the average cost of deposits is defined as interest expenses/total deposits and money market funding; (2) the average cost of labour is calculated as personnel costs/total assets; and (3) the average cost of capital is proxied by other non-interest expenses/total assets. The control variables in equation (20.6) can include a number of bank-specific factors that are relevant to the modern banking business. These are additional explanatory variables that reflect differences in costs, size, risk, structure and product mix, and should, theoretically, stem from the cost and revenue functions underlying the Panzar–Rosse H-statistic. These are generally balance sheet ratios that reflect banks' behaviour and risk profile, and usually include equity to total assets ratio, net loans to total assets ratio, a diversification measure (for example, the proportion of non-interest income among total operating income) and a full set of individual-year dummy variables. The literature also suggests controlling for bank size (the logarithm of total bank assets) since larger banks tend to earn more revenue, *ceteris paribus*, in ways unrelated to variations in input prices. Recall that the two extreme cases of monopoly and perfect competition are identified by $H < 0$ and $H = 1$ respectively.

An important feature of the H-statistic is that the tests must be undertaken on observations that are in long-run equilibrium. In particular as stated by Molyneux *et al.* (1994, p. 449): 'the empirical test for equilibrium is suggested by the fact that competitive capital markets will equalise risk-adjusted rates of return across banks such that, in equilibrium, rates of return should not be correlated statistically with input prices'. The equilibrium test can be performed by recalculating the Panzar–Rosse's H-statistics, replacing the dependent variable in equation (20.6) with the natural log of return on assets (which is equal to net income over total assets). The findings will be interpreted as follows: $H < 0$ would indicate disequilibrium and $H = 0$ would indicate equilibrium. If the market is in equilibrium, then the Panzar–Rosse H-statistic can be meaningfully interpreted.

A study by Sun (2011) investigates the degree of bank competition in the euro area, the US and UK before and after the introduction of the euro and attempts to assess the impact of the recent financial crisis on bank competition. The results suggest that the level of bank competition converged across euro area countries in the wake of the introduction of the euro; however, the 2007–2009 financial crisis seems to have led to a fall in competition in several

countries. The main results of this study (summarised in Table 20.4) seem to indicate a decline in competition since the introduction of the single currency. Indeed, the finding that larger and more financially integrated countries exhibit less competitive behaviour is in line with recent studies (Bikker *et al*., 2012).[5]

20.3.2 Conjectural variations approach

In the extreme cases of perfect competition and monopoly, firms are assumed to take no notice of other firms' price and output decisions. In the case of monopoly, the monopolist does not consider its rivals (or believes it has no rivals). In the case of perfect competition, each firm is too small to influence market prices. In many markets though, including banking markets, there are a number of firms which have influence over market prices and output quantities and, as such, influence the behaviour of competitors. In this case, each firm will try to anticipate its competitors' reactions to its changes in terms of prices and quantities. What each firm believe its competitors' response to its own actions will be is known as *conjectural variation*.

Models based on the idea that a bank/firm takes into account the reaction of competitors when setting price and output quantities are known as the *conjectural variations (CV) approach*. These models, based on oligopoly theory, were introduced by Iwata (1974), Bresnahan (1982) and Lau (1982).

The CV approach is built around the principle that profit-maximising firms in short-run equilibrium will choose prices or quantities where marginal costs equal marginal revenues.

Table 20.4 Panzar–Rosse H-statistic

	Before EMU	After EMU	Δ pre and post EMU	After crisis	Δ pre and post crisis
Austria	0.583***	0.604***	0.0209	0.707***	0.107
Finland	0.797***	0.550***	−0.247**	0.647***	0.0964
France	0.638***	0.584***	−0.0544	0.625***	0.0414
Germany	0.432***	0.449***	0.0171	0.364***	−0.0849***
Greece	0.816***	0.518***	−0.298***	0.385***	−0.133
Ireland	1.020***	0.754***	−0.266	0.589***	−0.165
Italy	0.878***	0.588***	−0.290***	0.496***	−0.0917***
Netherlands	0.896***	0.407***	0.488***	0.611***	0.204***
Portugal	0.705***	0.679***	−0.0254	0.849***	0.170
Spain	0.704***	0.795***	0.0908**	0.505***	−0.290***
Euro–area	0.699***	0.518***	0.182***	0.444***	−0.0737***
UK	0.506***	0.647***	0.141***	0.618***	−0.0289
US	0.309***	0.425***	0.116***	0.270***	−0.155***

Notes: The table displays the estimated average H-statistics of reduced-form bank revenue equations estimated using pooled OLS over the period 1995–2009. The pre-EMU period is 1995–2000; the post-EMU period is 2001–2009. The post-financial-crisis period is 2008–2009. All variables in the estimations are annual data from Bankscope.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Source: Adapted from Sun (2011), p. 20.

[5] Also see Shaffer and Spierdijk (2017b) who provide further illustrations of the Panzar–Rosse test.

In contrast to the Panzar–Rosse H-statistic (discussed in Section 20.3.1), the conjectural variation method estimates a structural equation that includes both supply and demand.

More specifically, the CV approach is based on a demand specification, a cost specification and a specification of the interdependence of market participants (the degree of collusion). The degree of competition in the market is evaluated on the basis of the estimated interdependence of market participants. The CV model assumes that firms produce homogenous products and face exogenous market prices; if the price charged by a firm is greater than its marginal cost, the CV model assumes that there is a certain degree of market power (defined as deviation of a firm's pricing to the marginal cost, λ). The parameter λ can therefore be interpreted as a measure of competitiveness. Empirically, the relationship can be written as:

$$P(Q, Y; \alpha) + \lambda QP'(Q, Y, \alpha) = C'(Q, Z; \beta) \tag{20.8}$$

where P is the market equilibrium price; $P(Q, Y; \alpha)$ is the market inverse demand function; Q is the market output; and $C'(Q, Z; \beta)$ is the marginal cost. α and β are vectors of exogenous variables that shift the demand and cost functions respectively. In this context, λ is the conjectural elasticity of the industry output to a variation of bank i's output, that is, it is a measure of the perceived response of the industry to a change in quantity by firm i. The greater the value of λ, the more the firm's pricing deviates from competitive pricing, and therefore the lower the level of competitiveness in the market. The empirical estimation of λ therefore provides a test of firms' competitive behaviour as it can be interpreted, as illustrated in Table 20.5.

Equation (20.8) can be rearranged as:

$$\lambda = \eta(P)\left[\frac{P - MC}{P}\right] \tag{20.9}$$

where $\eta(P)$ is the price elasticity of demand and $[\frac{P - MC}{P}]$ is the well-known **Lerner index** (Lerner, 1934), a conventional measure of market power, calculated as a firm's mark-up over its price (see Section 20.3.3).

The CV method has been widely applied in banking studies, from the early work of Spiller and Favaro (1984), Shaffer (1993), Shaffer and DiSalvo (1994) and Berg and Kim (1998), to more recent studies by Bikker and Haff (2002), Uchida and Tsutsui (2005), Delis *et al.* (2008), Coccorese (2005, 2009) and Overvest (2017).

Table 20.5 Interpretation of the CV parameter (λ)

Market structure	Conduct	CV parameter
Perfect collusion (cartel)	A firm expects full retaliation from the competitors. An increase of one unit of output by firm *i* will lead to an increase in the market output by X/x_i units, where X denotes the industry output.	$\lambda = \sum_{j \neq i}^{n} x_j/x_i$
Cournot–Nash equilibrium	An increase of one unit of output by firm *i* will lead to an increase in the market output by X/x_i units.	$\lambda = 0$
Perfect competition	An increase in output by one firm has no impact on the market price and quantity.	$\lambda = -1$

20.3.3 Lerner index

The Lerner index of monopoly power (Lerner, 1934) is an indicator of the degree of market power and is a well-established measure of competition in the banking literature. It represents the extent to which market power allows firms to fix a price above marginal cost (MC). It is based on the assumption that, in perfect competition, price equals marginal cost and therefore a measure of the degree to which price exceeds marginal cost provides a useful indicator or measure of market power (this is based on neoclassical theory).

Accordingly, the Lerner index is estimated as follows:

$$L = \frac{P - MC}{P} \tag{20.10}$$

The Lerner index ranges between a minimum value of zero and a maximum value of one. In perfect competition, $P = MC$ so $L = 0$. In monopoly, $P > MC$, and if $MC > 0$, $0 < L < 1$.

As the Lerner index provides a measure of a firm's market power based on the relationship between its price and marginal cost, the first step is to estimate the marginal cost. There are two ways to estimate marginal cost. The first is simple – using average (variable) costs, defined as the total (variable) costs divided by total assets (or total income). This method has the advantage of being straightforward but not very accurate. The second approach is more complex as it requires the estimation of a cost function. This is usually a translog cost function with a single output (total assets) and three input prices (deposits, labour and physical capital).[6] Table 20.6 illustrates estimates of the Lerner index for banks in the Asia Pacific region,

Table 20.6 Lerner index – Banks in Asia Pacific (average figures, 2003–2010)

Country	Lerner index	Competition Ranking	3 assets CR %	Concentration Ranking	Number of banks in the sample
Indonesia	0.2653	1	46	7	134
Sri Lanka	0.2669	2	62	4	55
Pakistan	0.2671	3	44	8	98
Taiwan	0.2753	4	27	11	62
Australia	0.2954	5	68	3	48
Japan	0.3091	6	41	9	597
India	0.3093	7	34	10	226
Philippines	0.3175	8	51	6	78
Korea	0.3486	9	51	6	31
Thailand	0.3622	10	46	7	64
Hong Kong	0.4268	11	71	2	32
Malaysia	0.4315	12	46	7	24
China	0.4343	13	52	5	35
Singapore	0.4889	14	92	1	16

Notes: The higher the Lerner Index then the less competitive the market. The three-bank concentration ratio (CR-3) is the assets market share of the largest three banks in the country.

The table shows that Singapore has the highest Lerner index and has the most concentrated banking system. However, some countries have relatively high concentration with low Lerner measures of competition. This just reflects the point that banking systems can sometimes be both competitive and concentrated at the same time. The correlation between the CR-3 and the Lerner measure is 0.56.

Source: Adapted from Fu *et al.* (2014) and authors' updates.

[6] For more detail, see Liu *et al.* (2013). Also see De Guevera and Maudos (2017).

indicating that Taiwan has the most competitive banking system with a Lerner index of 0.2719. In contrast, Singaporean banks appear the least competitive (Lerner index of 0.4889).

20.3.4 Boone indicator

An alternative measure of competition, based on the efficiency hypothesis (see Section 20.2.2), is the one proposed by Boone (2008), which has become known as the **Boone indicator** and relies on relative profit differences (RPD). This indicator is based on the assumption that competition enhances performance, as efficient banks (i.e. those with lower marginal costs) increase their market share and profits. This effect will be greater, the stronger the competition. As an industry becomes more competitive, given a certain level of efficiency of each individual bank, the profits of the more efficient banks increase relative to those of less efficient bank counterparts.

The Boone indicator can be estimated from the following simple equation:

$$ln\ (MS)_{i,j} = \alpha + \beta \ln(MC_{i,j}) \tag{20.11}$$

where $MS_{i,j}$ is the market share of bank i in market j; $MC_{i,j}$ is the marginal cost of bank i in market j; and β is the Boone indicator of market power. In this context, the market can be defined in terms of products, for example the loans market, the deposits market etc.

Recall that the more efficient a firm (or bank), that is the lower its marginal cost, the greater its market share should be, all other things being equal. And the greater the market share, the greater the profits, *ceteris paribus*. Hence, the estimated β should be negative. As competition intensifies, the slope of the regression should become steeper since inefficient banks are punished more harshly by fiercer competition.

Similarly to the estimation of the Lerner index, the estimation of the Boone indicator requires the computation of the marginal cost, which can be approximated by the ratio of average variable costs to total income (or total assets) or, in a more sophisticated way, it can be derived by the estimation of a translog cost function.

Applications of the Boone indicator to the analysis of competition in banking include van Leuvensteijn *et al.* (2011) and Shaeck and Ćihak (2014). The method has a number of appealing properties, including the possibility of evaluating competition in different products/markets. The Boone indicator has a strong theoretical foundation. In addition, the Boone indicator does not impose restrictive assumptions, unlike the Panzar–Rosse H-statistics, which requires the market to be in long-run equilibrium. Finally, it has the same data requirements as the Lerner index. On the other hand, the approach has also attracted some criticism. For example, the assumption that because of efficiency improvements, banks increase market share without decreasing prices, that is without passing at least partially the efficiency gains on to consumers. Schiersch and Schmidt-Ehmcke (2010) argue that the empirical application of the Boone indicator is not as robust as its theoretical properties as it doesn't take into account firm size. They argue that the empirical relationship between a firm's efficiency and its profitability does not behave as designed in Boone's theoretical framework, where the most efficient firm is always, by design, also the biggest.

20.3.5 Persistence of profits (POP)

The **persistence of profits (POP)** hypothesis was developed by Mueller (1977, 1986) and focuses on the dynamics of profitability, accounting for the possibility that markets are not in equilibrium when observed. More specifically, the POP hypothesis posits that if entry and exit are sufficiently free to eliminate any abnormal profit, then all firms' profit rates will tend to converge rapidly towards the same long-run average value. The alternative is that some incumbent firm has the capability to prevent imitation, or delay or block entry (inhibiting competition). In this case, abnormal profit tends to persist from year to year, and differences in firm-level long-run average profit rates may be sustained indefinitely. The extent to which firm- or industry-level profits converge to long-run values reflects the degree of competition in the market. The slower the speed of adjustment, the stronger the persistence of profits, the lower the competition.

Empirically, the POP literature focuses on the 'standardised profit rate', which is defined as the difference between the firm's actual profit rate and the average industry profit rate in a given year. As explained by Lipczynski *et al.* (2013), persistence of profitability can be estimated using a first-order autoregressive AR (1) model:

$$\pi_{i,t} = \alpha_i + \lambda_i \pi_{i,t-1} + u_{i,t} \tag{20.12}$$

where $\pi_{i,t}$ is the profit of bank i at time t (for example, the return on assets); and $\pi_{i,t-1}$ is the profit of bank i at time $t - 1$. λ_i represents the strength of profit persistence and can be read as follows: if $\lambda_i = 0$, there is no association between $\pi_{i,t}$ and $\pi_{i,t-1}$. This is the case of perfect competition. If $0 < \lambda_i < 1$, there is a positive association between $\pi_{i,t}$ and $\pi_{i,t-1}$, or evidence of persistence of profit (in the short run).[7]

While there is extensive empirical evidence of the POP hypothesis in various industries, there is only a handful of studies in banking. This is possibly due to the fact that it is relatively difficult to build long time series using banking data. Some of the early work using this approach was undertaken by Berger *et al.* (2000) and Goddard *et al.* (2004). Overall, this literature finds evidence of profit persistence, driven by bank-specific and country-specific characteristics. A recent study by Goddard *et al.* (2011) examines the intensity of competition in 65 national banking industries and reports that the persistence of profit is weaker (i.e. competition is stronger) for banks in developing countries than for those in developed countries. The authors also note that persistence is stronger when entry barriers are high and competition is low.

20.4 Comparing competition measures – are they consistent?

We have introduced a number of competition measures, which are commonly used by academics and regulators alike to estimate the competitive conditions in banking markets. Table 20.7 compares these competition measures for EU banking markets over the period 2000–2009. Looking at the 3-firm concentration ratio (CR-3), Belgium's banking industry shows the highest concentration, with the market share of three largest banks summing up to 85 per cent of the assets of the whole banking system. In contrast, Luxemburg has the lowest level of

[7] The industrial organisation literature distinguishes between *short-run persistence* (which refers to the degree of correlation between consecutive values of π for the same firm) and *long-run persistence* (which refers to the degree of variation in the long-run average standardised profit rates between firms). A detailed analysis of these concepts is outside the remit of this textbook and we refer the reader to an industrial organisation textbook (Lipczynski *et al.*, 2017).

Table 20.7 Competition measures and ranks for selected EU countries (average values, 2000–2009)

Country	CR-3	Rank	HHI	Rank	H-stat (II)	Rank	H-stat (TI)	Rank	Lerner	Rank	Boone	Rank	POP	Rank
Austria	0.66	5	4595	1	0.58	1	0.5	2	9.17	2	−0.87	3	0.38	4
Belgium	0.85	1	2851	3	0.52	3	0.56	1	20.21	5	−0.89	2	0.54	7
Germany	0.69	4	1067	5	0.39	4	0.37	4	7.3	1	−0.78	5	0.34	3
Denmark	0.78	2	3000	2	−0.24	7	−0.13	8	15.14	4	−0.39	6	0.3	2
Spain	0.76	3	1024	6	0.02	5	0.1	5	25.81	8	−0.80	4	0.65	9
France	0.56	7	710	8	−0.46	8	−0.15	9	22.71	6	−0.95	1	0.46	5
UK	0.57	6	2251	4	−0.06	6	0.01	6	23.98	7	0.02	9	0.53	8
Italy	0.49	8	592	9	0.55	2	0.49	3	10.92	3	−0.15	8	−0.03	1
Luxembourg	0.26	9	739	7	−0.47	9	−0.03	7	32.98	9	−0.22	7	0.52	6
Mean	**0.62**		**1870**		**0.09**		**0.19**		**18.69**		**−0.56**		**0.41**	
Median	**0.66**		**1067**		**0.52**		**0.43**		**20.21**		**0.02**		**0.46**	

Notes: (A): CR-3 is the 3-bank assets concentration ratio; HHI is the Herfindahl–Hirschman index (calculated using asset market shares); H-stat (II) is the H-statistic (using interest income as the dependent variable); H-stat (TI) is the H-statistic (using total income as the dependent variable); Lerner is the Lerner index; Boone is the Boone indicator; POP is the short-run profit persistence parameter, λ (ROA as the profit ratio). (B): The rank for CR-3 and HHI are from the most concentrated (1) to least concentrated (9) banking systems. All other measures are ranked from the most competitive (1) to least competitive (9).

Source: Authors' elaborations. Data on competition measures are from Liu *et al*. (2013).

concentration, with a CR-3 of 0.26 (the market share of the three largest banks represents only 26 per cent of the market's total assets). The HHI shows a different competition pattern to the CR-3 concentration ratio. Looking at the HHI (which includes the market share of all banks in the market), Austria's appears to be the most concentrated banking market. Liu *et al*. (2013) estimate the Panzar–Rosse H-statistic using both the total interest income and the total income as revenue measure. These are the H-stat (II) and H-stat (TI) columns in Table 20.7.

These measures show broadly consistent results (indeed, the correlation coefficient between them is 96 per cent, as reported in Table 20.8). Looking at both H-stat (II) and

Table 20.8 Correlation matrix for the competition measures

	POP	Boone	Lerner	H-Stat (TI)	H-Stat (II)	HHI	CR3
POP	1						
Boone	−0.32	1					
Lerner	0.67*	0.23	1				
H-Stat (TI)	−0.34	−0.25	−0.59	1			
H-Stat (II)	−0.4	−0.21	−0.72	0.96*	1		
HHI	0.09	−0.2	−0.36	0.3	0.38	1	
CR3	0.17	−0.55	−0.41	0.28	0.42	0.48	1

Notes: CR-3 is the 3-bank assets concentration ratio; HHI is the Herfindahl-Hirschman index (calculated using asset market shares); H-stat (II) is the H-statistic (using interest income as the dependent variable); H-stat (TI) is the H-statistic (using total income as the dependent variable); Lerner is the Lerner index; Boone is the Boone indicator; POP is the short-run profit persistence parameter, λ (ROA as the profit ratio). *$p < 0.05$.

Source: Authors' elaborations. Data on competition measures are from Liu et al. (2013).

H-stat (TI), the results suggest that banks in Denmark, France and Luxemburg operate under monopoly conditions, while banks in other countries generate revenue under monopolistic competition.

To answer the question as to whether the different competition measures are consistent, Liu *et al*. (2013) present a correlation matrix.[8] From Table 20.8, we can see that the Lerner index is significantly correlated with measures of competition derived using the Panzar–Rosse H-statistic (particularly when using interest income as revenue measure) and short-run profit persistence parameter (POP). Competition measures derived from the estimation of the Boone indicator, on the other hand, do not show any significant correlation with other competition measures and seem to contradict the findings of both the Lerner index and the H-statistic. The profit persistence indicator shows significant correlation with the Lerner index but not the other competition measures.

To summarise, from the results presented by Liu *et al.* (2013) it is possible to find consistent evaluation of competitive conditions from the estimation of H-statistic, Lerner index and (to a certain extent) profit persistence. Given their popularity in empirical banking research, this result is reassuring. Structural measures of competition (the CR-*n* ratio and the HHI) are not good proxies of competition. As for the Boone indicator, although theoretically appealing and relatively easy to compute, doubts remain concerning its effective empirical application.

20.5 Competition and risk in banking

So far we have outlined the different approaches to measuring competition in banking. However, whether competition is a force for good in banking has always been controversial, as the potential benefits deriving from increased competition have to be weighed against the risks of potential instability. The traditional view is that competition would lead to excessive bank risk taking and could therefore result in a higher likelihood of individual bank failure. Bank failures can be costly, and can lead to contagion as well as systemic failure (see Chapter 8). As a consequence, the banking industry has been historically heavily regulated. This traditional view is known as the **competition-fragility view** and is sometimes referred to as the **charter value** view of banking, according to which banks under greater (actual and potential) competitive pressure choose more excessive risk, thus increasing fragility.

More recently the competition-fragility view has been challenged by various commentators who argue that competition can have a stabilising influence on a banking system. One argument is that as loan interest rates are lower in a competitive system this means that fewer borrowers are likely to default and as such great competition can aid stability. Various theoretical studies point to evidence of this **competition-stability view** that has also been confirmed in a number of empirical studies. Some even find evidence of a U-shaped relationship where competition first reduces stability and then after a certain point aids stability.

In the aftermath of the 2007–2009 financial crisis, supporters of the competition-fragility view point to the house price bubble that led up to the banking crisis – particularly in the US, UK and Ireland. They argue that banks were competing so aggressively in the lending market (particularly in the market for residential mortgages) that they neglected to accurately

[8] Also see De Jonghe *et al.* (2016) and De Guevera and Maudos (2017), who compare a range of competition measures in European banking.

estimate the true risk of borrowers. They use the property price bubble as a clear indication that competition in banking leads to increased risk taking, with the now well-known adverse consequences. Another issue brought to the fore by the 2007–2009 financial crisis is that large banks are often deemed to be too-big, too-inter-connected or too-complex-to-fail. In these cases large banks may obtain implicit (or explicit) subsidies via government safety nets (see also Chapter 19). This may increase moral hazard and encourage large banks to take on excessive risks.

Before we can discuss the relationship between competition and risk (and ultimately between competition and financial stability), we need to outline the risk indicators. These are reviewed below.

20.5.1 Accounting-based measures of bank risk

The empirical banking literature proposed a number of different measures of risk, ranging from **accounting-based measures** to more complex market-based measures. The simplest are accounting ratios derived from bank accounting information. Two commonly used indicators are the loan-loss provision and loan-loss reserves ratios as higher levels of reserves or provisions can indicate greater banking risk. The ratio of loan-loss reserves to gross loans and the ratio of loan-loss provisions to average gross loans are considered indicators of credit risk. These indicators, however, only partly reflect the quality of the loan portfolio, since variation in provisioning across banks may reflect different internal policies regarding problem loan classification, reserve requirements and write-off policies. As such researchers have sought to use a broader indicator of bank risk, namely, insolvency risk as measured using the **Z-score** indicator. The Z-score has become a popular measure of bank risk and has been widely used in the banking literature (Laeven and Levine, 2009; Čihák *et al*., 2012b; Lepetit and Strobel, 2013).

20.5.1.1 Z-scores

The Z-score measures the distance from insolvency for a given bank combining bank profitability, capitalisation and volatility of returns. The Z-score is defined as:

$$Z = \frac{\overline{ROA} + \overline{EA}}{\sigma_{ROA}} \tag{20.13}$$

where $\overline{ROA}$ is the average return on assets, $\overline{EA}$ is the average equity capital ratio and σ_{ROA} is the standard deviation of return on assets.

In other words, the Z-score is an indicator of a bank's probability of insolvency as it estimates the number of standard deviations that the bank's profits have to fall below its expected value before its equity becomes negative. The value of the Z-score depends positively on the bank's profitability and capital ratio and negatively on the variability of the bank's profits. A higher Z-score indicates that a bank is more stable, or the less likely it is that the bank will become bankrupt. In other words, a higher Z-score value indicates lower risk.

As with all accounting measures, a limitation associated with using the Z-scores relates to the fact that they are static and backward-looking measures at a point in time. In addition, even if they accurately reflect portfolio quality and risk, managers are likely to have some timing discretion over these measures, and there is evidence that such discretion is exercised in a manner that minimises regulatory costs.

20.5.2 Market-based risk measure

To overcome the well-known shortcoming of accounting measures of risk, researchers have sought to use **market-based measures of bank risk**. These include the volatility of stock prices, Moody's KMV expected default frequency (EDF) and the five-year cumulative probability of default (PD) indicators. Both EDF and PD refer to the probability of default within the short and medium terms (one and five years, respectively) and can therefore be considered representative of all banking risks. In addition, both variables are free from managerial discretion and are usually estimated through an economic cycle (PD estimates are long-run probabilities of default that take into consideration upturns and downturns in the economy).

20.5.2.1 The distance to default model

In order to estimate the insolvency risk of listed banks, it is possible to adapt Black and Scholes's (1973) and Merton's (1974) distance to default (DD) model.

In general terms, the DD model considers equity as a call option on the assets of a firm, with a strike price equal to the face value of the liabilities at time T when the liabilities mature. At time T, if the value of the firm's assets is greater than the face value of its liabilities then equity holders will exercise their option and pay off the debt holders. However, if the value of the assets is not enough to fully repay the firm's debts, then the call option loses its value and equity holders will let it expire. In this case, the firm files for bankruptcy and the model assumes that ownership is transferred to the debt holders at no cost, although the payoff for equity holders is zero. In the DD model, the probability of bankruptcy can be estimated as follows:

$$P = N\left(-\frac{\ln\left(\frac{V_A}{D}\right) + \left(u - \delta - \left(\frac{\sigma^2 A}{2}\right)\right)T}{\sigma_A\sqrt{T}}\right) \tag{20.14}$$

where P is the probability of bankruptcy; $N(\,)$ is the cumulative normal density function; V_A is the value of assets; D is the face value of debts proxied by total liabilities; u is the expected return; δ is the dividend rate estimated as total dividends over total liabilities + market value of equity; σ_A is the standard deviation of assets (asset volatility); and T is the time to expiration (taken to be one year).

In empirical applications of the DD model, V_A and σ_A are non-observable and therefore are commonly proxied following the model outlined by Bharath and Shumway (2008) to estimate the probability of bankruptcy. It is important to note that the market-based measures can only be derived for publicly quoted banks, that is those banks that have equity, bonds, credit default swaps (CDS) or other publicly traded instrument.

20.5.2.2 Systemic risk

As the global financial crisis was system wide (and few saw it coming) has encouraged researchers to develop ways to measure **systemic risk**. Below are a few recent measures that are increasingly used in the banking literature to look at competition-risk issues as well as other areas. Probably the most well-known indicator is the conditional value at risk (CoVaR), proposed by Adrian and Brunnermeier (2016). This measures a financial institution's contribution to systemic risk and its contribution to the risk of other financial institutions using a VaR (value at risk) methodology. The latter looks at extreme losses over certain time horizons

using various probability distributions – for instance, if the value of a bank's shares had a one-day 1 per cent VaR of £1 billion, this would mean that there is a 0.01 probability that the portfolio will fall in value by more than £1 billion over a one-day period (if there is no trading). CoVaR uses this methodology to look at the relationship between financial institution stock price and credit risk indicators and for the system overall. The measure can therefore be used to identify systemically important institutions. Because measuring CoVaR does not rely on contemporaneous price movements, it can also be used as an indicator to help identify the build-up of systemic risk.

Brownlees and Engle (2017) developed what is known as SRISK, which measures the capital shortfall of an institution conditional on a severe market drop, estimated as a function of its size, leverage and risk. The study shows that the SRISK measure gave a good indication of systemic institutions in the US even a few years before the crisis commenced. Another systemic risk indicator is by Acharya *et al.* (2017), who modelled risk based on financial sector undercapitalisation. Each financial institution's contribution to systemic risk is measured as its systemic expected shortfall (SES), namely, the propensity of a bank to be undercapitalised when the system as a whole is undercapitalised. SES increases in the institution's leverage and its marginal expected shortfall (MES), namely losses in the tail of the system's loss distribution (for instance, one indicator of MES is the average return of a bank's equity during the 5 per cent worst days of the overall market return).

Increasingly, bank researchers are looking to see if competition (as well as other factors) is linked to these systemic risk variables (as discussed in Section 20.6).

20.6 Bank competition and stability

The impact of bank competition on financial stability remains a highly controversial issue, which is currently the subject of both academic and policy debates. As clearly illustrated by a OECD report:

> Studies exploring the complex interactions between competition and stability in retail and commercial banking come to the ambiguous conclusion that competition can be both good and bad for stability. Policy measures that strike an acceptable balance remain elusive.
>
> OECD (2011)

Theoretical models of the relationship between increased competition and stability reaching opposing results, often because of the different assumptions underlying models of bank behavior. On the other hand, empirical studies may yield different results due to the different measures of competition and risk discussed above.

Table 20.9 summarises some selected studies presenting evidence in favour and against increased competition in banking.

20.6.1 Evidence on the competition-fragility view

Rhoades and Rutz (1982) offer one of the first empirical studies on the relationship between competition and risk in US banking over 1969–1978. They employ the CR-3 deposit concentration ratio as a proxy for (the lack of) bank competition and four alternative risk indicators

Table 20.9 Empirical evidence of the competition-stability relationship

Competition-fragility view			Competition-stability view		
Authors	**Key variables**	**Key results**	**Authors**	**Key variables**	**Key results**
Rhoades and Rutz (1982)	Competition: CR-3 (deposit) ratio Risk: volatility of ROA; equity/assets; total loans/total assets; net loan losses/total loans	Greater market power, less risk	Jayaratne and Strahan (1998)	Competition: deregulation Risk: NPLs; net loan charge-offs; loan-loss provisions	Deregulation decreases credit risk
Keeley (1990)	Market power: Tobin's *q* (market to book value of assets) Risk: market value of the banks' capital-to-asset; interest rates on large CDs	Competition encourages risk taking	De Nicolo (2000); De Nicolo *et al*. (2004)	Market power: bank size (total assets) Risk: Z-score	Greater bank size is associated with greater risk and lower charter values
Dick (2006)	Competition: proxied by deregulation Risk: charge off losses/total loans; loan-loss provisions/ total loans	Competition increases credit risk	Boyd and De Nicolo (2005)	Competition: concentration (HHI) Risk: Z-score	Higher concentration leads to higher probability of default Greater bank size is associated with greater risk
Berger *et al*. (2009)	Competition: Lerner index Risk: NPLs/total loans; Z-score; equity/total assets	Banks with greater market power have less risk	Yeyati and Micco (2007)	Competition: H-statistic Risk: Z-score	Competition leads to less risk
Beck *et al.* (2013)	Competition: Lerner index Risk: Z-score	Positive relationship between market power and stability	Uhde and Heimeshoff (2009)	Competition: Concentration (HHI) Risk: Z-score	Concentration leads to higher risk
Diallo (2015)	Competition: Lerner index, Boone index Risk: duration model and hazard function estimates of transition from a sound to crises banking system	Competition is detrimental to bank stability	Akins *et al.* (2016)	Competition: HHI index; concentration ratios; H-statistic Risk: accounting measures of asset risk	Greater competition increases financial stability.

including the volatility of ROA, equity to assets ratio, total loans to total assets and net loan losses to total loans. The authors provide evidence that Hick's 'quiet life' hypothesis (see Section 20.4) holds and banks with greater market power tend to be less risk-inclined than those operating in competitive markets.

In another study on US banks, Keeley (1990) investigates the relationship between market power, measured as the market-to-book value of assets ratio (i.e. Tobin's *q*), and risk. This latter is measured as the market value of the banks' capital-to-asset and interest rates on large CDs. In line with Rhoades and Rutz (1982), the author provides evidence that bank competition encourages risk taking as institutions with lower market-to-book assets (with less market power) were more likely to take on greater risks.

In a study on the effects of branching deregulation, Dick (2006) contends that banks are more likely take on more risk when barriers across states are lower and geographic diversification increases. The author employs the ratio of charged-off losses to total loans and loan-loss provisions to total loans as proxies for risk. Evidence indicates that branch deregulation led to greater loan losses, thereby suggesting that competition increases credit risk.

Berger *et al*. (2009) use the Lerner index to measure competition for a sample of over 8,000 banks across 23 developed nations over 1999–2005. The main findings support the traditional 'competition-fragility' view that banks with greater market power also have less overall risk exposure.

20.6.2 Evidence on the competition-stability view

A number of studies have produced results opposite to those reviewed above, namely that competition appears to be associated with a lower probability of bank failure. For example, in a study on US banks over the period 1975–1992, Jayaratne and Strahan (1998) conclude that deregulation of branching restrictions significantly decreased credit risk (expressed as non-performing loans, net loan charge-offs and loan-loss provisions). A possible explanation for these results is that greater competition encouraged bank managers to carry out better screening and monitoring activities, leading to better credit quality overall.

De Nicolo (2000) and De Nicolo *et al*. (2004) investigated the relationship between bank size, charter value and the Z-score (see Section 20.5.1) as proxy for insolvency risk. The study reveals that greater bank asset size is associated with greater risk and lower charter values. The (debatable) assumption that bigger banks have more market power leads the author to conclude that competitive banks are less risky.

The empirical analysis carried out by Boyd *et al*. (2006) shows that in US banking, concentration in either deposits or loans markets (measured by the Herfindahl index) leads to higher probabilities of default (as measured by the Z-score). They also finds that bank size is negatively related to the Z-score, indicating that larger banks face greater risks.

Yeyati and Micco (2007) provide evidence on the relationship between competition and risk for a sample of commercial banks operating in eight Latin American countries over 1993–2002. The authors use the Panzar–Rosse H-statistic (see Section 20.3.1) as a proxy for competition and, as most studies reviewed in this section, the Z-score as a measure for bank risk. One of the key results of the study is that overall competition appears to lead to less risky activities. Anginer *et al*. (2014), Akins *et al*. (2016) and Goetz (2018) contribute to the debate by providing empirical evidence on the competition-stability nexus using US data. They all conclude that bank competition decreases risk-taking behaviour because it improves profitability and asset quality. Calderón and Schaeck (2016) investigate the influence of government support provided to US banks after the financial crisis and find that this boosted competition.

Given the overall conflicting results, the relationship between competition and financial stability is difficult to interpret. It depends on the chosen proxies for competition and risk. It depends on the banking markets analysed (deposit market, loan market, etc). In addition, it also seem to be linked to different types of banks and banking structures.[9] Beck *et al*. (2013) present a comprehensive analysis of attempts to reconcile the different strands of the literature.

[9] A more in-depth discussion of these themes is presented in Casu *et al.* (2012).

In addition the authors explore cross-country heterogeneity in the competition-stability relationship in banking. They find, on average, a positive relationship between market power (measured by the Lerner index) and stability (measured by the Z-score), although there is large cross-country variation in this relationship. The finding is similarly confirmed by Fu *et al*. (2014) and Diallo (2015), who argue that more concentrated banking systems show a lower probability of systemic crises and greater resilience to such events compared with competitive systems

20.7 Conclusion

In this chapter we outline the link between banking sector competition and risk. We start by outlining the variety of ways one can measure banking sector competition, highlighting the structure-conduct-performance (SCP) paradigm and the use of structural indicators like concentration ratios and the Herfindahl index. We then go on to explain newer measures of banking sector competition – the so-called non-structural indicators – which include the Panzar–Rosse H-statistic, the Lerner index, conjectural variations measures, the Boone indicator and persistence of profits (POP) measures. We illustrate that these indicators may not always provide consistent indicators of banking system competition. Following on from this we describe different ways of measuring bank risk, namely accounting and market-based measures. The main accounting measures include simple ratios such as loan-loss reserves and loan-loss provisions measures of bank credit risk, as well as the bank insolvency risk indicator known as the Z-score. Market-based indicators (other than stock return volatility) can be complicated, and here we briefly outline a distance to default bankruptcy prediction indicator of bank risk. We also briefly note new systemic risk measures that have been used to evaluate the link between competition and systemic risk. Finally, we outline the empirical evidence covering the competition-stability and competition-fragility views.

Overall there is no consensus as to the relationship between competition and risk in banking as highlighted in the evidence provided in the theoretical and empirical banking literature. A reason for this may be the fact that empirical studies often use different competition measures and risk indicators, as well as varying bank samples and methodologies, to investigate such relationships. So policy makers need to be cautious in implementing policies designed to boost competition unless they are certain such reform does not lead to excessive risk taking. Since the major bank bailouts resulting from the banking sector crash in 2008–2009, various commentators have started to investigate whether government support has resulted in adverse competitive effects. Some argue that banks that were heavily supported by the state have had an unfair competitive advantage over those not supported. Evidence is also emerging that the government support after the global financial crisis had pro-competition effects.

Key terms

- Accounting-based measures of bank risk
- Boone indicator
- Charter value
- Competition-fragility view
- Competition-stability view
- Concentration ratios
- Efficiency hypothesis
- Efficient structure hypothesis
- Herfindahl–Hirschman index
- H-statistic
- Lerner index
- Market-based measures of bank risk
- New empirical industrial organisation (NEIO)
- Non-structural indicators
- Panzar–Rosse statistic
- Persistence of profits (POP)
- Quiet life hypothesis
- Structural indicators
- Structure-conduct-performance (SCP) paradigm
- Systemic risk
- Z-score

Key reading

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REVISION QUESTIONS AND PROBLEMS

20.1 Outline the main structural measures of competition in banking. What are the main limitations of these measures?

20.2 What does the Herfindahl index tell us about industry concentration?

20.3 What are the main non-structural indicators of competition?

20.4 Explain the main features of the Lerner index and discuss whether it yields similar findings on competition to other non-structural measures.

20.5 What are the main limitations of non-structural competition indicators?

20.6 How do we measure banking system risk?

20.7 Why is the Z-score a preferred accounting measure of bank risk?

20.8 Discuss the two opposing theoretical views, the competition-stability view and the competition-fragility view. Why does the empirical literature provide conflicting results?

20.9 How can more competition lead to greater banking system stability?

20.10 Do state bailouts of major banks distort the competitive environment in banking systems?

Appendix A1

Interest rates, bonds and yields

A1.1 Nominal and real interest rates

Interest rates play a crucial role within the financial system. For example, they influence financial flows within the economy, the distribution of wealth, capital investment and the profitability of financial institutions. It is important to appreciate that an interest rate is a *price*, and that the price relates to *present* claims on resources relative to *future* claims on resources. An interest rate is therefore the price that a borrower pays in order to be able to consume resources now rather than at some point in the future. Correspondingly, it is the price that a lender receives to forego current consumption.

It is common to distinguish between nominal and real interest rates. A *nominal* interest rate is what is normally observed and quoted and represents the actual money paid by the borrower to the lender, expressed as a percentage of the sum borrowed over a stated period of time. The *real* rate of interest is the return if there is no risk and inflation is zero. In most discussions comparing real and nominal interest rates the emphasis is on short-term interest rates and so the focus is on:

$$i = r + P^e \tag{A1.1}$$

where

i = nominal rate of interest;

r = real short-term rate of interest;

P^e = a premium based on price expectations (inflation premium).

A1.2 Concept of present value

As we will discuss later on in this appendix, a precise measure of interest rate is yield to maturity. This can be measured on debt market instruments, such as loans and bonds, and requires knowledge of the concept of present value. The present value (PV) of a loan or bond is equal to the current value (i.e. the value today) of a future payment. For instance, to

calculate the present value of a one-year £1,000 loan (this is the face value, or FV, of the loan) if the interest rate (r) is 10 per cent we will use the following formula:[1]

$$PV = \frac{FV}{(1+r)^t} \tag{A1.2}$$

PV = ? FV = £1,000
| |
t = today t = 1 year

$$PV = \frac{FV}{(1+r)^t} = \frac{£1{,}000}{(1+0.10)^1} = £909$$

This means that given the current interest rate of 10 per cent, today the £1,000 loan is worth £909. To calculate the PV of a two-year loan at the same interest rate:

PV = ? FV = £1,000
t = today t = 1 year t = 2 years

$$\text{PV} = \frac{£1{,}000}{(1+0.10)^2} = £826$$

A1.3 Bonds and bond pricing

The concept of PV is often used to calculate the current value of bonds and bond pricing. Bonds are instruments in which the issuer of a bond (the debtor) promises to repay the lender (the investor) the amount borrowed at some pre-determined date in the future in addition to some periodic interest payments before the due date. Because the interest payments paid by the issuer of a bond are fixed, bonds are referred to as *fixed-income securities*. Bonds can be issued by governments and private companies and they pay a periodic cash flow (coupon) at set periods (once every 12 months or every 6 months). At maturity the issuer pays the bondholder the bond's face (or 'par') value. A *zero coupon* bond (also called a discount bond) is a bond paying no coupons that sells at a discount and provides only a payment of par value at maturity.

The present value of the coupon payments will be equal to:

$$PV = \sum_{t=1}^{T} \frac{C}{(1+r)^t} \tag{A1.3}$$

$$= \frac{C}{(1+r)^1} + \frac{C}{(1+r)^2} + \frac{C}{(1+r)^3} + \ldots + \frac{C}{(1+r)^T}$$

Consider a three-year 15 per cent coupon bond. If the bond's face value is £100 and the current interest rate is 10 per cent, the present value will be equal to $\frac{£15}{(1+0.10)^1}$ in year 1, $\frac{£15}{(1+0.10)^2}$ in year 2 and $\frac{£15}{(1+0.10)^3}$ in year 3.

[1] Note that this formula can also be written as: $\text{PV} = \text{FV}\,(1+\text{r})^{-1}$.

PV = ?	C = £15	C = £15	C = £15
t = today	t = 1	t = 2	t = 3

Therefore the PV of the bond coupon payment streams will be equal to the sum of the progression: 13.63 + 12.39 + 11.27 = £37.29. However, with bonds instruments at maturity the issuer pays the bondholder the bond's face (or 'par') value, which is usually £100 in the UK and $1,000 in the US), so that:

			FV = £100
PV = ?	C = £15	C = £15	C = £15
t = today	t = 1	t = 2	t = T = 3

It follows that the price of the three-year bond (PB) will be equal to the PV of the coupons plus the PV of the bond's FV:

$$P_B = \sum_{t=1}^{T} \frac{C_t}{(1 + r)^t} + \frac{FV}{(1 + r)^T} \tag{A1.4}$$

$$P_B = \frac{£15}{(1 + 0.10)^1} + \frac{£15}{(1 + 0.10)^2} + \frac{£15}{(1 + 0.10)^3} + \frac{£100}{(1 + 0.10)^3}$$

$$P_B = 37.29 + 75.13 = £112.42$$

A1.4 Bonds and yields

For an investor buying a bond, the market price (P) of the bond might be different from the bond's initial face or par value. She will therefore use the bond price (PB), maturity date (t) and coupon payments (C) to infer the return offered by the bond over the investment period. The actual rate of return for holding a bond depends on the price paid for the bond (P), the coupons received relative to the price paid and changes in the price of the bond. We can define the bond's yield to maturity (YTM) as the interest (or more precisely 'discount') rate that makes the present value of a bond's payments equal to its price. The YTM is often viewed as a measure of the average rate of return that will be earned by the investor during the entire time span of the bond.

In the financial press (see Table A1.1), another measure of yield is quoted. This is the current yield, which is equal to the coupon/price of the bond (C/PB). However, the YTM is the most appropriate measure of rate of return, since it includes all aspects of the bond investment, and this can be calculated using a standard discounted cash flow approach as is used to estimate net present values.

To sum up, there are three main elements that determine the annual rate of return an investor is getting on a bond investment:

- **coupon rate:** annual payout as a percentage of the bond's face value;
- **current yield:** annual payout as a percentage of the current market price;
- **yield to maturity:** composite rate of return off *all* payouts, coupon and capital gain (or loss). The capital gain or loss is the difference between face value and the price actually paid for the bond.

Example: yield to maturity of a four-year gilt

Consider the following example of a UK gilt bond selling for £99.15, with a coupon rate of 4 per cent. The bond matures in four years and the par value is £100.

	Coupon	Maturity date	Current price/yield	Price/yield change
4-year	4.000	03/07/2019	99.15/4.02	−0.095/0.028

The yield to maturity is calculated as follows: the coupon payment is £4 (4 per cent of £100), substituting values into the equation A1.3 gives us:

$$£4(1 + r)^{-1} + £4(1 + r)^{-2} + £4(1 + r)^{-3} + £4(1 + r)^{-4} + £100(1 + r)^{-4} = £99.15$$

Yield to maturity (r) = 4.24 per cent.

Note that the YTM can be relatively complicated to calculate manually and it is easier to use web-based bond-yield calculators such as those found at: www.investinginbonds.com.

One important point to note is that yield to maturity (4.24 per cent) is greater than the current yield (4.02 per cent), which in turn is greater than the coupon rate (4 per cent). (Current yield is £4/£99.15 = 4.03 per cent.)

This will always be the case for a bond selling 'at a discount'. In fact, you will always have this:

Bond selling at	Satisfies this condition
Discount	Coupon rate < Current yield < Yield to maturity
Premium	Coupon rate > Current yield > Yield to maturity
Par value	Coupon rate = Current yield = Yield to maturity

A1.5 Yield to maturity – price, maturity, coupon level and frequency of payment and tax

Calculation of the yield to maturity of a bond can obviously change depending on the current price, maturity, coupon rate, frequency of interest payments and tax (on the income from the coupon and possible capital gain if sold before maturity).

Below are some examples:

1. Price

Take the example of the four-year UK gilt shown above and let us assume that the bond is selling for 50 pence more at £99.65, it still has a coupon rate of 4 per cent, matures in four years and the par value is £100. The yield to maturity is calculated as follows:

$$4(1 + r)^{-1} + 4(1 + r)^{-2} + 4(1 + r)^{-3} + 4(1 + r)^{-4} + 100(1 + r)^{-4} = £99.65$$

Yield to maturity (r) = 4.10 per cent (if the current price were 80 pence more at £99.85 the yield to maturity would be 4.04 per cent).

All other things being equal, the yield to maturity declines as the market price approaches par value. In other words, bond prices and yields move in opposite directions.

$$P_B \uparrow \Rightarrow \quad YTM \downarrow$$

2. Maturity

In the same example, assume that maturity is now ten years. That is, the bond is selling for £99.15 and has a coupon rate of 4 per cent, it matures in ten years and the par value is £100. The yield to maturity is calculated as follows:

$$£4(1 + r)^{-1} + £4(1 + r)^{-2} + £4(1 + r)^{-3} + £4(1 + r)^{-4} + £4(1 + r)^{-5}$$
$$+ £4(1 + r)^{-6} + £4(1 + r)^{-7} + £4(1 + r)^{-8} + £4(1 + r)^{-9} + £4(1 + r)^{-10}$$
$$+ £100(1 + r)^{-10} = £99.15$$

Yield to maturity (r) now becomes = 4.11 per cent (if maturity was 20 years this would fall to 4.06 per cent).

All other things being equal, the yield to maturity declines as maturity increases.

$$M \uparrow \Rightarrow \quad YTM \downarrow$$

3. Coupon

Take the same example and now assume that the coupon is set at 5 per cent. That is, the bond is selling for £99.15 and has a coupon rate of 5 per cent, it matures in four years and the par value is £100. The yield to maturity is calculated as follows:

$$5(1 + r)^{-1} + 5(1 + r)^{-2} + 5(1 + r)^{-3} + 5(1 + r)^{-4} + 100(1 + r)^{-4} = 99.15$$

Yield to maturity (r) = 5.24 per cent.

All other things being equal, the higher the coupon, the higher the yield to maturity.

$$C \uparrow \Rightarrow \quad YTM \downarrow$$

Finally, there are two other factors that may influence the YTM. One is the frequency of coupon payments and the other is taxes.

4. The frequency of coupon payments

This can influence the yield to maturity because if coupon payments are made semi-annually then the yield to maturity is calculated by halving the coupon payment and taking account of cash flow over eight six-monthly periods as follows:

$$2(1 + r)^{-1} + 2(1 + r)^{-2} + 2(1 + r)^{-3} + 2(1 + r)^{-4} + 2(1 + r)^{-5} + 2$$
$$(1 + r)^{-6} + 2(1 + r)^{-7} + 2(1 + r)^{-8} + 100(1 + r)^{-8} = 99.15$$

Yield to maturity (r) = 2.62 per cent.

All other things being equal, the greater the frequency in coupon payments, the lower the yield to maturity.

5. Taxes

Finally, taxes can have a substantial impact on YTM. In the examples above we have assumed no taxes, but of course income from coupons is typically taxable (income tax) as capital gains on sale of the bond may be. Taxes can obviously reduce the size of the net coupon or potential capital gains on the bond if sold before maturity, so one should be aware of potential tax implications when carrying out such calculations.

A1.6 The financial press

Bond prices change daily like shares prices. If you want to keep track of your bond investments, the financial press reports the previous day's closing prices by types of bonds, as illustrated in Table A1.1 which is extracted from the *Financial Times*.

Table A1.1 shows that bond issues are listed in increasing order of residual maturity: shorts, 5–10 years, 10–15 years and more than 15 years. The table also reports *undated* (with no fixed maturity date) and *index-linked* gilts (inflation-linked bonds).[1]

- The title of each bond includes the type of stock, the coupon rate and redemption date (e.g. Treasury, 5 per cent 2014).
- The first column of figures shows the current price in £s (Price £).
- The second column of figures shows the variation on the previous day's price (Day's chng).
- The third column of figures shows the variation on the previous week's price (W'ks chng).
- The fourth column of figures shows the interest or current yield (Int yield).
- The fifth column of figures shows the redemption yield (Red yield).
- Columns 6–9 refer to the redemption yield and show the variation in price on the previous day, week, month and year, respectively.
- The next two columns show the highest and lowest price in the previous 52 weeks (High and Low).
- The last three columns show the nominal total amount in issue (Amnt £m), the last ex-dividend date (Last xd date) and the dates when interest is due (Interest due).

The redemption yield takes into account the capital loss or gain standing on the bond. For instance, take a Treasury bond with 2 per cent coupon and maturity 2016 currently trading at £102.50. Since on redemption you will get back only £100 and there are two years until redemption, that is an average loss of £1.25 every year for every £100 of bonds you own.

Table A1.2 shows a selection of UK government bonds with maturities ranging from 2 years to 30 years with various coupons. The data also reveal that the yield on these gilt-edged securities often varies quite markedly. It is this *spread of yields* paid on the same type of assets (in this case gilt-edged securities) with different terms to maturity that theories of the *term structure of interest rates* seek to explain.

[1] For more information and data about the gilt market see also the UK Debt Management Office website: **https://www.dmo.gov.uk/data/gilt-market/**

Table A1.1 Reading the *Financial Times*: UK government bonds

UK GILTS - cash market

www.ft.com/gilts

Mar 18	Price £	Day's chng	W'ks chng	Int yield	Red yield	Red yield Day's chng	Red yield W'ks chng	Red yield Mth's chng	Red yield Year chng	52 Week High	52 Week Low	Amnt £m	Last xd date	Interest due
Shorts (Lives up to Five Years)														
Tr 5pc '14	102.17	-0.01	-0.07	4.89	0.35	-0.01	+0.02	+0.01	+0.20	107.15	102.14	40,579	26/02	7 Mar/Sep
Tr 2.75pc '15	101.98	-0.01	-0.05	2.70	0.40	+0.00	+0.01	-0.02	+0.20	104.75	101.95	28,813	13/01	22 Jan/Jul
Tr 4.75pc '15	106.24	-0.02	-0.09	4.47	0.48	+0.01	0.00	-0.01	+0.27	111.26	106.20	37,879	26/02	7 Mar/Sep
Tr 8pc '15	112.95	-0.02	-0.14	7.08	0.43	-	-0.01	-0.02	+0.25	121.28	112.86	10,357	27/11	7 Jun/Dec
Tr 2pc '16	102.50	-0.01	-0.08	1.95	0.64	+0.00	-0.01	+0.01	+0.32	104.92	102.35	32,037	13/01	22 Jan/Jul
Tr 4pc '16	107.81	-0.02	-0.12	3.71	0.80	+0.00	-0.01	+0.02	+0.42	112.66	107.71	34,648	26/02	7 Mar/Sep
Tr 1pc '17	99.16	-0.02	-0.04	1.01	1.25	+0.01	-0.04	-0.04	+0.55	101.91	97.95	23,019	26/02	7 Mar/Sep
Tr 1.75pc '17	102.12	-0.02	-0.07	1.71	0.99	+0.01	-0.03	-0.01	+0.48	105.11	101.45	31,269	13/01	22 Jan/Jul
Tr 8.75pc '17	125.39	-0.04	-0.15	6.98	1.19	+0.01	-0.04	-0.05	+0.58	135.92	125.12	10,879	16/02	25 Feb/Aug
Tr 5pc '18	113.88	-0.03	-0.08	4.39	1.39	+0.01	-0.05	-0.06	+0.62	121.22	113.20	34,398	26/02	7 Mar/Sep
Tr 4.5pc '19	113.13	-0.03	-0.04	3.98	1.73	+0.01	-0.06	-0.08	+0.71	121.28	111.68	35,485	26/02	7 Mar/Sep
Five to Ten Years														
Tr 3.75pc '19	109.71	-0.02	-	3.42	1.87	+0.00	-0.07	-0.08	+0.73	117.57	107.91	28,057	26/02	7 Mar/Sep
Tr 3.75pc '20	109.89	-0.01	-0.01	3.41	2.11	+0.00	-0.07	-0.08	+0.71	118.39	107.76	23,997	26/02	7 Mar/Sep
Tr 4.75pc '20	115.49	-	-0.01	4.11	1.99	0.00	-0.07	-0.08	+0.72	124.76	113.71	32,517	26/02	7 Mar/Sep
Tr 3.75pc '21	109.86	-	+0.03	3.41	2.31	-	-0.09	-0.08	+0.67	118.86	107.30	27,709	26/02	7 Mar/Sep
Tr 8pc '21	138.32	-0.02	-0.02	5.78	2.23	+0.00	-0.09	-0.09	+0.71	152.25	136.23	23,499	27/11	7 Jun/Dec
Tr 1.75pc '22	94.04	-	+0.07	1.86	2.54	+0.00	-0.09	-0.07	+0.65	101.21	90.96	28,360	26/02	7 Mar/Sep
Tr 4pc '22	111.65	-	+0.03	3.58	2.39	-	-0.09	-0.07	+0.65	121.12	108.93	37,045	26/02	7 Mar/Sep
Ten to Fifteen Years														
Tr 5pc '25	120.84	-	+0.18	4.14	2.78	-	-0.11	-0.06	+0.60	133.14	116.51	32,992	26/02	7 Mar/Sep
Tr 4.25pc '27	113.74	+0.02	+0.25	3.74	3.02	0.00	-0.11	-0.08	+0.49	125.44	108.85	29,279	27/11	7 Jun/Dec
Tr 6pc '28	134.93	+0.02	+0.28	4.45	3.04	0.00	-0.11	-0.08	+0.50	149.79	129.51	18,575	27/11	7 Jun/Dec
Over Fifteen Years														
Tr 4.75pc '30	120.31	+0.14	+0.52	3.95	3.18	-0.01	-0.10	-0.09	+0.43	133.06	115.50	28,716	27/11	7 Jun/Dec
Tr 4.25pc '32	113.82	+0.14	+0.51	3.74	3.24	-0.01	-0.10	-0.09	+0.39	125.81	109.05	34,598	27/11	7 Jun/Dec
Tr 4.5pc '34	117.61	+0.15	+0.55	3.83	3.31	-0.01	-0.10	-0.09	+0.33	129.79	112.57	25,501	26/02	7 Mar/Sep
Tr 4.25pc '36	113.96	+0.18	+0.55	3.74	3.35	-0.01	-0.09	-0.09	+0.29	125.51	108.92	25,952	26/02	7 Mar/Sep
Tr 4.75pc '38	123.19	+0.21	+0.63	3.86	3.36	-0.01	-0.08	-0.09	+0.23	135.38	117.68	24,601	27/11	7 Jun/Dec
Tr 4.25pc '39	114.61	+0.19	+0.59	3.71	3.39	-0.01	-0.08	-0.09	+0.20	125.59	109.28	19,280	26/02	7 Mar/Sep
Tr 4.5pc '42	120.02	+0.20	+0.64	3.76	3.40	-0.01	-0.08	-0.09	+0.16	131.41	114.24	26,001	27/11	7 Jun/Dec
Tr 3.25pc '44	96.34	+0.20	+0.58	3.38	3.45	-0.01	-0.08	-0.09	+0.12	104.97	90.69	23,778	13/01	22 Jan/Jul
Tr 4.25pc '46	116.42	+0.24	+0.69	3.66	3.41	-0.01	-0.08	-0.09	+0.09	126.88	109.84	20,873	27/11	7 Jun/Dec
Tr 4.25pc '49	117.57	+0.25	+0.71	3.62	3.40	-0.01	-0.08	-0.09	+0.05	127.61	110.52	19,301	27/11	7 Jun/Dec
Tr 3.75pc '52	107.14	+0.24	+0.66	3.51	3.41	-0.01	-0.07	-0.09	+0.03	116.26	100.30	19,761	13/01	22 Jan/Jul
Tr 4.25pc '55	119.45	+0.26	+0.73	3.57	3.38	-0.01	-0.07	-0.09	+0.02	129.57	111.43	23,416	27/11	7 Jun/Dec
Tr 4pc '60	114.65	+0.27	+0.74	3.50	3.37	-0.01	-0.07	-0.09	+0.02	124.65	106.48	18,764	13/01	22 Jan/Jul
Undated														
Cons 4pc ⊕	97.79	-	+0.68	4.10	4.09‡	-0.01	-0.07	-0.09	+0.02	102.15	90.45	257	22/01	1 Feb/Aug
War Ln 3.5pc	83.97	-	+0.52	4.18	4.17‡	-0.01	-0.07	-0.07	+0.15	91.27	77.76	1,938	20/11	1 Jun/Dec
Cn 3.5 pc '61 Aft ⊕	81.81	-	+0.49	-	4.28‡	-0.01	-0.07	-0.07	+0.15	90.64	77.71	17	22/09	1 Apr/Oct
Tr 3pc '66 Aft ⊕	68.68	-	+0.41	4.38	4.37‡	-0.01	-0.07	-0.07	+0.15	76.16	64.91	40	25/09	5 Apr/Oct
Cons 2.5pc ⊕	58.85	-	+0.36	4.26	4.25‡	-0.01	-0.07	-0.07	+0.15	65.43	55.54	177	25/12	5 Ja/Ap/Jul/Oc
Tr 2.5pc ⊕	59.98	-	+0.37	4.18	4.17‡	-0.01	-0.07	-0.07	+0.15	67.81	56.64	287	22/09	1 Apr/Oct
Index-linked				(1)	(2)									
2.5pc '16 (81.6)	338.64	+0.08	+0.14	-2.51	-2.08	-0.01	-0.11	-0.13	+0.77	354.21	337.20	7,899	15/01	26 Jan/Jul
1.25pc '17† (193.725)	110.78	+0.06	+0.14	-1.58	-1.58	-0.02	-0.13	-0.15	+0.89	119.42	109.59	11,846	13/11	22 May/Nov
2.5pc '20 (83.0)	364.72	+0.33	+0.71	-1.11	-0.94	-0.02	-0.12	-0.17	+0.97	393.73	357.72	6,579	07/10	16 Apr/Oct
1.875pc '22† (205.65806)	121.31	+0.14	+0.36	-0.52	-0.52	-0.01	-0.13	-0.15	+0.86	136.90	118.43	15,743	13/11	22 May/Nov
0.125pc '24	104.04	+0.16	+0.49	-0.27	-0.27	-0.02	-0.14	-0.16	+0.77	116.66	100.08	8,688	11/09	22 Mar/Sep
2.5pc '24 (97.7)	330.47	+0.45	+1.33	-0.43	-0.32	-0.01	-0.13	-0.16	+0.75	364.74	319.33	6,821	08/01	17 Jan/Jul
1.25pc '27† (194.06667)	119.22	+0.22	+0.64	-0.14	-0.14	-0.01	-0.11	-0.15	+0.53	135.08	115.11	14,170	13/11	22 May/Nov
0.125pc '29	102.51	+0.30	+0.79	-0.04	-0.04	-0.02	-0.11	-0.15	+0.45	115.32	98.14	14,229	11/09	22 Mar/Sep
4.125pc '30 (135.1)	313.12	+0.81	+2.15	-0.19	-0.12	-0.02	-0.10	-0.16	+0.47	347.63	302.44	4,841	13/01	22 Jan/Jul
1.25pc '32† (217.13226)	124.73	+0.43	+1.10	-0.07	-0.07	-0.02	-0.10	-0.15	+0.31	141.11	119.51	12,760	13/11	22 May/Nov
0.75pc '34 (235.20)	115.55	+0.45	+1.15	-0.03	-0.03	-0.02	-0.10	-0.15	+0.24	129.44	109.97	12,458	11/09	22 Mar/Sep
2pc '35 (173.6)	205.10	+0.77	+1.95	-0.12	-0.06	-0.02	-0.09	-0.14	+0.24	224.90	194.33	9,084	15/01	26 Jan/Jul
1.125pc '37† (202.24286)	127.77	+0.54	+1.35	-0.04	-0.04	-0.02	-0.08	-0.13	+0.13	143.19	121.33	12,132	13/11	22 May/Nov
0.625pc '40† (216.52258)	116.94	+0.54	+1.34	-0.02	-0.02	-0.02	-0.08	-0.13	+0.06	130.39	109.89	11,438	11/09	22 Mar/Sep
0.75pc '47† (207.76667)	127.04	+0.72	+1.78	-0.05	-0.05	-0.02	-0.07	-0.13	-0.04	141.59	117.56	11,687	13/11	22 May/Nov
0.5pc '50† (213.40000)	119.71	+0.73	+1.78	-0.04	-0.04	-0.02	-0.07	-0.12	-0.06	133.71	110.25	11,351	11/09	22 Mar/Sep
0.25pc '52	110.75	+0.74	+1.80	-0.03	-0.03	-0.02	-0.07	-0.12	-0.08	124.13	101.04	9,002	11/09	22 Mar/Sep
1.25pc '55† (192.20000)	155.48	+0.97	+2.41	-0.06	-0.06	-0.02	-0.07	-0.12	-0.07	174.95	143.00	10,169	13/11	22 May/Nov
0.375pc '62	121.41	+0.92	+2.33	-0.06	-0.06	-0.02	-0.07	-0.11	-0.06	139.35	109.00	12,480	11/09	22 Mar/Sep

Source: FT.com/gilts, 18/03/14 © The Financial Times Limited. All Rights Reserved.

Table A1.2 UK benchmark government bond yields – 13 May 2014

Maturity	Yield	Today's change	1 week ago	1 month ago
1 month	0.30%	0	0.32%	0.32%
3 month	0.38%	0	0.37%	0.38%
6 month	0.42%	0	0.41%	0.40%
1 year	0.41%	−0.03	0.44%	0.41%
2 year	0.77%	−0.03	0.76%	0.62%
3 year	1.18%	−0.01	1.15%	1.00%
4 year	1.75%	−0.03	1.73%	1.56%
5 year	2.02%	−0.03	2.00%	1.83%
7 year	2.38%	−0.02	2.32%	2.23%
8 year	2.46%	−0.01	2.39%	2.31%
9 year	2.60%	−0.01	2.53%	2.47%
10 year	2.72%	−0.01	2.66%	2.62%
15 year	3.21%	−0.01	3.17%	3.14%
20 year	3.34%	−0.01	3.30%	3.27%
30 year	3.46%	>−0.01	3.44%	3.42%

Source: *Financial Times*, 13/05/14. © The Financial Times Limited. All Rights Reserved.

A1.7 The term structure of interest rates

The 'term structure' of interest rates refers to the relationship between the term to maturity of a bond and its yield to maturity. Economists and investors believe that the shape of the yield curve reflects the market's future expectation for interest rates and the conditions for monetary policy.

The term structure of interest rates may be defined as the spread of yields generated by the same type of assets with different terms to maturity. The concept of the term structure of interest rates is of relevance only in the case of those assets that have a fixed term to maturity and pay a fixed interest at specified points in time (bonds and other types of financial instruments, such as sterling certificates of deposit).

The term structure of interest rates on a particular type of asset may be represented diagrammatically in a yield curve. The yield in this context is the yield to maturity. As noted above, this yield includes not only the interest income from the asset but also any anticipated capital gain (due to the current price being less than the maturity value) or capital loss (due to the current price being greater than the maturity value).

Typically, the yield curve is drawn for similar-risk securities that have different maturity dates, as shown in Figure A1.1, and demonstrates that long-term bonds (30 years) give higher yields than short-term ones (5 years in the example). This can be considered a 'normal' market's expectations of future interest rates because typically longer-term instruments carry more uncertainty than shorter-term ones and thus should offer higher yields. However, if expectations on the economy are different from normal the yield curve can take different shapes (the two extremes being a flat yield curve, where short- and long-term securities offer the same yield, and inverted, in which short-term securities offer yields higher than the long-term ones).

The yield curve is usually calculated on a daily basis so we can draw a different yield curve for every day. All the major central banks/monetary authorities report yield curve data for

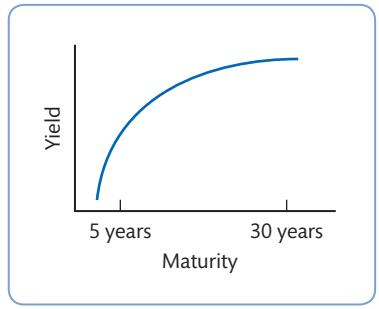


Figure A1.1 Normal yield curve

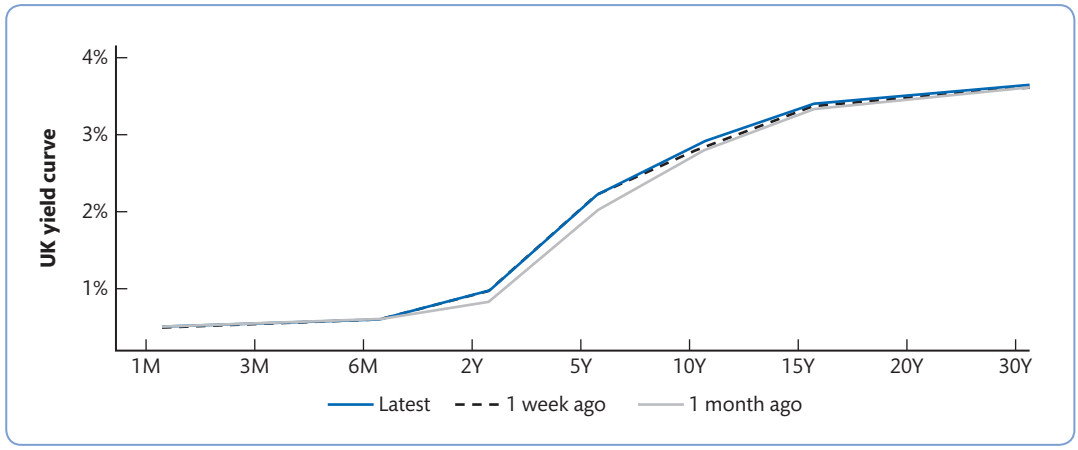


Figure A1.2 UK government yield curve

Source: *Financial Times* 13/05/14. © The Financial Times Limited. All Rights Reserved.

various instruments. Using the data points in Table A1.2, Figure A1.2 illustrates the shape of the UK government yield curve on 13 May 2014.

A1.8 Theories on the shape of the yield curve

A number of theories have been put forward to explain the various shapes of the yield curve, which may be observed in practice. None of the established theories is wholly satisfactory, and many economists believe that the assumptions required by the theories undermine their practical value. Nevertheless, it is worthwhile summarising the key features of these theories as a basis for more advanced study of yield curves (not covered in this book).

Two main theories seek to explain the shapes of yield curves. These are:

- **expectations theory**, which is subdivided into:
  - pure expectations;
  - liquidity-biased expectations;
  - preferred habitat-biased expectations;
- **market segmentation theory**, which disallows large-scale arbitrage between the various segments of the market.

A1.8.1 Pure expectations

The basis of this theory is that the shape of yield curves is determined by market expectations of future short-term interest rates. If lenders and borrowers expect short-term interest rates to rise, then lenders would wish to invest at the short end of the market, profiting when bond prices had fallen by enjoying higher yields. This would push up short-term bond prices (force down the yield curve for short-maturity bonds). Borrowers would, of course, want to borrow for much longer periods, forcing up the yield for long-maturity bonds. These actions would tilt the curve in an anti-clockwise direction, making it steeper (rising from left to right). However, the theory fails to consider the risks involved, as nobody knows future bond prices (price risk) or future rates of interest (reinvestment risk).

A1.8.2 Liquidity

This theory assumes that the risk associated with investment in bonds increases with their term to maturity. It is argued that this increasing risk will lead investors to require a progressively larger liquidity premium for investing in bonds with a progressively longer maturity. Investors require a premium for bonds not being liquid, e.g. buying long-dated bonds, and this urge to be compensated for holding illiquid assets may be more important than the expectations, which may result in a downward-sloping curve. This premium has an upward bias on the curve. This theory fits closely with the intuitive explanation for the shape of yield curves as discussed above.

A1.8.3 Preferred habitat

This theory argues that investors prefer to match their assets with known liabilities and borrowers will seek to raise funds for a time period that matches their needs. Also, investment institutions may try to match the maturity of their assets and liabilities.

In order to be encouraged to shift out of their preferred habitats, lenders and borrowers will require a premium on the yield to cover the risk that they feel they are being asked to accept. The premium will vary according to the extent that the investor or borrower has to shift from their preferred habitat. Therefore, as there is no reason to believe that the premium will rise uniformly with maturity, the theory is able to explain any shape of yield curve.

A1.8.4 Market segmentation

A lay person might describe this theory as ‘a highly structured and inflexible version of the preferred habitat theory’. It assumes that neither investors nor borrowers are able or willing to move along the yield curve to take advantage of arbitrage opportunities.

The reason for this highly inflexible segmentation of the market might be because regulators and/or the investing institutions’ own rules require them to keep certain strict percentages of their assets in each of the market’s maturity sectors.

Under this theory, the yield curve is constructed from the yield curves of the various segments of the fixed-interest securities market. Some economists regard this theory as unsustainable because it presupposes that there is absolute risk aversion, whereas evidence shows that investors are willing to take risks and arbitrage along the yield curve.

Appendix A2

Introduction to portfolio theory

A2.1 Return, risk and the concept of diversification

The return and risk characteristics associated with different types of securities vary tremendously. For example, the return on a UK Treasury bond is near certain (risk-free). By contrast, the return to be achieved on ordinary equity shares in an average company is far from certain (it carries a positive level of risk). Portfolio theory aims to show that by holding a diversified array of securities, the risk of making a loss on the investment can be reduced. Let's first see how to calculate risk and return.

In order to measure the past performance of a security or a portfolio of securities it is necessary to calculate the actual return on the security or the portfolio taking into account:

- any change in the capital value of the security or portfolio during the relevant time period;
- the dividend or interest payments received on the security or portfolio during the relevant time period.

The single period return may be calculated using the following formula:

$$R_1 = (P_1 - P_0 + D_1)/P_0 \qquad \text{(A2.1)}$$

where:

R_1 = the return obtained by holding the security (portfolio) for the whole of period 1;

P_0 = the market price of the security (portfolio) at the start of period 1;

P_1 = the market price of the security (portfolio) at the end of period 1;

D_1 = the dividend or interest income received on the security (portfolio) during period 1.

Often you will be interested in calculating the multiple period returns. One way to calculate them is by using arithmetic or geometric averages over the period.

The usual way to measure the risk associated with investment in a security is via calculation of the *probable variability of future returns*. In other words, risk may be measured in terms of the variance (or standard deviation) of the expected returns.

Typically, the higher the risk, the higher the variance:

$$\textbf{Risk}\uparrow \rightarrow \quad \sigma^2\uparrow$$

The variance is the volatility or dispersion of returns. It tells us about the potential for deviation of the returns from its expected value. Look at the example in Table A2.1.

Table A2.1 Case 1: overall expected return on a security

Outcome	Expected return %	Probability of expected return occurring	Expected return weighted by probability %
A	50	0.1	5
B	30	0.2	6
C	10	0.4	4
D	−10	0.2	−2
E	−30	0.1	−3
Total		**1.0**	**10**

In Case 1, it is assumed that there are five possible outcomes, A to E. The probability of each outcome occurring is specified on the basis of past experience. For example, there is a 0.1 (i.e. 10 per cent) probability that outcome A will occur. This outcome involves the occurrence of a 50 per cent expected return on the security. If outcomes A to E cover all possible outcomes, then the combined probability must sum to 1.0 (i.e. 100 per cent).

To calculate the overall expected return on the security, the expected return for each possible outcome is multiplied by the probability of that outcome occurring (to give the fourth column in Table A2.1) and the weighted expected returns are summed. Therefore, it may be observed that while the security has possible expected returns ranging from 50 per cent to −30 per cent, the overall expected return is 10 per cent.

More formally, we can express the expected return from a security as:

$$(E)R = p_1R_1 + p_2R_2 + p_3R_3 + \ldots\ldots\ldots + p_nR_n \qquad \text{(A2.2)}$$

where:

$(E)R$ = expected return

R_i = return in outcome i;

p_i = probability of occurrence of the return R_i;

n = number of outcomes.

Note that in practice future returns and their probabilities are not usually known, so historical average returns from past data relating to the performance of the investment are used as indicators of future returns.

To calculate the variance of the expected return on the security:

- Square the difference between the expected return for outcome A and the overall expected return and multiply the result by the probability that outcome A will occur.
- Repeat this step for each possible outcome.
- Sum the results generated for all possible outcomes.

Thus, for Case 1:

$$\begin{aligned}\text{Variance} &= 0.1(0.5 - 0.1)^2 + 0.2(0.3 - 0.1)^2 + 0.4(0.1 - 0.1)^2 \\ &\quad +0.2(-0.1 - 0.1)^2 + 0.1(-0.3 - 0.1)^2 \\ &= 0.016 + 0.008 + 0 + 0.008 + 0.016 = 0.048\end{aligned}$$

The standard deviation is simply the square root of the variance. For Case 1:

$$\text{Standard deviation} = \sqrt{0.048} = 0.2191$$

As a general rule, if an investor wishes to achieve a higher-than-average expected return, they should take on a higher-than-average level of risk.

$$\textbf{Return}\uparrow \quad \rightarrow \quad \textbf{Risk}\uparrow$$

Diversification, that is adding more securities into an existing portfolio, can reduce risk exposure (i.e. the portfolio volatility).

$$\textbf{Diversification}\uparrow \quad \rightarrow \quad \textbf{Risk}\downarrow$$

For a portfolio composed of n securities, the expected return will be equal to the weighted average of the expected returns on the component securities:

$$(E)R_p = w_1(E)R_1 + w_2(E)R_2 + w_3(E)R_3 + \ldots\ldots\ldots + w_n(E)R_n \qquad \text{(A2.3)}$$

where:

$(E)R_p$ = weighted average of the expected return of the individual stocks composing the portfolio, where weights are the portfolio weights;

w_n = portfolio weight of stock n, where $n = 1, 2 \ldots n$.

Example

Assume we have a portfolio comprising two equities: the UK supermarket Tesco (trading at 286.25p on 9 April 2021) and Barclays (trading at 238.95 on the same day). Also assume that 70 per cent of the portfolio comprises Barclays shares and 30 per cent Tesco shares. The expected return of Barclays is 20 per cent and for Tesco shares is 4 per cent. The expected return for the portfolio is: $(0.7 \times 0.2) + (0.3 \times 0.04) = 0.14 + 0.012 = 15.2\%$.

While investors cannot escape from the inherent return–risk trade-off, they may nevertheless construct their portfolios in a manner that aims to minimise the risk assumed at any given desired rate of return. *Modern portfolio theory* seeks to explain this behaviour. The theory derives from the seminal work of Markowitz undertaken in the 1950s.

A2.2 Modern portfolio theory

The central principle of modern portfolio theory is that it is possible to construct a portfolio of securities that has a return that is less risky than the return on any individual security contained therein. In order to do this it is necessary that the returns on the individual component securities should not be perfectly correlated. If the performance of securities is affected in an identical way by a particular event, then it is not possible to reduce the risk of being adversely affected by the event simply by holding a portfolio of those securities. The relative variability of returns on two securities is known as their covariance.

The correlation coefficient (ρ) measures the degree to which two variables are linearly related. If there is a perfect linear relationship with positive slope between the two variables, we have a correlation coefficient of 1; if there is a perfect linear relationship with negative

slope between the two variables, we have a correlation coefficient of −1; a correlation coefficient of 0 means that there is no linear relationship between the variables. The correlation coefficient (ρ) comprises two elements:

- covariance (the extent to which values move together);
- standard deviations (how tightly values are clustered around the mean in a set of data).

In this context, the correlation coefficient is simply the covariance between the stocks divided by their respective standard deviations. In the case of two stocks, 1 and 2, the correlation coefficient will be calculated as follows:

$$\rho_{1,2} = \frac{\text{Cov}_{1,2}}{\sigma_1 \sigma_2} \tag{A2.4}$$

where $\text{Cov}_{1,2}$ is the covariance between the two stocks and is a measure of the extent to which the two assets covary.

To get the correlation, the covariance is divided by the standard deviation to provide a standardised measure between the movements of two different values. (Note that the correlation coefficient falls between −1 (perfect negative) and +1 (perfect positive), while zero correlation means that the returns on the two assets are unrelated to each other.)

Hence the variance of the portfolio return σ_p^2, will be equal to the sum of the contributions of the component security variances plus a term that involves the correlation coefficient between the returns of the component securities; or, in symbols:

$$\sigma_p^2 = (W_1\sigma_1)^2 + (W_2\sigma_2)^2 + 2(W_1\sigma_1)(W_2\sigma_2)\rho_{1,2} \tag{A2.5}$$

Given this information let us run through the example relating to a portfolio consisting of Tesco and Barclays shares from above. Assume the past standard deviations of Tesco shares were 40 per cent and for Barclays shares 60 per cent. Assume the two stocks are positively correlated – they move in the same direction – but are not perfectly correlated. Assume their correlation coefficient is 0.75. ($\rho 1,2 = 0.75$). Recall also that 70 per cent of the portfolio is held in Barclays shares and the remainder in Tesco stock.

The variance of the portfolio is therefore:

$$[(0.7)^2 \times (0.6)^2] + [(0.3)^2 \times (0.4)^2] + 2(0.7 \times 0.3 \times 0.6 \times 0.4 \times 0.75) =$$

$$[0.49 \times 0.36] + [0.09 \times 0.16] + 2(0.0378) =$$

$$0.1764 + 0.0144 + 0.0756 = 0.2664 = 26.64\%$$

So the variance of the portfolio is 26.64 per cent and the standard deviation is:

$$\sqrt{0.2664} = 0.051614 = 5.1614\%$$

Note that the variance of the portfolio return is lower than that of any individual asset, which shows that by constructing a portfolio one is able to diversify risk. Diversification increases the less correlated the stocks are in the portfolio – when stocks in the portfolio are perfectly correlated then there are no diversification benefits.

Correlation↓ → Diversification↑ → Risk↓

It must be emphasised that 20 or more different securities is normally thought of as being the minimum number of securities required to achieve significant risk reduction by diversification. Moreover, in order to significantly reduce risk, securities should emanate from different business sectors and ideally from different countries (i.e. international diversification).

A2.3 Efficient (mean–standard deviation) frontier

This section briefly introduces the features of the efficient frontier that can be used to demonstrate the optimal holdings of risky assets for a risk-averse investor. It is otherwise known as the mean–standard deviation frontier as it plots the mean expected return against the standard deviation of a risky asset (the risky asset is constructed by using weights of the two assets in the combined portfolio). Each point on the efficient frontier in Figure A2.1 therefore represents a risky asset.

As the portfolio weights for the two assets range from zero to one, the portfolio goes from one that only combines Security 1 to a portfolio combining only Security 2. As the weights change then the new portfolios plot a curve that includes both Securities 1 and 2. This can be seen in Figure A2.2.

The efficient frontier shows the expected return and risk that could be achieved by constructing different portfolios of the two risky assets. Investors can use this to consider trade-offs between returns (mean returns) and risk (standard deviations) when they choose portfolio weights for their investments. It is important to note that this exposition assumes that investors are not allowed to short-sell (the selling of a security that the seller does not own).

In order to identify the optimal portfolio we have to take into account the risk–return preferences of an investor – this is shown in Figure A2.2 where the investor chooses a portfolio with a 50–50 mix of both Securities 1 and 2. The area inside the frontier is known as a 'feasible region' and this represents feasible but inefficient portfolios as expected return is not maximised for a given risk or standard deviation.

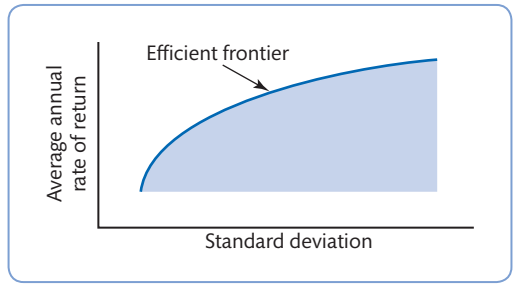


Figure A2.1 Efficient (mean–standard deviation) frontier

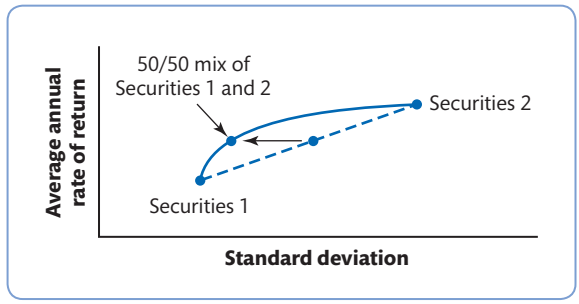


Figure A2.2 Efficient frontier: two risky assets (Securities 1 and 2)

A2.4 Components of risk

The risk associated with the return on a security may be divided into two components:

- Market or systematic risk is the risk related to the macroeconomic factors or market index. Systematic risk is non-diversifiable.
- Unsystematic risk is the firm-specific risk, not related to the macroeconomic environment. Unsystematic risk is diversifiable.

Securities have different proportions of systematic and unsystematic risk. Diversification can reduce firm-specific risk to low levels; however, it cannot eliminate the common sources of risk that affect all firms, as shown in Figure A2.3.

The extent to which the return on an individual equity share moves with the general trend of the average return on the market (i.e. its systematic risk component) is measured by its

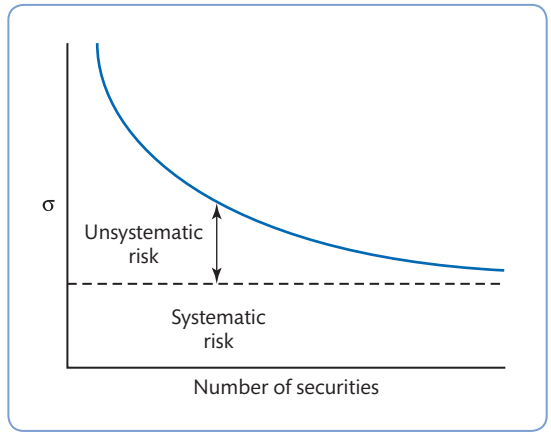


Figure A2.3 Systematic and unsystematic risk: effects of diversification

beta value (β). In particular, β measures the sensitivity of a security's returns to the systematic or market factor and is calculated as follows:

$$\beta_i = \frac{Cov(r_j, r_M)}{\sigma^2 M} \tag{A2.6}$$

where $Cov(r_j, r_M)$ is the covariance with the market divided by the variance of the market.

Some shares (and portfolios) tend to respond strongly to general movements in the market. The returns on other shares (and portfolios) tend to move less markedly and may be relatively stable in the face of major market movements.

The beta value for a company's shares is derived from the capital asset pricing model (CAPM), which is simply the reduction of modern portfolio theory into a single-factor model – with that single factor being called beta (β). Instead of a matrix of covariances between all securities in the market, as shown above, there is only one covariance coefficient: β, the covariance between a security and the market.

The CAPM states that the security's risk premium is proportional to both the beta and the risk premium of the market portfolio. An equity share's β is obtained from an equation that explains the expected return (or required return) from a stock that is calculated as follows:

$$E(r_i) = r_f + \beta_i[E(r_M) - r_f] \tag{A2.7}$$

where:

$E(r_i)$ is the expected return on asset i;

β_i is the beta of asset i;

$E(r_M)$ is the expected market rate of return;

r_f is the risk-free rate of interest.

From the expected return equation shown above, the expected return of a stock, $E(r_i)$, is determined by the risk-free rate (generally given by the rate on the safest investment – usually a government bond such as a UK gilt or US Treasury) plus the β of the security, multiplied by the market risk premium. This is the expected return in excess of that on risk-free securities and thus is calculated as the difference between the expected return on the market portfolio, $E(r_M)$ and the risk-free rate (r_f).

The primary determinant of the expected rate of return is the security's β. The risk-free rate and market risk premium, of course, would be the same for all securities.

If a security cannot match the required rate of return for a certain level of risk, it is considered a poor investment according to CAPM. If a security exceeds the required rate of return, it is considered a good investment according to CAPM.[1]

[1] William Sharpe published the capital asset pricing model in 1964 (Sharpe, 1964); for this work he shared the 1990 Nobel Prize in Economics with Harry Markowitz and Merton Miller. Parallel work was also performed by Treynor (1964) and Lintner (1965). For his work on CAPM, Sharpe extended Harry Markowitz's (1952) portfolio theory to introduce the notions of systematic and specific risk.

The interpretation of beta values is straightforward. Quite simply, a market index (such as the FTSE 100) is given a beta value of 1. If an individual equity share has a beta value greater than 1, then the return on this share is prone to fluctuate more than the average return on the market index. For example, if the average return on the market index falls by 10 per cent, the return on the share may fall by 15 per cent – this would mean that the share had a beta value of 1.5. In contrast, if an equity share had a beta value of less than 1, then the return on this share is more stable than the average return on the market. For example, a beta value of 0.3 would imply that a 10 per cent fall in the average return on the market index would be matched by a 3 per cent fall in the return on the share.

A2.5 Security market line

The security market line is a graphical representation of the expected return–beta relationship of the CAPM. Its slope is the risk premium of the market portfolio.

Table A2.2 shows the linear relationship between expected return and beta.

Using the information in Table A2.2, the security market line is shown in Figure A2.4 where beta is on the horizontal axis and expected return on the vertical axis. It can be seen that expected return on an asset with β of zero is 0.03 (or 3 per cent) and for a beta of 1 it is 11 per cent.

The security line is simply a straight line starting from the risk-free point passing through the market portfolio (where $\beta = 1$). Whenever the CAPM holds, all securities must lie on the security market line in market equilibrium. This is because any investor can always obtain the market risk premium $\beta_i\,(E(r_M) - r_f)$ by holding a combination of the market portfolio and the risk-free rate.

The beta of a portfolio (β_P) is simply the weighted sum of the individual assets in the portfolio (β_i), where weights are the portfolio weights (w_i) so:

$$\beta_p = \sum W_i \beta_i \tag{A2.8}$$

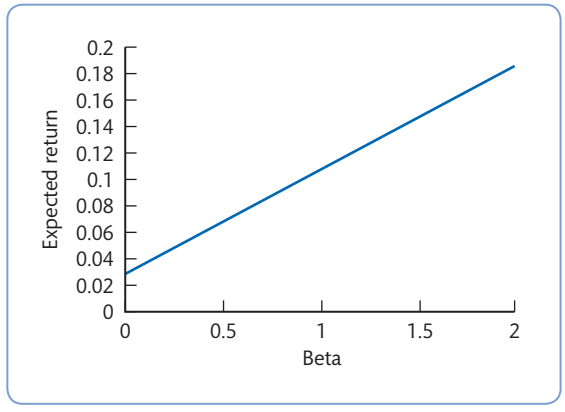


Figure A2.4 Security market line

Table A2.2 Expected return and beta

Risk-free rate (r_f)	Beta (β_i)	Market premium $E(r_i)$ minus (r_f)	Expected return $E(r_M)$
0.03	2	0.08	0.19
0.03	1.5	0.08	0.15
0.03	1	0.08	0.11
0.03	0.5	0.08	0.07
0.03	0	0.08	0.03

A2.6 Portfolio expected returns and the capital asset pricing model

It is argued that rational risk-averse investors will:

- require additional expected returns to compensate for taking on additional risk;
- construct a diversified portfolio of securities.

Therefore, the return that investors require, and the return that the market is willing to pay, will be determined by that component of risk that cannot be eliminated by diversification, i.e. by systematic risk, which cannot be avoided. In other words, the CAPM suggests that:

- the return required on any given security (or portfolio of securities) will depend upon its beta value;
- the total risk associated with the return on any security is irrelevant to the determination of the required return, i.e. because it is relatively easy to eliminate unsystematic risk, investors will not receive any premium for that risk.

The operation of efficient markets in securities should ensure that diversified portfolios containing securities with the same average beta value should attract the same return, irrespective of the total risk associated with the individual securities. If this was not the case then investors holding diversified portfolios would seek to purchase the securities attracting the higher returns (presumably those with greater associated unsystematic risk) and sell securities earning the lower returns. This action would push up the price of the riskier securities and push down the price of the less risky securities. This adjustment would continue until the returns from securities with the same beta values were equalised.

A2.7 Arbitrage pricing theory: a note

An alternative view on stock pricing to CAPM is known as the arbitrage pricing theory (APT). This theory posits that the expected return of a financial asset can be modelled as a linear function of a variety of macroeconomic factors, where sensitivity to changes in each factor is represented by a factor-specific beta. The model-derived rate of return will then be used to price the asset correctly – the asset price should equal the expected end-of-period price discounted at the rate implied by the model. If the price diverges, arbitrage should bring it

back into line. Unlike CAPM, which specifies returns as a linear function of only systematic risk, APT may specify returns as a linear function of more than a single factor.

The attraction of APT is that unlike in CAPM one does not have to identify and measure the appropriate market portfolio. However, its main drawback is that it does not specify the underlying macroeconomic factors that are to be used in estimating expected returns (although factors such as growth in real GDP, interest spreads and default probabilities are often used). CAPM, of course, assumes all these macroeconomic factors are taken into account by the market portfolio.

Glossary

Abenomics Refers to the aggressive reforms carried out by Japanese Prime Minister Shinzo Abe since 2012 in an attempt to pull Japan out of recession and deflation and restore growth.

Accountability A central bank, as all other public institutions, should be held properly accountable to policy makers and to society. A key element of social accountability is transparency – for example, the publication of minutes of meetings, the publication of detailed technical reports and convening press conferences.

Accounting-based measures of bank risk Indicators of bank risk drawn from the bank balance sheet and profit and loss accounts. These include, for example, loan loss provisions and the Z-score.

Acquis communautaire A French term meaning 'the European Union as it is'; in other words, the rights and obligations that member states of the EU share. The 'acquis' includes all the EU's treaties and laws, declarations and resolutions, international agreements on EU affairs and the judgments given by the Court of Justice. It also includes action that EU governments take together in the area of 'justice and home affairs' and on the Common Foreign and Security Policy.

Acquisitions (or equipment) lines Credit lines that that may be drawn down for a given period to purchase specified assets or equipment or to make acquisitions.

Adverse selection Refers to a market process in which bad results occur due to asymmetric information between buyers and sellers: the 'bad' products or customers are more likely to be selected.

Agency Within an international parent bank, agencies are offices similar to branches, but with less operative tasks.

Agency capture Refers to the situation where a regulatory process can be captured by producers (banks and other financial institutions) and used in their own interest and advantage rather than in the interest of consumers.

Agency costs These are the costs that principals (typically the owners) have to incur in order to ensure that their agents (the managers) make financial decisions consistent with their best interests.

Agency fee In the context of the syndicated lending market, an annual administration fee payable by the borrower on the full amount of the facility.

Agency MBS A mortgage-backed security issued by one of the US three quasi-governmental agencies: the Government National Mortgage Association (GNMA or Ginnie Mae), the Federal National Mortgage Association (FNMA or Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac).

Agent bank A bank that acts on behalf of another bank, a group of banks, a company or an individual.

Alt-A mortgage In the US, a type of mortgage that is less risky than a sub-prime but riskier than an A (i.e. prime) mortgage; 'Alt' is short for *alternative*.

Anti-money laundering (AML) The body of laws, regulations and procedures designed to prevent criminals from disguising illegally obtained funds as legitimate income. AML is a worldwide term to prevent money laundering. Global and local regulators are established around the world to prevent financial crimes, and these regulators create AML policies.

Arbitrage The simultaneous buying and selling of a commodity, or a security, in different markets to take advantage of price differentials.

Arrangement fee In the context of the syndicated lending market, an arrangement fee is the upfront fee received by the mandated lead arranger for structuring the loan.

Arranger In syndicated lending arrangers serve the role of raising finance for an issuer in need of capital. The term is also used in the context of the securitisation process where the arranger bank is an investment bank that acts as the underwriter representing the issuer (the SPV or trust).

Asset-backed commercial paper (ABCP) Short-term borrowing with fixed maturity (less than 270 days) collateralised by a pool of financial assets (e.g. car loans, trade receivables, leases).

Asset-backed securities Securities backed by real or financial assets (e.g. mortgage-backed securities/bonds). Asset-backed securities are otherwise known as collateralised securities.

Asset-based finance A specialised method for providing capital and loans that are secured by machinery, inventory, equipment and/or real estate.

Asset Guarantee Program (AGP) Refers to the US exceptional government support of institutions whose collapse in 2009 would have caused serious consequences to the financial markets and the real economy. It included supporting the value of specific assets held by banks that met certain criteria (namely Citibank and Bank of America) by accepting to absorb a portion of losses on those assets.

Asset–liability management The management of a business in a way that co-ordinates decisions on both sides of the balance sheet. Also known as balance sheet management.

Asset management This can either refer to the managing of an institution's asset side of the balance sheet (e.g. altering the mix of assets to increase returns or minimise risk) or to the function of managing assets on behalf of a customer (asset management *services*).

Asset Protection Scheme (APS) A scheme launched in 2009 by the UK Treasury to protect over £280 billion of Royal Bank of Scotland's financial assets against losses.

Asset transformation The ability of financial intermediaries to transform large denomination assets into smaller units.

Assets What a firm or a person owns or is owed, such as money, securities, equipment and buildings. Assets are listed on a company's balance sheet.

Association for Payment Clearing Services (APACS) APACS was set up in 1985 as a UK-based non-statutory association of institutions delivering payment services to end customers. APACS provides the forum for institutions to discuss non-competitive issues relating to the payments industry.

Automated clearing house (ACH) An ACH transaction is an electronic method of transferring funds for the clearing and settling of payments among financial institutions. Such electronic transactions are substitutes for cheques.

Automated teller machines (ATMs) An unmanned terminal usually operated through the use of a magnetically coded card, which can dispense cash, take instructions on transfer, provide balances, etc.

Backtesting In value-at-risk models, backtesting is used as an ex-post comparison of the risk measure generated by the model against actual daily changes in portfolio value.

Bacs system (formerly Bankers Automated Clearing Services) A UK system for sending money electronically between banks. It allows automated settlement of accounts between customers, processing direct debits and direct credits, for example.

Bad loans Generally, loans that currently have not been repaid in part or in full (including those in arrears) and thus they are not currently accruing interest or on which interest is not being paid.

Balance of payments A financial statement prepared for a country which summarises the flow of goods, services and funds between the residents of that country and the residents of the rest of the world during a certain period of time.

Balance sheet A financial statement that reports a company's assets, liabilities and net worth at a point in time.

Bancassurance A French term coined to denote the combination of banking and insurance business within the same organisation. It relates to the distribution of insurance products through a bank's distribution channels.

Bank for International Settlements (BIS) An international bank set up in Basel (Switzerland) in 1930 that fosters international monetary and financial co-operation and serves as a bank for central banks. It is the world's oldest international financial organisation.

Bank holding companies (BHCs) In the US a company (so-called top holder) in control of one or more banks. A BHC could also own another bank holding company, which in turn owns or controls a bank. In Europe BHCs are usually referred to as banking/financial conglomerates or groups.

Bank of England Act 1998 A major piece of UK legislation that gave the Monetary Policy Committee sole responsibility for setting interest rates to meet the government's inflation target. The Act also provided for the transfer of responsibility to supervise deposit-taking institutions from the Bank to the Financial Services Authority.

Bank performance Refers to how well a bank is doing. Two commonly used bank performance measures are return-on-assets (ROA) and return-on-equity (ROE).

Bank Recovery and Resolution Directive (BRRD) EU Directive adopted on 15 April 2014 that sets common rules for all member states in relation to when and how authorities will intervene to support troubled banks. The BRRD is implemented in the eurozone countries through the Single Resolution Mechanism and came into force on 1 January 2015.

Bank restructuring Usually this term refers to the change in structural features of banking markets (e.g. number of institutions operating in the market) through mergers and acquisitions. It can also refer to corporate changes internal to a bank organisation.

Bank runs Refers to the situation where a large proportion of depositors withdraw their savings because they fear that the bank is unsound and about to fail. (See also **Banking crisis**.)

Bank-based financial systems A type of financial structure where banks play a key role in mobilising savings, identifying viable investments, monitoring the decision of corporate managers and supplying risk management services. Germany and Japan are examples of bank-based systems. The alternative is the **market-based financial system**.

Banker's acceptance A short-term credit investment created by a non-financial firm and guaranteed by a bank. A bank's customer orders his/her bank to pay a sum of money at a future date, typically within six months. When the bank endorses the order for payment as 'accepted', it assumes responsibility for ultimate payment to the holder of the acceptance. At

this point, the acceptance may be traded in secondary markets much like any other claim on the bank.

Banking Act (2009) UK legislation aimed at strengthening the resilience of the financial sector and maintaining public confidence by providing tools to the supervisory authorities for dealing with banks and building societies experiencing serious financial distress. The Act created the Special Resolution Regime (SRR) and gave the Bank of England statutory responsibility for systemically important inter-bank payment systems.

Banking and business banking codes Voluntary codes which set standards of good banking practice for banks and building societies to follow when they are dealing with personal or business customers (used in the UK).

Banking book In the context of commercial bank activities, it refers to the bank's core business such as deposits, cash, loans, fixed assets and other illiquid assets.

Banking crisis The situation when individuals and companies lose confidence in the banking system. For example, this may be the result of an actual (or expectations of a potential) run on the banking system. Any event, or series of events, that leads to concerns about the solvency of the banking system can be considered a banking crisis.

Banking Union Refers to the creation of a single centralised mechanism for the supervision and restructuring of banks. In June 2012 the EU leaders committed to creating a banking union for the eurozone members.

Basel Framework The consolidated 'Basel Framework' consolidates the full set of global standards and banks' prudential regulation and supervision of the Basel Committee.

Best-efforts syndication An arrangement whereby the underwriter in a syndicated contract agrees to do its best to sell the issue to the public at the agreed price but does not guarantee selling the entire issue.

'Big Bang' The name given to 27 October 1986, when the London Stock Exchange (LSE)'s new regulations took effect, allowing banks to own stock broking and jobbing firms and the automated price quotation system was introduced. The new rules allowed banks to undertake a broader range of securities business and resulted in many UK merchant (investment) banks being acquired by foreign institutions.

Bill and Cheque Clearing Systems (BCCS) In Japan, a system that clears bills and cheques which are exchanged between financial institutions located within the same geographical area.

Bill of exchange A means of payment used in domestic (rarely) and international banking. Defined by the UK Bills of Exchange Act of 1882 as 'An unconditional order in writing, addressed by one person to another, signed by the person giving it, requiring the person to whom it is addressed to pay, on demand or at a fixed or determinable future time, a sum certain in money to, or to the order of, a specified person, or to bearer.'

Bitcoin Digital money and first decentralised P2P (peer-to-peer) payment network that is not controlled by a central authority or bank. It was created in 2009 by the pseudonymous person or group of people Satoshi Nakamoto.

Board of Governors The governing body of the Federal Reserve System, which is responsible for US monetary policy.

BOJ-NET (Bank of Japan Financial Network System) Funds Transfer System In Japan, it is the central bank's funds transfer system and is used to settle interbank obligations including net obligations of participants in the private sector clearing systems.

Bond A document issued by a government or company borrowing money from the public, stating the existence of a debt and the amount owing to the holder of the document (the bondholder). Bondholders use the document to obtain repayment of the loan. Bonds are usually long-term (greater than five-year maturity) and pay fixed rates of interest.

Boone indicator A measure of competition based on the idea that competition enhances the performance of efficient banks which is reflected in higher profits or increased market shares. It is calculated as the elasticity of profits to marginal costs. The more negative the Boone indicator is, the higher the level of competition in the loan market.

Branch A branch office is a key part of the distribution channel and acts as a legal and functional part of the bank, offering a full range of services.

Brexit

Bridge bank In case of one or more failed institutions in a system, a bridge bank is a temporary financial institution that is established to receive and manage the good assets of the one or more failed institutions.

Bridge loans Loans provided to offer short-term financing to 'bridge' financial needs (for example, before bond/equity issuances).

Broker An intermediary between market makers and investors. Brokers buy and sell securities on behalf of customers and do not take a position in securities.

Building society Mutually owned UK financial institution which issues shares (i.e. accepts deposits) and lends to borrowers mainly for home mortgages.

Bullet payment A facility where the repayment is in one amount on the final maturity date of the syndicated agreement.

Business angels Wealthy private investors who provide capital for companies at the start-up phase or during a level of expansion. Business angels usually invest their own funds.

Call risk The risk that arises when a borrower or bondholder may redeem the security prior to maturity.

CAMELS A rating system used by regulatory and supervisory authorities to evaluate the safety and soundness of financial institutions. The acronym CAMELS refers to the six components of a bank's financial condition that are assessed: Capital adequacy, Asset quality, Management, Earnings, Liquidity and Sensitivity to market risk. Ratings are assigned for each component in addition to the overall rating of a bank's financial condition. The ratings are assigned on a scale from 1 to 5. Banks with ratings of 1 or 2 are considered to present few, if any, supervisory concerns, while banks with ratings of 3, 4, or 5 present moderate to extreme degrees of supervisory concern.

Capital In a balance sheet, capital is the difference between assets and liabilities. Also known as net worth or equity capital, it represents the ownership interest in a business.

Capital adequacy Refers to the level of capital a bank should hold in relation to the regulatory minimum standards, established under the Basel Accord. The amount of capital a bank holds relates to the riskiness of its business activity (both on balance sheet and off balance sheet). The more risky a bank's assets (on balance sheet) and its other activities not recorded as assets (off-balance-sheet business including guarantees, commitments, securities underwriting and so on) the more capital it needs to hold.

Capital management Refers to the capital adequacy management techniques used to ensure that the bank keeps an adequate level of capital to comply with regulations.

Capital markets Markets where capital funds (debt and equity) are issued and traded. This includes private placement sources of debt and equity as well as organised markets and exchanges.

Capital risk The decrease in the market value of assets relative to the market value of liabilities. In the case of a bank it refers to the risk associated with losses that have to be borne by its capital reserves. In extreme cases a bank may not have enough capital to cover all its losses and this is when the bank becomes insolvent/bankrupt. Note that capital risk is also used as a general term that refers to losses incurred by an investor where he or she may lose all or part of the principal invested.

Caps A type of option that gives the holder a right to purchase a forward rate agreement 'with hindsight'. For example, an interest rate cap may be bought in order to get protection that the interest rate will not move upwards beyond the level specified by the cap contract.

Cash management and transaction services Offered by large wholesale and/or international banks, cash management and transaction services can include, for instance, electronic funds transfers, cheque deposit services and electronic sending of letters of credit.

Cashless payment A payment made without need of physical money. Typically, these payments are made by transferring money electronically, either via bank transfer or payment cards. It also includes mobile wallets and QR code payments.

Central and Eastern European Countries (CEECs) Acronym used to indicate Central and Eastern European Countries, namely the Czech Republic, Hungary, Poland, Slovakia and Slovenia.

Central bank independence This refers to the level of independence that the central bank of a country has from the government (and political interference).

Certificate of deposit (CD) A negotiable certificate issued by a bank as evidence of an interest-bearing wholesale time deposit.

Charter value Is the present value of the future profits that a solvent bank would be expected to get from a new business in protected markets. Also known as 'franchise value', it is an intangible asset that includes various factors such as its reputation, customer relationships, scale economies, market structure in the area and so on.

Check 21 In the United States, this term is used to refer to the Check Clearing for the 21st Century Act that became effective on 28 October 2004. The legislation gives banks greater flexibility in converting paper cheques into electronic form to speed up retail payments.

Cheque (UK) or Check (US) A form of payment used in place of cash and payable on demand that instructs a bank to pay the specified sum to the party named on the cheque from funds held on a deposit account.

CHIPS In the United States, the acronym used to indicate the Clearing House Interbank Payments System. It refers to the main bank-owned payments system for clearing large-value, mainly international, payments.

City banks The largest banks in the Japanese banking system that account for over 50 per cent of total banking sector assets.

Clearing Refers to the system whereby payments are settled among banks (or other financial intermediaries) and funds transferred from the account of one institution to the other. In the markets, clearing refers to the process of transferring the ownership of securities (and always involves a clearing house).

Clearing House Automated Payments System (CHAPS) A computerised system that provides a same day guaranteed sterling electronic credit transfer service within the United Kingdom.

Club deal Refers to a loan syndicated by a small number of participating banks, which are not entitled to transfer their portion of the loan to a third party.

Collars Hybrid derivative products, being part forward contract and part option. A collar (as its name suggests) puts an upper and lower bound on price movements.

Collateral An asset that secures repayment on a loan. The main form of collateral is real estate.

Collateralised debt obligations (CDOs) A type of structured asset-backed security. They allow banks to gather together cash-flow generating assets, such as loans, mortgages and bonds, into a special purpose vehicle. Investors will buy tranches in the CDOs that carry different levels of risk and return.

Collateralised loan obligations (CLOs) Securities that are backed by a pool of loans. In other words, CLOs are repackaged loans that are sold to investors.

Colonial banks A term used to describe 'British overseas banks' or 'Anglo-foreign banks'. Colonial banks were institutions set up by the British in their colonies and typically only provided services outside the United Kingdom. Note that the term can also be used more generally to describe banks that operate in the colonies of any country.

Commercial bank An institution that undertakes traditional banking activities: deposit-taking, lending and payments services.

Commercial credit Loans and other forms of credit extended to financial and non-financial companies.

Commercial paper A short-term unsecured instrument that promises to repay a fixed amount representing the cost of borrowed funds (such as LIBOR) plus interest, on a certain future date at a specific time. Usually issued by companies with a high credit standing. It may be a purely financial instrument or be based on an underlying commercial transaction.

Commitment A legal promise undertaken by a bank to lend to a customer.

Commitment fee In the context of the syndicated lending market, a fee payable by the borrower to each of the lenders and relative to the amount of the undrawn and uncancelled loan during the availability period.

Competition and Markets Authority (CMA) The Competition regulator in United Kingdom.

Competition Commission Established by the Competition Act 1998, the Competition Commission is an independent body responsible for investigating mergers, markets and conditions and regulation of major UK industries.

Competition policy Government regulations and actions designed to promote competition and restrict monopoly practices by preventing individual firms from having excessive market power.

Competition-fragility view The traditional view that although competition in banking erodes market power, it also lowers profits and results in reduced franchise value that fosters bank risk- taking. It is the alternative to the **competition-stability view**.

Competition-stability view The view that bank risks are greater if there is more market power in the loan markets because loan rates will be higher and customers will find it more difficult to repay their debts. It is the alternative to the **competition-fragility view**.

Competitive pressures Refers to increased rivalry between institutions for customers.

Competitive risk The risk that arises as a consequence of changes in the competitive environment.

Compliance costs The incremental costs associated with complying with regulations.

Concentration ratio Measure used to identify the proportion of total market controlled by the largest firms. In the case of banks, for example, a three-firm concentration ratio measures the

proportion of total assets (or total deposits) of the banking sector held by the three largest firms.

Conglomerate discounts Refer to fact that investors tend to value conglomerate or diversified firms less (at a discount) than focused companies.

Consumer credit Loans and other forms of credit extended to the household sector. Otherwise known as retail credit.

Consumer protection The body of regulations safeguarding buyers of goods and services, and the public, against unfair practices in the marketplace.

Consumer Financial Protection Bureau (CFPB) US agency responsible for consumers' protection in the financial sector.

Contagion The tendency of a financial/banking crisis to spread or spill over from one market to another.

Contractual savings institutions Term used to refer to insurance companies and pension funds whose main funding comes from long-term regular payments (savings) made by individuals/companies. The liabilities of these firms are the long-term future benefits to be paid to policy holders and fund holders.

Convergence This term is widely used to refer to a number of features of the financial system or economy overall. It can relate to: financial regulations across countries becoming more similar as a result of the harmonisation of international regulatory standards; macroeconomic variables such as interest rates, GDP and so on across countries moving to the same level; the business practices of banks becoming more similar; and so on.

'Convoy system' Term used in Japan to indicate the situation where the Ministry of Finance encouraged healthy banks to acquire those in trouble.

Co-operative banks Traditionally banks that are characterised by mutual ownership; today many co-operative banks have converted into listed institutions.

Corporate banking Corporate banking relates to banking services provided to companies although typically the term refers to services provided to relatively large firms.

Corporate governance Relates to the way outside investors and other stakeholders, such as employees and government, exercise control over senior management and other corporate insiders in order to protect their interests. In banking the situation of governance is complicated because banks are highly leveraged, have opaque business models and they benefit from government safety nets.

Correspondent banking In international banking, banks use correspondent banks to do business in markets where they have no physical presence.

Cost–income ratio A quick test of bank efficiency that can be calculated by dividing non-interest expenses by total income.

Cost of capital Relates to the costs of financing, namely, the expense of raising equity and debt. High-performing banks can raise funds by issuing shares or bonds more cheaply than poor-performing banks. Cost of capital arguments have been used in international banking theory to explain the rationale for overseas expansion.

Costs Derived from the liabilities side of the balance sheet, costs relate to payments that the bank has to undertake including payment of interest on deposits, staff and other operating costs.

Counter terrorism financing (CTF) Terrorist financing involves the solicitation, collection or provision of funds with the intention that they may be used to support terrorist acts or organisations. Funds may derive from both legal and illicit sources. Counter terrorist financing refers

to the body of laws and regulations that have been enacted to curtail the financing of terrorist activity, and are collectively known as counter terrorist financing policies.

Counterparty risk The risk that a party in a financial transaction will default. Counterparty risk is often used to indicate the credit risk on off-balance-sheet products.

Countertrade Refers to a variety of commercial mechanisms for reciprocal trade, e.g. barter, switch trading, etc.

Country risk It is the risk that economic, social and political conditions and events in a foreign country will adversely affect a firm's commercial/financial interests.

Covered bonds Debt securities backed by assets such as mortgage loans. Covered bonds are backed by pools of mortgages that remain on the issuer's balance sheet, as opposed to mortgage-backed securities such as collateralised mortgage obligations (CMOs), where the assets are taken off the balance sheet.

Credit checking The process of evaluating an applicant's loan request in order to determine the likelihood that the borrower will repay.

Credit co-operative banks See Co-operative banks.

Credit culture Refers to the fundamental principles that drive lending activity and how management analyses risk. It is generally used in relation to an individual bank's lending and risk management procedures. For example, one may hear a banker say Citibank has a different credit culture to Barclays, implying their loan granting procedures and risk assessments are different in some way. The term can also be used to describe the attitude to borrowing by households, for example, 'US households have a different credit culture to the Japanese', meaning that the former love to borrow whereas the latter do not.

Credit default swaps (CDS) Derivatives that a bank or investor buys to insure a credit risk. If an issuer defaults on a bond or loan, the credit purchaser is compensated at par by the seller of the swap.

Credit easing An unconventional policy tool that implies a central bank's purchase of private sector assets to increase liquidity in the system, make credit more available and ultimately stimulate the economy.

Credit enhancements Protections to cover potential losses via financial support on securitised assets in case of adverse conditions. These risk-reduction techniques enable bankers to convert pools of poorly rated loans or mortgages into highly rated securities. They act as a financial cushion and help improve the credit rating of the structured products or transactions.

Credit facilities Facilities available to individuals and companies such as loans, overdrafts and lines of credit.

Credit guarantee scheme (CGS) One of the measures taken by the UK government in 2008 to help restore the stability of the financial system, protect customers and to boost investors' confidence particularly in the wholesale market. Under this scheme banks could obtain credit guarantees effectively backed by the government in return for a fee.

Credit lines Arrangements through which bank customers may borrow and repay at will, subject to a maximum amount granted. Firms pay a fee in exchange for the right to draw on funds when needed.

Credit multiplier A model that illustrates how banks create money determined by the ratio of change in deposits to the change in level of reserves.

Credit philosophy A bank's management's preference for more or less conservative loan-granting practices.

Credit-rating agencies Private agencies, such as Standard & Poor's, Moody's and Fitch IBCA, that assess and rate the risk and quality of debt securities, companies, organisations and countries.

Credit rationing A technique used by banks to limit the amount of credit available to a specific segment of customers.

Credit reference agencies Banks use credit reference agencies such as Experian and Equifax in the credit-scoring process to check individuals' identity and credit history when they apply for a loan.

Credit risk The risk that a counterparty defaults on some or all of its contractual obligations. Credit risk in lending operations is the likelihood that a borrower will not be able to repay the principal or pay the interest.

Credit scoring A qualitative evaluation system employed by banks to assess the creditworthiness of an individual or firm that applies for a loan.

Credit transfers Also known as Bank Giro Credits, credit transfers are payments where the customer instructs their bank to transfer funds directly to the beneficiary's bank account.

Credit unions Non-profit financial institutions owned and operated entirely by their members. They provide financial services for their members, including savings and lending. Common in the United States, Ireland and (to a lesser extent) the United Kingdom.

Cross-border mergers Merger operations between institutions headquartered in different countries.

Crowdfunding platforms Websites that enable interaction between fundraisers and 'the crowd'. Financial pledges can be made and collected through the platform. Fundraisers are usually charged a fee if the fundraising campaign has been successful.

Cruickshank Report A report carried out by the UK government in 2000 looking into the issue of competition in UK banking and headed by Sir Donald Cruickshank.

Currency crisis Typically involves a speculative attack on the currency resulting in a devaluation or sharp depreciation. Authorities will be forced to defend the currency by selling foreign exchange reserves, raising domestic interest rates or imposing capital controls.

Currency forward A derivative contract that allows both the buyer and the seller to hedge against the risk of future fluctuations in currencies.

Currency swaps A transaction in which two counterparties exchange specific amounts of two different currencies at the outset and repay over time according to a predetermined rule which reflects interest payments and possibly amortisation of principal. The payment flows in currency swaps (in which payments are based on fixed interest rates in each currency) are generally like those of spot and forward currency transactions.

Cyber risk The probability of exposure or loss resulting from a cyber-attack or data breach. It can also be defined as cyber-security risk, that is, the potential loss or harm related to technical infrastructure, use of technology or reputation of an organisation.

de Larosière Report A report published in 2009 by a high-level group on financial supervision chaired by Jacques de Larosière, outlining the proposals for reform of the EU regulatory framework. It contains 31 recommendations on regulation and supervision of EU financial markets and proposes a two-level approach to reforming the EU financial architecture.

Debentures Unsecured obligations of an issuing firm, which are claims only on the general assets of the company.

Debt-based financing In Islamic banking, debt-based financing is carried out through various instruments derived under the principle of exchange or, more specifically, the contract of deferred sale. Under such arrangement, Islamic debt is created when goods are purchased, and the payments are deferred. Unlike debt in conventional banking, in Islamic banking debt is created in response to the demand to purchase goods by deferred payment.

Debt Management Office (DMO) In the UK it is the Executive Agency of Her Majesty's Treasury. Its key duties include debt and cash management for the UK government, lending to local authorities and managing certain public sector funds.

Default The inability to ultimately fulfil a contractual obligation when it falls due.

Deficit unit Term used to denote the ultimate borrower in a financial transaction.

Deflation A general decrease in price levels that implies an inflation rate below 0 per cent that is caused by a collapse in aggregate demand.

Delegated monitoring One of the theories put forward as an explanation for the existence of banking. It relates to the role of banks as 'monitors' of borrowers.

Demand deposit Current account funds that can be withdrawn at any time without notice. They can be either interest or non-interest bearing. Sometimes known as chequing (checking) accounts.

Demutualisation The process of changing from a mutual company owned by its members (e.g. in the United Kingdom the traditional building societies) to a company owned by shareholders. When the building societies demutualised, their shares became listed on the stock exchange and they converted to banks.

Deposit and lending services Personal banking services that include, for instance, current and savings accounts and consumers' loans and mortgages.

Deposit insurance Where bank deposits of retail customers are insured against loss in the event of bank failure. Deposit insurance schemes can be privately funded (by the banks) or by the government.

Deposit Insurance Corporation An organisation that insures retail customers' deposits. For example, Japan's Deposit Insurance Corporation is a semi-governmental organisation that was established in 1971 with the purpose of operating the country's deposit insurance system, in line with the Deposit Insurance Law.

Deposit-taking institutions/Depository institutions Financial institutions that obtain their funds mainly from accepting savings and/or demand deposits from the general public and provide regular banking services such as chequing and savings accounts.

Deregulation The process of removing or reducing the rules and regulations on an industry with the objective of improving economic efficiency, competition and innovation in the market.

De-risking In a general business context, de-risking means to take steps to make (something) less risky or less likely to involve a financial loss. In international banking, de-risking refers to the restriction of correspondent banking relationships or business services from major global banks to certain jurisdictions due to concerns over money laundering or potential involvement in the financing of terrorist activities.

Derivatives Contracts involving rights or obligations relating to purchases or sales of underlying real or financial assets (e.g. gold and shares respectively), or relating to payments to be made in respect of movements in indices (e.g. the London FTSE 100). These rights and obligations are related to – or derived from – the underlying transactions, so they have been given the general name of *derivatives*.

Developing countries Those with a Gross National Income (GNI) per capita of $12,615 or less. The World Bank (2019) classifies economies as low-income (GNI $1,035 or less), lower middle-income (GNI $1,036–$4,045), upper middle-income (GNI $4,046-$12,535) and high-income (GNI $12,536 or more). Low-income and middle-income economies are sometimes referred to as developing countries.

Development banks Multilateral institutions that provide financial support and professional advice for economic and social development activities in developing countries, such as the World Bank. In Japan, a standard type of public financial institution such as, for example, Development Bank of Japan.

Digital banking A term used to describe any banking activities that are completed using a digital device, including online banking (via a computer) and mobile banking (via an app).

Digital divide Gap between those people and communities who have access to information technology (e.g. computers) and those who do not.

Digital footprint The trail of information that individuals leave online when they access or register on a website.

Direct debit Regular electronic debiting of funds from an individual's bank account to pay utility bills (electricity, gas, water bills), mortgages, etc.

Direct finance The situation where borrowers obtain funds directly from lenders in financial markets.

Discount A sum of money allowed for immediate payment of a sum due at a later date. If the sum is secured by a bill of exchange, the holder who buys the bill and receives the discount is said to discount the bill.

Discount window Monetary policy tool of central banks that allows eligible banking institutions to borrow money from the central bank, usually to meet short-term liquidity needs.

Disintermediation The process whereby borrowers and investors bypass banks and transact business directly.

Dodd–Frank (Wall Street Reform and Consumer Protection) Act The most comprehensive Wall Street reform in history. It is aimed at avoiding excessive risk taking and at building a safer and more stable financial sector in the US. It became US law in 2010 and was named after Senator Christopher J. Dodd and US Representative Barney Frank, who were the sponsors of the legislation.

Dollarisation When a non-US country either adopts US dollars as a local currency or uses them in parallel to the domestic currency.

Domestic mergers Mergers and/or acquisition operations where both bidder and target are from the same domestic country.

Duration analysis Used extensively as a risk management technique, it is a measure of the average life of an asset's (or liability's) cash flow.

E-banking The remote delivery of banking products and services through electronic channels.

E-money E-money includes reloadable electronic money instruments in the form of stored value cards and electronic tokens stored in computer memory.

E-wallet Also known as mobile wallet or digital wallet, this is an electronic device, online service or software programme that allows the owner to make electronic transactions.

Early warning systems (EWS) Models designed to draw regulators' attention to certain key variables associated with past crisis. These variables can reflect the risk of a single financial

institution (micro-prudential approach) or the risk of the financial system as a whole (macro-prudential approach).

ECOFIN Council The Economic and Financial Affairs Council is, together with the Agriculture Council and the General Affairs Council, one of the oldest configurations of the Council of the European Union. It is commonly known as the ECOFIN Council or simply 'ECOFIN' and is composed of the economics and finance ministers of the member states, as well as budget ministers when budgetary issues are discussed.

Economic and Monetary Union (EMU) The name given to the process of harmonising the economic and monetary policies of the member states of the European Union with a view to the introduction of a single currency, the euro.

Economies of scale Cost savings arising from decreasing unit cost of production as output increases.

Economies of scope Cost savings arising from joint production. For example, the costs of a financial institution offering banking and insurance products jointly are lower than the costs of separate firms providing only banking and insurance services.

Efficiency hypothesis An industrial organisation theory that argues that more concentrated banking sectors containing a high proportion of large banks will tend to have higher profitability on average, because large banks are more efficient than their smaller counterparts operating in more competitive sectors.

Efficient structure hypothesis The view that larger firms tend to operate more efficiently, attain large market shares and therefore make higher profits. In empirical tests market share is treated as a proxy for relative efficiency of the firm.

Electronic funds transfer at point of sale (EFTPOS) A system which allows funds to be transferred automatically as goods are bought in a store.

Electronic funds transfer system (EFTS) A system which transfers funds by means of electronic communication rather than paper.

Emergency Liquidity Assistance (ELA) A form of exceptional financing granted by central banks to solvent financial institutions facing temporary liquidity needs in exceptional circumstances, on a temporary basis and against adequate collateral.

Emerging markets The term 'emerging market' was originally coined to describe a fairly narrow list of middle-to-higher income economies among the developing countries, with stock markets in which foreigners could buy securities. The term's meaning has since been expanded to include more or less all developing countries.

Equator Principles Set out in 2003 and reviewed periodically, they are a voluntary set of rules in relation to banks' project financing and aimed at the development of socially responsible projects that reflect sound environmental management practices.

Equity In the context of capital markets, equity refers to an ordinary share. In accounting and legal terms, it refers to the financial interests in a firm's assets after prior claims have been made.

ESG risks The risks arising from the management of environmental, social and governance (ESG) factors, from internal frameworks and monitoring to investor preference and regulatory requirements.

Ethical banking A broad term that relates to the principles and policies embraced by a banking firm in relation to the environmental and social impact of its investments and loans. (See also **Sustainable banking**.)

Euro The euro is the single currency for 19 EU countries.

Euro area/Eurozone/Euroland Expressions used interchangeably to refer to the EU countries that have adopted the euro.

Eurobank Banks and other financial intermediaries that bid for wholesale time deposits and make wholesale loans in a currency or currencies other than that of the country in which they are based.

Eurobond An international bond that may be issued in any currency, other than that of the issuer's home country, and subsequently traded in international markets.

Eurocommercial paper Note sold in London for same-day settlement in US dollars in New York. The maturities are more tailored to the needs of issuers and investors rather than the standard euronote terms of one, three and six months.

Eurocurrency A currency that is held in the form of time deposits in financial institutions outside the home country of the currency, e.g. yen time deposits held in London banks.

Eurocurrency banking This involves banks undertaking wholesale (large-scale) foreign exchange transactions (loans and deposits) with both residents and non-residents.

Eurocurrency market The money market for borrowing and lending currencies that are held in the form of deposits in banks located outside the countries where the currencies are issued as legal tender. The eurocurrency market is utilised by banks, multinational corporations, mutual funds and hedge funds.

Euroisation Occurs when residents of a country extensively use the euro alongside or instead of the domestic currency. For example, this process is common in Central and Eastern Europe.

Euromarkets General term that refers to all the markets in which financial instruments denominated in Eurocurrencies are traded, e.g. Eurobonds, Euroequities, etc.

Euronote A short-term note (usually one, three and six months) issued under a note issuance facility (NIF) or Eurocommercial paper facility.

European Banking Authority (EBA) An independent EU agency established in January 2011 as part of the European System of Financial Supervision (ESFS). It aims to ensure effective and consistent bank prudential regulation and supervision across Europe. Among its main objectives are to maintain stability in the EU and to safeguard the integrity, and the efficiency and orderly functioning of the banking sector.

European Central Bank (ECB) The ECB is the central bank for Europe's single currency, the euro.

European Community (EC) Former European Community that was superseded in 1993 by the European Union (EU).

European Currency Unit (ECU) European Currency Unit is a composite currency made up of currencies of the members of the former European Community (EC).

European Financial Stability Facility (EFSF) A temporary rescue facility created by euro countries in 2010 and superseded in 2012 by the European Stability Mechanism (ESM) as a permanent mechanism.

European Insurance and Occupational Pensions Authority (EIOPA) An independent advisory body based in Frankfurt that is part of the ESFS. Its main responsibilities are to support the stability of the financial system, transparency of markets and financial products and protection of insurance customers and pension scheme members.

European Monetary System (EMS) An exchange rate regime established in 1979 whose main objective was to create closer monetary policy co-operation between Community countries, leading to a zone of monetary stability in Europe. The main components of the EMS were the ECU, the exchange rate and intervention mechanism (ERM) and various credit mechanisms. It ceased to exist in 1999 at the start of Stage Three of Economic and Monetary Union (EMU), when ERM II (Exchange Rate Mechanism II) was established.

European Securities and Markets Authority (ESMA) An independent EU authority created on 1 January 2011 and located in Paris. Its mission is to enhance the protection of investors and ensure stability, integrity, transparency, efficiency and orderly functioning of securities markets in the European Union. Works closely with EBA and EIOPA.

European Stability Mechanism (ESM) The permanent crisis resolution facility for euro area member states established in October 2012. It issues debt instruments in order to finance loans and other forms of financial assistance to euro area countries.

European Supervisory Authorities (ESAs) Refers to three new agencies that since January 2011 oversee the regulation of financial services across Europe, namely the European Securities and Markets Agency (ESMA), the European Banking Agency (EBA) and the European Insurance and Occupational Pensions Authority (EIOPA).

European System of Central Banks (ESCB) The European System of Central Banks includes the ECB and the National Central Banks (NCBs) of all EU member states (including those that have not yet joined the EMU).

European System of Financial Supervisors (ESFS) Refers to the EU supervisory architecture, and its main purpose is to ensure supervision of the Union's financial system. It consists of the three ESAs: the European Systemic Risk Board (ESRB); the Joint Committee of the ESAs; and the competent or supervisory authorities in the member states as specified in the legislation establishing the three ESAs.

European Systemic Risk Board (ESRB) An EU-level body established in 2010 responsible for the macro-prudential oversight of the Union by monitoring the entire financial sector. It is based in Frankfurt and is part of the ESFS. It works in close co-operation with the three ESAs.

European Union (EU) Currently an international organisation of 27 European member states established by the Treaty on European Union (i.e. Maastricht Treaty).

Eurosystem The Eurosystem comprises the ECB and the NCBs of those countries that have adopted the euro. The Eurosystem and the ESCB will co-exist as long as there are EU member states outside the Euro area.

Eurozone crisis The sovereign debt crisis that has been affecting eurozone countries since late 2009. It started after disclosure of underreporting of Greek budget deficits and then quickly spread to other EU countries, including Ireland and Portugal.

Excess managerial capacity Too many managers. Often referred to in the context of bank reorganisations after a merger. For example, when banks merge, the new organisation has two senior management teams, headquarters and a duplication of other managerial functions. A main focus of cost savings post merger is to get rid of this excess managerial capacity by removing duplication of managerial positions. It is also the view that overseas expansion may be driven by the willingness of the bank to extend its scale of operations to achieve a certain size that allows the existing managerial resources to be used more efficiently.

Excess spread In the context of asset securitisation it is the additional revenue generated by the difference between the coupon on the underlying collateral and the coupon payable on securities. It is used as a credit enhancer to absorb possible collateral losses.

Exchange controls These are restrictions placed on the movements of funds in a particular currency (or limitations to the convertibility of a currency) by central banking authorities.

Exchange Rate Mechanism (ERM and ERM II) Introduced in March 1979 by the European Community as part of the EMS, the ERM was designed to reduce exchange rate variability and achieve monetary stability in Europe. In May 1999, at the start of Stage Three of the EMU, ERM II replaced the original ERM. Under ERM II, a central rate against the euro is defined for the currency of each member state not participating in the Euro area but participating in the ERM. The mechanism allows one standard fluctuation band of 15 per cent on either side of the central rate.

Exchange rate policy Relates to the control and management of a country's levels of exchange rate for its currency. Governments influence the exchange rate by using the gold and foreign currency reserves held by their central banks to buy and sell domestic currency.

Expected shortfall (ES) A risk measure sensitive to the shape of the tail of the distribution of returns on a portfolio, unlike the more commonly used value at risk (VaR). Expected shortfall is calculated by averaging all of the returns in the distribution that are worse than the VaR of the portfolio at a given level of confidence. For instance, for a 95 per cent confidence level, the expected shortfall is calculated by taking the average of returns in the worst 5 per cent of cases.

Factoring The purchase by the factor and sale by the company of its book debts on a continuing basis, usually for immediate cash. The factor then manages the sales ledger and the collection of accounts under terms agreed by the seller.

Fair value An accounting term that refers to the best possible estimate of the market prices of certain assets and liabilities using current information about future cash flows and current risk-adjusted discount rates. The alternative is historical cost accounting.

Fannie Mae (Federal National Mortgage Association – FNMA) A US government-sponsored entity and one of America's largest mortgage company providers. It was created in 1938 and became a for-profit, shareholder-owned company in 1968. The large exposures in high-risk mortgages before the housing market crash of 2007 resulted in federal bailout.

Faster Payments Service (FPS) A UK payment service introduced in 2008 that allows internet, phone and standing order payments to be processed almost instantly.

Federal Deposit Insurance Corporation (FDIC) In the US, the FDIC is an independent agency of the federal government that preserves and promotes public confidence by insuring deposits in banks and thrifts for up to $250,000. (See also **Deposit Insurance Corporation**.)

Federal Open Market Committee (FOMC) It is the monetary policy making body of the US Federal Reserve System. It is responsible for open market operations and is composed of the seven members of the Board of Governors and five Reserve Bank presidents.

Federal Reserve System (Federal Reserve or Fed) Established in 1913, it is the central bank of the United States. It comprises the Federal Reserve Board, the twelve Federal Reserve Banks, and the national and state member banks. Its primary purpose is to regulate the flow of money and credit in the country.

Fedwire A real-time gross settlement system (RTGS) that links Federal Reserve Banks to other banks and depository institutions. It is an important participant in providing interbank

payment services as well as safekeeping and transfer services for US government and agency securities, and mortgage-backed securities.

Finance houses Financial institutions that accept deposits and finance leasing and hire purchase agreements.

Financial asset Term used to refer to claims held by the lender of funds against the borrower in the form of money, bank deposit accounts, bonds, shares, loans etc.

Financial claim A claim to the payment of a future sum of money and/or a periodic payment of money. It carries an obligation on the issuer to pay interest periodically or to redeem the claim at a stated value.

Financial Conduct Authority (FCA) One of the two new regulatory institutions for the UK financial services sector (the other is the Prudential Regulatory Authority), replacing the Financial Services Authority. The FCA was created by the Financial Services Act 2012 and is a separate body from the Bank of England. It is responsible for promoting effective competition, ensuring that relevant markets function well, and for the conduct regulation of all financial services firms.

Financial conglomerates This term defines a group of enterprises, formed by different types of financial institutions, operating in different sectors of the financial industry.

Financial conglomeration The process relating to the creation of groups of financial institutions operating in different sectors (banking, insurance, securities and so on) of the financial industry. A financial institution that undertakes a wide range of different financial activities is known as a financial conglomerate.

Financial deepening Refers to the size of the financial sector relative to an economy. It is typically proxied by domestic private credit by banks over GDP.

Financial deregulation See **Deregulation**.

Financial derivatives See **Derivatives**.

Financial futures Futures contracts in an interest rate, stock index, currency or interest-bearing security.

Financial guarantees See **Guarantees**.

Financial innovation Financial innovation can be defined as the act of creating and then popularising new financial instruments as well as new financial technologies, institutions and markets. It includes institutional, product and process innovation. Institutional innovations relate to the creation of new types of financial firms. Product innovation relates to new products such as derivatives, securitised assets, foreign currency mortgages and so on. Process innovations relate to new ways of doing banking/financial business, including online banking, phone banking, new ways of implementing information technology and so on.

Financial liability The issuer of a financial claim (borrower) is said to have a financial liability.

Financial liberalisation Generally refers to the process of opening up a market and the relaxation of restrictive practices. Deregulation is required for financial liberalisation to take place.

Financial Policy Committee (FPC) An independent committee at the Bank of England created in 2013 and charged with a primary objective of identifying, monitoring and taking action to remove or reduce systemic risks with a view to protecting and enhancing the resilience of the UK financial system. The FPC has a secondary objective to support the economic policy of the government.

Financial ratio analysis Refers to the use of key ratios to both measure and analyse the performance of a firm. In banking the typical performance ratios are ROA, ROE, C/I and NIM.

Financial repression A situation where restrictions on financial activities exist and government intervention in financial markets is severe. A financially repressed system is likely to be characterised by a lack of competition in banking and financial markets, and interest rates and other financial market prices do not reflect the underlying economic fundamentals.

Financial safety net A comprehensive system designed for enhancing and ensuring a country's financial stability.

Financial Services Act 1986 The Financial Services Act 1986 established the regulatory framework for investor protection in the United Kingdom.

Financial Services Act 2012 The piece of UK legislation that replaced the FSA with the PRA and an FCA. In addition, an expert macro-prudential authority was created within the Bank – the **FPC**.

Financial Services (Banking Reform) Act (2013) A UK banking bill that received royal assent in December 2013 and that introduced far-reaching reforms to make banks more resilient to shocks, easier to fix when in trouble and to reduce the severity of future crises. Among the key provisions are the introduction of an electrified ring-fence between retail and investment banks and criminal penalties for senior bankers who behave irresponsibly. The Bill also introduced preference for deposits protected under the Financial Services Compensation Scheme if a bank enters insolvency.

Financial Services Action Plan (FSAP) Initiated in 1999, the FSAP can be considered the European Commission response towards improving the single market in financial services in the EU.

Financial Services Agency In Japan, the governmental agency established in 1998 responsible for supervision and inspection functions of the private sector financial institutions.

Financial Services and Markets Act (2000) (Regulated Activities) Order 2001 The UK legislation that created the Financial Services Authority.

Financial Services Authority (FSA) The Financial Services Authority was established by the Labour government in 1997 as the regulatory body for the whole UK financial services industry. A number of separate regulatory bodies were brought together in the FSA, which also took over the responsibilities that the Bank of England had for supervising banks and other financial institutions. In April 2013 the FSA was replaced by the twin peaks of the FCA and PRA.

Financial stability In general, financial stability is about the absence of system-wide episodes in which the financial system fails to function (crises). It is also about resilience of financial systems to stress. In simple terms, a stable financial system is one that can provide crucial services to households and businesses in good times and bad.

Financial Stability Oversight Council (FSOC) Created under the 2010 Dodd-Frank Act, the Council provides comprehensive monitoring of the stability of the US financial system.

FinTech Technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.

Fiqh muamalat The part of Figh (Muslim jurisprudence) dealing with relations between people, such as the Islamic commercial law. It is the area of Fiqh that governs the review process for Islamic financial products from the perspective of Sharia compliance.

Firm-specific advantages One of the theories on the rationale for international banking. For example, firms have financial, economic, business and other advantages specific to their own operations that enable them to undertake international activities.

Fiscal policy One of the five major forms of economic policy conducted by governments, fiscal policy relates to changes in the level and structure of government spending and taxation designed to influence the economy.

Fixed-rate assets and liabilities Fixed-rate assets and liabilities carry rates that are constant throughout a certain time period (e.g. one year) and their cash flows do not change unless there is a default, early withdrawal or an unanticipated prepayment.

Floating-rate debt Debt instruments that pay a variable (as opposed to fixed) rate of interest.

Floating-rate note A medium-term security which carries a floating rate of interest which is reset at regular intervals, usually quarterly or half-yearly, in relation to some pre-determined reference rate.

Floors A type of option. An interest rate floor is similar to a cap except that it protects an investor or depositor against a floating rate of interest falling below a specified lower or floor level.

Foreign debt crisis Situation of financial turmoil that occurs when a country is unable to service its foreign debt, such as in the case of a sovereign debt crisis or private debt crisis (or both). See, for example, Europe's debt crisis started in 2010.

Foreign direct investment (FDI) The movement of capital across national frontiers in a way that grants the investor control over the acquired asset. Thus it is distinct from portfolio investment which may be cross-border, but does not offer such control. Firms which undertake FDI are known as multinational enterprises.

Foreign exchange risk The risk that exchange rate fluctuations affect the value of a bank's assets, liabilities and off-balance-sheet activities denominated in foreign currency.

Foreign Exchange Yen Clearing System (FXYCS) In Japan, the FXYCS was established in 1980 to facilitate clearing of yen payments for cross-border financial transactions.

Forfaiting In international banking, the situation where the exporter agrees to surrender the rights to claim for payment of goods or services delivered to an importer under a contract of sale, in return for a cash payment from a forfaiting bank. The forfaiting bank takes over the exporter's debt and assumes the full risk of payment by the importer. The exporter is thereby freed from any financial risk in the transaction and is liable only for the quality and reliability of the goods and services provided.

Forward guidance Refers to the communication from a central bank about the state of the economy and likely future course of monetary policy. If a central bank gives forward guidance, it means it is providing information about its future monetary policy intentions, based on its assessment of the outlook for price stability.

Forward rate agreement (FRA) A common type of forward contracts that gives the agents involved the opportunity to hedge against interest rate risk thereby 'locking in' the future price of the assets.

Forwards In a forward contract, two parties agree to exchange over-the-counter (OTC) a real or financial asset on a prearranged date in the future for a specified price.

Freddie Mac (Federal Home Loan Mortgage Corporation – FHLMC) A US government-sponsored enterprise created in 1970 and one of America's largest mortgage company providers. The large exposures in high-risk mortgages before the housing market crash of 2007 resulted in federal bailout.

Free banking A school of thought that maintains that the financial sector would work better without regulation, supervision and central banking.

Funds transfer pricing (FTP) A process used to determine the relative performance of different business units within a bank that considers assets and liabilities simultaneously. It can significantly contribute to optimise a bank's risk/return profiles and is carried out via the treasury division.

Futures contracts An exchange traded contract generally calling for the delivery of a specified amount of a particular commodity, or financial instrument, at a fixed date in the future.

Gap analysis Gap analysis is possibly the best-known interest rate risk management technique. The 'gap' refers to the difference between interest rate sensitive assets and interest rate sensitive liabilities over a specific time horizon.

Geographical diversification Refers to the expansion of the supply of a bank's financial products and services into different geographic locations or markets.

Gharar An Arabic word associated with uncertainty, deception and risk. Gharar is an important concept in Islamic finance – for example, most derivative products and short-selling contracts are rejected by Islamic scholars due to excessive uncertainty.

Gilt-edged securities UK government bonds.

Global onshore private banking business The business of offering banking and investment services to wealthy (high net worth) individuals in their own country (onshore). Wealthy individuals that have their personal finances managed outside their home country (e.g. UK billionaires who place their funds in Swiss banks) are said to be undertaking offshore private banking activity. The word 'global' comes from the fact that there are a number of firms that offer such services in many countries, such as Citigroup Private Bank and UBS. Note also that many banks use the term 'global' to signify that their services are available to an international clientele as well as to indicate that they have substantial international operations.

G-SIBs Global systemically important banks. See SIFIs and G-SIFIs.

G-SIFIs Global systemically important financial institutions. These can be banks, insurance companies or other financial institutions. See SIFIs and G-SIBs.

Globalisation General term used to describe the world-wide integration of both capital and money markets.

Governing Council The main decision-making power of the ECB.

Government bonds Bonds issued on behalf of (or backed up by) the government.

Government safety net Public policy regulation designed to minimise the risk of bank runs, it includes deposit insurance and the lender-of-last-resort function.

Government-sponsored enterprises (GSEs) Enterprises created by the US Congress to perform a key role in the country's housing finance system, namely to provide liquidity, stability and affordability to the mortgage markets. Examples are Fannie Mae and Freddie Mac.

Gramm–Leach–Bliley Act Legislation passed in 1999 whereby US banks can establish financial holding companies and engage in the full range of financial services areas, such as securities underwriting, insurance sales and underwriting and investment banking business.

Guarantees These are traditional off-balance-sheet exposures, where a bank has underwritten the obligations of a third party and currently stands behind the risk, for example standby letters of credit and acceptances.

Haram An Arabic term meaning forbidden, unlawful.

Hard information Refers to verifiable data that as a result of technological process can be summarised into numerical scores, and it can be stored and transmitted electronically. For example, in bank lending, the credit scoring data.

Hedge fund A private investment fund that trades and invests in various assets such as securities, commodities, currency and derivatives on behalf of its clients.

Hedging Reducing risk by taking a position that offsets existing or expected exposures. Hedging is the avoidance of risk by arranging a contract at specified prices which will yield a known return.

Herfindahl–Hirschman index (HHI) Often just referred to as the Herfindahl index, it is a measure of market concentration calculated as the sum of the squares of the market shares of all firms operating in the market.

Hibah An Arabic term meaning gift. In Islamic finance, it refers to the transfer of an asset (or any form of wealth) to another party without compensation. In the broader context of wealth management, hibah has also been used as a financial instrument by Islamic financial institutions.

High net worth individuals (HNWIs) Wealthy personal (retail) customers. Definitions vary but typically refer to individuals with more than US$1 million or more in investable assets (the limit is usually US$30 million for *ultra* HNWIs.

High-quality liquid assets (HQLA) Regulatory classification to define liquid assets to include only those with a high potential to be converted easily and quickly into cash. Assets are considered to be HQLA if they can be easily and immediately converted into cash at little or no loss of value.

Hire purchase An arrangement for buying expensive consumer goods, where the buyer makes an initial down payment and pays the balance plus interest in instalments. The term hire purchase is commonly used in the UK. In the US it is more commonly known as an installment plan.

Horizontal FDI A theory in international banking that associates the existence of multinationals in a country to trade barriers that make exporting costly.

H-statistic A non-structural measure of market competition based on the empirical observation of the impact on firm-level revenues of variations in the prices of the factors of production. Built into the test is an explicit assumption of profit-maximising behaviour on the part of the firms. When it indicates perfect competition; monopolistic competition; and monopoly or collusive oligopoly.

Household information files (HIFs) Information databases containing financial files and other characteristics of households. Data are usually used for marketing purposes.

Hubris hypothesis A managerial explanation as to why mergers may destroy value according to which over-confident managers systematically overestimate the advantages of an acquisition and therefore pay too much for targets, leading to value destruction/no performance improvements.

Impaired loan Situation that occurs when it is likely that all amounts due on a loan will not be collected.

Income statement See Profit and loss account.

Independent Commission on Banking An independent body set up in 2010 with the task of investigating possible reforms for promoting financial stability and competition in the UK banking markets and to make recommendations to the government.

Indirect finance The situation where borrowers obtain funds indirectly from lenders through financial intermediaries.

Inflation risk The probability that an increase in the price level for goods and services will unexpectedly erode the purchasing power of a bank's earnings and returns to shareholders.

Information asymmetries The imperfect distribution of information among parties to a contract. They can create situations of adverse selection and moral hazard.

Information memo In the syndicated lending process, the memo prepared by the arranger specifying the terms of the transaction. Also known as bank-book.

Innovative (or new product) stage When a good or service is produced to meet a new consumer demand or when a new technology enables the creation of innovative goods.

Inspection Term relating to when bank regulators demand to inspect the books (financial accounts) and managerial practices of a bank. Inspection is often undertaken on the bank's own premises.

Institutional investor An entity that invests money on behalf of other people. Institutional investors pool money from retail clients to purchase securities, real property, and other investment assets. For example, banks, credit unions, insurance companies, pension funds, hedge funds and mutual funds.

Instruments of portfolio constraint Instruments that may be imposed by the authorities for the aims of monetary policy that constrain the portfolio structure of financial institutions, with the purpose of influencing credit creation and, possibly, the type of lending taking place.

Insurance services Insurance products protect policyholders from various adverse events. Policyholders pay regular premiums and the insurer promises compensation if the specific insured event occurs. There are two main types of insurance – life insurance and general (or property and casualty) insurance.

Interbank Usually refers to short-term wholesale loans traded between banks.

Interest rate risk Defined as the risk arising from the mismatching of the maturity and the volume of banks' assets and liabilities as part of their asset transformation function.

Interest rate swaps A transaction in which two counterparties exchange interest payment streams of differing character based on an underlying notional principal amount. The three main types are coupon swaps (fixed rate to floating rate in the same currency), basis swaps (one floating rate index to another floating rate index in the same currency), and cross-currency interest rate swaps (fixed rate in one currency to floating rate in another).

Interest spreads Difference between interest paid and interest owned, e.g. if interest paid on deposits averages 4 per cent and interest earned on assets equals 10 per cent then the interest spread is 6 per cent.

Intermediary An intermediary links borrowers and lenders either by acting as an agent or by bringing together potential traders, or by acting in place of a market.

International banking. Business undertaken by banks across national borders and/or activities that involve the use of different currencies.

Internationalisation General term used to describe the substantial increase in the presence of banks and other financial institutions doing business outside their domestic markets.

Intervened bank In bank resolution terminology, an intervened bank refers to an insolvent or non-viable institution whose control is in the hands of the authorities.

Investment banking Financial business that involves dealing mainly with corporate customers and specialises in securities markets activities including underwriting, trading, asset management and corporate restructuring (e.g. mergers and acquisitions) advisory activities.

Investment grade A borrower, or the specific debt instrument or class of debt of a borrower, given a rating from one of the major rating agencies of Baa3/BBB or higher.

Investment intermediaries In the United States, a term to designate mutual funds, investment banks, securities firms and finance houses whose liabilities are usually short-term money market or capital market securities.

Investment products Generally speaking these are services and products offered to retail customers that include for example mutual funds (known as unit trusts in the UK), investment in company stocks and various other securities related products (such as savings bonds).

Invoice discounting services Similar to factoring, invoice discounting services involve a narrower service where the discounting company collects sales receipts but the firm still manages its ledger.

Irrevocable letter of credit An agreement between a buyer (often an importer) and the buyer's bank. The bank agrees to pay the seller (the exporter) as soon as certain conditions are met. The terms of the letter cannot be changed without the agreement of everyone involved.

Islamic banking A type of banking particularly common in South and South-East Asia, the Gulf Co-operation Council countries and other countries, that offers products and services that do not charge or pay interest.

Japan Post Bank A Japanese bank which was formerly part of the Post Office Savings Bank and was privatised in 2007. It is now part of the Japan Post Holdings postal and financial services group.

Jobber A firm, or individual, in the stock exchange responsible for quoting prices to and trading securities via brokers.

Key performance indicators (KPIs) Financial (e.g. asset quality) and non-financial (e.g. customer satisfaction) factors that management monitors and reviews against the company's strategic objectives.

Know your customer (KYC) The guidelines in financial services require professionals to verify the identity, suitability and risks involved with maintaining a business relationship. The procedures fit within the broader scope of a bank's anti-money laundering policy. (Sometimes called *know your client*.)

Lamfalussy procedure A procedure established in February 2001 by a Committee of Wise Men chaired by Alexander Lamfalussy, for improving the effectiveness of the EU's securities market regulatory process.

Large and complex banking groups (LCBGs) Financial institutions with such a large asset size and business complexity that their failure would most probably result in contagion as it would affect other institutions and harm the stability of the financial markets.

Lease-based financing In Islamic finance lease-based financing (Ijarah) usually refers to a leasing contract of property (such as land, plant, office automation, a motor vehicle), which is leased to a client for stream of rental and purchase payments, ending with a transfer of ownership to the lessee, and otherwise follows Islamic regulations.

Leasing A financial technique for obtaining the use of an asset by contracting a series of payments over a specific period. The grantor of the lease (the lessor) remains the owner of the leased property throughout the term of the lease and receives payments from the lessee.

Least-cost resolution In the context of bank restructuring, the generally accepted principle that the bank resolution should be carried out in a manner that minimises the cost for the resolution authority, deposit insurer or the government.

Legal risk The risk that contracts that are not legally enforceable or documented correctly could disrupt or negatively affect the operations, profitability or solvency of the bank.

Lender of last resort (LOLR) The understanding that the central bank will always stand ready to lend money to a bank or number of banks experiencing a crisis if they cannot obtain finance from market sources.

Lerner index of monopoly power A non-structural indicator of the degree of market power that represents the extent to which market power allows firms to fix a price above marginal cost. It is based on the assumption that in perfect competition, price equals marginal cost and therefore a measure of the degree to which price exceeds marginal cost. It ranges between 0 ($P = MC$ in perfect competition) and 1 ($P > MC$ in monopoly), and $0 < L < 1$ if $MC > 0$.

Letter of credit (LOC) A document issued by a bank stating its commitment to pay someone a stated amount of money on behalf of a buyer so long as the seller meets very specific terms and conditions.

Leverage Usually refers to the debt to equity ratio; the higher the proportion of debt over equity the greater the leverage (or gearing). The leverage ratio for banks refers to the Tier 1 capital to assets ratio that regulators expect to range between a minimum of 3 to 4 per cent depending on a specific bank's characteristics.

Liabilities The debts and other financial obligations of a firm or an individual.

Liability management The process whereby banks manage liabilities and buy in (i.e. borrow) funds when needed from the markets for interbank deposits, large-sized time deposits and certificates of deposit.

Liikanen Report A set of proposals published in October 2012 on reforming the banking sector in Europe prepared by a group chaired by Mr Erkki Liikanen, Governor of the Bank of Finland. The central recommendation is to legally separate (ring-fence) risky activities from core banking activities.

LIBID (London Interbank Bid Rate) The rate at which a bank is willing to buy funds in the international interbank markets.

LIBOR (London Interbank Offered Rate) The rate at which a bank is willing to lend funds (wholesale money) in the international interbank markets.

LIMEAN The mean of LIBID and LIBOR.

Liquid asset An asset that can easily be turned into cash at short notice.

Liquidity The ability of an institution to pay its obligations when they fall due.

Liquidity crisis A situation where depositors demand larger withdrawals than normal and banks are forced to borrow funds at an elevated interest rate. A liquidity crisis is usually unpredictable and can be due to either a lack of confidence in the specific bank, or some unexpected need for cash. Liquidity crises can ultimately result in 'a run' and even the insolvency of the bank.

Liquidity management Those activities a bank should carry out to ensure that holdings of liquid assets are sufficient to meet its obligations as they fall due, including unexpected transactions.

Liquidity risk The risk that a solvent institution is temporarily unable to meet its short-term monetary obligations.

Loan commitments Promises to lend up to a pre-specified amount to a pre-specified customer at pre-specified terms.

Loan policy A fundamental part of the credit process whereby the lending guidelines that bank employees follow to conduct lending business are formalised.

Loan rate Term used in the process of loan pricing to indicate the price of the loan.

Loan sales A loan sale occurs when a bank originates a loan and then decides to sell it to another legal entity, usually a financial intermediary. Where the bank is selling only part of the loan then the operation is called loan participation or loan syndication.

Location advantages One of the theories on the rationale for international banking.

Longer-term refinancing operations (LTRO) A process by which the ECB provides financing to banks in the euro area. In the wake of the crisis the ECB has provided liquidity to banks using LTROs with maturities of up to 36 months.

Long-term credit banks A private credit institution that provides long- and medium-term finance to the corporate sector.

Macro-hedging When a bank uses futures (or other derivatives) to hedge the entire balance sheet (the aggregate portfolio interest rate risk).

Macro-prudential regulation The body of regulation concerned with the interactions among individual financial institutions, as well as the feedback loops of the financial sector with the real economy, including the costs that systemic risk entails in terms of output losses. (See also **Micro-prudential regulation**.)

Management risk The risk that management lacks the ability to make commercially profitable and other decisions consistently. It can also include the risk of dishonesty by employees and the risk that the bank will not have an effective organisation.

Managerial motives Alternative explanations to performance and efficiency motives for bank consolidation phenomenon based on the idea that managers engage in M&A operations in order to maximise their own utility at the expense of shareholders. (See also **Quiet life** and **Hubris hypothesis**.)

Market capitalisation Market value of a company's outstanding equity.

Market flex language In a syndicated loan contract it is the right given to underwriters/arrangers to change the structure and conditions of the borrowing (e.g. changes in interest rates and covenants) in order to attract enough commitment from participants in financing the loan.

Market maker An institution that quotes bid and offer prices for a security and is ready to buy and sell at such prices.

Market maker of last resort (MMOLR) The evolution of the lender of last resort from the traditional idea of a provision that should apply only to solvent but illiquid banks, to one that has to meet the liquidity needs of dysfunctional financial markets.

Market-based financial systems A type of financial structure where well-functioning markets will reduce inherent inefficiencies associated with banks and play a key role in promoting economic growth. The US and UK are examples of market-based systems. The alternative is the **bank-based financial system**.

Market-based measures of bank risk Measures of bank risk that are not accounting-based, such as the volatility of stock prices, Moody's KMV Expected Default Frequency (EDF) and the five-year cumulative probability of default (PD) indicators.

Market risk The risk of losses in on- and off-balance-sheet positions arising from movements in market prices. This type of risk pertains in particular to short-term trading in assets, liabilities and derivative products, and relates to changes in interest rates, exchange rates and other asset prices.

Market segmentation A systematic process whereby different types of groups are identified (segmented) for target marketing purposes.

Mature product stage A stage in the product life cycle when growth has started to slow and defending market share becomes the chief concern. Additionally, more competitors have stepped forward to challenge the product at this stage, some of whom may offer a higher-quality version of the product at lower price. Customers are more aware of the product's features and also are likely to become more price-sensitive (demand for the product in the home market becomes more elastic). At this stage, the producer is likely to benefit from scale economies so production costs fall. When a product or service reaches maturity, foreign expansion becomes likely.

Maturity The length of time elapsing before a debt is to be redeemed by the issuer.

Medium-term notes (MTNs) Medium-term debt securities that pay floating rates of interest.

Merchant bank A British term to indicate an investment bank, that is a financial institution that specialises in securities markets activities such as underwriting and trading and advising on such issues as mergers and acquisitions. Merchant banking is also a term used in the United States to refer to investment banks that acquire equity stakes in companies either for strategic or temporary investment purposes.

Merger premium In a merger operation, the premium that an acquiring bank is willing to pay for the target bank over and above the market value of the target bank's stock. Merger premiums are typically proportional to the potential gains from the merger operations; in banking they may also be higher for banks that have implicit bailout guarantees.

Mergers and acquisitions (M&As) The combination of two (or more) institutions through partnering or purchase.

Micro-hedging When a bank hedges a transaction associated with an individual asset, liability or commitment.

Micro-prudential regulation The body of regulations concerned with the safety and soundness of individual financial institutions. Focuses on the firm-level oversight to ensure that the balance sheets of individual institutions are robust to shocks. (See also **Macro-prudential regulation**.)

Migration risk The potential loss deriving from a credit rating downgrade. Also referred to as credit-rating risk or downgrade risk.

Modern banking As opposed to traditional banking, modern banking refers to the new ways of doing banking business as a result of the forces of change. Generally used to emphasise the fact that banks have become full-service financial firms operating in many different sectors of the financial industry (banking, insurance, pensions, investments and so on) in both their home and international markets.

Modern international banking Refers to the process of expansion of banks overseas in recent years.

Monetary aggregates A series of measures for the money supply, including narrow and broad measures. Usually termed as M1, M2, M3 and M4.

Monetary policy Relates to the actions taken by central banks to influence the availability and cost of money and credit by controlling some measure (or measures) of the money supply and/or the level and structure of interest rates.

Monetary Policy Committee (MPC) An independent nine-member panel that is responsible for setting the short-term base interest rate and more generally for the UK monetary policy decisions.

Monetary transmission mechanism Describes the process through which monetary policy decisions affect the real economy and inflation level.

Money Money is represented by the coins and notes which we use in our daily lives; it is the commodity readily acceptable by all people wishing to undertake transactions. It is also a means of expressing a value for any kind of product or service. This, of course, is the most common and narrowest definition of money. For monetary policy purposes broader definitions of money can include coins and notes plus bank deposits and other items.

Money market Short-term financial market usually involving large-value (wholesale) assets with less than one year to maturity.

Money market funds (MMFs) Type of mutual funds that invest in highly liquid and low-risk securities such as government securities and certificates of deposits.

Money transmission services The activity of financial intermediation exercised, for instance, by the means of: the collection and transfer of funds (e.g. credit transfers); the transmission and execution of payment orders (e.g. cheque payments and other payments media); and the offsetting of debits and credits.

Monitoring Checking on borrowers' behaviour and ability to repay their loans through the life of the loan.

Monoline insurer Bond insurer that provides guarantees to issuers, often in the form of credit wraps or credit default swaps, to enhance the credit of the issuer. These insurance companies first began providing wraps for municipal bond issues, then specialised in providing credit enhancement for other types of bonds, such as mortgage-backed securities.

Moral hazard It is a situation that arises when a contract or financial arrangement creates incentives for the parties involved to behave against the interest of others.

Mortgage-backed bonds Bonds traded mainly in the United States which pay interest on a semi-annual basis and repay principal either periodically or at maturity, and where the underlying collateral is a pool of mortgages.

Mortgage-backed securities (MBS) These are securities backed by a collection of mortgages.

Mortgage equity withdrawal Relates to home owners borrowing against the increased value of their property (capital gains), by taking out additional housing equity loans.

Mudarabah The term refers to a form of business contract in which one party brings capital and the other personal effort. The proportionate share in profit is determined by mutual agreement. But the loss, if any, is borne only by the owner of the capital, in which case the entrepreneur gets nothing for his labour. In Islamic banking, it is a financing technique whereby all the capital is provided by the Islamic bank while the business is managed by the other party. The profit is shared in pre-agreed ratios, and loss, if any, unless caused by negligence or violation of terms of the contract, is borne by the Islamic bank. The bank passes on this loss to the depositors.

Multinational banking Refers to banks having some element of ownership and control of banking operations outside their home market.

Murabahah (also referred to as cost-plus financing) An Islamic financing structure in which the seller and buyer agree to the cost and markup of an asset. The markup takes the place of interest, which is illegal in Islamic law. As such, murabaha is not an interest-bearing loan, but is an acceptable form of credit sale under Islamic law.

Musharakah A contract similar to a joint venture, which allows equity participation by the parties, who finance a project in agreed proportions. The parties agree to accept a percentage of the returns and risk, sharing the profit and loss of a project in proportion to their investment. A participant providing management or technical expertise may also charge a fee.

Mutual funds An institution that manages collectively funds obtained from different investors. In the United States they are referred to as mutual funds; in the United Kingdom, unit trusts.

National central banks (NCBs) Within the Eurosystem, the central banks of the 19 European Union member states whose common currency is the euro.

National Competent Authorities (NCAs) Authorities responsible for conducting the banking supervision in the euro area.

National consolidation The reduction in the number of banks in a system generally due to mergers and/or acquisitions between domestic institutions.

National debt management policy One form of economic policy conducted by governments that is concerned with the manipulation of the outstanding stock of government debt instruments held by the domestic private sector with the objective of influencing the level and structure of interest rates and/or the availability of reserve assets to the banking system.

Negative equity The situation where the market value of a property is less than the outstanding mortgage loan.

Net interest margin (NIM) A common measure of bank performance that is equal to gross interest income minus gross interest expense.

New empirical industrial organisation (NEIO) Describes techniques for the estimation of competition in an industry. It refers to development of the so-called 'non-structural approaches' that are based on the direct observation of firms' conduct and on the evaluation of how firms set their prices and quantities.

New member states (NMSs) Refers to the ten countries that joined the EU on 1 May 2004, namely Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and the Slovak Republic.

NIM-8 (countries) Refers to the former transition countries. This includes the Central and Eastern European countries (CEECs) (Czech Republic, Hungary, Poland, Slovenia and the Slovak Republic) and the three Baltic States (Estonia, Latvia and Lithuania).

Non-deposit-taking institution (NDTI) A general term used to refer to financial institutions whose main activity is not to take deposits, such as insurance companies, pension funds, investment companies, finance houses and so on.

Non-financial performance The non-financial performance of a firm is usually measured by non-financial (or non-monetary) indicators, such as the intellectual capital of an organisation, and includes the knowledge, skills, brands, corporate reputation, relationships, information and data, as well as patents, processes, trust or an innovative organisational culture.

Non-performing loans (NPLs) Non-performing loans are loans on which debtors have failed to make contractual payments for a predetermined time.

Non-profit and loss sharing (NPLS) In Islamic finance, this describes debt-based financing and lease-based financing transactions.

Non-structural indicators This refers to the empirical competition literature in banking that moves away from the assumption that concentration and competition are inversely related and argues that competition should be measured ignoring market concentration. Non-structural indicators of competition include the Panzar–Rosse H-statistic, the Lerner index, the Boone indicator and the persistence of profitability (POP) measures.

Note A certificate of indebtedness like a bond, but used most frequently for short-term issues.

Note issuance facility (NIF) A medium-term arrangement enabling borrowers to issue short-term paper, typically of three or six months' maturity, in their own names. Usually a group of underwriting banks guarantees the availability of funds to the borrower by purchasing any unsold notes at each rollover date or by providing a standby credit. Facilities produced by competing banks are called, variously, revolving underwriting facilities (RUFs), note purchase facilities and Euronote facilities.

Off-balance-sheet (OBS) activities Banks' business, often fee-based, that does not generally involve booking assets and taking deposits. Examples are swaps, options, foreign exchange futures, standby commitments and letters of credit.

Off-balance-sheet (OBS) management This refers to those activities banks should carry out to control and limit their exposure derived from off-balance-sheet transactions.

Off-balance-sheet (OBS) risk This relates to the risks incurred by a bank in dealing with contingent, non-traditional banking activities such as guarantees and letters of credit.

Office of Federal Housing Enterprise Oversight (OFHEO) In the US this was an independent body responsible for ensuring the stability, liquidity and affordability of the US mortgage market and for overseeing two GSEs: Fannie Mae and Freddie Mac. In 2008, it was incorporated into the newly created Federal Housing Finance Agency.

Office of the Comptroller of the Currency (OCC) The OCC is an independent bureau of the US Department of the Treasury, set up in 1863 to regulate all banks chartered by the Federal Reserve.

Official bank rate (also referred to as 'policy rate' or 'base rate') In the UK, the Bank Rate is the overnight interest rate at which the Bank of England lends to financial institutions. In setting this key rate the Bank considers the amount at which banks borrow from each other overnight.

Offshore banking Banking activity undertaken by institutions that are located outside the country of residence of the customer, typically in a low-tax jurisdiction (e.g. Bahamas and Bermuda) and that provide financial and legal advantages.

Open market operations (OMOs) These operations are the most important tools by which central banks can influence interest rates and therefore the amount of money in the economy. The principle is that the central bank will influence the level of liquidity and the level and structure of interest rates within the financial system by purchasing or selling government debt to the non-bank private sector.

Operating risk This relates to the possibility that operating expenses might vary significantly from what is expected, producing a decrease in income and a bank's value.

Operational risk The risk associated with the possible failure of a bank's systems, controls or other management failure (including human error).

Option The contractual right, but not the obligation, to buy or sell a specific amount of a given financial instrument at a previously fixed price or a price fixed at a designated future date.

A traded option refers to a specific option traded on official markets. A call option confers on the holder the right to buy the financial instrument. A put option involves the right to sell.

Ordinary shares Security representing the claim to the residual ownership of a company. Known as common stock in the US. (See **Equity**.)

Originate-to-distribute model When banks distribute (i.e. 'sell') the loans they originate to investors rather than hold them until maturity. (See also **Originate-to-hold model**.)

Originate-to-hold model When banks use deposits to fund loans with the intention to keep them on their balance sheets until maturity as opposed to selling them to investors. (See also **Originate-to-distribute model**.)

Over-collateralisation In the context of asset securitisation it is the holding of a larger pool of assets than securities issued. It is used as credit enhancer to absorb possible collateral losses.

Over-the-counter (OTC) An informal dealer-based market.

Own Funds Directive EC directive adopted by the Council of Ministers in April 1989. The aim was to harmonise the definition of capital for all EU credit institutions in line with the 1988 Basel I recommendations.

Ownership advantage In international banking, one of the theories for explaining overseas expansion is based on the idea that banks expand overseas to enjoy direct benefits derived from their technological expertise, marketing know-how, production efficiency, managerial expertise, innovative product capability and so on.

Panzar–Rosse statistic See **H-statistic**.

Paris Agreement The Paris Agreement is a legally binding international treaty on climate change whose primary objective is to keep global warming well below 2°C. It entered into force on 4 November 2016.

Payment system Any organised arrangement for transferring value between its participants.

Peer group A set of individual banks that are grouped following analytical criteria such as size, business mix, ownership, etc.

Peer group analysis Used by banks to compare the financial performance against other similar-sized banks with similar characteristics and business mix (i.e. a peer group). In the context of EWS, for example, the aim of peer group analysis is to identify a possible area of underperformance and other differences that could imply supervisory concern.

Pension services Pension services offered via banks are known as private pensions. These are distinguished from public pensions that are offered by the state. Contributions paid into the pension fund are invested in long-term investments with the individual making contributions receiving a pension on retirement (a retirement income is generated by the purchase of annuities).

Persistence of profits (POP) This argues that if in a market entry and exit are sufficiently free to eliminate any abnormal profit, then all firms' profit rates will tend to converge rapidly towards the same long-run average value. The extent to which firm- or industry-level profits converge to long-run values reflects the degree of competition in the market. The slower the speed of adjustment, the stronger the POP, the lower the competition.

Physical risk A threat to a company's physical assets, including buildings, equipment and people. Risks could be events such as fire and flooding, or crimes like theft and vandalism.

Plastic cards These include credit cards, debit cards, cheque guarantee cards, store cards, travel and entertainment cards and 'smart' or 'chip' cards.

Portfolio risk The risk that a particular combination of projects, assets, units or something else in the portfolio will fail to meet the overall objectives of the portfolio due to a poor balance of risks. In the case of a bank loan portfolio, for example, it is the risk that the initial choice of lending opportunities will prove to be poor, in that some of the alternative opportunities that were rejected will turn out to yield higher returns than those selected.

Preference shares Shares that pay a fixed dividend and rank ahead of ordinary shares in liquidation. Known as preferred stock in the US. (See **Equity**.)

Price elasticity of demand A measure of the degree of responsiveness of demand to a given change in price.

Price stability A situation of stability in the level of prices of goods and services that protects the purchasing power of money.

Prices and incomes policy One type of economic policy of a government intended to influence the inflation rate by means of either statutory or voluntary restrictions upon increases in wages, dividends and/or prices. Widely used in the United Kingdom during the 1960s.

Primary market Market in which securities are traded between issuers and investors, thereby raising additional funds for the issuing firm.

Prime rate One of several base interest rates used as an index to price commercial loans.

Principal–agent problems An economic theory concerning the relationship between a principal (for example, a shareholder) and an agent of the principal (for example, a company manager). It involves the costs of resolving conflicts of interest between the principals and agents (agency costs).

Private banking Specialist banking, investment, estate planning and tax services provided to wealthy (high net worth) personal customers.

Private deposit-taking financial institutions Privately owned financial intermediaries funded mainly by deposits from the public. The distinction between private and public deposit-making institutions is usually made when one describes a banking system that has both private and government-owned banks, such as in Japan.

Private equity finance A type of service offered to firms that need to raise finance and that can be distinguished according to two main types: formal and informal. Formal equity finance is available from various sources including banks, special investment schemes, and private equity and venture capital firms. The informal market refers to private financing by so-called business angels – wealthy individuals that invest in small unquoted companies. Private equity finance can refer to both large and small equity stakes.

Private non-deposit-taking financial institutions Privately owned financial intermediaries that do not take deposits, including a wide variety of securities, insurance and other firms.

Private sector purchaser A UK bank resolution procedure whereby all or part of a failing bank's business (its shares or property, i.e. assets and liabilities) are transferred to a commercial purchaser.

Privatisation process The process of conversion from a government-controlled company to a public limited company often through a sale or flotation on the stock market.

Process of deconstruction The process of deconstruction generally refers to the separation of banks' lending function into different component parts (i.e. origination, funding, servicing and monitoring) that can be provided by different financial institutions.

Product (production) diffusion This relates to the pattern of customer or firm adoption of a new product, service or production process. For example, if a new mortgage product is offered

by a bank and then all other banks start offering a similar product in a short period of time then this product can be said to have fast diffusion among banks. Diffusion simply refers to the rate of take-up by potential users of the new product, process or service.

Product diversification This refers to a bank's diversification into more than one product market.

Product life cycle The stages of development that new products go through from introduction to decline.

Profit and loss account (income statement) A document that reports data on costs and revenues and measures bank performance for a given financial year.

Profit and loss sharing (PLS) A method of finance used by Islamic financial or Sharia-compliant institutions to comply with the religious prohibition on interest on loans. It is also called participatory banking. There different types of profit and loss sharing used by Islamic banks – Mudarabah (trustee finance) and Musharakah (equity participation contract).

Profit margin A common measure of profitability that is equal to earnings before income taxes to total operating income and takes into account both interest and non-interest income.

Profits Revenues minus costs.

Proprietary trading The practice of a bank making investments with its own money (thus bearing the risk of trading losses) rather than on behalf of a customer, so as to make a profit for itself. See also **Volcker Rule** for the proposed prohibition of speculative proprietary trading.

Prudential regulation Regulations governing the supervision of the banking system, e.g. licensing criteria, capital adequacy requirements, etc.

Prudential Regulation Authority (PRA) One of the two new regulatory institutions for the UK financial services sector (the other is the Financial Conduct Authority), replacing the Financial Services Authority. The PRA was created by the Financial Services Act 2012 and is part of the Bank of England. It is responsible for the prudential regulation and supervision of banks, building societies, credit unions, insurers and major investment firms.

Public financial institutions Government institutions like public development banks that deal with the provision of public credit (e.g. lending, public securitisation, public portfolio investments, etc.). They are common in both developing and developed countries (e.g. Japan, Canada).

Public-Private Investment Programme (PPIP) Created in 2009 in the US in the context of TARP to help restart the markets for legacy mortgage-backed securities (i.e. originally issued prior to 2009).

Quantitative easing An unconventional monetary stimulus designed to inject money directly into the economy when official interest rates are close to zero. The central bank purchases assets (government bonds, equities, houses, corporate bonds or other assets from banks) from private business using new money created electronically.

Quiet life In the industrial economics literature this hypothesis argues that monopoly power allows managers to benefit from a 'quiet life', free from competitive pressures, and therefore increased concentration should bring about a decrease in efficiency.

Rate-sensitive assets and liabilities Assets and liabilities that can be re-priced within a certain time period (e.g. 90 days); therefore the cash flows associated with rate-sensitive contracts vary with changes in interest rates.

Recapitalisation Term used to refer to a change in the way a firm is financed resulting from an injection of capital.

Refinancing risk The risk that the cost of rolling over or re-borrowing funds will rise above the returns being earned on asset investments.

Regional banks In Japan, banks with a regional focus specialised on retail and SMEs (small and medium-sized enterprises).

Regulation The setting of specific rules of behaviour that firms have to abide by – these may be set through legislation (laws) or be stipulated by the relevant regulatory agency (for instance, the Financial Conduct Authority and Prudential Regulation Authority in the United Kingdom). (See also **re-regulation**.)

Regulatory forbearance The possibility given by the regulatory authorities to insolvent banks of staying in operation for the sake of avoiding systemic risk.

Regulatory risk The risk associated with a change in regulatory policy. For example, banks may be subject to certain new risks if deregulation takes place and barriers to lending or to the entry of new firms are lifted.

Reinvestment risk The risk that the returns on funds to be reinvested will fall below the cost of funds.

Relationship banking When there is a close and long-term relationship between the banks and the firms they lend to. Among the key benefits are lower monitoring costs for the banks, the continuous role of the banks in serving firms' financial needs (e.g. in response to new investment opportunities), mutual confidence and loyalty.

Remote payments These are payment instruments that allow remote access to a customer's account.

Repos (repurchase agreements) Securities that can be sold for a finite period, but with a commitment to repurchase usually at an agreed price and at a stated time.

Representative office Representative offices can be set up by banks in risky markets abroad as the cost of running such small offices is negligible, and they can easily be closed if commercial prospects are not good.

Reputation risk The risk that strategic management's mistakes may have consequences for the reputation of a bank. It is also the risk that negative publicity, either true or untrue, adversely affects a bank's customer base or brings forth costly litigation thereby affecting profitability.

Re-regulation This term describes the process of implementing new rules, restrictions and controls in response to market participants' efforts to circumvent existing regulations.

Reserve requirement The proportion of a commercial bank's total assets which it keeps in the form of liquid assets so as to comply with regulatory reserve requirements.

Resolution Trust Corporation A temporary US government agency, the first of its kind, created in 1989 and charged with the task of taking assets off the Savings & Loans (S&Ls) books and then selling them on to investors and other banks.

Resolved bank A bank that, as a result of a crisis, has been acquired by the authorities ('-intervened') and eventually is either liquidated, taken over, recapitalised or other.

Retail or personal banking Banking services provided to the household (consumer) sector.

Return on assets (ROA) A common measure of bank profitability that is equal to net income/total assets.

Return on equity (ROE) A common measure of bank profitability that is equal to net income/total equity.

Revenues The revenues, generated by the assets of a bank, include: interest earned on loans and investments; fees and commissions (interest and non-interest revenue); and other revenues (e.g. from the sale of businesses).

Revocable letter of credit A type of letter of credit in which the issuing bank can amend the terms of the letter of credit or cancel the letter of credit completely without giving prior notice to the beneficiary. A revocable letter of credit is extremely rare.

Revolving credit facility A facility where part of the loan can be drawn down, repaid and then redrawn depending on the borrowers' discretion.

Revolving lines of credit A commitment by a bank to lend to a customer under pre-defined terms. The commitments generally contain covenants allowing the bank to refuse to lend if there has been a material adverse change in the borrower's financial condition.

Revolving underwriting facilities (RUFs) Similar to a NIF but differs from it because issuers are guaranteed the funds by an underwriting group which buys the notes at a minimum price.

Riba A concept in Islamic banking that refers to interest charged on lending. Riba is prohibited in Islamic banking.

Ring-fencing The key recommendation of the Vickers and Liikanen reports that implies that banks should separate their retail and SME deposit-taking business from investment and wholesale business.

Risk-adjusted return on capital (RAROC) A risk-adjusted profitability measurement and management framework for measuring risk-adjusted financial performance and for providing a consistent view of profitability across businesses.

Risk–asset ratio A ratio that sets out to appraise a bank's capital adequacy on the basis of a bank's relative riskiness.

Risk culture This refers to corporate values and people's behaviour within an organisation that affect risk propensity and risk management decisions.

Risk management Risk management is a complex and comprehensive process, which includes creating an appropriate environment, maintaining an efficient risk measurement structure, monitoring and mitigating risk-taking activities and establishing an adequate framework of internal controls.

Risk measurement The process of quantification of risk exposure.

Risk retention This refers to regulation that requires banks to retain a portion of the credit risk in the assets that they securitise. This is based on the assumption that by retaining 'skin in the game' (i.e. an interest in their own securitisations) banks should have a greater incentive to improve the screening and monitoring of their borrowers.

Rogue trader A trader who recklessly makes speculative deals without authorisation with the intention of deriving higher monetary benefits for themselves.

Rogue trader risk The risk that rogue traders within the organisation create huge losses by trading in high-risk investment.

Safety-net subsidies Safety nets that confer both benefits (arising from their presence) and subsidies. These latter by definition are transfers of resources across groups; they occur when, for example, the government provides safety net-related financial services below their fair price (i.e. there is a misallocation of resources because if, for example, deposit insurance is fairly priced, there are no subsidies).

Savings and Loans Association (S&Ls) The most important type of savings institutions in the United States; also known as thrifts.

Savings bank A financial institution whose primary function is to offer savings facilities to retail customers. Traditionally savings banks were mutual institutions (like building societies in the United Kingdom and thrifts in the United States), i.e. they were established and controlled by groups of people for their own benefit. Today savings banks' business has become more diversified and many have become listed.

Screening The action undertaken by the less-informed party to determine the information possessed by the informed party. For example, the action taken by a bank before giving a loan to gather information about the creditworthiness of a potential borrower.

Second Banking Co-ordination Directive (2BCD) A milestone in the harmonisation of EU banking laws, the 1989 Second Banking Co-ordination Directive established EU-wide recognition of single banking 'passports' issued in any member state as well as the principle of home-country supervision with minimum standards (including capital) at the EU level. In addition, the directive allowed banks to operate as universal banks.

Secondary market A market in which previously issued securities are traded.

Secured Overnight Financing Rate (SOFR) A benchmark interest rate for dollar-denominated derivatives and loans that is replacing the London interbank offered rate (LIBOR).

Securities house A non-bank organisation that specialises in brokerage and dealing activities in securities.

Securities Markets Programme Started in May 2010 to address tensions in certain market segments that hampered the monetary policy transmission mechanism in the eurozone. Under the SMP, the ECB could intervene by buying from banks on the secondary market the securities that it normally accepts as collateral. The programme was terminated in September 2012.

Securities underwriting The procedure under which investment banks provide a guarantee to a company that an issue of shares (or other capital market instruments) will raise a specific amount of cash. Investment banks will agree to subscribe to any of the issue not taken up.

Securitisation The term is most often used narrowly to mean the process by which traditional bank assets, mainly loans or mortgages, are converted into negotiable securities which may be purchased either by depository institutions or by non-bank investors. More broadly, the term refers to the development of markets for a variety of new negotiable instruments, such as FRNs in the international markets and commercial paper in the United States, which replace bank loans as a means of borrowing. Used in the latter sense, the term often suggests disintermediation of the banking system, as investors and borrowers bypass banks and transact business directly.

Settlement An important element in the processing of large-value funds transfers, settlement is the transfer of funds from the payer's financial institution to the payee's financial institution with respect to the payment order.

Settlement or payment risk A risk typical of the interbank market; it refers to the situation where one party to a contract fails to pay money or deliver assets to another party at the time of settlement.

Shadow banking All activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated banking system.

Shareholder value This refers both to the value of the firm to shareholders and to the management principle of maximising the worth of a corporation to shareholders. A bank can create shareholder value by pursuing a strategy that maximises the return on capital invested relative to the (opportunity) cost of capital (the cost of keeping equity shareholders and bondholders happy). (See also **Stakeholder value**.)

Sharia The practical divine law deduced from its legitimate sources: the Quran, Sunnah, consensus (ijma), analogy (qiyas) and other approved sources of the Sharia.

Shinkin banks Co-operative not-for-profit financial institutions operating in Japan. Their membership is composed of local residents and small and medium-sized enterprises.

Signalling In an adverse selection problem, the term refers to actions of the 'informed party' and can imply, for instance, the offer of a warranty or guarantee.

Single Bank Resolution Fund (SBRF) Set up under the control of the Single Resolution Board, the fund should provide medium-term funding support while the bank is restructured. It should be funded by contributions of the banking sector.

Single Deposit Guarantee Mechanism A proposal to create a Single EU Deposit Guarantee Scheme, as part of the Banking Union.

Single EU passport Also known as the 'Single European Banking Licence', it ensures that EU-incorporated banks which are authorised within their own country's regulations (e.g. UK banks authorised by the FSA) are automatically recognised as banks in any part of the European Union by virtue of their home country recognition.

Single Euro Payments Area (SEPA) European Union project that aims to create an integrated market for all electronic euro payments within Europe.

Single market A single market represents the creation of one area with common policies and regulations in which there is free movement of goods, persons, services and capital.

Single Resolution Board (SRB) A committee consisting of representatives of the ECB, the EC and the relevant national authorities with broad powers for the resolution of troubled banks.

Single Resolution Mechanism (SRM) A single system in the eurozone for the timely and effective resolution of troubled banks.

Single Rulebook A single set of harmonised prudential rules for financial institutions across the EU provided by the EBA.

Single Supervisory Handbook A set of guidelines to be compiled by the EBA to promote a level playing field for the supervision of the 27 European Union countries and avoid fragmentation within the Single Market.

Single Supervisory Mechanism (SSM) It is a component of the Banking Union through which the ECB will be responsible for specific supervisory tasks related to the financial stability of all euro area banks as well as banks in other (non-euro area) member states voluntarily joining the SSM. The main aims of the SSM will be to ensure the safety and soundness of the European banking system and to increase financial integration and stability in Europe.

Skin in the game See **Risk retention**.

Small and medium-sized enterprises (SMEs) In the EU SMEs are defined as companies with less than 250 employees and either an annual turnover not exceeding €50 million or a total balance sheet not exceeding €43 million. The term is also widely used to refer to small businesses in general.

Soft information Data that cannot be reduced to numbers and can be based on opinions, rumours, long-term relationships with customers, etc. A typical example in banking is relationship lending.

Solvency The ability of an institution to repay obligations ultimately.

Solvency Ratio Directive EC directive agreed in July 1989. The aim was to harmonise the solvency ratios (capital adequacy ratios) for credit institutions (in line with Basel I 1988 proposals).

Sterling Overnight Index Average (SONIA) The effective overnight interest rate paid by banks for unsecured transactions in the British sterling market. It is produced by the Bank of England at it is used for overnight funding for trades that occur in off-hours and represents the depth of overnight business in the marketplace. The SONIA itself is a risk-free rate.

Sovereign risk Relates to the risk associated with a government default on bond or loan repayments.

Special Liquidity Scheme (SLS) A scheme introduced by the Bank of England in April 2008 (and closed in January 2012) to improve the liquidity position of the banking system by allowing banks and building societies to swap their high-quality mortgage-backed and other securities for UK Treasury Bills for up to three years.

Special-purpose vehicle (SPV) An entity created solely for a specific, limited and temporary purpose or activity. It can be created through a variety of entities, such as trusts, corporations, limited partnerships and limited liability companies, and used in structured finance transactions such as securitisations to isolate certain company assets or operations.

Special Resolution Regime (SRR) Introduced by the Banking Act 2009, the SRR may be adopted by supervisory authorities in the case of UK banks or building societies experiencing financial difficulties. This special resolution regime offers three options: stabilisation, bank insolvency and bank administration.

Specialist banking Banks specialised in the supply of specific products and services as opposed to universal banking.

Stakeholder A party that has any type of stake or an interest in a company and can either affect or be affected by the business, for example investors, employees, customers and suppliers. Different stakeholders have different interests, and companies often face trade-offs in trying to please all of them.

Stakeholder value Involves creating the optimum level of return for all stakeholders in an organisation, including employees, the local community, governments, customers and suppliers.

Standardised products The final stage of the product life cycle where the product is uniform and undifferentiated and competition between producers is based solely on price.

Standby letter of credit Similar to the commercial LOC. The standby LOC is issued by the importer's bank and obligates that bank to compensate the exporter in the event of a performance failure. The importer will pay a fee for this service and will be liable to its bank for any payments made by the bank under the standby LOC.

Standing facilities Central bank facilities available to counterparties on their own initiative. For example, the Eurosystem offers two overnight standing facilities: the marginal lending facility and the deposit facility.

Standing orders These are instructions from the customer (account holder) to the bank to pay a fixed amount at regular intervals into the account of another individual or company.

Sterling commercial paper A collective name for sterling-denominated short-term unsecured notes issued by corporate borrowers. The majority are issued at maturities of between 15 and 45 days.

Stockbrokers See **Broker**.

Stress testing Simulation techniques used to try to gauge the ability of a financial institution to deal with extreme scenarios such as a crisis and establish whether the institution is at risk of failure.

Structural deregulation This refers to the opening up, or liberalisation, of financial markets to allow institutions to compete more freely. Specifically, this process encompasses structure and conduct rules deregulation (such as the removal of branch restrictions and credit ceilings, respectively) and not prudential rules.

Structural indicators In the context of competition literature, typical structural indicators are the Herfindahl-Hirschman index and the concentration ratios.

Structure-conduct-performance (SCP) paradigm A traditional industrial organisation theory that hypothesises that market concentration weakens competition by fostering collusive behaviour among a handful of firms thus resulting in abnormal profits.

Structured investment vehicle (SIV) A type of structured SPV used in the short-term asset-backed commercial paper (ABCP) market. They are also known as *conduits.*

Sub-prime mortgage lending Residential mortgages issued to individuals who are at high risk of default because of their poor credit histories (e.g. late payments or bankruptcy). Interest rates are typically higher on sub-prime compared to *prime* (conventional) mortgages in order for the credit firms to compensate themselves for carrying a higher than average credit risk.

Subsidiary In international banking a subsidiary is a separate legal entity from the parent bank that has its own capital and is organised and regulated according to the laws of the host country.

Sudden stop This refers to a sudden and typically large reduction in international capital inflows or a sharp reversal in aggregate capital flows to a country, likely taking place in conjunction with a sharp rise in its credit spreads.

Sukuk Certificates that represent a proportional undivided ownership right in tangible assets, or a pool of tangible assets and other types of assets. These assets could be in a specific project or specific investment activity that is Sharia-compliant. Also known as Islamic bonds.

Supervision A term used to refer to the general oversight of the behaviour of financial firms.

Supervisory re-regulation Defined as the process of implementing new rules, restrictions and controls in response to market participants' efforts to circumvent existing regulations (e.g. bank capital adequacy rules).

Surplus unit Term used to denote the ultimate lender in a financial transaction.

Sustainability performance A country's sustainability performance is assessed by looking not only at environmental sustainability but also on a variety of ESG factors, such as governance, use of resources, etc.

Sustainability risks Environmental, social or governance (ESG) events or conditions, which, if they occur, have or may potentially have significant negative impacts on the assets, financial and earnings situation, or reputation of an entity.

Sustainable banking This generally refers to the situation where banks' business decisions to lend or invest take into account environmental and social implications in addition to financial and economic performance.

Sustainable Development Goals (SDGs) The SDGs are 17 'Global Goals' that aim to end poverty, fight inequalities and tackle climate change. The SDGs are at the heart of the **United Nations 2030 Agenda for Sustainable Development**.

Swap A financial transaction in which two bodies agree to exchange streams of payment over time according to a predetermined rule. A swap is normally used to transform interest rate or foreign exchange cash flows from one form into another. Fixed interest cash flows may be swapped for variable cash flows, or/and different currencies can be swapped. (See **Currency swaps** and **Interest rate swaps**.)

Syndicated loans Syndicated loans are a special category of loans in which an arranger bank, or group of arrangers, forms a group of creditors on the basis of a mandate to finance the company (or government) borrower.

Systematic credit risk The risk associated with the possibility that default of all firms may increase over a given time period because of economic changes or other events that impact large sections of the economy.

Systemic risk The risk faced by a financial system, resulting from a systemic crisis where the failure of one institution has repercussions on others, thereby threatening the stability of financial markets.

Systemic stability Systemic risk is the possibility that an event at the company level could trigger severe instability or collapse an entire industry or economy. Systemic stability is often used as a synonym of financial stability – that is, the absence of system-wide episodes in which the financial system fails to function (crises). There are different measures of systemic stability, these normally incorporate three elements: the probability of failure in individual financial institutions; the loss given default in financial institutions; and correlation of defaults across institutions.

Systemically important financial institutions (SIFIs) These are large, complex and interconnected financial firms – almost exclusively banks – whose distress or failure would cause considerable damage to the world financial system. (See also **G-SIFIs**, **G-SIBs**.)

Tail risk A higher than expected risk of an investment moving more than three standard deviations away from the mean.

Takaful (Islamic insurance) A mutual guarantee in return for the commitment to donate an amount in the form of a specified contribution to the participants' risk fund, whereby a group of participants agree among themselves to support one another jointly for the losses arising from specified risks.

Technology Term used to indicate the use of modern machines and systems, e.g. computers, internet, electronics, circuits and so on.

Technology risk This occurs when technological investments do not produce the anticipated cost savings in the form of either economies of scale or scope; it also refers to the risk of current systems becoming inefficient because of the development of new systems.

Temporary public ownership (TPO) In the UK, it involves a short-term situation where the government acquires all the shares of a failing bank.

Term Asset-Backed Securities Loan Facility A funding facility created in 2009 by the US Fed to help market participants meet the credit needs of households and small businesses by supporting the issuance of asset-backed securities collateralised by loans of various types to consumers and businesses of all sizes.

Term loan A loan where the amount is specified for a set time.

Thrifts See **Savings and Loans Associations**.

Too big to fail (TBTF) The cases of TBTF, as well as 'too important to fail', are examples of moral hazard caused by the government safety net. Because the failure of a large (or strategically important) bank poses significant risks to other financial institutions and to the financial system as a whole, policy makers may respond by protecting bank creditors from all or some of the losses they otherwise would face.

Too-important-to-fail (TITF) a type of financial firm, or group of financial firms, so integral to a country's financial system that the government would be forced to bail them out in case of distress.

Trade-off between safety and returns to shareholders This is the trade-off between total capital and ROE.

Trading book Bank activities classified for regulatory purposes that are market-related such as derivatives and bonds. These are activities that are not traditional (e.g. loans) and are also characterised by high liquidity and ease to trade.

Traditional banking As opposed to modern banking, traditional banking refers to mainstream deposit and lending activity.

Traditional foreign banking In international banking, this involves transactions with non-residents in domestic currency that facilitate trade finance and other international transactions.

Tranching In the securitisation process, it refers to the issuing of securities carrying different levels of risk, duration and other characteristics. Typically three main types of tranches can be identified: senior (AAA rating), mezzanine (BBB and below) and equity tranche (unrated).

Transactional banking Financial services or products provided by the bank to a firm in exchange for a fee that does not imply any form of relationship or future business. Transactional banking involves 'arm's length' transactions rather than relationships.

Transaction costs The costs associated with the buying and selling of a financial instrument (e.g. cost of searching, cost of writing contracts, etc.).

Transition economies A term used to describe former communist countries that have been transforming their planned economies to market economies.

Transition risk Transition risks include policy changes, reputational impacts, and shifts in market preferences, norms and technology.

Treasury A division within banks that acts as a 'bank's bank' and is responsible for the management of liquidity, and capital and balance sheet requirements.

Treasury bill (or T-bill) A financial security issued through the discount market by the government as a means of borrowing money for short periods of time (usually three months).

Troubled Assets Relief Programme (TARP) A plan authorised by the US Congress in October 2008 through which the US government acquired assets and equity from financial institutions. Its main aims were to strengthen banks' financial positions – by indirectly improving their capital strength – to provide greater confidence in the system and to restart economic growth.

Trust banks In Japan, banks that perform commercial banking activity, but whose main function is asset management for retail and other customers.

Turner Review A 2009 report published in the UK by Lord Turner on how to respond to the global banking crisis. It covers the need for: banks to be better capitalised; credit agencies to be more closely supervised; and excessive pay scales of bankers to be reduced. It also highlights the need to reform the supervisory framework both in the UK and at a pan-European level.

Twin crises These are crises episodes that occur simultaneously such as a currency crisis and a banking crisis (e.g. Asian crisis) or banking crises followed by sovereign debt crises (e.g. eurozone crises).

UK Financial Investments Ltd (UKFI) Created in November 2008 as part of the UK's response to the financial crisis. It is responsible for managing the government's shareholdings in the Royal Bank of Scotland Group and Lloyds Banking Group.

Underwriting See **Securities underwriting**.

Underwritten deal A type of syndication where arrangers guarantee the entire commitment, and then syndicate the loan to other banks and institutional investors. If they cannot fully subscribe the loan, they absorb the difference and may later try again to sell to investors.

Unit trust A UK institution that manages collectively funds obtained from different investors. (See **Mutual funds**.)

United Nations 2030 Agenda for Sustainable Development A plan of action adopted by all UN countries in 2015 that aims to eliminate poverty and achieve sustainable development by 2030 all over the world. It includes 17 **Sustainable Development Goals (SDGs)**.

Universal bank An institution which combines its strictly commercial activities with operations in market segments traditionally covered by investment banks, securities houses and insurance firms, and this includes such business as portfolio management, brokerage of securities, underwriting, mergers and acquisitions. A universal bank undertakes the whole range of banking activities.

Universal banking Under the universal banking model, banking business is broadly defined to include all aspects of financial service activity – including securities operations, insurance, pensions, leasing and so on.

Unlisted securities market for dealing in company stocks and shares that have not obtained a full stock exchange quotation.

Unsystematic credit risk Also known as firm-specific credit risk, this is derived from 'micro' factors and thus is the credit risk specific to the holding of loans or bonds of a particular firm.

VaR (value at risk) VaR is a technique that uses statistical analysis of historical market trends and volatilities to estimate the likely or expected maximum loss on a bank's portfolio or line of business over a set time period, with a given probability. The aim is to get one figure that summarises the maximum loss faced by the bank within a statistical confidence interval.

Venture capital Share capital or loans subscribed to a firm by financial specialists when these companies are considered to be high risk and would not normally attract conventional finance.

Venture capitalists Private equity investors that provide capital to companies with high growth potential in exchange for an equity stake.

Vertical FDI A type of FDI that describes overseas investment as a consequence of differences in international factor prices (e.g. wages, raw materials).

Vickers Report The most far-reaching reform of British banking in modern history. It was issued in September 2011 by the Independent Commission on Banking chaired by Sir John Vickers. Its main recommendations relate to ring-fencing retail banking from investment/wholesale banking, boosting capital resources and various measures aimed at increasing competition in UK banking.

Visegrad countries These are the following four Central European states: Czech Republic, Hungary, Poland and Slovakia.

Volcker Rule Part of the 2010 Dodd-Frank Act that aims to constrain risk taking at banks by introducing a ban from trading on a proprietary basis (subject to certain exceptions) and by restricting investment in hedge funds and private equity by commercial banks. Paul Volcker was an American economist who was chairperson of the Fed from 1979 to 1987.

Wholesale banking The borrowing and lending of large amounts of money usually between banks or other financial organisations, through the interbank market.

Zengin Data Telecommunication System (Zengin System) The main retail payments system in Japan that clears retail credit transfers.

Z-score A bank-specific indicator of distance from insolvency that combines bank profitability, capitalisation and the standard deviation (volatility) of profits. The Z-score depends positively on bank profits and capital ratio and negatively on profits variability; so a higher (lower) Z-score indicates that a bank is more (less) stable, or the less (more) likely it is that the bank will fail.

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