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Principles of banking and finance

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Undergraduate study in
Economics, Management,
Finance and the Social Sciences

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This is one of a series of subject guides published by the University. We regret that due to pressure of work the authors are unable to enter into any correspondence relating to, or arising from, the guide. If you have any comments on this subject guide, favourable or unfavourable, please use the form at the back of this guide.

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Chapter 1: Introduction

General introduction to the subject

This subject guide provides an introduction to the principles of banking and finance. It covers a broad range of topics using an economic perspective, and aims to give a general background to any student interested in the subject of banking and finance.

The contents of the subject guide can be broken down into three main parts:

- In Part I, we investigate the structure and functions of financial systems. We focus on each of the three main entities that compose a financial system: financial intermediaries, securities and financial markets. We then investigate the difference in the relative importance of financial intermediaries and financial markets around the world, and thus propose a historical and economic investigation of the reasons behind the emergence of bank-based systems and market-based systems in different countries.
- In Part II, we examine the issues that come under the broad heading of principles of banking. Here we examine the key economic reasons used to justify the existence of financial intermediaries (and specifically banks). We then investigate the special nature of banking regulation. Finally we outline the key risks in banking and the main methods used for risk management. Thus the areas covered include the role of financial intermediation, banking regulation and banking risk management.
- In Part III, we move to the issues known as principles of finance. Here we will examine the techniques used by firms to value real investment projects, and the models used by investors to value bonds and stocks. We then investigate the issues related to the formation of an optimal portfolio by investors, and we derive the main equilibrium asset pricing models. Finally, we investigate the efficiency of the market in pricing securities, and thus we propose a theoretical and empirical validation of the efficient market hypothesis. The areas covered in this section therefore include capital budgeting, securities valuation, mean-standard deviation portfolio theory, asset pricing models and informational market efficiency.

24 Principles of banking and finance is a compulsory course for the BSc Banking and Finance. This is an important subject because it establishes many of the fundamental concepts in banking and finance that will be developed in later subjects in the degree, such as **92 Corporate finance**, **29 Financial intermediation** and **143 Valuation and securities analysis**.

Note that the guide uses mainly US references, takes a US view and uses US terminology.

Learning outcomes

By the end of this subject guide, and having done the relevant readings and activities, you should be able to:

- discuss why financial systems exist, and how they are structured

- explain why the relative importance of financial intermediaries and financial markets is different around the world, and how bank-based systems differ from market-based systems
- understand why financial intermediaries exist, and discuss the role of transaction costs and information asymmetry theories in providing an economic justification
- explain why banks need regulation, and illustrate the key reasons for and against the regulation of banking systems
- discuss the main types of risks faced by banks, and use the main techniques employed by banks to manage their risks
- explain how to value real assets and financial assets, and use the key capital budgeting techniques (Net Present Value and Internal Rate of Return)
- explain how to value financial assets (bonds and stocks)
- understand how risk affects the return of a risky asset, and hence how risk affects the value of the asset in equilibrium under the fundamental asset pricing paradigms (Capital Asset Pricing Model and Asset Pricing Theory)
- discuss whether stock prices reflect all available information, and evaluate the empirical evidence on informational efficiency in financial markets.

Essential reading

The following text has been chosen as the core text for this subject guide, due to its extensive treatment of many (but not all) of the issues covered in the subject guide and its up-to-date discussions:

Mishkin, F. and S. Eakins *Financial Markets and Institutions*. (Boston, London: Addison Wesley, 2009) sixth edition [ISBN 978032155112].

However, this core text does not cover the material for the entire subject guide.

To analyse comparative financial systems, the essential reading also includes:

Allen, F. and D. Gale *Comparing Financial Systems*. (Cambridge, Mass.: MIT Press, 2001) [ISBN 9780262511254].

To investigate issues of principles of finance (capital budgeting and valuation of financial assets, risk and return of financial assets and portfolios), the following text is also essential reading:

Brealey, R.A, S.C. Myers and F. Allen *Principles of corporate finance*. (Boston, London: McGraw-Hill/Irwin, 2010) tenth (global) edition [ISBN 9780071314176] Chapters 2, 3, 4, 5, 7, 8, 13 and 14.

The subject guide must be used in conjunction with these three essential textbooks. At the head of each chapter of this guide, we indicate essential reading from Mishkin and Eakins. Alternatively, when no relevant readings are available in Mishkin and Eakins, we indicate reading from either Allen and Gale or Brealey, Myers and Allen.

Several websites are indicated in the subject guide, mainly as references for activities you are required to do. Please visit these websites whenever indicated.

The following articles from academic journals are also indicated as Essential reading in Chapters 5 and 6:

Dow, S. 'Why the banking system should be regulated', *Economic Journal* 106 (436) 1996, pp.698–707.

Dowd, K. 'The Case for Financial Laissez-Faire', *Economic Journal* 106 (436) 1996, pp.679–87.

Gordy, M.B. 'A comparative anatomy of credit risk models', *Journal of Banking and Finance* 24 (1-2) 2000, pp.119–49.

Detailed reading references in this subject guide refer to the editions of the set textbooks listed above. New editions of one or more of these textbooks may have been published by the time you study this course. You can use a more recent edition of any of the books; use the detailed chapter and section headings and the index to identify relevant readings. Also check the virtual learning environment (VLE) regularly for updated guidance on readings.

Further reading

Please note that as long as you read the Essential reading you are then free to read around the subject area in any text, paper or online resource. You will need to support your learning by reading as widely as possible and by thinking about how these principles apply in the real world. To help you read extensively, you have free access to the VLE and University of London Online Library (see below).

Other useful texts for this course include:

Bain, A.D. *The Economics of the Financial Systems*. (Oxford: Blackwell Publishers Ltd, 1992) [ISBN 9780631181972] Chapter 4.

Brealey, R.A., S.C. Myers and F. Allen *Principles of Corporate Finance*. (Boston, London: McGraw-Hill/Irwin, 2008) tenth edition [ISBN 9780073368696] Chapter 8.

Buckle, M. and J. Thompson *The UK Financial System*. (Manchester: Manchester University Press, 2004) fourth edition [ISBN 9780719067723] Chapters 1, 2 and 17.

Copeland, T.E., J.F. Weston and K. Shastri *Financial Theory and Corporate Policy.* (Boston, London: Pearson Addison Wesley, 2005) [ISBN 9780321223531] Chapters 2, 4, 5, 6 and 10.

Elton, E.J., M.J. Gruber, S.J. Brown and W.N. Goetzmann *Modern Portfolio Theory and Investment Analysis*. (New York: John Wiley & Sons, 2007) seventh edition [ISBN 9780470050828] Chapter 17, pp.59 and 61.

Freixas, X. and J.C. Rochet *Microeconomics of Banking.* (Boston, Mass.: The MIT Press, 2008) [ISBN 9780262061933] Chapters 2, 8 and 9.

Grinblatt, M. and S. Titman *Financial Markets and Corporate Strategy* (Boston, London: McGraw-Hill/Irwin, 2002) second edition [ISBN 9780072294330] Chapters 4, 5, 6, 9 and 10.

Heffernan, S. *Modern Banking in Theory and Practice.* (Chichester: John Wiley and Sons, 2005) [ISBN 9780471962090] Chapters 2, 3, 4 and 5.

Luenberger, D.G. *Investment Science*. (New York: Oxford University Press, 1998) [ISBN 9780195108095] Chapters 6 and 7.

Saunders, A. and M.M. Cornett *Financial Institutions Management: a Risk Management Approach*. (New York: McGraw-Hill/Irwin, 2007) sixth edition [ISBN 9780077211332] Chapters 2–6 and 8–12.

Sinkey, J.F. *Commercial Bank Financial Management in the Financial-Services Industry*. (Upper Saddle River, NJ: Pearson Education Inc., 2002) [ISBN 9780130984241] Chapter 16.

Smart, S.B., W.L. Megginson and L.J. Gitman *Corporate Finance*. (Mason, Ohio: South-Western/Thomson Learning, 2004) [ISBN 9780324269604] Chapters 4, 7 and 10.

References

For certain topics, we will also list journal articles or texts as supplementary references to the additional reading. It is not essential that you read this material, but it may be helpful if you wish to better understand some of the topics in this subject guide.

A full bibliography of the supplementary references is provided below:

Akerlof, G. 'The Market for "Lemons": Quality, Uncertainty and the Market Mechanisms', *Quarterly Journal of Economics* 84(3) 1970, pp.488–500.

Allen, F. and R. Karjalainen 'Using Genetic Algorithms to Find Technical Trading Rules', *Journal of Financial Economics* 51(2) 1999, pp.245–71.

Altman, E.I. 'Managing the commercial lending process' in Aspinwall, R.C. and R.A. Eisenbeis *Handbook of Banking Strategy.* (New York: John Wiley and Sons, 1985) [ISBN 9780471893141] pp.473–510.

Ball, R. and P. Brown 'An Empirical Evaluation of Accounting Income Numbers', *Journal of Accounting Research* 6(2) 1968, pp.159–78.

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Bernard, V. and J. Thomas 'Post-earnings announcement drift: Delayed price response or risk premium?', *Journal of Accounting Research* 27(3) 1989 supplement, pp.1–36.

Boyd, J.H. and M. Gertler 'Are Banks Dead? Or Are the Reports Greatly Exaggerated?' in *The Declining(?) Role of Banking.* (Chicago: Federal Reserve Bank of Chicago, 1994).

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Chen, N. 'Some Empirical Tests of the Theory of Arbitrage Pricing', *Journal of Finance* 38(5) 1983, pp.1393–414.

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Cheng-few L., D.C. Porter and D.G. Weaver 'Indirect tests of the Haugen-Lakonishok small-firm/January effect hypotheses: window dressing versus performance hedging', *The Financial Review* (1998) 33, pp.177–94.

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Corbett, J. and T. Jenkinson 'How Is Investment Financed? A Study of Germany, Japan and the United States', *Manchester School of Economics and Social Studies* 65 (1997) supplement, pp.69–93.

DeBondt, F.M. and R. Thaler 'Further Evidence on Investor Overreaction and Stock Market Seasonality', *Journal of Finance* 42(3) 1987, pp.557–80.

Diamond, D.W. 'Financial Intermediation and Delegated Monitoring', *Review of Economic Studies* 51(166) 1984, pp.393–414.

Diamond, D.W. 'Financial Intermediation as Delegated Monitoring: A Simple Example', *Federal Reserve Bank of Richmond Economic Quarterly*, 82/3, 1996, pp.51-66.

Diamond, D.W. and P.H. Dybvig 'Bank Runs, Deposit Insurance, and Liquidity', *Journal of Political Economy* 91(3) 1983, pp.401–419.

Dimson, E., P. Marsh, and M. Staunton 'Global evidence on the equity risk premium', *Journal of Applied Corporate Finance* 15(4) 2003, pp.27–38.

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Fama, E. 'Efficient Capital Markets: II', *Journal of Finance* 46(5) 1991, pp.1575–618.

Freixas, X, C. Giannini, G. Hoggart and F. Soussa 'Lender of Last Resort: A Review of the Literature', *Bank of England Financial Stability Review*, November 1999.

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Roll, R. 'A Critique of the Asset Pricing Theory's Tests; Part 1: On Past and Potential Testability of the Theory', *Journal of Financial Economics* 4(2) 1977, pp.129–76.

Ross, S.A. 'The Arbitrage Theory of Capital Asset Pricing', *Journal of Economic Theory* 13(3) 1976, pp.341–60.

Sharpe, W.F. 'Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk', *Journal of Finance* 19(3) 1964, pp.425–42.

Trueman, B., M.H. Wong and X.J. Zhang 'The Eyeballs Have it: Searching for the Value in Internet Stocks', *Working Paper*, (University of California, April 2000).

Turner, A 'The Turner Review: A regulatory response to the global banking crisis', Financial Services Authority, 2009. (download from www.fsa.gov.uk/pubs/other/turner_review.pdf)

Online study resources

In addition to the subject guide and the Essential reading, it is crucial that you take advantage of the study resources that are available online for this course, including the VLE and the Online Library.

You can access the VLE, the Online Library and your University of London email account via the Student Portal at:
http://my.londoninternational.ac.uk

You should receive your login details in your study pack. If you have not, or you have forgotten your login details, please email uolia.support@london.ac.uk quoting your student number.

The VLE

The VLE, which complements this subject guide, has been designed to enhance your learning experience, providing additional support and a sense of community. It forms an important part of your study experience with the University of London and you should access it regularly.

The VLE provides a range of resources for EMFSS courses:

- Self-testing activities: Doing these allows you to test your own understanding of subject material.
- Electronic study materials: The printed materials that you receive from the University of London are available to download, including updated reading lists and references.

- Past examination papers and *Examiners' commentaries*: These provide advice on how each examination question might best be answered.
- A student discussion forum: This is an open space for you to discuss interests and experiences, seek support from your peers, work collaboratively to solve problems and discuss subject material.
- Videos: There are recorded academic introductions to the subject, interviews and debates and, for some courses, audio-visual tutorials and conclusions.
- Recorded lectures: For some courses, where appropriate, the sessions from previous years' Study Weekends have been recorded and made available.
- Study skills: Expert advice on preparing for examinations and developing your digital literacy skills.
- Feedback forms.

Some of these resources are available for certain courses only, but we are expanding our provision all the time and you should check the VLE regularly for updates.

Making use of the Online Library

The Online Library contains a huge array of journal articles and other resources to help you read widely and extensively.

To access the majority of resources via the Online Library you will either need to use your University of London Student Portal login details, or you will be required to register and use an Athens login:
http://tinyurl.com/ollathens

The easiest way to locate relevant content and journal articles in the Online Library is to use the **Summon** search engine.

If you are having trouble finding an article listed in a reading list, try removing any punctuation from the title, such as single quotation marks, question marks and colons.

For further advice, please see the online help pages:
www.external.shl.lon.ac.uk/summon/about.php

Unless otherwise stated, all websites in this subject guide were accessed in 2008. We cannot guarantee, however, that they will stay current and you may need to perform an internet search to find the relevant pages.

The structure of the subject guide

Part I of the subject guide focuses on financial systems, Part II addresses the key principles of banking and Part III investigates the principles of finance. The content of the subject guide is as follows.

Part I: Financial systems

- Chapter 2 serves as grounding to financial systems by investigating the functions and structure of financial systems. It thus focuses on each of the three main entities that compose financial systems (financial intermediaries, securities and financial markets).
- Chapter 3 presents a discussion of the features of bank-based systems against market-based systems in different countries around the world.

Part II: Principles of banking

- Chapter 4 focuses specifically on the nature and process of financial intermediation by presenting a discussion of the key theories of financial intermediation (transformation of assets, uncertainty, reduction in transaction costs, reduction of problems arising out of asymmetric information).
- Chapter 5 provides an investigation of the theoretical and practical aspects of regulation of banks, such as arguments for or against regulation, traditional regulation mechanisms and alternatives to traditional regulation.
- Chapter 6 presents discussion of the key risks in banking (credit risk, interest rate risk, market risk and liquidity risk) and the main methods of risk management in banks (such as screening, monitoring, duration gap analysis, value-at-risk).

Part III: Principles of finance

- Chapter 7 outlines the concept and techniques of capital budgeting and securities valuation. It focuses first on the valuation of real investment projects using the Net Present Value (NPV), and provides a comparison of NPV with alternative techniques. Then it moves to the models used for the valuation of bonds and stocks.
- Chapter 8 discusses the basics of risk and return of securities and mean-variance portfolio theory. It goes on to derive and discuss the equilibrium asset pricing models (Capital Asset Pricing Model and Arbitrage Pricing Model).
- Chapter 9 focuses on the efficiency of financial markets by providing a theoretical derivation of the concepts of weak, semi-strong, and strong efficiency. It then moves to the discussion of the empirical evidence in favour of and against market efficiency.

How to use this subject guide

This subject guide is written for students studying **24 Principles of banking and finance**. The aim is to help you to interpret the syllabus. It tells you what you are expected to know for each area of the syllabus and suggests the reading which will help you understand the material. It must be emphasised that this guide is intended to supplement the essential textbooks, not replace them.

A different chapter is devoted to each major section of the syllabus and the chapter order of this guide follows the order of the topics as they appear in the syllabus.

You need to appreciate that different topics are not self-contained. There is a degree of overlap between the topics and you are guided in this through cross-referencing between different chapters in the guide. However, in terms of studying this guide, the chapters are designed as self-contained units of study, but for examination purposes you need to have an understanding of the subject as a whole.

We suggest that for each topic in the syllabus, you first read through the whole of the chapter in this guide to get an overview of the material to be covered. Then reread the chapter and follow up the suggestions for reading in the essential reading or further reading. After this you should work through the activities.

Structure of each chapter

At the beginning of each chapter, you will find a list of aims and learning outcomes. These tell you what you can expect to learn from that chapter of the subject guide and the relevant reading. You need to pay close attention to the learning outcomes and use them to check that you have fully understood the topics.

You will then find the essential reading, further reading, and references. The list of essential reading indicates what you need to read as a minimum in order to cover the syllabus. Once you have read a chapter, check that you have covered all the essential reading.

Each chapter contains 'Activities' which apply what you have just learnt in a practical way. Activities are heterogeneous: they include the analysis of institutional website material, numerical exercises and further readings on the texts. It is very important that you do these activities. For numerical activities (marked with an asterisk*) we provide answers in Appendix 1 at the end of the guide.

Throughout the guide, there are a lot of key terms, all detailed in the 'Key terms' section at the end of each chapter. Compile your own glossary with full definitions and comments on each of these terms, and use it for revision.

At the end of each chapter, look out for sample examination questions, similar to those asked in the final examination. We recommend that you try these sample examination questions during your revision.

Examination

Important: the information and advice given in the following section are based on the examination structure used at the time the guide was written. Please note that subject guides may be used for several years. Because of this we strongly advise you always to check both the current *Regulations* for relevant information about the examination, and the VLE where you should be advised of any forthcoming changes. You should also carefully check the rubric/instructions on the paper you actually sit and follow those instructions.

Remember, it is important to check the VLE for:

- up-to-date information on examination and assessment arrangements for this course
- where available, past examination papers and *Examiners' commentaries* for the course which give advice on how each question might best be answered.

The **Principles of banking and finance** examination paper is three hours in duration. You will be asked to answer four questions from a choice of eight. The examination paper is in two sections. You will be required to answer one question from Section A, one from Section B and two further questions from either section. The Examiners ensure that all the topics covered in the syllabus are examined.

Section A of the exam essentially tests your understanding of concepts and theories from the syllabus. The questions in Section A are therefore discursive and generally split into two or three parts. In answering Section A questions Examiners will be looking for evidence of your understanding of the concept or theory being asked about. The subject guide sets out the essential points of theories/concepts that you can draw upon in

answering the question. The essential reading and further reading texts go into further detail on these concepts and theories and you will generally be expected to go deeper into the subject matter than that set out in the subject guide if you want to get a very good mark. Please also note that evidence of understanding of a theory or concept may sometimes be demonstrated by the use of a relevant example. Examiners will also reward answers that show an up-to-date knowledge of a topic. For example, the regulation of banking is fast changing and the material in the subject guide may not be fully up-to-date when you read it. Keeping up-to-date with developments in relation to the topic areas of the syllabus will provide you with an opportunity to demonstrate to Examiners your understanding of the topic area.

Section B of the exam essentially tests your understanding of the application of finance concepts and tools. As in Section A the questions in Section B are split into a number of parts with some parts requiring you to calculate something and other parts testing your understanding of the techniques being applied or your understanding of the answers you have calculated. Therefore to answer a Section B question fully requires you to understand how to apply techniques to the data given in the question in an appropriate way, to understand the assumptions and limitations of the technique you are using and to be able to interpret your calculated answer.

Examples of section A type questions are provided at the end of Chapters 2, 3, 4, 5 and 9. Examples of section B type questions are provided at the end of Chapters 6, 7 and 8 and 9.

You have to answer four questions, giving you 45 minutes to spend on each question. You should attempt all parts or aspects of a question. Pay attention to the breakdown of marks associated with the different parts of each question. Some questions may contain both numerical and essay-based parts. Examples of these types of questions (or question parts) are provided at the end of each chapter of this subject guide.

- For essay-based questions, remember to plan your answer: list the main issue you want to discuss and the order of the discussion.
- Begin the essay-based question with an introduction stating the aims of the essay, and conclude with a summary bringing together the main issues investigated in the essay.
- Please use material only when relevant to the question. Answers including a large amount of irrelevant material are likely to be marked down.
- Answers that simply repeat the subject guide material in a relevant way may be given a pass at best.
- Answers with a clear structure, a good understanding of the material and originality in the approach are likely to achieve a good mark.

A Sample examination paper is provided in Appendix 2 to this guide.

Syllabus

Part I: Financial systems

1. Introduction to financial systems: Role of financial systems (role of households, government and firms in terms of savings and investments). Financial intermediaries, securities and markets. Taxonomy of financial institutions. Nature of financial claims (debt versus equity, bonds and notes, fixed and floating interest rates, common and preferred stocks). Structure of financial markets (direct and indirect finance, dealers and brokers, banks, mutual funds, pension funds and insurance companies).
2. Comparative financial systems: Bank-based systems against market-based systems. Legal aspects.

Part II: Financial intermediaries

3. Role of financial intermediation: Nature and process of financial intermediation. Theories of financial intermediation (transformation of assets, uncertainty, reduction in transaction costs, reduction of problems arising out of symmetric information). Implications of financial intermediation (Hirshleifer model, effect on economic development).
4. Regulation of banks: Regulation of banks (free banking, arguments for and against regulation, traditional regulation mechanisms, alternatives to traditional regulation).
5. Risk management in banking: Market risks: liquidity risk, interest rate risk, foreign exchange risk. Credit risk: screening and monitoring, credit rationing, collateral.

Part III: Principles of finance

6. Financial securities: Risk and return; Portfolio analysis: mean-variance portfolio theory. The portfolio selection process: the correlation of securities returns (single-index model and multi-index models). Asset pricing models: capital asset pricing models (CAPM) and arbitrage pricing theory (APT).
7. Capital budgeting: Pricing of bonds and stocks. Net pricing value. Project appraisal.
8. Financial markets: Transmission of information; Efficient markets. Theory and empirical evidence. Concepts of weak, semi-strong and strong efficiency. Concepts of excess return. Micro-structures.

Notes

Part I: Financial systems

Overview

Before we introduce you to the Principles of banking (Part II) and to the Principles of finance (Part III), we begin our analysis by examining financial systems. Two main areas of interest are investigated:

- What role does a financial system play in an economy? What is the structure of a financial system? (Chapter 2)
- How does the structure of financial systems differ across countries worldwide? (Chapter 3)

We answer these questions in Part I.

Notes

Chapter 2: Introduction to financial systems

Aims

The aim of this chapter is to investigate financial systems from both a functional and a structural perspective. We set out a taxonomy of financial intermediaries, securities and financial markets, and give an overview of the peculiarities of national financial systems.

Learning outcomes

By the end of this chapter, and having completed the essential readings and activities, you will be able to:

- explain why financial systems exist (i.e. explain the functions of financial systems)
- outline the structure of financial systems (i.e. describe the three main entities that compose financial systems: financial intermediaries, securities and financial markets)
- describe which financial intermediaries operate in financial systems in the USA in particular and, more generally, around the world (e.g. depository institutions, contractual savings institutions and investment intermediaries) and explain their characteristics
- explain which financial securities are traded on financial markets (bonds, notes, bills and stocks), and explain their nature
- discuss the various theories that attempt to explain the shape of the yield curve
- explain the structure of financial markets in the USA and around the world (primary versus secondary markets, money versus capital markets, organised versus over-the-counter markets, quote-driven dealer markets versus order-driven markets and brokered markets).

Essential reading

Allen, F. and D. Gale *Comparing Financial Systems*. (Cambridge, Mass.: MIT Press, 2001) Chapter 3.

Mishkin, F. and S. Eakins *Financial Markets and Institutions*. (Boston, London: Addison Wesley, 2009) Chapters 1, 2 and 10.

Further reading

Brealey, R.A., S.C. Myers and F. Allen *Principles of Corporate Finance*. (Boston, London: McGraw-Hill/Irwin, 2010) Chapter 14.

Buckle, M. and J. Thompson *The UK Financial System*. (Manchester: Manchester University Press, 2004) Chapter 1.

Freixas, X. and J.C. Rochet *Microeconomics of Banking*. (Boston, Mass.: The MIT Press, 2008) Chapter 2.

Saunders, A. and M.M. Cornett *Financial Institutions Management: a Risk Management Approach*. (New York, McGraw-Hill/Irwin, 2007) Chapters 2, 3, 4, 5 and 6.

Introduction

We start the unit with an overview of financial systems, their functions and general structure. Then we investigate the nature and characteristics of the three major entities that compose financial systems. These are financial intermediaries, securities and financial markets. We will return to a more detailed investigation of each of these entities in later chapters.

In our review of different countries, we restrict ourselves to large economies with well-developed financial systems, notably the USA, UK, France and Germany. Specifically, we take a US view and US terminology, therefore in Part I other countries are compared with the US system.

Functions of financial systems

Financial systems perform the essential economic function of channelling funds from units who have saved surplus funds to units who have a shortage of funds. The units who have saved can lend funds: they are known as lender-savers. The units with a shortage of funds must borrow funds to finance their spending: they are the borrower-spenders. The most important lender-savers are usually households; while the typical borrower-spenders are firms and the government.

The channelling of funds from savers to spenders is very important for two reasons:

- First, lender-savers (with excess of available funds) do not frequently have profitable investment opportunities, while borrower-spenders have investment opportunities but lack of funds.
- Second, even for purposes other than investment opportunities in businesses, borrower-spenders may want to invest in excess of their current income or to adjust the composition of their wealth (reconciliation of the preferences for current versus future consumption).

In direct finance, borrower-spenders borrow funds directly from lenders in the financial markets by selling them securities. In indirect finance, a financial intermediary stands between the lender-savers and the borrower-spenders: the intermediary helps to transfer funds from one to the other. This suggests that financial markets and intermediaries are alternatives that perform more or less the same function but in different ways (and perhaps with different degrees of success). Note, however, that the process of indirect finance, known as financial intermediation, is the most important way of transferring funds from lenders to borrowers. This contrasts with the attitude of the media to focus mainly on financial markets (as discussed in Chapter 4).

Another important function of a financial system is the monetary function. The introduction of money into the economy enables savers and spenders to separate the act of sale from the act of purchase and allows them to overcome the main problem of barter, which is the ‘double coincidence of wants’ (each of the two parties involved in a transaction has to want simultaneously the good the other party is offering to exchange). The financial system provides a variety of payment mechanisms e.g. cheques, debit cards and credit cards to enable one party to pay another.

Financial systems also provide mechanisms for risk to be transferred. For example insurance contracts allow a party such as a firm or household to transfer the risk of loss of wealth due to theft or fire to another party such as an insurance company. The firm or household will pay a fee (insurance premium) for this transfer. The insurance company, by providing a large

number of insurance contracts, is better able to manage the risk than an individual firm or household as they can obtain benefits of pooling and diversification. Thus a more efficient allocation of risk results.

In short, the main functions of financial systems are to:

- provide the mechanisms by which funds can be transferred from units in surplus to units with a shortage of funds in order to directly or indirectly facilitate lending and borrowing (as shown in Figure 2.1)
- enable wealth holders to adjust the composition of their portfolios
- provide payment mechanisms
- provide mechanisms for risk transfer

Activity 2.1

Throughout this guide, there are a lot of key terms, all collected in the 'Key terms' section at the end of each chapter. Compile your own glossary with full definitions and comments on each of these terms, and use it for revision.

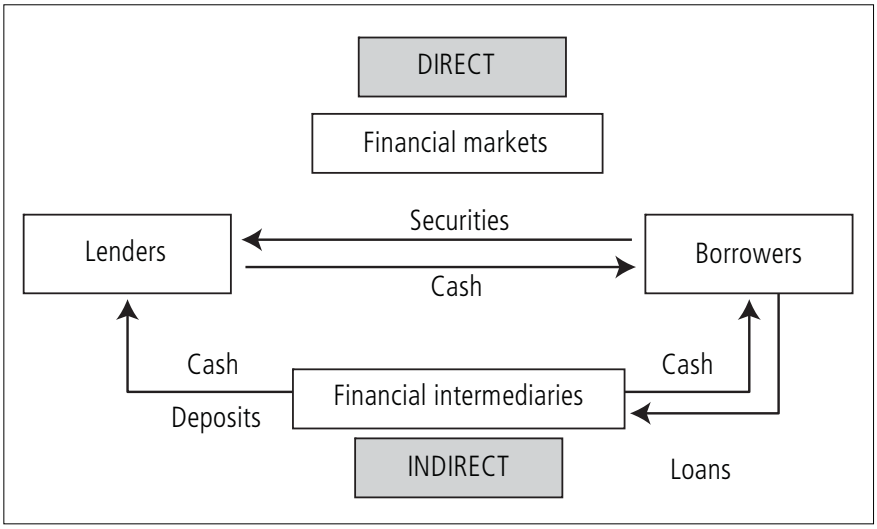

Figure 2.1: Direct and indirect lending performed by a financial system

The structure of financial systems: financial markets, securities and financial intermediaries

From a structural point of view a financial system can be seen in terms of the entities that compose the system. A financial system comprises financial markets, securities and financial intermediaries.

Financial markets are markets in which funds are moved from people who have an excess of available funds (and lack of investment opportunities) to people who have investment opportunities (and lack of funds). They also have direct effects on personal wealth, and the behaviours of businesses and consumers. Therefore, they contribute to increase the production and the efficiency in the overall economy. Financial markets (such as bond and stock markets) are markets in which securities are traded.

Securities (also called financial instruments) are financial claims on the issuer's future income or assets. They represent financial liabilities for the individual or firm that sells them (borrower or issuer of the financial claim) in return for money, and financial assets for the buyer (lender or investor in the financial claim). By definition, therefore, the sum of financial assets in existence will exactly equal the sum of liabilities.

Governments and corporations raise funds to finance their activities by issuing debt instruments (bonds) and equity instruments (shares, known in the USA as stocks). Bonds are securities that promise to make periodic payments of a sum of money for a specified period of time. Stocks are securities that represent a share of ownership in the firm.

Financial intermediaries are economic agents who specialise in the activities of buying and selling (at the same time) financial contracts (loans and deposits) and securities (bonds and stocks). Note that financial securities are easily marketable, while financial contracts cannot be easily sold (marketed). Banks form the largest financial institution in our economy. They accept deposits (loans by individuals or firms to banks) and make loans (sums of money lent by banks to individuals or firms): therefore, they borrow deposits from people who have saved and in turn make loans to others. In recent years, other financial intermediaries, such as mutual funds, pension funds, insurance companies and investment banks, have been growing at the expense of banks.

Taxonomy of financial intermediaries

We begin by looking at the USA, the largest economy and financial system in the world. Later we will turn to other countries. In the USA the three major groups of financial intermediaries are: depository institutions, contractual savings institutions and investment intermediaries (for an overview of financial intermediaries around the world refer to the next section).

Depository institutions

Depository institutions: intermediaries with a significant proportion of their funds derived from customer deposits – include: commercial banks – savings institutions and credit unions.

Commercial banks

Commercial banks accept deposits (liabilities) to make loans (assets) and to buy government securities. Deposits are broad in range, including checkable deposits (deposits on which cheques can be written), savings deposits (deposits that are payable on demand, but do not allow depositors to write cheques), time deposits (deposits with a fixed term to maturity). Loans include consumer, commercial and mortgage loans.

In the USA, commercial banks are the largest group of financial intermediary: in 2006 there were 7,402 with aggregate total assets of $10.1 trillion (according to the FDIC Quarterly Banking Profile). Note that the industry has experienced a recent consolidation as a result of mergers and acquisitions (simply consider that in 1984 there were 14,416 commercial banks). The performance of US banks improved throughout most of the 1990s, although it deteriorated slightly with the economic downturn in the early years of the twenty-first century. In 2006 the return on equity (ROE) of the US banking industry averaged 9.9 per cent.

Activity 2.2

Consult the American Banker Online available (2-week trial subscription) at www.americanbanker.com/tools/ranking-the-banks.html. From the section on Banks, thrifts and holding companies locate the Top World Banking Companies by Assets and identify the 10 largest US depository institutions and compare their total assets value. Identify the largest depository institution in your own country.

The balance sheet structure of US commercial banks reflects the main assets and liabilities of their business. The aggregated balance sheet values for US banks in 2006 are reported in Table 2.1. As shown, loans constituted around 58 per cent of their assets (compared with 62 per cent in 1990), whereas investments in securities represented 16 per cent of their assets. Interest-bearing deposits instead constituted 54 per cent of their liabilities.

Total assets	10,090,626	Total liabilities and capital	10,090,626
Total loans & leases	5,980,915	Non-interest bearing deposits	1,216,695
Less: Reserve for losses	69,071	Interest bearing deposits	5,514,667
Net loans and leases	5,911,844	Other borrowed funds	1,711,411
Securities	1,665,743	Subordinated debt	149,795
Other real estate owned	4,721	All other liabilities	467,645
Good will and other intangibles	358,472	Equity capital	1,030,413
All other assets	2,149,832	Off-balance-sheet derivatives	132,162,947

Table 2.1: Aggregate balance sheet values for US commercial banks ($million, 2006)

Source: Table created using data from FDIC website (www2.fdic.gov/hsob/)

Savings and loan associations

Historically savings and loan associations (S&Ls) and thrift institutions have concentrated mostly on residential mortgages by acquiring funds primarily through savings deposits. In terms of number of institutions, they are the second largest group of financial intermediaries (1,279 associations with $1.8 trillion of total assets in 2006 according to FDIC Quarterly Banking Profile).

In the 1950s and 1960s, S&Ls grew much more rapidly than commercial banks. However, between 1979 and 1982 the change in the monetary policy of the Fed led to a dramatic surge in interest rates. (The Federal Reserve Bank, known as The Fed, is the central bank for the US banking system, as explained later in Chapters 3 and 5). This increase in the short-term rates had two effects.

- First, S&Ls had negative interest spreads (interest income minus interest expense) in funding the fixed-rate long-term residential mortgages.
- Second, they had to pay more competitive interest rates on savings deposits. Note that The Federal Reserve Bank's Regulation Q ceilings limited the interest rates payable on deposits by S&Ls.

To overcome the effects of rising rates and disintermediation, in the early 1980s the Congress passed acts allowing S&Ls to expand their deposit-taking (i.e. to offer checking accounts) and asset-investment powers (i.e. to make consumer and commercial loans). For many S&Ls the new powers created safer and more diversified institutions. However, for a small – but significant – group of S&Ls, they created an opportunity to take more risk in the attempt to improve profitability. For example, in Texas in the mid-1980s there had been a real estate and land prices crash, which led to the default of many borrowers with mortgage loans issued by S&Ls. As a result a large number of S&Ls failed at the end of the 1980s and as a consequence, new legislation – the FIRREA of 1989 – was adopted.

Activity 2.3

Read Mishkin and Eakins (2009), section beginning on p.491, to investigate the recent reform of S&L. Then consult the section on Savings institutions in FDIC Quarterly Banking Profile available online at: http://www2.fdic.gov/qbp/2010sep/sav1.html.

Draw a graph to show the trend in the number of institutions.

Write a short explanation of why this variation has occurred.

The evolution in the number and size (in terms of total assets) of both commercial banks and S&Ls is shown in Figures 2.2 and 2.3.

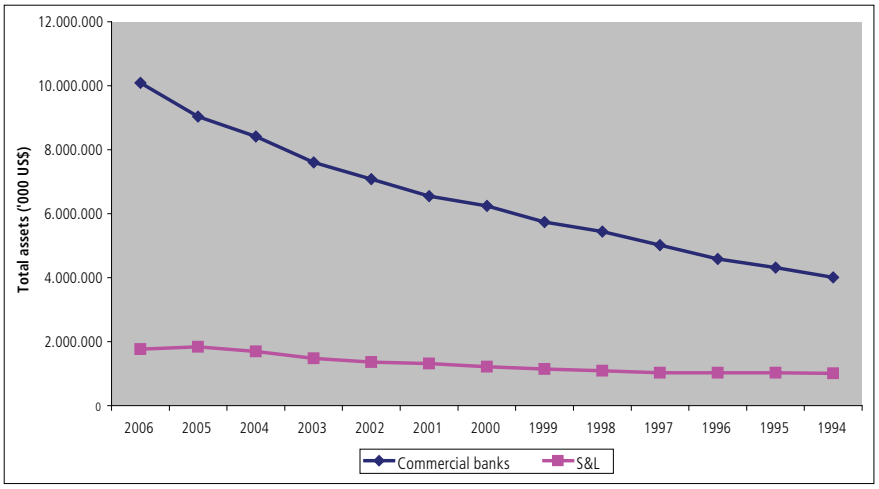

Figure 2.2: Trend in the size of US depository institutions

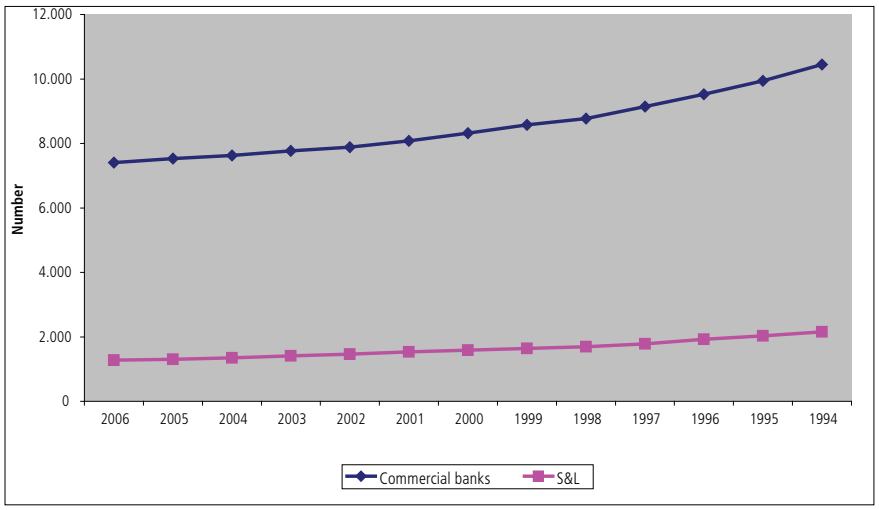

Figure 2.3: Trend in the number of US depository institutions

Source: Tables created using data from www2.fdic.gov/qbp/qbpSelect.asp?menuItem=STBL

Credit unions

Credit unions are non-profit institutions mutually organised and owned by their members (depositors). Their primary objective is to satisfy the depository and lending needs of their members, who have to belong to a particular group (identified by occupation, association, geographical location). The members' deposits are used to provide loans to other members, and earnings from these loans are used to pay a higher rate of interest to member depositors. They are the most numerous among the institutions composing depository institutions, totalling about 8,535 in 2006 according to the Credit Union National Association.

Contractual savings institutions

Contractual savings institutions acquire funds at periodic intervals on a contractual basis. The industry is classified into two major groups: insurance companies and pension funds. The liquidity of their assets is less important than for depository institutions because they can predict with reasonable accuracy the future payments due to their customers. As a consequence they invest their funds in long-term securities (such as corporate bonds, stocks and mortgages).

Insurance companies

The primary objective of insurance companies is to protect individuals and firms (known as policy-holders) from adverse events. Insurance companies receive premiums from policy-holders, and promise to pay compensation to policy-holders if particular events occur. There are two main segments in the industry: life insurance on the one hand, and property and causality insurance on the other.

Life insurance protects against death, illness and retirement. Companies acquire premiums from the policy-holders, and use them mainly to buy corporate bonds, mortgages, and stocks (amount limited by legislation). In 2006 in the US, life insurance companies were the largest group among the contractual savings institutions with aggregate assets of $4.71 trillion as reported by the Insurance Information Institute. Note that traditional life insurance is no longer the primary business of many companies in the life/health insurance industry. Today, the emphasis has shifted to the underwriting of annuities. Annuities are contracts that accumulate funds and/or pay out a fixed or variable income stream, which can be for a fixed period of time or over the lifetimes of the contract holder and his or her beneficiaries.

Property and causality insurance provides protection against personal injury and liabilities such as accidents, theft and fire. In comparison to life insurance companies, they hold more liquid assets because of a higher probability of loss of funds in case of major disasters. In the USA this segment is quite concentrated: the top 10 firms have a 51 per cent share of the market.

Pension funds

Pension funds provide retirement income (in the form of annuities) to employees covered by a pension plan. They receive contributions from employers or employees and invest these amounts in corporate bonds and stocks. There are private pension funds and public pension funds. The US government has promoted the establishment of pension funds, and the expectation is of further developments in pension funds in terms of number and variety of options.

In some countries pensions funds are very important (e.g. USA and UK) whereas elsewhere they are not (e.g. France, Germany and Italy), because of the different importance of State pension schemes.

Activity 2.4

What types of pensions are there? Visit the Financial Services Authority website (available at www.moneymadeclear.fsa.gov.uk/products/pensions/pensions.html) to find out more about the UK system.

Do you now understand how a pension fund operates? Look in Mishkin and Eakins (2009), pp.561–62 to make sure. After reading Mishkin and Eakins (2009) do you think pension funds are financial intermediaries, i.e. do they channel funds from saver-lenders to spender-borrowers?

Investment intermediaries

Investment intermediaries comprise mutual funds, finance companies, investment banks and securities firms.

Mutual funds

Mutual funds pool resources from many individuals and companies and invest these resources in diversified portfolios of bonds, stocks and money market instruments. An open-ended mutual fund (the major type of mutual fund) continuously allows shareholders to sell (redeem) outstanding shares, and investors to buy new shares at any time. The value of these shares is determined by the value of the mutual fund's holding assets. Two main advantages characterise mutual funds. First, mutual funds provide opportunities to small investors to invest in financial securities and diversify risk. Second, mutual funds take advantage of lower transaction costs when they buy larger blocks of financial securities.

There are two segments in the mutual fund industry: long-term funds and short-term funds. Long-term funds comprise bond funds (funds that contain fixed-income debt securities), equity funds (funds that contain stock securities) and hybrid funds (funds that contain both debt and stock securities). Short-term funds are represented by money market mutual funds, funds that contain various mixes of money market securities and partially allow shareholders to write cheques against the value of their holdings: the presence of deposit-type accounts makes money market mutual funds to some extent similar to depository institutions.

In the USA mutual funds are the second most important financial intermediary in terms of asset size. In fact, they are larger than the insurance industry, but smaller than the commercial bank industry. The combined assets of the nation's mutual funds increased to $9.5 trillion in 2006, according to the Investment Company Institute's official survey of the mutual fund industry.

Activity 2.5

From the 2007 Investment Company Fact Book produced by the Investment Company Institute (available online at www.icifactbook.org/pdf/2010_factbook.pdf) read the summary on the significant events in the mutual fund industry (pp.210–12).

Then write a short explanation of how you think these events have determined the historical trend of the industry as described in Table 1 'US Mutual Fund Industry Total Net Assets, Number of Funds, Number of Share Classes, and Number of Shareholder Accounts, (2010 Investment Company Fact Book, p.124).

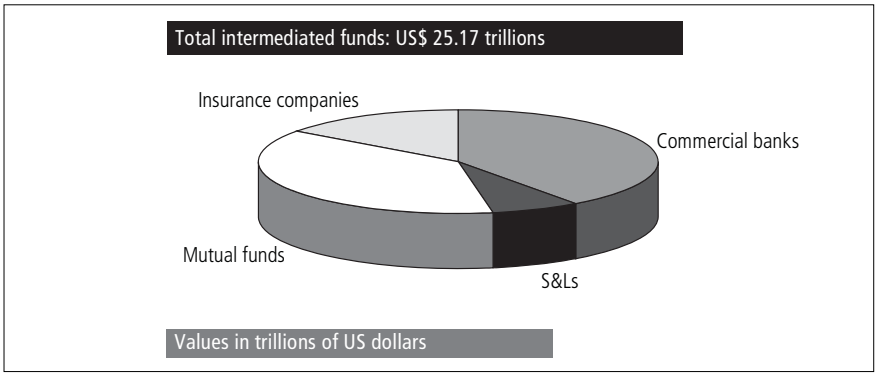

Figure 2.4: Intermediated funds by type of financial intermediary

Source: Table created using data from FDIC website (http://www2.fdic.gov/hsob/)

Summing up, as shown in Figure 2.4, the total funds intermediated by US financial intermediaries are US$25.17 trillion in 2006. Commercial banks account for the highest proportion, followed by mutual funds, insurance companies and S&Ls.

Finance companies

Finance companies make loans to individuals and corporations by providing consumer lending, business lending and mortgage financing. Some of their loans are similar to those provided by commercial banks. However, finance companies differ from commercial banks because they do not accept deposits. They raise funds by selling commercial paper (a short-term debt instrument) and by issuing stocks and bonds. Moreover, finance companies often lend to customers perceived as too risky by commercial banks.

There are three major types of finance companies:

- Sales finance institutions that make loans to customers of a particular retailer or manufacturer (e.g. Ford Motor Credit).
- Personal credit institutions that make loans to consumers perceived as too risky by commercial banks (e.g. Household Finance Corp).
- Business credit institutions that provide financing to companies, especially through equipment leasing and factoring (purchase by the finance company of accounts receivable from corporate customers).

Investment banks and securities firms

Investment banks assist corporations or governments in the issue of new debt or equity securities. Investment banking includes:

- the origination, underwriting and placement of securities in primary financial markets (primary and secondary markets are discussed later in this chapter). The process of underwriting a stock or bond issue requires the investment bank to purchase the entire issue at a predetermined price and then to resell it in the market. The investment bank then bears the risk that they are not able to resell the entire issue in which case it will hold the unsold stock on its own balance sheet. In return for taking on this risk the investment company receives an underwriting fee from the issuing company.
- financial advisory on corporate finance activities (such as advising on mergers and acquisitions).

Typically, investment banks earn their income from fees charged to clients. These fees are usually set as a fixed percentage of the size of the deal being worked.

Securities firms assist in the trading of existing securities in the secondary markets. There are two main categories of securities firms:

- **brokers** - agents of investors who match buyers with sellers of securities. They earn a commission for their service;
- **dealers** - agents who link buyers and sellers by buying and selling securities. They hold inventories of securities, and sell these securities for a slightly higher price than they paid for them. They thus earn the **bid-ask spread**, the difference between the best ask (lowest price charged for immediate purchase of stock) and the best bid (highest price received for an immediate sale of a unit of stock).

The main service offered by brokers is securities orders. Orders are trade instructions specifying what traders want to trade, whether to buy or sell,

how much, when and how to trade, and on what terms. Traders issue orders when they cannot personally negotiate their trades. There are two primary types of orders: market orders and limit orders. **Market orders** are instructions to trade at the best price currently available in the market. Market order traders pay the bid-ask spread (they demand immediacy).

It follows that there is price uncertainty. Large market orders can have substantial and unpredictable price impacts. **Limit orders** instead are instructions to trade at the best price available, but only if it is no worse that the limit price specified by the trader. For example, you submit a limit order to buy 100 shares of BP at (at most) 515p per share. The order will be executed if there is a seller willing to give you his shares for 515p or less. In such a case, there is no price uncertainty but there is execution uncertainty. Note that standing limit orders (i.e limit orders that are not immediately executed) provide the market with liquidity as they sit in the order book allowing traders who submit a market order to obtain immediate execution.

In the USA, the securities firms and investment banking industry includes several types of firms:

- National full-line firms acting both as broker-dealers and underwriters. The major US firms are Merrill Lynch and Morgan Stanley.
- National full-line firms that specialise more in corporate finance and are highly active in trading securities; examples are Goldman Sachs and Smith Barney.
- Specialised investment bank subsidiaries of commercial banks, such as J.P. Morgan Chase
- Specialised discount brokers, stockbrokers that conduct trading activities for customers without offering any investment advice (such as Charles Schwab).
- Specialised electronic trading securities firms (such as E*trade) enabling trades on a computer via the internet.
- Regional securities firms concentrating in the service of customers of a particular geographical region.

Retail and wholesale banks

Commercial banking can also be separated into retail and wholesale banking. The difference between retail and wholesale banking is essentially one of size. Retail banks have traditionally provided intermediation and payment services to individuals and small businesses dealing with a large number of small value transactions. This is in contrast with the wholesale banks, which deal with a smaller number of larger value transactions.

In practice it is difficult to identify purely retail banks. In the UK, USA and many other developed countries, large banks combine retail and wholesale activities. Wholesale banks consist mainly of investment banks.

Financial intermediaries around the world

In the **United Kingdom** the banking system comprises **commercial banks**, investment banks and building societies. Four big clearing banks currently dominate commercial banking: Barclays, Royal Bank of Scotland (RBS), HSBC, and Lloyds. They are essentially universal banks as they provide a wide range of services to individuals and corporations (from life insurance to underwriting). As London is an international financial centre, the role of foreign commercial banks is extremely important there:

they are roughly the same size as UK domestic banks. Investment banks are involved in traditional investment banking activities, like in the USA. **Building societies**, likeS&Ls in the USA, were originally devoted to providing mortgages. Deregulation has allowed them to expand their activities into traditional banking; as a result, they are now competitors of the big four. Among contractual savings institutions there are pension funds and insurance companies. They both constitute a large proportion of household assets, significantly larger than in other countries. Insurance services are provided by bank subsidiaries as well as insurance companies. The insurance industry, unlike banking, is not dominated by a few large players.

The banking sector in **Japan** comprises shareholder-owned banks (ordinary banks, trust banks, and long-term credit banks) and cooperative banks (credit unions and credit association). **Ordinary banks**, the counterpart of commercial banks in other countries, provide mainly short-term loans to individuals and corporations. **Trust banks** provide long-term loans to corporations, in addition to a range of services (ordinary banking services, asset management, investment advisory services). **Long-term credit banks** provide long- and medium-term loans (mainly to large corporations) by using the funds raised from medium- and short-term bonds. **Cooperative banks** provide banking services to small corporations and are owned by their members. Among contractual savings institutions, life insurance companies are significantly more important in Japan than in other countries. These companies – that are mostly mutual – provide traditional life insurance products, make long-term loans to corporations and manage corporate pension funds. Property and causality insurance companies are also important, but not as important as life insurance companies. Pension funds in Japan are significantly more important than in France and Germany, but less than in the USA and UK.

In **France** there are commercial banks, mutual and cooperative banks and savings banks. Commercial banks are the most important industry in the banking system, but **mutual and cooperative banks** are also significant. There are several types of mutual and cooperative banks with different specific purposes: Crédit Mutuel (to provide loans to individuals with modest income); Crédit Coopérative (to provide loans to their members, while receiving deposits from everybody); Crédit Agricole Mutuel (to provide loans to farmers); Crédit Populaire (to provide loans to the trade sector and medium-size industries). **Savings banks** can make loans only to non-industrial or non-commercial entities or individuals. Their unique feature is to offer accounts whose interest is tax-free up to a given amount. French contractual savings institutions are mostly insurance companies (similar to those in the Japanese financial system), whereas pension funds are rare. Insurance services can be provided by commercial banks as well as insurance companies.

Commercial banks, savings banks and cooperative banks constitute the banking system in **Germany**. Commercial banks are universal banks that provide a full range of products and services: deposits, short- and long-term loans, life insurance, underwriting and even investing directly in equity securities. The big three commercial banks are: Deutsche, Dresdner and Commerzbank. Savings banks are non-profit maximising entities but are operated in the public interest. Cooperative banks are mutual organisations owned by their depositors. An interesting feature of the German banking system is that the majority of organisations (in terms of assets) are not profit-maximising entities. As in France, very few household assets are held by pension funds, whereas insurance companies

hold a large proportion of assets. Insurance services are provided by universal banks as well as insurance companies and are usually organised by groups (because of the legal requirement to separate life insurance from other forms of insurance).

USA	Commercial banks	S&L	Credit Unions	Institutions not found in USA
UK	Commercial banks	Building societies		
Japan	Ordinary banks	Co-operative banks (Credit Unions and Associations)		Trust banks Long-term credit banks
France	Commercial banks	Mutual and Co-operative banks	Savings banks	
Germany	Commercial banks	Co-operative banks	Savings banks	
Your country				

Table 2.2: Equivalent names of depositary institutions

Table 2.2 shows the different names used for the US institutions we looked at above. Add your country to the table in the last row.

(Refer to Chapter 3 'Comparative financial systems' to analyse the historical developments of national financial systems and to understand the reasons for the existence of bank-based and market-based financial systems across countries).

Activity 2.6

In the following table, list the names of some major financial institutions and briefly note down the special features of the financial system in each country.

Country	Examples of important financial institutions	Special features of their system
USA		
UK		
Japan		
France		
Germany		

Nature of financial instruments (securities)

Financial instruments (known as securities) can be classified into two broad groups: debt instruments and equity instruments. Note that there are also derivative instruments (such as futures, options and swaps), which are financial instruments that derive their value from the value of some other financial instruments or variables. (Although they are not analysed here, they will be developed in later subjects in the programme, such as **92 Corporate finance**.) Remind yourself what a security is (see the Essential reading and see also p.17 earlier in this chapter).

Debt and equity instruments

Debt instruments are instruments that promise the payment of given sums to the investor. Examples of debt instruments are bills, notes and bonds (described below). Bonds represent debt owed by the issuer to the investor. They are claims that normally pay periodic interest (coupon payments) until the maturity date, and pay back the par value (face value)

to the investor at the maturity date. The coupon payments are usually based on a fixed interest rate. The interest rate is the cost of borrowing or the price paid for the rental of funds (usually expressed as a percentage).

Equity represents claims to shares in the net income and assets of a firm, and they do not have a maturity date. In terms of economic rights, equity claims differ from debt instruments for several reasons.

- First, firms are not contractually obliged to make periodic payments to equity holders: the payment of dividends is a discretionary decision of the firm.
- Second, firms must pay all their debt holders before they make any payment to equity holders: therefore equity holders are residual claimants.

As a result, equity claims are riskier than debt instruments. In addition to economic rights, equity claims confer ownership rights to equity holders. The presence of ownership rights is in contrast with bondholders, who have no ownership interest but are rather creditors of the firm.

Ownership rights have two main implications.

- First, equity holders can benefit from any increase in the income or asset value of the company. In the case of stock price increases (decreases) on the financial market, equity holders can obtain high capital gains (losses), whereas this is very unlikely by investing in bonds.
- Second, equity holders have the right to vote for directors or on certain issues. The proportion of economic and ownership rights is different between common stocks and preferred stocks (as discussed below).

Activity 2.7

If you expect a company to become bankrupt in a year's time, would you rather hold bonds or equities issued by the company? Or nothing?

Zero coupon bonds, coupon bonds and other types of bonds

Debt instruments can be classified into two main categories: zero coupon bonds and coupon bonds. **Zero coupon bonds** are instruments under which a borrower promises, at the current time, to pay one specified nominal sum (face value) to the lender at one specified future date. In return, at the current date the borrower receives the bond price. Zeros are also known as discount bonds. Clearly, with positive interest rates, the price of a zero coupon bond must be lower than the face value. Let me give an example of a zero coupon bond: an 8-year zero issued today and with face value of $1,000 would require the borrower to repay this amount to the lender after this period of time. At the current date, the borrower receives an amount of cash which must be less than $1,000 given the positive time value of money.

Coupon bonds are contractual agreements by the borrowers to make regular payments (known as coupons or interest) until a specified date (the maturity date), when the amount borrowed (principal) is repaid. The maturity is the time to the expiration date of the debt instrument. Coupon bonds deliver two different types of cash flow to the bondholder:

- Face value: at the end of the bond's lifetime, the issuer repays the face value of the bond to the holder. Face value is also known as par value or principal.

- Coupon payments: regular (often semi-annual) payments of cash to the bondholder. These payments are generally a fixed fraction of the face value. The interest rate is the cost of borrowing or the price paid for the rental of funds (usually expressed as a percentage).

Let me give an example of a coupon bond: assume that a company issues a three-year bond with a coupon rate of 5 per cent and face value of $1,000. The bondholder receives the following ($) cash flows (note the semi-annual coupon payments which are each half the total annual coupon):

Year	0.5	1.0	1.5	2.0	2.5	3.0
Cash flows ($)	25	25	25	25	25	1,025

Certain other popular bond types differ from standard coupon bonds along certain dimensions. These include: perpetual bonds, floating rate bonds and index-linked bonds. **Perpetual** bonds (also known as consols) never mature. They simply pay coupons of a specified amount forever. **Floating rate bonds** have coupon rates which vary over the bond's lifetime. Generally, the floating coupon rate is set at a premium over some market interest rate (e.g LIBOR or the US T-bill rate) and is reset on a pre-specified basis. For **index-linked bonds**, coupons and principal grow in line with inflation (in the relevant country). First issued in the UK, they are now increasingly frequently issued by governments. As such, they can be thought of as real, risk-free securities (although in most cases indexation is not perfect).

Certain bonds also have options embedded in them. These embedded options will provide the issuer or holder with extra rights over and above the usual. Examples include callable bonds, puttable bonds and convertible bonds. **Callable bonds** can be repaid early (i.e. before maturity) by the issuer if he/she so chooses. Early repayment might be restricted to a specified date (European) or may be allowed at any time prior to maturity (American). With **puttable bonds** the redemption date is under the control of the holder (i.e. the opposite to the callable bond case). **Convertible bonds** are debt instruments which can be converted into a share in the firm's equity (either at a specific date or at any time). As such, this type of debt allows bondholders, as well as shareholders, to participate in upside gains of a corporation.

On the basis of the country of sale in comparison to the issuer's country of origin, there are two special types of bonds: foreign bonds and Eurobonds. A **foreign bond** is a bond issued by a borrower in a country different from that borrower's country of origin (i.e. the borrower is selling debt abroad). The bond is denominated in the currency of the country in which it is sold. Hence, if a Russian firm sells Sterling denominated debt in the UK it has issued foreign bonds. Such Sterling denominated foreign bonds are colloquially known as bulldog bonds. **Eurobonds** are bonds denominated in the currency of one country but actually sold or traded in another, different country. So, for example, a Eurosterling bond will be denominated in Sterling but sold outside the UK. Coupons on these bonds are generally paid on an annual basis. Note that London is one of the major Eurobond markets.

Activity 2.8

Identify whether the following bonds are foreign bonds or Eurobonds:

1. A US firm issues a dollar denominated bond in London.
2. A Japanese firm issues a dollar denominated bond in New York.
3. A UK company issues a dollar denominated bond in Singapore.

On the basis of the maturity, debt instruments can be divided into: short-term (maturity less than one year), intermediate-term (maturity between one and ten years), and long-term (maturity of ten years or longer). Bonds are generally defined to have lifetimes exceeding one year. Debt securities with maturities less than a year are called **money market securities**.

Bonds, notes and bills by issuer

There are three main classes of institutions that issue bonds in the USA: national governments, local governments and corporations. (As we saw above, most US instruments and intermediaries have their parallels in other industrial countries).

Government notes and **bonds** are issued in the USA by the US Treasury to finance national debt. Notes have an original maturity of one to ten years, while bonds have an original maturity of ten to twenty years. Government notes and bonds are normally seen to be free of default risk (risk that the issuer of the bond will default, that is, be unable to make interest payments and principal repayment, as discussed in Chapter 6). In fact, the issuer (the government) can always print money to pay off the debt if necessary. As a consequence, they pay lower interest rates than corporate bonds. Such bonds are known as gilts in the UK, Treasuries in the USA and Bunds in Germany.

Note that among government debt instruments are Treasury bills. These are money market securities, with an original maturity of less than one year. They do not pay any interest, but they are issued at a discount from their par value and they are repaid at the par value at the maturity date. The difference between the issue value and the par value represents the yield to the investor.

Municipal bonds are debt instruments issued by US local, county or state governments to finance public interest projects. Municipal bonds are not default-free and are not as liquid as Treasury bonds. In fact, such bonds are usually secured on their own revenues and not guaranteed by central government. However, they pay lower interest rates than Treasury bonds. The reason for this is that their interest payments are exempt from federal taxation, and thus this determines an implicit increase in the actual interest rates received by investors.

Corporate bonds are issued by large corporations when they need long-term financing. They usually make interest payments twice a year (semi-annually). Clearly such debt is not risk-free and the level of risk will depend on the nature of the corporation's activities (e.g. contrast utilities with biotech firms). The degree of risk, which depends on the default risk of the company, is higher than for government and municipal bonds. This determines the presence of higher interest rates. Moreover, this gives bondholders senior claims on corporate assets in the event of bankruptcy.

Activity 2.9

Are each of the following statements true or false?

1. A bond only pays the holder a return if the company makes a profit.

2. Banks buy bonds and issue shares. They never buy shares or issue bonds.

Default risk and bond rating

A bond (generally) obliges a borrower to repay nominal cash flows at specified dates. However, circumstances may arise whereby the borrower is unable to meet the obligations. At such a time the borrower is said to be in default. After a default, the bondholder generally has a senior

claim on the borrower's assets. Obviously, the likelihood of a borrower defaulting will affect the terms on which individuals are willing to lend to a borrower: if I consider agent A to be more likely to default than agent B, I will charge agent A a higher rate of interest, a **default risk premium**.

As discussed in Chapter 4, certain commercial organisations help characterise the default risk associated with bonds by providing credit ratings. The two main players in this market are Moody's and Standard and Poor's. They assign ratings to bonds such that highly rated bonds are projected to have low default risk while very low rated bonds (junk bonds) are believed to be quite likely to default.

The term structure of interest rates

The term to maturity influences the interest rate. Bonds with identical risk may have different yields (interest rates) because of the difference in the time remaining to maturity. A yield curve plots the yields (interest rates) of bonds with different maturity but the same risk. Usually the yield curve is constructed from government securities. These are often referred to as the benchmark yield curve, as they are the basis for evaluating other yields of similar maturity bonds. The yield curve can be: upward (the long-term rates are above the short-term rates); flat (short- and long-term interest rates are the same); and inverted (long-term interest rates are below short-term interest rates).

There are a number of factors that influence the shape of the yield curve.

(a) Expectations theory

The expectations theory of the term structure of interest rates states that in equilibrium, the long-term rate is a geometric average of today's short-term rate and expected short-term rates in the future.

This theory requires that there is an implicit relationship between current bond yields and forward rates. The forward rate of interest is the rate of interest that will be payable on funds beginning at some future date. For example, if:

R represents the annual yield on a two-year bond,

r1 represents the annual return from a one year bond, and

r2 represents a one-year forward rate beginning in one year's time

then the following relationship will hold:

$$(1 + R)^2 = (1 + r1) \times (1 + r_2)$$

With the expectations theory of the term structure, an investor who invests £1,000 in either a two-year bond, or a one-year bond subsequently reinvesting the proceeds from the first year into another one-year bond, will receive the same return from both strategies. According to the theory, the existence of arbitrageurs in bond markets ensures that this relationship holds.

Suppose that the yield on a two-year government bond, R is 9% p.a. and the yield on an equivalent one year bond, r_1 is 8% p.a. The yield implied on a one year bond held during year two of the two year bond's life, r_2, is given as:

$$£1{,}000 \times (1.09) \times (1.09) = £1{,}188.10 = £1{,}000 \times (1.08) \times (1 + r_2)$$

$$r_2 = 10.01\%$$

In this example, there is an upward sloping yield curve as the 1 year bond yield is lower than the two year yield. Usually we observe an upward

sloping yield curve, for example in 2008 the shape of the yield curve was the one shown in Figure 2.5.

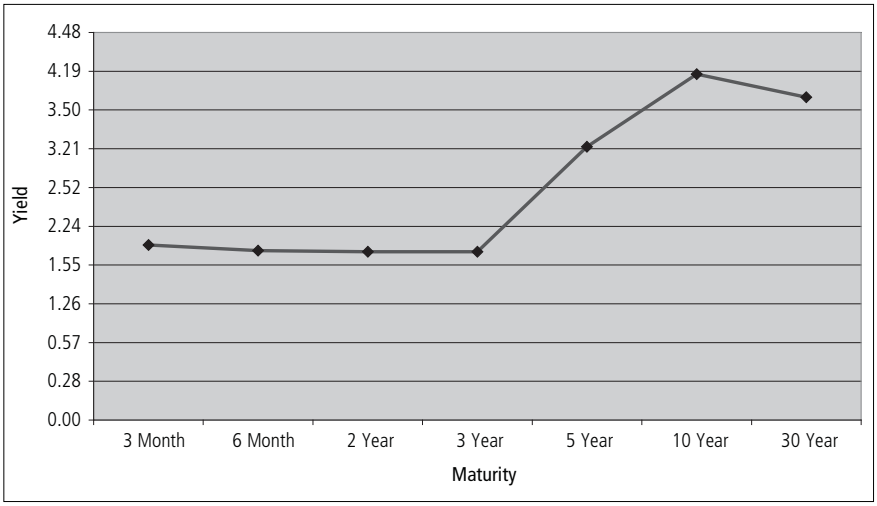

Figure 2.5: US Treasury yield curve rates (8 February 2008)

Source: Graph created using data from: http://bonds.yahoo.com/rates.html.

In the yield curve example above, the current long rate (after three years) is higher than the current short rate, therefore short-term rates must be expected to rise in the future. Conversely, if the current long rate is lower than the current short rate then short-term rates are expected to decline in the future: in this instance, we will observe a downward sloping yield curve. Finally, if no change is expected in short rates, then the current long rate will equal the current short rate, and we will observe a flat yield curve. Hence, it should be clear that the shape of the yield curve will be determined by expectations of future interest rates.

(b) Liquidity premium theory

Liquidity premium theory asserts that, in a world of uncertainty, investors and lenders will want to hold assets which can be converted into cash quickly. Therefore they will demand a liquidity premium for holding long-term debt. Conversely, the same dislike for uncertainty causes borrowers (for example, firms and governments) to prefer to borrow for a longer period at a rate which is certain now – therefore they will be willing to pay a liquidity premium and, therefore, a higher rate of interest on their longer-term debt. This implies that the yield curve will normally be upward sloping, in the absence of any other influences. In reality, we need to consider the combined effect of expectations together with liquidity preference. A downward sloping yield curve will occur when expectations of an interest rate fall are sufficient to offset the liquidity premium.

(c) Market segmentation

As well as the investors' expectations with respect to future interest rates and their preferences for liquidity, another theory, the market segmentation theory, suggests that the bond market is actually made up of a number of separate markets distinguished by time to maturity, each with their own supply and demand conditions. Different classes of investors and issuers will have a strong preference for certain segments of the yield curve and, therefore, the curve will not necessarily move up, or down, over its entire range.

Activity 2.10

Now read Mishkin and Eakins (2009) pp.107–109 and then try and answer the following questions:

1. According to the expectations theory, if the current short term rate is higher than the current long term rate, what is expected to happen to interest rates in the future?
2. Which of the three theories best explains why yield curves normally slope upwards?
3. Why can't the market segmentation theory explain why yields on bonds of different maturities tend to move together?

Activity 2.11

Consult http://bonds.yahoo.com/rates.html. This shows the interest rates paid on US Treasury bonds, municipal bonds and corporate bonds. Then try the following questions:

1. Why do 2-year Treasury bonds pay lower rates than 5-year Treasury bonds?
2. Why do 5-year municipal bonds pay lower rates than 5-year Treasury bonds?
3. Why do corporate bonds pay higher rates than government bonds?

Common and preferred stocks

Common stocks represent ownership interests in the firm. Common stockholders receive dividends (when distributed), take capital gains (or losses) when the stock price on the market increases (or decreases), and have the right to vote.

Preferred stocks are equity claims with limited ownership rights in comparison to common stocks. They differ from common stocks in several ways. First, preferred stocks distribute a fixed constant dividend, which makes them more similar to bonds than to common stocks. Second, the price of preferred stocks is relatively stable, as the dividend is a constant amount. Third, preferred stocks do not usually carry voting rights. Finally, preferred stockholders have a residual claim on assets and income left over after creditors have been satisfied, but they have priority over common stockholders.

Structure of financial markets

Financial markets can be classified on the basis of several parameters: the nature of the financial securities traded (primary versus secondary markets), forms of organisation (organised exchanges versus over-the-counter markets), maturity of the financial instruments traded (capital markets versus money markets), and forms of trade intermediation (quote-driven dealer markets, order-driven markets and brokered markets).

Primary and secondary markets

A primary market is a financial market in which new issues of financial securities (both bonds and stocks) are sold to initial buyers. A secondary market is one in which securities that have been previously issued are resold. Primary markets facilitate new financing to corporations, but most of the trading of securities takes place in the secondary markets.

Although some commentators have argued that secondary markets are less important to the economy than primary markets, they serve two important functions. First, they make financial securities more liquid. The improvement in liquidity makes securities more desirable to investors, and thus easier for the firm to sell them in the primary market. Second, they set the price of the securities the firm sells in the primary market. This means that the price of the securities' issues on the primary markets is

partly determined by the price of similar securities traded in the secondary market. These two reasons explain why we focus our attention on secondary markets.

In the USA the New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) are the best known examples of secondary markets for the trading of previously issued stocks. (In April 2007 NYSE was combined with Euronext, as discussed below.) Note however that the US bond markets, where previously issued private or governmental bonds are traded, actually have a larger trading volume that the US stock markets.

Activity 2.12

In the table below, tick the column that shows where each of the intermediaries operate.

	Operate in primary markets	Operate in secondary markets
Mutual funds	☐	☐
Finance companies	☐	☐
Investment banks	☐	☐
Securities firms	☐	☐

Exchanges and over-the-counter (OTC) markets

Secondary markets can be organised as exchanges or over-the-counter (OTC) markets.

- In exchanges, buyers and sellers (through their brokers) transact in one central location to conduct trades. Examples are the New York Stock Exchange (NYSE) which recently acquired the American Stock Exchange (AMEX) and the London Stock Exchange (LSE).
- In over-the-counter markets, dealers at different locations have an inventory of securities, and are ready to buy and sell these securities 'over-the-counter' to anyone willing to accept their price. Because of the technological links among dealers about prices, OTC markets are competitive and not very different from organised exchanges. OTC trading is most significant in the USA, where requirements for listing stocks on the exchanges are quite strict. Examples of OTC markets are: the US government bond market and the NASDAQ (National Association of Securities Dealers Automated Quotation System) stock exchange. The NASDAQ is the second largest US market. Traditionally, it used to be a pure dealer market. Following controversies about dealer collusion, since 1997 public limit orders are allowed to compete with dealers. Market and limit orders can be entered onto the Small Order Execution System (SOES), which automatically routes market orders to the dealer quoting the best price.

(Read Mishkin and Eakins (2009), pp.262–64 for more information on the NASDAQ.)

Activity 2.13

Visit the Nasdaq website at www.nasdaqomx.com/whoweare/quickfacts/ and summarise the mission of Nasdaq.

Money and capital markets

On the basis of the maturity of the securities traded, a distinction between money and capital markets can be introduced.

- Money markets are financial markets where only short-term debt instruments (maturity of less than one year) are traded. Money markets are mainly wholesale markets (large transactions) where firms and financial institutions manage their short-term liquidity needs (i.e. to earn interest on their temporary surplus funds).
- Capital markets are markets in which long-term securities are traded. These long-term instruments include equity instruments (infinite life), government bonds and corporate bonds (original maturity of one year or greater). Capital markets' securities are often held by financial intermediaries, such as mutual funds, pension funds and insurance companies.

Quote-driven dealer markets, order-driven markets and brokered markets

On the basis of how the trade intermediation occurs, a distinction between quote-driven dealer markets, order-driven markets and brokered markets can be made.

- In **quote-driven dealer markets**, a dealer or market-maker is on one side of every trade. (Note that dealers are also known as market makers, as they quote prices and stand ready to buy and sell at these quotes, so that they provide liquidity). Dealers hold an inventory of the security, which fluctuates as they trade. They profit from charging a bid-ask spread and from speculating.
- In **order-driven markets**, buyers and sellers trade directly without any intermediation. Most order-driven markets are auction markets. Trading rules formalise the process by which buyers seek the lowest available prices and sellers seek the highest available prices (price discovery process).
- In **brokered markets**, brokers perform an active search role to match buyers and sellers. They do not provide liquidity but they find liquidity. They hold no inventory as they do not participate in the trade themselves. The most important brokered securities markets are those for large blocks of stocks and bonds.

Most major equity markets are hybrid markets in that they are not purely order-driven or purely quote-driven, but a mixture of the two. For example the NYSE is an explicitly hybrid market. Each stock is assigned a single market-maker, known as a specialist. He must ensure that trade in the stock in question occurs in a fair and orderly fashion. He must provide quotes to everybody. However, the public can also submit limit orders to the specialist. The specialist then maintains (and has exclusive access to) the limit order book. When the specialist provides quotes to potential customers, they may be his own or (partially) composed from public limit orders. This implies that not all trades affect the specialist's inventory.

Secondary markets around the world

In the **United Kingdom**, secondary financial markets are as sophisticated as in the USA. The London Stock Exchange, the major organised stock market in the UK, enables domestic and overseas companies to raise equity capital. (Note that in August 2007 the London Stock Exchange merged with Borsa Italiana, and nowadays the group leads the European equities business.) For frequently traded stocks (constituents of the FTSE-100,

the market index of the London Stock Exchange), the primary trading venue is the electronic, order-driven system called SETS (Stock Exchange Electronic Trading Services). Essentially, the London Stock exchange is a hybrid market: while the exchange itself regards SETS as the primary trading venue for FTSE-100 stocks, a lot of trade in these stocks is off the SETS order book. Dealers still exist who are voluntarily willing to provide liquidity in FTSE-100 stocks. Hence, the London Stock Exchange has some quote-driven features too (and is not fully transparent or centralised).

As shown by Figure 2.6, in 2004 the total capitalisation of domestic listed companies on the London Stock Exchange was much lower than the one of NYSE. Note however that foreign companies, not included in the graph, constitute a high proportion of listed companies in the UK. Bond markets are important in the UK. The domestic bond market has been replaced by the Eurobond market (market for the trading of bonds denominated in a currency other than that of the country in which they are sold). The Eurobond market is based in London, and accounts for the trading of most (up to 80 per cent) of the new issues of international bonds.

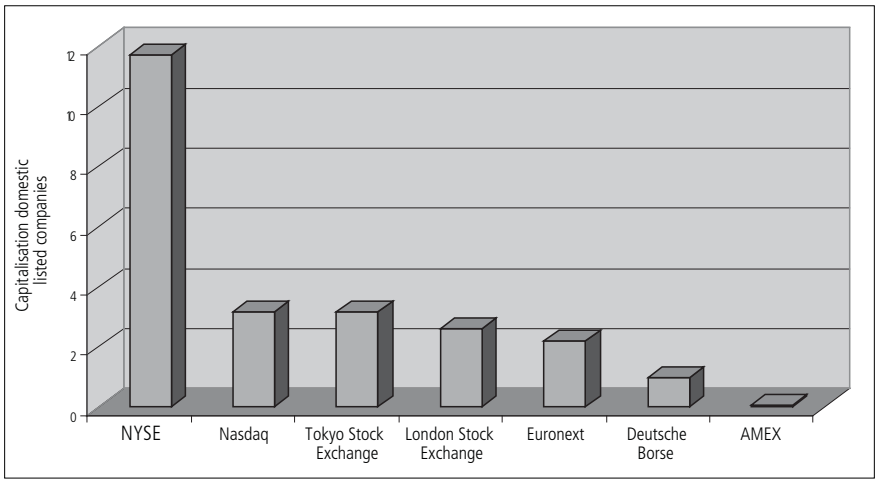

Figure 2.6: Stock market capitalisation ($trillion), 2004

Source: Graph created using data from NYSE website (www.nyse.com).

In **Japan** there are eight stock exchanges, with the Tokyo Stock Exchange by far the most important. The total capitalisation of domestic listed companies is similar to that of the London Stock Exchange. There is also an OTC market, which has become more important in recent years. The debt markets (for the debt of government, financial institutions and companies) are also well developed.

In the **Netherlands**, **France**, **Belgium** and **Portugal** the stock exchange is Euronext, which was formed on 22 September 2000 when the exchanges of Amsterdam, Brussels and Paris merged. Euronext expanded at the beginning of 2002 with the acquisition of LIFFE (London International Financial Futures and Options Exchange) and the merger with the Portuguese exchange BVLP (Bolsa de Valores de Lisboa e Porto). Euronext represents a European cross-border exchange, integrating trading and clearing operations on regulated and non-regulated markets, and was formed in response to the globalisation of capital markets and to create a pan-European exchange offering its participants increased liquidity and lower transaction costs. In April 2007 NYSE Euronext (i.e. the holding company created by the combination of NYSE and Euronext) was established. NYSE Euronext operates the world's largest and most liquid exchange group and offers the most diverse array of financial products and services.

In **Germany**, the Deutsche Borse is composed of seven regional exchanges, with Frankfurt being the most important. These markets have been traditionally underdeveloped in Germany compared to most other countries. The bond markets are more important than the stock markets. Most of the debt traded is issued by the government and banks.

Activity 2.14

In your own country, if you or a company want to launch (primary market) or buy and sell shares (secondary market), where do they do it? Note down what you've read about your country's stock exchange(s) and look at their websites. Ask your own bank what they think of these and other financial markets and intermediaries.

Summary

In this chapter, we investigated financial systems by using a functional perspective (analysing the functions of financial systems in order to understand why they exist) and a structural perspective (to outline the structure of financial systems and describe the main entities that comprise financial systems).

- From a functional perspective, financial systems perform two essential economic functions: the credit function and the monetary function.
- From a structural perspective, financial systems comprise financial intermediaries, securities and financial markets.

With reference to the US financial system, we provided a taxonomy of each of these three entities:

- Financial intermediaries comprise depository institutions (commercial banks, savings and loan associations and credit unions), contractual savings institutions (insurance companies and pension funds), and investment intermediaries (mutual funds, finance companies, investment banks and securities firms).
- Financial securities traded in financial markets are debt instruments (bonds, notes and bills), and equity instruments (common and preferred stocks).
- Financial markets can be classified as primary versus secondary markets, organised exchanges versus over-the-counter markets, capital markets versus money markets, quote-driven dealer markets versus order-driven markets and brokered markets.

Furthermore, the chapter provided an overview of the differences between national financial intermediaries and financial markets across the world.

Key terms

Bi-ask spread	Bonds	Borrower-spenders
Brokers	Brokered markets	Building societies
Callable bonds	Capital markets	Commercial banks
Common stocks	Contractual savings institutions	Convertible bonds
Corporate bonds	Coupon bonds	Credit unions
Dealers	Debt instruments	Default risk premium
Depository institutions	Direct finance	Economic function of a financial system
Equity	Eurobonds	Expectations theory
Finance companies	Financial intermediaries	Financial markets
Floating rate bonds	Foreign bond	Government bonds
Government notes	Index-linked bonds	Indirect finance
Insurance companies	Interest rate term structure	Investment banks
Investment intermediaries	Lender-savers	Limit orders
Liquidity premium theory	Long-term credit banks	Market makers
Market segmentation theory	Money markets	Market orders
Money market securities	Municipal bonds	Mutual/cooperative banks
Mutual funds	Order-driven markets	Ordinary banks
Organised exchanges	Over-the-counter markets	Pension funds
Perpetual bonds	Preferred stocks	Primary markets
Puttable bonds	Retail banks	Savings banks
Savings institutions	Secondary markets	Securities
Securities firms	Shares	Stocks
Treasury bills	Trust banks	Wholesale banks
Yield curve	Zero coupon bonds	

A reminder of your learning outcomes

By the end of this chapter, and having completed the essential readings and activities, you will be able to:

- explain why financial systems exist (i.e. explain the functions of financial systems)
- outline the structure of financial systems (i.e. describe the three main entities that compose financial systems: financial intermediaries, securities and financial markets)
- describe which financial intermediaries operate in financial systems in the USA in particular and, more generally, around the world (e.g. depository institutions, contractual savings institutions and investment intermediaries) and explain their characteristics
- explain which financial securities are traded on financial markets (bonds, notes, bills and stocks), and explain their nature
- discuss the various theories that attempt to explain the shape of the yield curve
- explain the structure of financial markets in the USA and around the world (primary versus secondary markets, money versus capital markets, organised versus over-the-counter markets, quote-driven dealer markets, order-driven markets and brokered markets).

Sample examination questions

1. a. What is a financial system? Frame your answer both from a structural and a functional perspective.

   b. What is the primary function of depository institutions? How does this function compare with the primary function of insurance companies?

   c. What is a mutual fund? What are the differences between short-term and long-term mutual funds? Where do mutual funds rank in terms of asset size among all financial intermediaries in the USA?

2. a. Explain how securities firms differ from investment banks. Which categories of firms are there in this industry? In what way are they financial intermediaries?

   b. What distinguishes stocks from bonds? What are the differences with reference to the risk/return relationship?

   c. 'Because corporations do not actually raise any funds in secondary markets, they are less important to the economy than primary markets'. Comment.

3. a. With reference to examples, discuss globalisation of the financial markets around the world.

   b. Compare and contrast quote- and order-driven markets

   c. Explain the purpose of money markets and give examples of the types of money markets and their users.

Chapter 3: Comparative financial systems

Aims

The aim of this chapter is first, to illustrate the main reasons for the existence of bank-based and market-based financial systems across countries, and to review the history of national financial systems and analyse why countries chose one way rather than another. Second, it aims to investigate the main causes of financial crises and their sequence of events. In particular we focus on the recent global financial crisis of 2007.

Learning outcomes

By the end of this chapter, and having completed the essential readings and activities, you should be able to:

- explain why the relative importance of banks and financial markets is different around the world
- discuss how the historical evolution of financial systems helps to explain the existence of bank-based and market-based financial systems
- outline the main similarities and differences between the financial systems of industrialised countries
- discuss the implications (in terms of households' asset allocation, role of indirect intermediation and firms' financing) of the existence of bank-based and market-based financial systems
- explain the main economic factors causing financial crises and the sequence of events of financial crises
- discuss, with reference to examples from history, financial crises and bubbles.

Essential reading

Allen, F. and D. Gale *Comparing Financial Systems*. (Cambridge, Mass.: MIT Press, 2001) Chapters 1, 2 and 3.

Mishkin, F. and S. Eakins *Financial Markets and Institutions*. (Boston, London: Addison Wesley, 2009) Chapter 18.

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Introduction

In Chapter 2 we suggested that financial markets and intermediaries are alternatives that perform more or less the same functions but in different ways (and perhaps with different degrees of success). Our objective in this chapter is to determine why we observe differences in financial systems with regard to the relative importance of financial intermediaries and financial markets, and hence why financial systems around the world can essentially be divided into bank-based and market-based systems.

In terms of the relative importance of banks and markets, Figure 3.1 clearly indicates some important differences across countries. First, we can see that the USA is at one extreme and Germany at the other. The equity market capitalisation to GDP ratio for the USA was 107 per cent in 2009. In contrast, the corresponding ratio for Germany was 39 per cent. The US ratio of market capitalisation is almost three times that of Germany. Accordingly, the ratio of bank claims on the private sector to GDP was 48 per cent for the USA and 127 per cent for Germany: the German ratio is about 2.5 times that of the USA.

Second, other financial systems fall in between these two extremes. On the one hand, in the UK, markets are more important than banks, but the relevance of banks is high (129 per cent versus 123 per cent). On the other hand, in Japan, banks are much more important than markets (127 per cent versus 70 per cent). Therefore, the UK and the USA are examples of market-based financial systems, where markets are more important than banks; while Japan and Germany are examples of bank-based financial systems, where the opposite situation occurs.

Third, several other financial systems are interesting intermediate cases, where both markets and banks are important. In France, banks and markets are roughly equally important. In other European countries (Italy and Spain), banks are important, and markets are less so. However, there are differences in the irrespective relevance (Banks are much more important than markets in Italy). Why are there differences in the relative importance of financial markets and intermediaries in different countries?

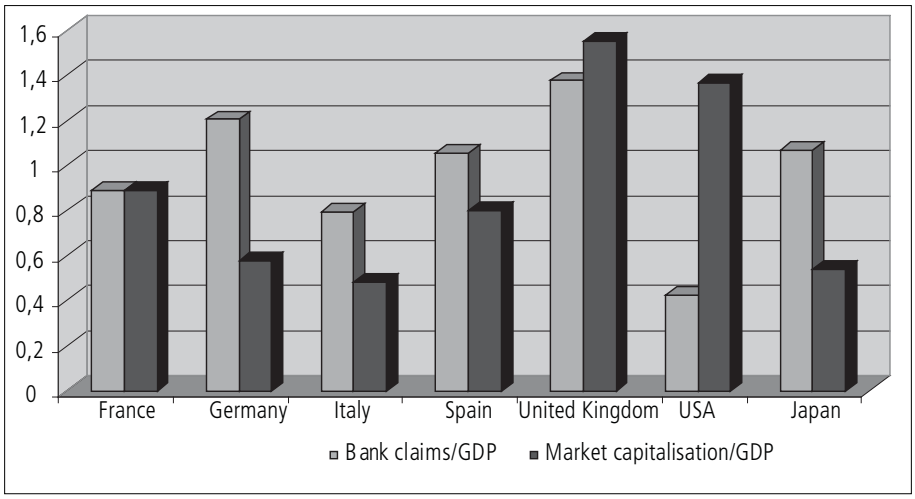


Figure 3.1: International comparison of banks and markets, 2009

Sources: OECD Statistics (for GDP data); World Federation of Exchanges (for stock exchange data); European Banks Federation; Bank of England; Federal Reserve Bank of USA; Bank of Japan.

The relative importance of different financial institutions is heterogeneous across countries. In terms of the different forms in which gross financial assets are held (directly by households, by pension funds, by insurance companies, by mutual funds), most assets are owned directly by households (except for the UK). In the USA and UK, pension funds are much more important than in other countries. In Germany, and to some extent in Japan, pension funds are relatively unimportant (please refer to Table 3.2 in Allen and Gale, 1998, p.48). Why are there differences in the relative importance of different financial intermediaries in different countries? What are the implications in terms of investment decisions of individuals in different countries?

From the perspective of households, there is a clear difference between the assets held in the USA, UK, Germany and Japan. As regard to the total portfolio allocation of assets, households in the USA and UK hold a greater proportion of their assets as shares than is the case in the other countries we consider here (Germany, Japan and France). Overall (direct and indirect holdings via pension funds, insurance companies and mutual funds), equity constitutes 45 per cent of household assets in the USA, and 52 per cent in the UK (even more than in the USA). This contrasts sharply with Japan and Germany, where the corresponding values are 12 per cent and 13 per cent. For cash and cash equivalents (which include bank accounts) and bonds the reverse is true. In Japan 52 per cent of assets are held in cash and cash equivalents and 13 per cent in bonds, while in Germany the figure is 36 per cent in both (please refer to Table 3.3 in Allen and Gale, 1998, pp.50–51). In the USA only 19 per cent of assets are held in cash and cash equivalents, and 28 per cent in bonds.

Activity 3.1

As you work throughout this section, fill in the table below on the household percentage of assets owned.

	USA	UK	Germany	Japan
Equity				
Cash and cash equivalents				
Bonds				

When you have completed the table in the Activity above you will see some sharp differences. The question is – why should these differences exist? Also, what are the implications in terms of risk for the investors of different countries?

From the perspective of firms' fund raising, the dominance of financial intermediaries over financial markets is clear in all countries. In all countries, except Japan, retained earnings are the most important source of finance. External finance is simply not very important. Loans represent the most important source of finance in terms of funds raised externally: they are the second source of finance in the USA, UK, Germany, Japan, France and Italy (Mayer, 1990; Corbett and Jenkinson, 1997). On the contrary, financial markets are not an important source of finance, as further discussed in Chapter 4. Even in the USA and the UK, which, as we saw above, have the highest financial market capitalisation to GDP, loans from financial intermediaries are far more important for corporate finance than are securities markets (bonds and stocks). In the countries with the lowest financial market capitalisation to GDP (Germany and Japan) financing from financial intermediaries has been almost ten times greater than that from securities markets. What makes financial intermediaries so important in the financing of firms?

Summing up, the UK and the USA are examples of market-based financial systems, where:

- Financial markets (organised markets for securities, such as stocks, bonds, futures and options) are more important than banks
- The proportion of gross financial assets owned by pension funds is higher.
- The proportion of equity in the total portfolio allocation of assets by householders is higher.
- Loans from financial intermediaries are more important for corporate finance than marketable securities, but at a lower extent than in other financial systems.

On the other hand, Germany and Japan are examples of bank-based financial systems.

This chapter explains these points. Whether a country has a bank-based or market-based financial system is important. Each type of system facilitates the flow of funds from savers to borrowers, but each has different implications for dealing with potential asymmetric information problems that arise between those providing funds and those receiving them, as discussed in Chapter 4. Is the ideal financial system – in terms of linking savers and borrowers – one that relies heavily on banks through lending and stock ownership or control to resolve these potential informational problems, or one that relies heavily on financial markets?

Activity 3.2

Plot the different countries shown in Figure 3.1 on a graph like this.

The evolution of financial systems

A basic knowledge of the historical development of financial systems is essential if you are to understand the reasons for the existence of market-based and bank-based systems. The stages that characterise the development of financial systems are briefly described below. You can find a full account of these in Allen and Gale (see Essential reading). We only summarise the main points here.

Ancient practices

In the first phase, which started with the Mesopotanian financial system (third millennium BC) and ended with the Roman empire (first century AD), the main characteristics of the system can be stylised as follows.

- Financial instruments were initially limited to precious metals or metallic (gold and silver) coins, but were then extended to loans and mortgages. Loans were made to individuals for consumption needs and for agricultural financing (from landlords to tenants). Mortgages were a combination of a loan and an insurance contract, and they were mainly used for foreign trade financing. The provider supplied funds to finance a voyager; however in the event of a catastrophe, repayment was not required (note the similarities with the equity instruments).
- Financial intermediaries were limited to money changers and banks. Money changers emerged because of the existence of many different types of coins. Banks began to operate in Athens in the late fifth century BC. Their main functions were to accept deposits and make loans.

Italian bankers

After the Romans, monetary systems did not develop in Europe until the next period of progress, starting in 1200. This came again from Italy, this time north of Rome in Tuscany and further north. These developments led eventually to the Renaissance in the 1300s. You can find some of the reasons explained in Allen and Gale – look out for the following factors: the role of the pre-Reformation Church; the aristocracy, nation states and taxation; the rise of Islam; trade routes between Asia and Europe (via the Silk Road). As a result, several characteristics of the modern financial system developed:

- Financial instruments became more varied. They included, in addition to trade credit and mortgages, bills of exchange, government and corporate securities and insurance contracts. The innovation of bills of exchange has been very important and opened up the way to banks in a modern sense. Bills of exchange were debt instruments drawn on the buyer of goods, which promised the payment of a specified amount in the buyer's hometown at some date in the future. Due to the prohibition on usury imposed by the Roman Catholic Church, bills of exchange could not be discounted. To overcome this prohibition, the exchange rate specified in the transaction was such that there was a de facto discount. Other new financial instruments appeared: (1) Debt claims against amount borrowed by governments (such as that of the Florentine Republic); (2) Corporate claims (equity-like instruments) issued by partnerships and companies. Finally, maritime insurance became important and life insurance was introduced.
- Financial intermediaries included early types of banks and insurance companies. Banks were first established in Florence, Siena and Lucca after the Middle Ages, then spread to Venice and Genoa. In the fourteenth century Bardi and Peruzzi in Florence grew to a substantial size: just to give a measure of their size, consider that they financed the English side of the Hundred Years' War. In the fifteenth century, Medici banks in Florence achieved a sophistication that remained unbeaten until the nineteenth century. The main activities of banks were: (1) transferring money associated with international trade and the Roman Catholic Church; (2) establishing networks in Europe.
- Informal markets appeared. To a limited extent, government and corporate securities were transferable and traded.

It is worth mentioning that Jewish people were more important than the Italians in northern Europe and went on to play important financial roles in Spain and Poland. The Church's rules against usury gave the Jewish bankers their competitive advantage.

Dutch finance

The third phase of financial development took place mainly in Amsterdam in the early 1600s. The Netherlands finally ejected their colonial masters – the Spanish – after a long, costly war and their new-found independence allowed a blossoming of trade and finance. The period is known to the Dutch as their 'Golden Era' and the wealth that flowed down the River Rhine from Germany, France and Switzerland led to new financial systems. Other signs of increased wealth were the rise of Dutch painting, empire-building and successful wars against the English, culminating in a Dutch king of England in 1689. As we see below, the Dutch also gave the English a model for a 'central bank' as well as a new king.

- Financial markets became more formalised. The first formal stock exchange developed as part of the Amsterdam Bourse, which was established in 1608 as a market for commodities and also for securities (although these were less important). The market soon developed sophisticated trading practices. The reason for the development of the Amsterdam Bourse was the tulip mania of 1636–37, the first main financial bubble (please refer to the last section of this chapter): the price of tulips rose quickly to very high levels, before collapsing dramatically and causing the bankruptcy of many speculators.
- Financial instruments: options and futures contracts were traded on the Amsterdam Bourse;

- Central banks appeared as the institutions through which governments were involved in financial systems. The Bank of Amsterdam, established in 1609, became a model for public banks set up by governments. Its main purpose was to facilitate payments. Commercial banks took deposits and made exchanges, but in general did not provide credit.

The emergence of market-based and bank-based systems

In the fourth phase, starting in the years 1719–20, when the South Sea Bubble occurred in England and the Mississippi Bubble in France, two distinctly different types of financial systems developed: the stock market-oriented US/UK model and the bank-oriented continental European model. Whereas the UK repealed the heavy regulation of the stock market (the so-called Bubble Act, which was a reaction to the South Sea Bubble) at the beginning of the nineteenth century, France did not ease restriction on the stock market until the 1980s. The French experience has substantially affected the development of financial systems in continental Europe, among them the German system. The historical development in each of these main countries is analysed below.

United States of America

The National Bank Acts of 1863 and 1864 set up a national banking system as a reaction to the chaos of the US Civil War. Fears of excessive centralisation led to the banks in each state being granted limited powers: each bank was confined to a single state; and banks were prohibited from holding equity or paying interest on demand deposits. After a series of panics in the system (1873, 1884, 1893, 1907), the Federal Reserve System was established – with a regional structure – in 1913. In 1933 another major banking panic led to the closing of banks for an extended period. This led to the Glass-Steagall Act of 1933, which introduced deposit insurance and required the separation of commercial and investment banking operations (and thus prohibited universal banking and prevented banks from underwriting securities). As a result, throughout the nineteenth century, the US banking system was highly fragmented, without a nationwide system with extensive branch networks.

On the other hand, capital markets are more important than banks in the USA. Several reasons explain the strength of the role of the USA's financial markets:

1. The Civil War helped to develop New York's financial market (as wars between England and France did in the eighteenth century with regard to the London capital markets), and the First World War helped the New York market to supplant London markets (as New York's markets were financing all parties).
2. The prohibition on banks' holding equity and the fragmentation of the banking system (particularly with regard to providing services to the corporate sector).
3. The Great Crash of 1929, which led to the creation of the Securities and Exchange Commission (SEC). This aimed to ensure the integrity of the markets and the regulation of financial markets.
4. Financial innovation, by the introduction of new financial instruments such as various derivative instruments (swap and complex options). At the same time, new exchanges for options and financial futures have appeared and become major markets.

Recently, three restrictions on the banking system have been relaxed. First, the erosion of the Glass-Steagall Act prohibitions. In 1987 the Federal Reserve allowed affiliates of approved commercial banks to engage in underwriting activities as long as the revenue did not exceed a specified amount – which started at 10 per cent, but was raised to 25 per cent – of the affiliates' total revenues. In 1988 the Federal Reserve used a loophole in Section 20 of the Glass-Steagall Act to allow three commercial banks (Bankers' Trust, Citicorp and J.P. Morgan) to underwrite corporate debt securities and to underwrite stocks. Two competitive reasons determined this legislative change. On the one hand, brokerage firms began to engage in the traditional banking business of issuing deposits. On the other hand, foreign banks' activities in the USA eroded the position of national US banks.

Second, the elimination of the Glass-Steagall Act. The Gramm-Leach-Bliley Financial Services Modernization Act of 1999 allows securities firms and insurance companies to purchase banks, and allows banks to underwrite insurance and securities and engage in real estate activities.

Third, the relaxation of the historical restriction on banks crossing state boundaries. The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 stated that after 1997 banks would be essentially unrestricted with regard to interstate banking, except in states that opted out or imposed other restrictions. Nationwide banks are now beginning to emerge.

Read Mishkin and Eakins (2009), pp.450–79 for more detail on the historical development of the US banking system. In particular focus on why the regulators decided to separate banking and other financial services companies (through Glass-Steagall) and then why they reversed this when Glass Steagall was repealed. You will notice that one of the consequences of the repeal of Glass-Steagall has been greater consolidation of the industry through large mergers. This has created a problem called the 'too-big-to-fail problem' which we will examine in Chapter 5 of this subject guide.

The financial assets of households are mostly equity (45 per cent of the total). Over a long period there has been a shift away from individuals' holding equity directly to intermediaries (mainly pension funds and mutual funds) holding it. We analysed this earlier: see pp.21.

United Kingdom

The financial system in the UK resembles that in the USA in that markets play an important role. However, differences in the size and structure of the banking sector are evident. Moreover, the UK system is characterised by much less regulation than the US system.

The speculation on the stocks of the South Sea Company, a company set up in 1711 to fund a portion of the government debt in exchange for a payment to the company, determined a dramatic rise in its price. This led to a large number of other stock issues by promoters who hoped to profit from price appreciation. To prevent these other stocks from diverting resources away from the South Sea Company, the Bubble Act was passed in 1720. However, the Act did not prevent a dramatic fall in the price of the South Sea Company, and many speculators went bankrupt (note the similarities with the tulip mania that occurred in the Amsterdam Bourse). The Act, not repealed until 1824, imposed the need to obtain a royal charter to form a joint stock company. The effect of the Act was to create barriers to company formation. This explains why the London capital market did not become a source of funds for companies.

However, it did become important for government financing. During the nineteenth century, the London Stock Exchange, established in 1802, steadily increased its importance as a source of funds for firms because of several events:

- the repeal of the Bubble Act in 1824
- the freedom to form companies without specific parliamentary approval, introduced in 1856
- the development of railways in Britain and abroad, which resulted in a large demand for capital.

New York replaced London as the world's major financial centre after 1918. To this day the UK remains a stock market-based financial system.

The UK banking system also developed strongly in the nineteenth century due to several other events:

- The Bank of England, founded in 1694 as a private institution, was initially intended to help the government market debt to finance the Nine Years' War with France. Its role became more important in 1742, when it was granted a monopoly over note issues in England except for private banks. Note that the growth of central banking activities in England laid the foundation for the development of central banks in other countries.
- Banks consolidated into nationwide networks: country banks needed to have London branches because of the Bank of England's role, and London banks needed to have branches outside London.
- A visible concentration process took place (in contrast to the United States). As noted earlier, commercial banking was traditionally dominated by four clearing banks: Barclays, National Westminster, Midland and Lloyds (now Barclays, Royal Bank of Scotland, HSBC and Lloyds). Note that although there is no equivalent to the Glass-Steagall Act and universal banking is allowed, commercial and investment banking (merchant banking or securities firms in UK terminology) were, until recently, traditionally separate because of restrictive practices. However, in 1986, the 'Big Bang' brought important structural changes in the London Stock Exchange, and as a consequence all the securities firms became part of integrated financial institutions.
- The foreign and domestic sectors of the banking industry are roughly equal in size. This large foreign presence may in part explain the high ratio of bank claims on the private sector to GDP. However, with a few exceptions, foreign banks are not involved with the domestic sector.

Traditionally, one important characteristic of the banking system is that banks did not engage in long-term lending to industry. This explains why firms rely greatly on internal finance and markets for raising funds.

Germany

Germany is very different from the US/UK financial system because banks play a far more important role and markets are less relevant, as shown in the opening section by the banks' claims and market capitalisation to GDP. The historical development of the financial system explains its present characteristics.

Prior to 1850, German financial markets were undeveloped relative to those in the UK, and joint stock companies were rare. The markets (Frankfurt and Berlin) were mostly for government debt and loans to

princes, towns and foreign estate. During the same period, banks provided the initial finance for industrialisation and subsequently managed the issue of shares and bonds to repay the loans. Links between banks and industry grew substantially during this period. Banks were represented on the boards of companies, and industrialists held seats on the boards of banks. This led to the development of the *Hausbank* system, where firms have a long-term relationship with a given bank and use it for most of their financing needs. This qualifies as a **universal banking system**, where banks offer a full range of services to commercial customers and are formally linked to their commercial customers through equity holdings. Even today, the three major universal banks – Deutsche, Dresdner and Commerzbank – dominate the allocation of resources in the corporate sector. This explains why the most important sources of funds for firms were bank financing and internal finance.

There are several reasons why financial markets in Germany remain relatively undeveloped:

- The reliance on bank finance and the close relationship between banks and industrial firms. This explains why bank loans are very important, although retentions (funds internally generated by firms) are the single most important source of finance.
- Few households participate directly in the financial market, because of the lack of prohibitions on insider trading, which make participation by unsophisticated investors unattractive.
- Limited availability of mutual funds. Overall this implies that German investors have a limited range of equity instruments to invest in. This explains why the allocation across assets is mostly in cash and cash equivalents (36 per cent) and bonds (36 per cent), while equity is fairly unimportant (13 per cent).

It is interesting to note the recent developments towards the creation of a single market in banking in the countries of the European Union (EU). In order to remove barriers to trade across European banking systems, a single market in banking has been created by harmonising regulation throughout the countries of the EU. The Second Banking directive of 1993 created the so-called EU passport, which entitles a bank in one member country to provide core banking services throughout the EU on the basis of the authorisation of their own member country. Moreover, complementary directives are aimed at providing harmonisation of solvency regulation across the EU (Basel Capital Requirements Directives). The original Basel Accord (now referred to as Basel 1) was agreed in 1988 by the Basel Committee on Banking Supervision. It helped to strengthen the soundness and stability of the international banking system as a result of the higher capital ratios that it required. Basel 2, a revision of the existing framework taking effect from the end of 2006, had the effect of making the framework more risk sensitive and representative of modern banks' risk management practices (as discussed in Chapter 5).

Japan

The Japanese financial system is often seen as similar to the German bank-based financial system. However, Japan has experienced a different historical development in the role of the government. In Germany, the *Hausbank* system developed in the private sector, whereas in Japan the government was instrumental in the development of the main banking system. The supervision by the Ministry of Finance and the Bank of Japan extends over areas as diverse as the opening of new branches, opening hours, credit volumes, interest rates and accounting rules.

From the time of the abolition of feudalism and the Meiji Restoration towards the end of the nineteenth century, the Japanese authorities played a leading role in the growth of the modern industrial economy and the establishment of a financial system. During wartime, from 1937 to 1941, the government introduced a system of central control of financial resources, the so-called system of credit allocation. This determined a close relationship between banks and companies in the keiretsu, which is a group of industrial firms with a core group of banks. This led to the development of the main characteristics of the banking system:

1. Long-term relationships between a bank and its client firm.
2. Holding of both debt and equity of non-financial firms by the bank.
3. Active intervention of the bank in case of financial problems in the firm.

This explains why in Japan loans (and not retentions) are the most important source of financing.

Traditionally Japanese banks have shown a high degree of segmentation and specialisation, along functional lines. The reform of 1992 reduced the amount of segmentation: different types of financial firms are now allowed to enter new financial activities through separate subsidiaries. The Japanese banking system experienced a major crisis between 1997 and 1998, when seven large financial institutions went bankrupt (as explained in Chapter 4). Private financial institutions still have not fully recovered from this crisis: in July 2007 only one Japanese bank (Mitsubishi UFJ Financial Group) still maintains a global presence and occupies the seventh position in The Banker's ranking of the top 1,000 banks, whereas in 1994 six of the 10 top places were occupied by Japanese banks.

For most of the past fifty years, the weakness of the securities market has, to some extent, been self-perpetuating. On the one hand, the bank system experienced an abundance of funds. This abundance has been mainly determined by the large financial surplus of the personal sector, which in turn has been determined by two facts: Japanese households are heavy savers and they have limited investment opportunities in housing. This explains the pattern of Japanese households' asset allocation, which is mainly cash and cash equivalents (52 per cent including bank accounts). On the other hand, the equity market tends to be volatile and speculative because of the dependence of companies on banks' financing, which has determined their very high leverage ratios (the amount of capital divided by total assets, as explained in Chapter 5).

However, in recent years, financial markets have steadily become more important. In order to gain international recognition, the Japanese government relaxed several regulatory restrictions, such as the restriction on issuing bonds. At the same time, large firms are able increasingly to rely on financial markets to raise funds. Overall, this has resulted in the development of fairly sophisticated financial markets. Nevertheless, the historical development of the Japanese financial market has determined the relative unimportance of equity and bonds in the asset allocation of Japanese households (13 and 12 per cent respectively). Note that in the 1990s the fall in individual ownerships has mainly been offset by an increase in the holdings of banks, insurance companies and business corporations.

France

The Mississippi Bubble (see p.40) profoundly affected the subsequent development of the stock market and banks in France. After the collapse, an official Bourse was set up. However, markets for company securities did not develop significantly during the nineteenth and twentieth centuries. Similarly, the Mississippi Bubble retarded the development of banks for many years. Two main institutions were founded in the 1938–62 period with the aim of providing long-term loans for the industry. However, they ended up providing short-term commercial loans and speculating in foreign bonds. This suggests that the system of banks lending to industry developed in a deeper way only in Germany.

Overall, the French financial system has traditionally been a bank-based system (even if less pronounced than the German system), and markets have played a less relevant role. However, in the 1980s, the government made a strong effort to reform the financial system and bolster financial markets. As a consequence, French financial markets have developed greatly since the beginning of the 1980s because of:

1. Two main reforms. First, the creation of a single national market, so that stocks from any of the seven exchanges could be traded at any exchange. Second, the completion of a computerised trading system (so-called CAC, Cotation Assistée et Continu).
2. The immediate success of derivatives markets (and MATIF in particular), set up in the mid-1980s.
3. The substantial presence of collective investment scheme (such as mutual funds), holding 19 per cent of financial assets, much higher than in any other country. Note, however, that a high proportion of assets (62 per cent) are held directly by households, and the main categories of assets held are cash and cash equivalents (38 per cent) and bonds (33 per cent).

This explains why the French system is now an intermediate case, where both markets and banks are equally important.

Activity 3.3

Investigate the following financial crises on the internet: Tulip mania, South Sea Bubble, Mississippi Bubble, Stock Market Crash of 1929. Then answer the following question:

How have financial crises influenced the development of the financial system in the UK, USA and France?

(Don't forget to do the Essential reading: Allen and Gale (2001) Chapter 2 to analyse in more detail the historical development of financial systems across countries.)

Market-based versus bank-based financial systems: implications

The presence of market-based and bank-based financial systems emerges by comparing national banking structures on the basis of:

1. Integration of banking and commerce, which can operate either by banks' ownership of commercial firms or by commercial firms' ownership of banks. In the USA and the UK there is virtually no integration of banking and commerce. However in both Germany and Japan there is a close relationship between banks and firms. The higher amount of information available to banks operating in Germany and

Japan – in comparison to US/UK banks – helps in monitoring the firms and thus reducing the moral hazard problem. Moral hazard is one of the problems intermediaries face in lending (as described in detail in the next chapter) and represents the risk (hazard) that the borrower engages in activities that are undesirable (immoral) for the lender after the transaction is made.

2. Integration of the provision of bank and non-bank financial services. Bank financial services refer to traditional deposit-based lending, while non-bank financial services are those such as investment, underwriting, insurance, trust and property services. A high level of integration characterises universal banks of Germany, against the traditionally low integration in the USA and UK. Note, however, that the regulations of USA/UK have recently been reformed, and higher degrees of integration are now possible. Other countries, such as France and Italy, have limited forms of universal banking.

In other words, there is a clear distinction between market-based (USA and UK) and bank-based systems (Germany, Japan and France). However, several peculiarities make the picture more complex:

1. The USA, unlike the UK and other European countries, did not develop a nationwide banking system with few banks.
2. In Germany and France, financial markets for company shares did not develop until recent years. Instead banks have had a primary role in providing funds to firms.
3. In Germany the ties between banks and firms are strong and intimate, but in France the banking relationship developed in a less successful way.
4. In Japan the government played an important role in the development of the banking system, whereas in Germany the *Hausbank* system developed without government intervention.

What is the economic reason for the existence of two broad types of financial systems, one market-based and the other bank-based? The answer is the different reactions to the instability associated with financial markets. As a consequence of the South Sea Bubble in England, and the Mississippi Bubble in France, two distinctly different types of financial systems developed. This occurred because the UK repealed the heavy regulation of the stock market (Bubble Act) at the beginning of the nineteenth century, whereas France did not ease the restriction on the stock market until the 1980s. Many other financial crises and speculative bubbles (Tulip mania, Great Crash of 1929) affected the development of financial systems. This suggests that financial systems are fragile and crises are endemic. (The next section investigates the economic reasons for financial crises.)

Financial markets did not develop spontaneously. As we have already seen, various kinds of financial institutions were responsible for the first financial transactions, mainly involving loans and transfers. Only at the beginning of the seventeenth century, with the foundation of the Amsterdam Bourse, was a formal market established. The presence of market imperfections – transaction costs and asymmetric information, as discussed in the next chapter, see p.64 – explains why for a long time most financial systems have been much closer to the extreme where no financial markets exist. Financial intermediaries are needed to overcome market imperfections, and thus enable firms and investors to exploit the market effectively.

The implications of the existence of the two broad types of financial systems affects households' asset allocation, the role of indirect intermediation (pension funds, insurance companies, mutual funds) and firms' financing.

With regard to households' asset allocation, as shown in Figure 3.2, in the UK/USA equity is a much more important component of household assets than in Japan, France and Germany. Equity constitutes 45 per cent of household assets in the USA and 52 per cent in the UK (even more than in the USA), whereas it constitutes only 12 per cent and 13 per cent in Japan and Germany. For cash and cash equivalents (which include bank accounts) and bonds, the reverse is true. In Japan 52 per cent of assets are held in cash and cash equivalents and 13 per cent in bonds, while in Germany the figure is 36 per cent for both. In the USA only 19 per cent of assets are held in cash and cash equivalents and 28 per cent in bonds. Bonds are fairly unimportant in the UK and Japan. This implies that in the USA and the UK households bear significant risk, while in Germany, France and Japan they bear relatively little risk.

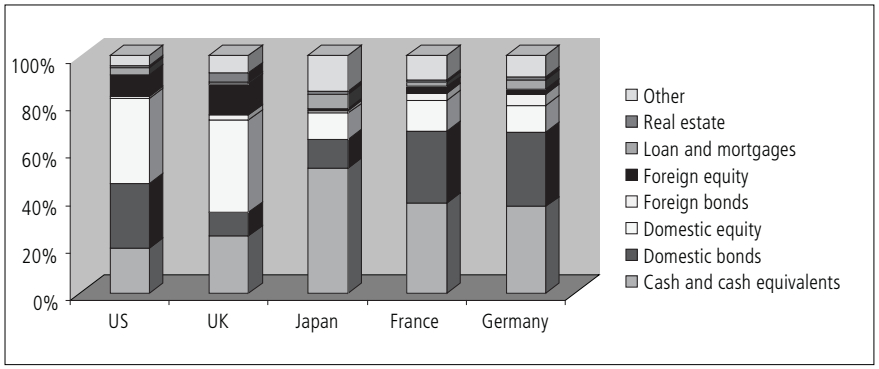


Figure 3.2: Portfolio allocation of total financial assets owned by the household sector (%)

Source: Figure created using data from Miles (1999), p.22.

In terms of the different forms in which gross financial assets are held (directly by households, by pension funds, by insurance companies, by mutual funds), as shown in Figure 3.3, most assets are owned directly by households (except for the UK). In particular, individuals' indirect investments through intermediaries (pension funds and mutual funds) are dominant in Germany, France and Japan. On the other hand, the individual's participation in the stock market (through direct transactions) is high in the USA, although it has been falling. This implies that the decisions individuals must take are of a different nature. However, the general trend is that individuals are becoming less involved in making transactions directly in financial markets, whereas pension funds and mutual funds are increasing their share of the market. Specifically, in the UK and USA, pension funds and insurance companies are much more important than in other countries. In Germany, and to some extent in Japan, pension funds are relatively unimportant.

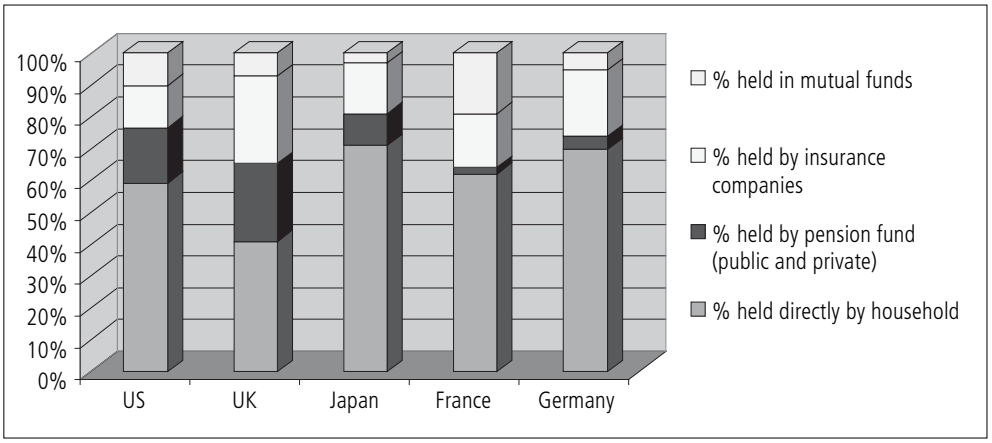


Figure 3.3: Financial assets ultimately owned by the household sector

Source: Figure created using data from Miles (1999), p.21.

In terms of firms' financing, the distinction between market-based and bank-based systems is less clear. However there are differences in how firms obtain funds from external sources. In the countries with the lowest financial market capitalisation to GDP (Germany and Japan), firms' financing from financial intermediaries has been almost ten times greater than that from securities markets. However, even in market-based systems, financial markets are not an important source of finance (as discussed in the next chapter).

The current trend is towards market-based systems. Several government policies support this argument.

- The European Union is moving towards a single financial market in the countries of the European Union (EU) through harmonising regulation throughout EU countries.
- France has chosen to increase the importance of financial markets since the mid-1980s.
- Japan introduced various reforms of its financial system (known as the 'Big Bang') between 1998 and 1999.

Why are market-based systems suddenly so popular? There are two reasons. First, government intervention has become discredited. Second, economic theory emphasises the effectiveness of financial markets in allocating resources. However, market imperfections, such as transaction costs and asymmetric information, represent important limitations of financial markets, as discussed in the next chapter.

Activity 3.4

Describe in two pages the historical development of the financial system in your country. Does it represent a market-based or bank-based system?

Financial crises

Financial crises are defined as major disruptions in financial markets that are characterised by sharp falls in asset prices and the failure of many financial institutions (including banks). Financial crises have been common in most countries throughout modern history in Europe and the USA and have had a deep impact on the development of financial systems, as described in the previous section. Moreover, many emerging countries have had several banking problems in recent years: about three-quarters of the member countries of the International Monetary Fund (IMF) suffered

some form of financial crises between 1980 and 1996 (Lindgren, Garcia, Saal, 1996). Given the historical importance of crises and their relevance in emerging countries and more recently (following the global financial crisis of 2007-09) in developed countries, it is important to understand why they occur.

Financial crises occur where there is a large increase in asymmetric information in financial markets. Asymmetric information occurs when one party to a transaction has less information than the other party, and thus is unable to make an accurate decision. (We discuss the asymmetric information issue further in the next chapter; however, we also need to introduce it here as part of our investigation into what causes a country to have a market- or a bank-based system).

An increase in information asymmetries means a market becomes less efficient as a channel for moving funds from savers to investors, and therefore the market-based system becomes less attractive relative to the banking system. A financial crisis can lead to economic activity contracting sharply. To understand why financial crises occur, let us examine four main factors.

1. **Problems in the banking sector**. Banks play a major role in the financing of productive investments because of their ability to produce information. Because banks have a mismatch between the maturities of liquid liabilities and illiquid assets (as explained in the next chapter), they are vulnerable to liquidity shocks. Deterioration in their balance sheets implies that fewer resources are available to lend. This leads to a decline in investment spending, which slows economic activities. In the case of a severe crisis, the banks might fail. Fear can spread from one bank to another. A panic at one bank can very quickly spread to other banks as depositors rush to withdraw their deposits simultaneously. In the absence of deposit insurance and being ignorant of the quality of each bank's loan portfolios, depositors at both good and bad banks attempt to withdraw their funds simultaneously. However, the banks will have insufficient funds to meet all these requests. Because banks operate on a sequential service constraint (a first come, first served basis), depositors have a strong incentive to run on the bank first. Uncertainty about the health of the banking system can lead to runs on banks both good and bad, and the failure of one bank can provoke the failure of others (known as the contagion effect or systemic risk). These multiple bank failures are known as **bank panics**. There are two consequences of a bank panic. First, a loss of information in financial markets and a loss of financial intermediation by the banking sector. Second, a decrease in the supply of funds to borrowers (because of the absence of lending), which leads to higher interest rates.
2. **An increase in interest rates**. A sharp increase in interest rates, caused by either a decrease in the money supply or an increase in the demand (you do not have to know this process to study this unit), means that individuals and firms with the riskiest investment projects are the only ones willing to pay the higher interest. Bad credit risks are the only ones still willing to borrow (because of the adverse selection problem – see Chapter 4 for details). In other words, the only customers who still want to borrow when interest rates are high are those who are likely to have weak, risky uses for the money. The consequence is that lenders no longer want to make loans. This decrease in lending leads to a decline in investment and aggregate economic activity.

3. **Stock market decline**. A sharp decline in the stock market is another possible reason for a serious deterioration in firms' balance sheets, which in turn can provoke a financial crisis. Given that share prices are the valuation of a firm's net worth, a stock market decline implies a reduction in the firm's net worth. The lower value of net worth implies a lower value of the collateral, which is property promised to the lender if the borrower defaults. The decline in the net worth makes banks less willing to lend because they are less protected by this collateral, and this causes a reduction in investments and aggregate economic activities. In addition, the decline in net worth induces firms to take on more risky investments, as they lose less if they have to default. As a consequence, lending is less attractive for banks, and thus there is a reduction in investments and aggregate economic activities.
4. **An increase in uncertainty.** The failure of prominent financial institutions, a recession or a stock market crash create increased uncertainty in the financial markets. Lenders become unable to screen good and bad credit risks (again due to the adverse selection problem). Once again, the decrease in lending results in a decline in investments and aggregate economic activity.

Financial crises in the USA

The following sequence of events characterises many US financial crises:

- The four factors causing financial crises (described above) lead to an increase in adverse selection and moral hazard problems.
- Lending, investment spending and aggregate economic activity decline.
- Depositors begin to withdraw their funds from banks, which can result in a full-scale bank panic. The determinants of the depositors' behaviour are the economic slowdown and the uncertainty about the banking system.
- Interest rates increase even further and financial intermediation by banks decreases because of the reduced number of banks.
- Adverse selection and moral hazard problems worsen.
- There is further economic contraction.
- In case of a sharp decline in prices, the recovery process is short-circuited due to a further deterioration of firms' net worth. This phenomenon is known as debt deflation, or rather increased burden of indebtedness for firms.

Activity 3.5

Refer to Figure 15.2 in Mishkin and Eakins (2009), p.390 to better investigate the sequence of events in US financial crises. Many of the concepts such as adverse selection and moral hazard will be examined in more detail in Chapter 4 of this subject guide. Now study the features of the Great Depression, a description of which follows.

The Great Depression

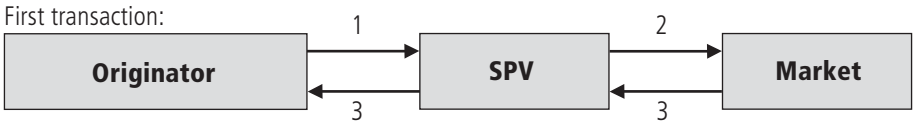
The financial crisis in the Great Depression was the worst ever experienced by the USA. In 1928–29, the stock market experienced a boom, during which stock prices doubled. To curb it, the Federal Reserve pursued a tight monetary policy, mainly through an increase in interest rates. The stock market then crashed in 1929. By the middle of 1930, more than half of the stock market decline had been reversed. However, after the middle of 1930, the adverse shocks extended to the agricultural industry

and the stock market continued to decline. This increased uncertainty and economic contraction determined a worsening of adverse selection and moral hazard in credit markets. From October 1930 to March 1933, a sequence of banks collapsed (over one-third of the US banks went out of business). This determined a reduction in the amount of financial intermediation and a decline in the ability of financial markets to channel funds to firms with productive investment opportunities. In the same period (1930–33), the price level fell by 25 per cent. This triggered a debt deflation (i.e. net worth fell because of the increased burden of indebtedness borne by firms). The decline in net worth and the resulting increase in adverse selection and moral hazard problems in the credit market led to a prolonged economic contraction in which the unemployment rate rose to 25 per cent.

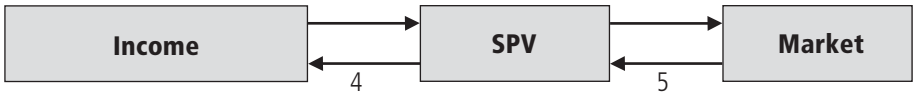
The global financial crisis 2007–09

The global financial crisis of 2007–09 was caused by a number of factors, but two general developments lay at its core. First, the growth of global macro-imbalances and second, financial market innovations. Large current account surpluses developed in Asian economies such as China and Japan as well as in oil exporting economies. The counterpart to this was the growing current account deficits of economies such as the US and some European economies such as the UK. The surpluses had been used to buy large amounts of government debt in the US and Europe. The consequence of this was to drive down interest rates in these countries. Low interest rates in the US and Europe have also been a consequence of low inflation as a result of low cost imports coming from fast growing developing nations such as China. Low inflation has allowed central banks to keep interest rates low. One consequence of low interest rates has been a massive expansion of debt – particularly mortgage debt. A rapid expansion of mortgage lending by banks fuelled a property price bubble as house prices grew at very fast rates. This in turn led lenders to relax credit standards leading to a rapid expansion of sub-prime mortgage lending in the US (and in other European countries).

(The term sub-prime generally refers to borrowers who do not qualify for prime interest rates because they have weakened credit histories, low credit scores, high debt-burden ratios or high loan-to-value ratios.) Another contributing factor has been the desire of investors to obtain higher yields to offset the lower interest rates available in credit markets. This desire for higher yields was satisfied by financial innovation, in particular the process of securitisation whereby debt is packaged then transferred off the balance sheets of banks and new securities issued. Figure 3.4 illustrates the process. In Figure 3.4 the bank transfers the pool of mortgages to a separate entity called a special purpose vehicle (SPV). This should be independent of the bank and is normally set up as a trust.



1 The originator (here a bank) sells the mortgages, or assigns the income, to the SPV.
2 The SPV issues bonds to the market.
3 The SPV receives cash from the market and passes it to the bank.



4 Payments from customers (originally to the bank) now go to the SPV.
5 The SPV uses these to repay bonds (both interest and principal).

Figure 3.4 The securitisation process

The securities created from packages of residential mortgages were called Residential Mortgage Backed Securities (RMBS). Sometimes additional securities, known as collateralised debt obligations–CDOs), were created by combining multiple RMBSs (or parts of RMBSs) and then selling portions of the income streams derived from the mortgage pool or RMBSs to investors with different appetites for risk. One of the original ideas behind securitisation was to allow banks to transfer risk off their balance sheet, thereby allowing them to diversify. The hope was that much of this debt would be transferred to other parts of the financial system. However, the majority of investors in the securitised debt were other banks that held the securities in their trading books. The ratings agencies also assigned high credit ratings to much of the securitised debt products, thus creating the perception that the default risk on these securities was very low.

Problems occurred in 2006–07 when house prices in economies such as the US fell. Many borrowers found that they owed more on their house than it was worth. Many borrowers chose to default – particularly sub-prime borrowers who were more sensitive to the fall in house prices. Rising loan defaults caused many RMBSs and CDOs that were backed by residential mortgages to experience substantial losses. In late 2007, banks such as Northern Rock in the UK, that depended heavily on securitisation to fund expansion of its business, found that this source of funding dried up as investors began to shun new issues of securitised mortgages. At the same time banks holding securitised debt in their trading books began to experience severe mark-to market losses. This led to concerns about liquidity in markets as banks reduced lending to each other through the inter-bank market as fears of insolvency increased. These strains continued into 2008 as large institutions such as Fannie Mae and Freddie Mac became reliant on government support in the US. A large drop in confidence occurred in September 2008 as Lehman Brothers investment bank failed, thus signalling that major institutions were not too big to fail.

The collapse in confidence in the banking sector in many economies around the world led central banks and governments to intervene to provide exceptional liquidity support, then recapitalisation of major banks, to prevent further failures. The severely impaired state of the banking system led to a large reduction in credit extension by banks thus resulting in a severe economic recession in most economies in the world.

Activity 3.9

Read Turner (2009), Chapter 1 and Bullard, Neely and Wheelock (2009) for a more detailed discussion of the causes and consequences of the financial crisis of 2007–09. You should focus on the following questions in your reading:

1. What were the macro-economic factors that contributed to the crisis?
2. What caused interest rates to be kept low in Western economies in the years before the crisis?
3. Why did banks relax lending conditions in the years before the crisis?
4. How does the process of securitisation allow banks to fund new lending?
5. Why did the crisis in the banking sector lead to a contraction of economic activity (recession) for most economies?

Note that we will follow up many of the problems revealed by the banking crisis in Chapter 5 when we consider regulation of the banking system.

Financial crises in emerging market countries

In recent years, many emerging market countries have experienced financial crises, as documented in Table 3.1. The sequence of events characterising these financial crises is different from what occurred in the USA in the nineteenth and early twentieth centuries mainly due to differences in the institutional features of debt markets in emerging market countries.

	Beginning	Ending	Change in deposits (%)	Change in net worth (%)	Fiscal costs (%)	Net IMF disbursement ($million)
Mexico	Dec 1994	1996	–15	–64	19.3	10.67
Venezuela	1994	1995	–43	–6	15	–0.66
South Korea	July 1997	1999	–6	15	31.3	6.07
Indonesia	July 1997	1999	13	–183	56.8	10.35
Thailand	July 1997	1999	–2	58	43.8	3.21
Ecuador	1998	2001	–24	–59	21.7	0.3
Turkey	2000	2002	–27	97	30.5	13.42
Argentina	Dec 2001	2003	–4.8	–37	11.4	–16

Table 3.1: Financial crises in emerging market countries

Source: Adapted from Lacoste (2004), p.97.

The following factors have caused financial crises in emerging countries:

1. Deterioration in banks' balance sheets due to the increase in loan losses, which, in turn, was due to weak supervision by bank regulators and lack of expertise in screening/monitoring borrowers at banks. This factor affected Mexican and East Asian crises and determined an erosion of banks' capital. Note that Argentina, instead, had a well-supervised banking system and no lending boom occurred before the crisis; nevertheless in 1998 Argentina entered a recession that led to some loan losses.
2. Increase in interest rates abroad and internally, which amplified adverse selection (i.e. it was more likely that the parties willing to take on the most risk would seek loans). This factor, consistent with the US experience, affected Mexican and Argentine but not East Asian crises.
3. Stock market decline and increase in uncertainty. This factor, once again consistent with the US experience, affected Mexico, Thailand, South Korea and Argentina.

4. Fiscal problems of the government. As government budget deficits could not be financed by foreign borrowing, the government forced banks to absorb large amounts of government debt. As a consequence, investors lost confidence in the ability of the government to repay its debt. The price of government debt decreased and determined big losses in banks' balance sheets. This factor was typical of the Argentine crisis, but not of the US, Mexican and East Asian crises.
5. Rise of interest rates abroad. The US Fed began to increase the government rate to head off inflationary pressures. Although this monetary policy was successful in the USA, it put upward pressures in foreign countries (particularly in Mexico and Argentina).

These factors worsened adverse selection and moral hazard problems. On the one hand, financial intermediaries experienced more difficulties in screening out good and bad borrowers. On the other hand, the decline in capital determined a decrease in the value of firms' collateral and an increase in firms' incentives to make risky investments (because of less equity to lose if the investments were unsuccessful).

At this point, speculative attacks developed in the foreign exchange markets, plunging the economies into a full-scale crisis. Moreover, the interaction of the institutional structure of debt markets with the currency devaluations played an important role: as large proportions of firms' debts were denominated in foreign currencies, the depreciation of domestic currencies implied an increase in indebtedness.

The collapse of currencies led to a rise in actual and expected inflation rates, and consequently in market interest rates. The increased interest payments caused reductions in the cash flows of households and firms. The very short duration of debt contracts (typical of emerging market countries) provoked a substantial effect on cash flows.

The sharp decline in lending led to an economic activity decline and to a deterioration in balance sheets, which in turn led to a worsening banking crisis. This materialised in substantial losses for banks because many firms and households were no longer able to pay off their debts. Even more problematic for the banks was the deterioration in their balance sheet because of the large amount of short-term liabilities denominated in foreign currencies, which experienced a sharp increase in their value after the devaluation. The banking system would have collapsed in the absence of a government safety net (e.g. the assistance of the IMF).

Activity 3.10

Read Mishkin and Eakins (2009), pp.391–95 to get further details on the financial crises in emerging-market countries: Mexico (1994–95) and East Asia (1997–98). Try to identify the common causes and consequences of the crises in Mexico and South East Asia.

Financial bubbles

Financial crises often follow what appear to be bubbles in asset prices. A bubble occurs when an asset or commodity becomes overinflated in value. These bubbles in asset prices typically have three distinct phases:

- Financial liberalisation results in an expansion in credit, which is accompanied by an increase in asset prices such as real estates and shares. They rise as the bubble inflates.
- The bubble bursts and asset prices collapse (often within a short period of time).

- Default of many firms and other agents that have borrowed to buy assets at inflated prices. A banking crisis may follow, causing problems in real sectors of the economy such as industry.

Historic examples of this type of crisis are the Dutch tulip mania (described in the next section), the South Sea Bubble in England and the Mississippi Bubble in France (discussed in the previous section). More recent examples are bubbles in Japan (late 1980s), Mexico (1994–95) and East Asia (1997–98) and housing market bubbles in the US, UK, Spain etc. prior to the 2007-09 crisis described above. Another recent case, the internet bubble of the late 1990s, is described below.

Dutch tulip mania

The tulip mania (1636–37) was the first serious financial bubble. The prices of tulip bulbs rose quickly to very high levels, before collapsing dramatically and causing the bankruptcy of many speculators.

The following sequence of events characterised the tulip mania. The tulip, introduced to Europe in the middle of the sixteenth century, experienced a strong growth in popularity in the Netherlands, boosted by competition for possession of the rarest tulips. The competition escalated until prices reached very high levels. The flower rapidly became a luxury item and a status symbol. In 1623, a single bulb of a famous tulip variety could cost as much as a thousand florins (vs. the average yearly income of 150 florins). Tulips were also exchanged for land and houses. By 1636, tulips were traded on the stock exchanges of numerous Dutch towns and cities. People started to trade their other possessions in order to speculate in the tulip market. Some traders sold tulip bulbs that had only just been planted or those they intended to plant (i.e. tulip future contracts, a type of derivative instrument).

After some time, the Dutch government started to introduce regulation to help control the tulip mania. Consequently, a few informed speculators started liquidating their tulip bulbs and contracts. Moreover, more tulip bulbs were added to the supply due to people harvesting new tulip bulbs. Suddenly tulip bulbs were not quite as rare as before. People began to suspect that the demand for tulips could not last. The tulip market began a slight downward trend.

In February 1637 the market experienced a widespread panic: everyone realised that tulips were not worth the prices people were paying for them, and began to sell. The bubble burst: in less than six weeks, tulip prices crashed by over 90 per cent. Attempts were made to resolve the situation, but these were unsuccessful. Ultimately, individuals were stuck with the bulbs they held at the end of the crash. Note that lesser versions of the tulip mania also occurred in other parts of Europe (e.g. England), although matters never reached the state they had in the Netherlands.

The internet bubble of the late 1990s

During the internet bubble of the late 1990s, the remarkable market values assigned to internet and related high-tech companies seemed inconsistent with rational valuation. Equity valuations were based on uncertain future forecasts. Even if all market participants rationally priced common stocks as the present value of all future cash flows expected (which will be explained in Chapter 7), it was still possible for inflated prices to develop. There were two main reasons for the internet bubble of the late 1990s:

1. Outlandish and unsupportable claims were being made regarding the growth of the internet (and the related telecommunications structure needed to support it);

2. Unsustainable projections for the rates and duration of growth of these 'new economy' companies.

As an example of how difficult it is to value these companies, we recall the following story about analyst recommendations. At the time when Amazon.com stock was trading for $130 a share, a prominent analyst issued a buy stock recommendation, even though official projections led him to a valuation of only $30. Admitting that he could justify any valuation between $1 and $200, the analyst stated his recommendation was based on the company, its opportunities and its management.

During those years, professional investors argued that the valuations of high-tech companies were proper, and professional pension fund and mutual fund managers overweighted their portfolios with high-tech stocks. Although it is now clear in retrospect that these professionals were wrong, there were certainly no obvious arbitrage opportunities available.

While there were no profitable and predictable arbitrage opportunities available during the internet bubble, and although stock prices eventually did adjust to levels that more reasonably reflected the likely present value of their cash flows, an argument can be maintained that asset prices did remain 'incorrect' for a period of time. In the USA, the market index of the internet stock industry went above 1,000 in February 2000, and fell to 200 in October 2000. Moreover, although internet firms represented 6 per cent of the public equity market during February 2000, the pure internet sector represented 19 per cent of the daily volume.

The above stylised facts about returns and volumes provide evidence of the irrationality of financial markets. The result was that too much new capital was allocated to internet and related telecommunications companies. Therefore, the stock market may well have temporarily failed in its role of efficiently allocating equity capital.

Summary

We showed in this chapter that differences in reactions to the instability of financial markets explain the existence of market-based financial systems (where financial markets are more important than banks) and bank-based financial systems. Overall, there is a clear distinction between market-based (USA and UK) and bank-based systems (Germany, Japan and France), although the current trend is towards market-based systems.

The two types of financial systems have different implications for:

- Households' asset allocation: in the market-based systems, equity (in the sense of stocks and shares) is a much more important component of household assets than in the bank-based systems; the reverse is true for cash, cash equivalents (which include bank accounts) and bonds.
- The role of indirect intermediation (pension funds, insurance companies, mutual funds): individuals' indirect investments through intermediaries are dominant in the bank-based systems, whereas individuals' direct participation to the stock market is high in the market-based systems, especially the USA (although even there it is in decline).
- Firms' financing: in the market-based systems, loans from financial intermediaries are more important for corporate finance than marketable securities, but at a lesser extent than in the bank-based financial systems.

The final issue concerns financial crises, which are major disruptions caused by a marked increase in the asymmetric information problem in

financial markets. The four types of factors that lead to financial crises are bank panics, increase in interest rates, stock market decline and increase in uncertainty.

Key terms

asymmetric information	bank-based systems	Bubble Act
financial bubble	financial crises	firms' fund raising
Glass-Steagall Act	Gramm-Leach-Bliley Act	gross financial assets
households	internet bubble	market-based systems
market capitalisation to GNP	Mississippi Bubble	tulip mania
universal banks		

A reminder of your learning outcomes

By the end of this chapter, and having completed the essential readings and activities, you should be able to:

- explain why the relative importance of banks and financial markets is different around the world
- discuss how the historical evolution of financial systems helps to explain the existence of bank-based and market-based financial systems
- outline the main similarities and differences between the financial systems of industrialised countries
- discuss the implications (in terms of households' asset allocation, role of indirect intermediation and firms' financing) of the existence of bank-based and market-based financial systems
- explain the main economic factors causing financial crises and the sequence of events of financial crises
- discuss, with reference to examples from history, financial crises and bubbles.

Sample examination questions

1. Analyse the historical evolution of financial systems in order to explain the reasons for the existence of market-based and bank-based systems.
2. a. Compare and contrast the German and Japanese banking systems.
   b. Explain the main implications of the presence of market-based versus bank-based financial systems.
3. a. How did competitive forces lead to the repeal of the Glass-Steagall Act's separation of the banking and securities industries? What are the recent changes in US regulation on the separation of the banking and securities industries?
   b. In the light of the global financial crisis of 2007–09 discuss the case for a new Glass-Steagall Act.
4. a. How can a stock market crash provoke a financial crisis?
   b. Analyse the main events of financial bubbles. Refer to the internet bubble of the late 1990s as a case study.
5. a. Analyse the causes of the global financial crisis of 2007–09.
   b. What lessons can regulators learn from this crisis?

Part II: Principles of banking

Overview

In Part II, the focus is on one of the three pillars of a financial system: financial intermediaries. The aim is to introduce you to the principles of banking. In Chapter 2 we proposed a taxonomy of financial intermediaries, one of the three entities comprising a financial system. In Chapter 3 we investigated the reasons for the differences in the relative importance of financial intermediaries and financial markets in financial systems around the world. But we still have to answer several important questions:

1. Why do financial intermediaries exist? What are the key economic theories that enable us to justify the existence of financial intermediaries? (Chapter 4)
2. Why do banks need to be regulated? What are the key economic reasons for and against banking regulation? How does regulation operate in practice? (Chapter 5)
3. What are the main risks faced by banks? How do banks manage these risks? In particular, what are the techniques and models used by banks to manage risk? (Chapter 6)

In the following chapters of Part II, we will answer each of these questions.

Notes

Chapter 4: Role of financial intermediation

Aims

The aim of this chapter is to illustrate the main reasons for the existence of financial intermediaries and to introduce the key economic theories required to analyse this issue. Furthermore, it illustrates how these economic theories can be applied to understand the existence (and relevance) of financial intermediaries.

Learning outcomes

By the end of this chapter, and having completed the essential readings and activities, you should be able to:

- explain why financial intermediaries exist
- discuss how the presence of market imperfections explains the importance of financial intermediaries (and the relative unimportance of financial markets) in the financing of corporations
- explain how financial intermediaries are able to reduce the transaction cost problem
- explain how financial intermediaries are able to reduce/solve the problems arising from adverse selection and moral hazard
- discuss the expected developments affecting the role of the different types of financial intermediaries (especially banks) in the future.

Essential reading

Allen, F. and D. Gale *Comparing Financial Systems*. (Cambridge, Mass.: MIT Press, 2001) pp.47–52.

Mishkin, F. and S. Eakins *Financial Markets and Institutions*. (Boston, London: Addison Wesley, 2009) Chapters 15 and 18.

Further reading

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Introduction

Several facts about financial intermediation deserve your attention. First, bank loans – and not stocks – are the most important source of funds raised externally by firms, despite the fact that so much media attention is focused on the stock market. Second, bonds are more important than stocks in financing firms. Third, direct lending from people who save to people who borrow to finance investment opportunities is less important than indirect lending through a financial intermediary such as a bank. This is despite the fact that it would seem more logical for the units with surplus funds to lend these funds directly to units in deficit. This chapter attempts to explain why most financing is indirect through intermediaries and thus considers the following questions:

- What makes banks so important in the financing of businesses?
- What are the reasons for the lesser importance of the stock markets in comparison to other external sources?
- Why are financial intermediaries more important than securities markets for getting funds from savers to investors?

These empirical facts (or puzzles) need to be understood in order to appreciate why financial intermediaries exist and how financial intermediation works. The analysis focuses on the main reasons for the existence of financial intermediaries and illustrates how a few (but powerful) economic theories can be applied to understand their existence, relevance and functioning.

The analysis also investigates the future for traditional intermediation services provided by banks, given the decline observed in many countries in recent years.

Some evidence on financial intermediation

Figure 4.1 shows the source of external funds used to finance firms over the period 1970–2000 in the USA, Germany and Japan. The categories of external funds are: bank loans, non-bank loans (loans by other intermediaries), bonds (marketable debt securities) and stocks (issue of new equity).

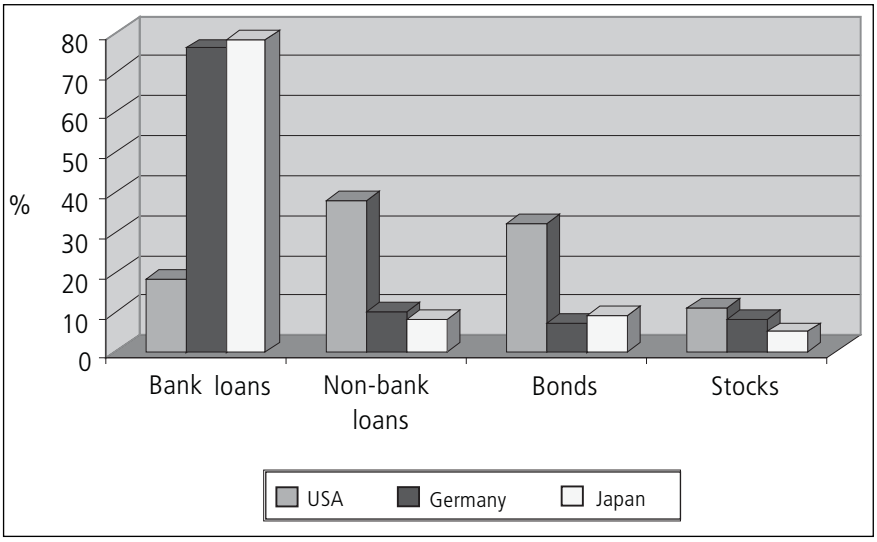

Figure 4.1: Sources of external funds for non-financial businesses in the United States, Germany and Japan (1970–2000)

(Note: definitions of the categories of external funds are given in Mishkin and Eakins (2009), p.367.)

Source: Graph created using data from Hackethal, A. and R.H. Schmidt 'Financing Patterns: Measurement Concepts and Empirical Results', Frankfurt Department of Finance Working Paper no. 125 (2004), p.30.

Pause and note down what you think Figure 4.1 shows.

First, loans are the most important source of funds raised externally in the USA, Germany and Japan. Buckle and Thompson (2004) report a similar finding for the UK. Although most funds raised by firms are internally generated (i.e. retained profits) with the exception of Japan, banks have the most important role in the external financing of businesses (56 per cent in the USA and 86 per cent in Japan and Germany). Specifically, the importance of banks is especially high in countries such as Germany (76 per cent) and Japan (78 per cent), the so-called bank-oriented systems as discussed in Chapter 3. However, it has to be noted that the share of banks in the financing of businesses has been declining in recent years.

Figure 4.1 leads us to ask this question: what makes banks so important in the financing of businesses? A second equally important question is: what is driving the recent decline in their relevance?

Activity 4.1

Find out the relative importance of sources of external funds for non-financial firms in your country. See if you can relate what you find to the importance of bank-oriented versus market-oriented systems.

Second, Figure 4.1 shows that stocks are the least important source of external financing for firms. In an average year, US firms raise funds over five times more through loans than with stocks. The issue of new equity is even less important than bank loans in the rest of the world: about 10

times less relevant in Germany, and about 20 times in Japan. Why are stock markets less important than other external sources?

Third, bonds are more important than stocks in financing firms (32 per cent versus 11 per cent in the USA). The difference in the relative share, however, is less remarkable in Japan (9 per cent bonds versus 5 per cent stocks). Nevertheless, the combined amount of stocks and bonds, which constitutes marketable securities, represents 43 per cent in the USA, and only 15 per cent in Germany and 14 per cent in Japan. What are the reasons limiting the use of marketable securities by businesses to finance their activities?

Fourth, only a small proportion of marketable securities (stocks and bonds) were sold directly to households (direct finance); the majority of these securities were bought primarily by non-bank financial intermediaries (pension funds, mutual funds and insurance companies). In this way, indirect finance, which involves the activities of financial intermediaries, is many times more important than direct finance, in which firms raise funds directly from lenders in the financial markets. This seems odd on the face of it. Units with surplus funds can lend these funds directly to units in deficit. On the one hand, the surplus units can obtain a return. On the other hand, the units in deficit can finance their investment opportunities. Why have indirect finance and financial intermediaries been so important in financial markets?

Read about these four points in Mishkin and Eakins (2009) Chapter 15, which contains a fuller treatment of the relative importance of financial intermediaries and the relative unimportance of securities markets for the financing of businesses.

Activity 4.2

Now read pages 47–52 in Allen and Gale (2001) and answer the following questions:

1. What is the percentage of direct finance versus indirect finance in the United States, Germany and Japan? (Refer to Figure 3.3 to find out the percentage values of marketable securities).
2. On the basis of your answer to the question above, discuss the relative importance of financial intermediaries versus financial markets.

In order to answer the set of questions arising from the above empirical evidence, we need to answer the question of why financial intermediaries exist. The next section identifies and illustrates each of the possible reasons for this, and the corresponding theories of financial intermediation.

Why do financial intermediaries exist?

We described financial intermediaries in Chapter 2 and their place in the financial system (see p.15). Now we will look deeper into their role. Why do they exist?

To answer this question we need to appreciate each of the reasons for the existence of financial intermediaries, and the relevant theories of financial intermediation. Financial intermediaries exist to solve or reduce **market imperfections**, such as: differences in the preferences of lenders and borrowers (in terms of size, maturity, liquidity, risk), presence of transaction costs, shocks in consumers' consumption and asymmetric information (which gives rise to both adverse selection and moral hazard). Several theories have been developed to explain how financial

intermediaries reduce/solve these market imperfections. They are the theories of:

- asset transformation
- transaction costs reduction
- liquidity insurance
- informational economies of scale and delegated monitoring.

Together they account for the existence of financial intermediaries and they provide a framework for the analysis, as summarised in Table 4.1.

Market imperfection	Theory of financial intermediation
Differences in the preferences of lenders and borrowers (in terms of size, maturity, liquidity, risk)	Theory of asset transformation
Presence of transaction costs	Theory of transaction cost reduction
Shocks in consumers' consumption	Liquidity insurance theory
Adverse selection	Informational economies of scale theory
Moral hazard	Delegated monitoring theory

Table 4.1: Framework for the analysis of the existence of financial intermediation

The framework based on transaction costs and asymmetric information has been developed by Professor Charles Goodhart, a member of the Financial Markets Group (FMG) Research Centre at LSE. The FMG is directed by David Webb, an LSE Professor in Finance, and is now one of the leading centres in Europe for academic research into financial markets.

In the following sections we will investigate each of the above theories.

Asset transformation

The simplest way to explain the existence of financial intermediaries is to emphasise their role in transforming particular types of assets into others, the process of asset transformation. Financial intermediaries simultaneously satisfy both borrowers' needs for permanent or long-term capital and the desires of many lenders for a high degree of liquidity in their asset holdings (assets may be turned into cash at short notice). To reconcile the conflicting requirements of lenders and borrowers, financial intermediaries transform the primary securities issued by firms into the indirect securities required by lenders (Gurley and Shaw, 1960; Fama, 1980). Specifically, they issue liabilities (deposit claims) with the characteristics of low risk, short-term, high liquidity, and use a proportion of these funds to acquire the larger size, high-risk and illiquid claims issued by firms. Therefore, financial intermediaries undertake four main transformations:

1. **Maturity transformation**: the liabilities of financial intermediaries generally mature more quickly than their assets. The traditional role of banks is to make long-term loans and fund them by issuing short-term deposits, a process commonly referred to as 'borrowing short and lending long'. Financial intermediaries are said to be mismatching the maturity of the assets they hold with the maturity of the liabilities they issue.

2. **Size transformation**: the amounts lenders make available are on average smaller than the amounts required by borrowers. Financial intermediaries collect the small amounts made available by lenders and parcel them into the larger amounts required by borrowers.
3. **Liquidity transformation**: financial intermediaries provide financial or secondary claims to depositors (e.g. bank accounts) that often have superior liquidity features than direct claims (e.g. bonds and stocks). Specifically, deposits are contracts that offer high liquidity and low risk (and they are held in the liabilities side of banks' balance sheets). Loans instead are illiquid and a higher risk asset than deposits (and they are held in the assets side of banks' balance sheets). Financial intermediaries (and banks in particular) can hold liabilities and assets of different liquidity features in their balance sheet through diversification of their portfolios. The more diversification, the lower the default probability.
4. **Risk transformation**: financial intermediaries transform risks to reconcile the preferences of borrowers and lenders. The lenders who hold the liability of the financial intermediaries must be able to regard them as absolutely safe. The intermediaries' loans, however, inevitably bear some default risk (the risk that the borrower will default on his or her obligations, that he or she will fail to pay interest or repay the loan itself when it is due). The degree (and range) of risk transformation qualifies the type of intermediary. Banks assume on their own the widest degree (and range) of risks. What determines the ability of banks to transform risky loans (assets) into virtually riskless deposits (liabilities)? Try to answer this before reading on.

Banks do this in three ways:

a. **Screening loan applications**: this enables the risk of loss on each individual loan to be minimised: the use of credit scoring is one technique banks can use to select only the good borrowers (i.e. good income/earnings or good record on repaying debt).

b. **Diversifying risk**: the spread of risks is achieved by lending to different types of borrowers. Banks try to avoid a heavy concentration in any single branch of economic activity or any single area of the country, and to restrict the maximum size of any single loan. There are many examples of the problems arising from interdependent risks. The failure of 400 Texan banks over the period 1985–89, as a result of the turmoil in the oil economy, was due to the heavy concentration of their loan portfolio in real estate dependent on the oil business.

c. **Pooling risks**: the presence of a large number of loans, as a consequence of the law of large numbers, reduces the variability of losses. The large number of loans does not reduce the expected loss in the portfolio of loans overall, but it is does give considerably improved predictability and limits the maximum loss for which the intermediary has to allow.

(Techniques that banks can use to evaluate and manage default risks are discussed in Chapter 6.)

This pragmatic perspective highlights the existence of units in surplus (lenders) and units in deficit (borrowers) with heterogeneous preferences as regards the characteristics of financial resources lent and borrowed. Therefore it enables us to move beyond the classical (ideal) world of frictionless and complete financial markets, and introduces some (small) market imperfections. These imperfections obstruct the conclusion of

financial transactions: lenders and borrowers are not able to diversify perfectly and obtain optimal risk sharing. As a consequence, financial intermediaries are needed to reconcile the conflicting requirements of lenders and borrowers.

Although this perspective offers a useful preliminary justification of the existence of financial intermediaries, it is has three main limitations. It does not explain:

- why borrowers do not undertake their own asset transformation
- why there are different types of financial intermediaries
- how different types of intermediaries perform their monetary, credit and allocation functions.

In the following sections, we illustrate the main theories about financial intermediation, and we see that these theories provide answers to these three questions. They are the theories of transaction costs, liquidity insurance and asymmetric information.

Transaction costs

In financial intermediation, transaction costs are incurred because of the time and money spent in performing financial transactions (Coase, 1960). The presence of transaction costs causes difficulties for a potential lender in finding an appropriate borrower. There are four main types of transaction costs:

1. Search costs: costs of searching out, and finding information about, a suitable counterpart (incurred both by lenders and borrowers).
2. Verification costs: lenders incur costs to verify the accuracy of the information provided by borrowers.
3. Monitoring and auditing costs: once a loan is made, lenders incur costs to monitor the activities of borrowers, and their adherence to the conditions of the contract.
4. Enforcement costs: in case the borrower is unable to meet the conditions of the contract, the lender will need to ensure their enforcement.

How financial intermediaries reduce transaction costs

Financial intermediaries reduce transaction costs by internalising them. Benston and Smith (1976, p.215) state 'The raison d'être for this industry is the existence of transaction costs.' Specifically, financial intermediaries reduce transaction costs in a number of ways. First, they develop branch networks and information systems, which enable lenders and borrowers to avoid the need to seek out a suitable counterpart on each occasion. Second, they provide standardised products, thereby cutting the information costs associated with scrutinising individual financial instruments. Third, they use tested procedures and routines. According to the theory of transaction costs, financial institutions are able to reduce transaction costs by taking advantage of the following:

- **Economies of scale** refer to the reduction in transaction costs per dollar of output as the size (scale) of the financial transaction increases. In symbols, in the presence of two outputs (Q1 and Q2), total costs (C) are: $C(Q1) < C(Q2)$ if $Q1 > Q2$. Because of their large size, financial intermediaries are able to combine the funds of many investors. For example, a bank is able to use a standard loan contract for a wide range of loans. The unit cost of the contract per loan is much

smaller for the bank than for an individual who has a loan contract drawn up when undertaking direct lending. Economies of scale are also important in lowering the costs of fixed investments, such as technology.

- **Economies of scope** are another area of cost savings for financial intermediaries. These economies occur whenever there is a cost advantage to producing more than one product jointly rather than producing them separately. In symbols, $C(Q1,Q2) < C(Q1) + C(Q2)$. Economies of scope are essentially concerned with deposit and payment services: deposits are the legal-financial claims by which banks both collect funds to sustain their lending activities, and satisfy the request of payment instruments.
- **Expertise** to lower transaction cost. For example, they have expertise in information technology (e.g. ATM, automated teller machines, or POS, point of sales) aimed at providing low-cost liquidity services.

Activity 4.3

Identify examples of the sort of transaction costs banks can reduce.

The theory of transaction costs explains several factors:

a. The distribution of financial transactions between financial intermediaries and financial markets. This distribution is based on the level of internalisation of transaction costs. Financial intermediaries are able to internalise many of the transaction costs because they have developed expertise and because they can take advantage of economies of scale and/or economies of scope. The difference in the level of internalisation of transaction costs explains why greater funds flow through financial intermediaries compared to financial markets. Therefore, the presence of transaction costs explains in part why indirect finance is much more important than direct finance.

b. The distribution of financial transactions among different types of intermediaries. Each type of intermediary sustains different levels of transaction costs: from simple brokers (pure intermediation) to banks (most complete absorption of transaction costs).

c. The presence of payment services (or liquidity services) provided by financial intermediaries, especially by banks. These services make it easier for customers to conduct transactions.

This perspective on transaction costs, however, does not help to explain why a financial intermediary makes a better selection of investment opportunities. Moreover, recent technological innovations and new financial instruments have reduced transaction costs. Therefore, reduction in transaction costs cannot be the main reason for explaining the existence of financial intermediaries and additional theories are needed: these include the liquidity insurance theory and the asymmetric information theory.

Liquidity needs

Economic agents are unsure about when they will require funds to finance consumption due to unforeseen events, and this creates a demand for liquid assets. By the law of large numbers, a large coalition of investors (such as a bank) will be able to invest in illiquid but more profitable assets, while preserving enough liquidity to satisfy the needs of individual investors. This means that financial intermediaries provide liquidity insurance, as postulated in the liquidity insurance theory also known as the consumption smoothing theory (Diamond and Dybvig, 1983).

How are financial intermediaries able to satisfy liquidity needs? According to the **liquidity insurance theory**, depository institutions are 'pools of liquidity' that provide households with insurance against idiosyncratic shocks that affect their consumption needs. Alternatively they can be seen as **'consumption smoothers'** that enable economic agents to smooth consumption by offering insurance against shocks to a consumer consumption path.

As long as the shocks in consumption needs across households are not perfectly correlated (or rather, they tend not to move together as explained in Chapter 8), the total cash reserve needed by a bank of size N (a coalition of N depositors) increases less than proportionally with N. This is the basic idea of the **fractional reserve system**, in which some fraction of the deposits can be used to finance profitable but illiquid loans. However, this is also the source of the potential fragility of banks – in the event that many depositors decide to withdraw their funds for reasons other than liquidity needs such as a general loss of confidence in the ability of the bank to remain solvent (as we will see in Chapter 5). Note that this theory is not specific to banks: it is also valid for any depository institution and for insurance companies.

Asymmetric information: adverse selection and moral hazard

As noted earlier, asymmetric information refers to the situation where one party to a transaction has less information than the other party, and thus is unable to make an accurate decision. This is an important aspect of most types of transactions, and particularly of transactions in financial markets. For example, potential investors in a firm have much less information than the managers of the firm, as they do not know how good the projects to be financed are, and they are not able to evaluate properly the risks and returns of these projects. Also, life insurance companies do not know the precise health of the purchaser of a life insurance policy. Similarly, banks do not know how likely a borrower is to repay.

The consequences of asymmetric information can be ex-ante (adverse selection) or ex-post (moral hazard):

- **Adverse selection** is the problem created by asymmetric information before the transaction occurs. It arises when the potential borrowers who are most likely to produce an undesirable (adverse) outcome are the ones who most actively seek out loans. Thus adverse selection increases the probability that bad credit risks will get loans. As a consequence, lenders may decide not to give any loans, even to good credit risks.
- **Moral hazard** is the problem that occurs after the transaction is made. It is the risk (hazard) that the borrower will engage in activities that are undesirable (immoral) for the lender. These activities potentially reduce the probability that the loan will be repaid. Again, the consequence is that lenders may decide not to make any loans. Investors are more likely to behave differently when using borrowed funds rather than when using their own funds.

Activity 4.4

As the concepts of adverse selection and moral hazard are extremely useful in understanding the existence, nature and role of financial intermediaries, read the case of Aunt Sheila, Aunt Louise and Uncle Melvin in Mishkin and Eakins (2009) p.27. Then answer the following question:

How does the adverse selection problem explain why you are more likely to make a loan to a member of your family than to a person not belonging to your family?

The concept of asymmetric information was proposed in the seminal contribution of Akerlof (1970). George Akerlof was a professor at the LSE in the late 1970s. He claimed that 'the difficulty in distinguishing good quality from bad is inherent in the business world; this may explain many economic institutions and may in fact be one of the most important aspects of uncertainty' (Akerlof, 1970, p.500). His analysis of the market for used cars (consisting of good cars and poor-quality cars) refers to a market where the seller has more information than the buyer regarding the quality of the product. The price the buyer pays must reflect the average quality of the cars in the market (between the low value of a poor-quality car and the high value of a good car). As a result of the adverse selection problem, only the owners of poor-quality cars will be happy to sell at this price, while the owners of good-quality cars will be reluctant to sell at this same price. The equilibrium in the market can be inefficient: the predominance of poor-quality cars implies a low number of transactions carried out in the market, because the buyers are reluctant to purchase a car unless they can obtain additional information.

Applying this analysis to financial markets, in a market characterised by asymmetric information, lenders have less information than borrowers. Lenders will therefore charge an interest rate reflecting the average quality (risk) of borrowers in the market. This will be higher than good quality (low risk) borrowers will be willing to pay and so mainly poor quality (high risk) borrowers will seek a loan. So there will be a higher probability that a lender will lend to a high risk borrower. This will reduce the amount of lending that takes place in the market.

Activity 4.5

Read the report on the Nobel Prize in Economics in 2001 awarded to George Akerlof, Michael Spence and Joseph Stiglitz (available on the website http://nobelprize.org/nobel_prizes/economics/laureates/2001/presentation-speech.html). Summarise the seminal contribution of George Akerlof on the analysis of markets with asymmetric information. Make sure you can see how their conclusions relate to financial intermediaries. (Do not spend more than 30 minutes on this activity.)

Of interest here is how asymmetric information problems affect lending and borrowing. Asymmetric information can lead to the selection of the borrowers with the higher risk (adverse selection); or to an increase in the risks attached to making a particular loan as a consequence of the opportunistic behaviours of the borrowers (moral hazard). The next section analyses how financial intermediaries attempt to solve these problems.

How adverse selection influences financial structure

The adverse selection problem significantly affects the securities market (stocks and bonds), where issuers have more information than potential investors. When individual borrowers (firms) have private information on the projects they wish to finance, the functioning of the market can be inefficient. Given that a potential investor is not able to distinguish good (high return/low risk) and bad (low return/high risk) firms, he is inclined to pay a price reflecting the average quality. The owners (managers) of good firms know that their securities are undervalued at this price, and they are not willing to sell. Only bad firms are willing to sell at this price.

The consequence is that the potential investor has problems in selecting firms to invest in, and is thus most likely to decide not to buy any security in the market.

These asymmetries impede the functioning of financial markets: they can either obstruct the conclusion of transactions (and cause the collapse of the market), or influence the level (and the quality) of production activities. Although the existence of organised financial markets partially reduces some of these problems, the solution to them has been the emergence of financial intermediaries, as shown in the next sections. The adverse selection problem explains one empirical fact emphasised above: why marketable securities – and stocks in particular – are not the primary source of external financing for firms.

How to reduce/solve the problems arising from adverse selection

To solve the adverse selection problem in financial markets, full information on the borrowers should be provided to the lenders. The following solutions exist to reduce/solve the adverse selection problem:

1. Private production and sale of information.
2. Government regulation.
3. Financial intermediaries.

First, private companies can produce and sell the information needed by potential investors to distinguish good and bad firms and to select their securities. Information concerns the financial statements of firms and their investment activities. In the United States, private companies such as Standard and Poor's, Moody's and Value Line do this. Standard and Poor's categorises corporate bond issuers into at least seven major classes according to perceived credit quality. The first four quality ratings – AAA, AA, A, BBB – indicate quality investment borrowers.

(Read Mishkin and Eakins (2009), Table 10.2, p.249, for a description of debt ratings.) The ratings below BBB are considered to be below investment grade and are sometimes referred to as junk bonds. Why do you think investors are willing to buy junk bonds?

Activity 4.6

Analyse the Credit Model developed by Standard and Poor's. Find out relevant information on their website (www.standardandpoors.com), under the section Products and Services. How do you think a firm reacts to a low rating by Standard and Poor's?

Adverse selection is not completely solved by the private production and sale of information because of the free-rider problem. This occurs when people who do not pay for information take advantage of information acquired by other people. If you buy the information on the quality of firms, as described in the last activity, you can use it to purchase undervalued securities of good firms. However, other investors (free-riders), who have not purchased the information, may observe your behaviour and buy the same security at the same time. The increase in the demand for the undervalued security will cause a build-up in its price to the true value. The effect is to negate the value of information. The free-rider problem explains why investors are reluctant to buy information. Thus the adverse selection problem remains.

Second, governments take steps to ensure that firms disclose full information to potential investors. In fact, financial markets are among the most heavily regulated sectors in the economy. In the USA, the Securities

and Exchange Commission (SEC) is the government agency entrusted to promote the adherence to standard accounting principles and disclosure of information. However, disclosure requirements do not solve the adverse selection problem, as the recent collapse of the Enron Corporation demonstrates (refer to Box on p.374 of Mishkin and Eakins (2009)).

Activity 4.7

Visit the website of the Securities and Exchange Commission, SEC (www.sec.gov/about/whatwedo.shtml).

Then find the equivalent authority in your own country, and what the main disclosure requirements are. If they are different, see if you can work out why, on the basis of the differences between your country and the USA.

Third, financial intermediaries, and especially banks, produce more accurate valuations of firms and are able to select good credit risks thanks to their expertise in information production. One particular advantage that banks may have in relation to information production is information about potential borrowers from the transactions on their bank accounts: banks obtain a profile of the suitability for credit (and ability to repay the loan) from the accounts of their customers. By acquiring funds from depositors and lending them to good firms, banks earn returns on their loans that are higher than the interest paid to their depositors. Although it does not take into account the possibility that firms provide information to the market, the asymmetric information theory offers a convincing explanation of the existence of financial intermediaries.

An important element of this explanation is that banks are able to avoid the free-rider problem because their loans are private securities, not traded in the open financial market. Therefore investors are not able to observe the bank and bid up the price of the loan to the point where the bank makes no profit on the production of information.

Moreover, banks reduce the adverse selection problem by asking the borrower to provide collateral against the loan. Collateral is property promised to the lender if the borrower defaults. Therefore it reduces the losses of the lender in the event of a default.

Activity 4.8

Can you explain how the presence of collateral reduces the adverse selection problem? Try to use an example. For instance, you want to borrow £1 million to buy a health and fitness club and you own a building whose value is £1.2 million.

Therefore, financial intermediaries solve the adverse selection problem, whereas the private production of information and government regulation only reduce it. The presence of adverse selection explains:

1. why bank loans are the most important source of funds raised externally
2. why indirect finance is many times more important than direct finance.

Further, there are several interesting corollaries:

i. Banks are even more important in developing countries than in developed countries, because information about private firms is even harder to collect than in developed countries.

ii. Large and well-known corporations have easier access to securities markets as the investors have more information about them.

iii. Recent improvements in information technology makes the acquisition of information easier for firms, and thus reduces the lending role of financial institutions.

The empirical evidence in the United States in the last 20 years confirms this, as discussed in the last section of this chapter.

A theory on financial intermediaries and adverse selection: informational economies of scale

In the presence of adverse selection, there are scale economies in the lending-borrowing activity. In such a context, financial intermediaries can be seen as 'information sharing coalitions' as argued by Leland and Pyle (1977) in the **informational economies of scale theory**.

Entrepreneurs can 'signal' the quality of their projects by investing more or less of their wealth in the firm. This partially reduces the adverse selection problem, since good firms can be separated from bad firms by the level of self-financing. However, if entrepreneurs are risk-averse, the 'signalling' is costly (i.e. good entrepreneurs are obliged to retain a substantial amount of the risk of their project). Nevertheless, information (not publicly available) on the quality of the projects can be obtained with an expenditure of resources. Interestingly, this information can benefit potential lenders. If there are economies of scale in the production of this information, specific organisations may exist to gather this information.

Two problems hamper firms that sell information to investors:

a. Quality of the information: buyers may not be able to ascertain the quality of the information (i.e. the distinction between good and bad information will not be apparent). As a consequence the price of the information will reflect average quality (as in the analysis by Akerlof above) so that firms that seek out high quality information will lose money.;

b. Appropriability of returns, also referred to as free-rider problem (as discussed above, buyers may be able to share or resell the information to others, without diminishing its usefulness). Thus the firm that originally collected the information may not be able to recoup the value of the information.

Both these problems can be solved if the firm gathering the information is a financial intermediary (such as a bank), buying and holding assets on the basis of its specialised information. Thus the information becomes embodied in its portfolio and hence, is not transferable. This provides an incentive for the gathering of this information. Once an organisation becomes better able than other lenders to sort classes of risks, borrowers of good risk wish to be identified, and to deal with an informationally efficient intermediary rather than with a set of lenders offering the value of the average risk. With the best risk 'peeled off', the average risk is less valuable, inducing borrowers of the next best risk to deal with the intermediary. Ultimately, borrowers of all types of risk will deal with intermediaries, with the only exception being the bottom class.

How moral hazard influences financial markets

Moral hazard has consequences for whether firms find it easier to raise funds with debt rather than with equity contracts:

- Moral hazard in equity contracts qualifies as a special type known as the **principal-agent problem** (Jensen and Meckling, 1976). Stockholders (called principals) own most of the firm's equity, but they are not the same people as the managers (agents) of the

firm. Managers have more information about their activities than stockholders so that there is asymmetric information. The separation of ownership and control, together with the asymmetric information, induce managers to act in their own interest rather than in the interest of stockholder-owners (i.e. managers have fewer incentives to maximise profits than stockholders).

- Moral hazard in debt contracts is lower than in equity contracts but is still present. Debt contracts require borrowers to pay fixed amounts and let them keep any profit above this amount. Consequently, borrowers have incentives to take investments riskier than lenders would like.

How to reduce/solve the problems arising from moral hazard in equity markets

Several tools can be used to reduce/solve moral hazard in the equity market:

1. Monitoring.
2. Government regulation to increase information.
3. Financial intermediaries active in the equity market.
4. Debt contracts.

First, stockholders can engage in the monitoring (auditing) of firms' activities to reduce moral hazard. Several reasons explain why monitoring is needed:

- to ensure that information asymmetry is not exploited by one party at the expense of the other
- the value of equity contracts cannot be certain when the contract is made
- the value of many financial contracts (i.e. future return on a stock) cannot be observed or verified at the moment of purchase, and the post-contract behaviour of a counterparty determines the ultimate value of the contract
- the long-term nature of many financial contracts implies that information acquired before the contract is agreed may become irrelevant at the maturity due to changes in conditions.

Nevertheless monitoring is expensive in terms of money and time, or rather it is a costly state verification. In addition, if you know that other stockholders are paying to monitor the activities of the firm you hold stocks in, you can free-ride on the activities of the others. As every stockholder can free-ride on others, the free-rider problem reduces the amount of monitoring that would reduce the moral hazard (principal-agent) problem. This is the same as with adverse selection and makes equity contracts less desirable.

Second, governments have incentives to reduce the moral hazard problem (just as with adverse selection). Several measures are used by governments: laws to force firms to adhere to standard accounting principles (i.e. to make profit verification easier); laws to impose stiff criminal penalties on people who commit the fraud of hiding/stealing profits. However, these measures are only partially effective as these frauds are difficult to discover.

Third, financial intermediaries operating in the equity market are able to avoid the moral hazard problem. Venture capital firms are an example of an intermediary able to reduce moral hazard and avoid the free-rider problem.. They use their funds to help entrepreneurs to start

new businesses. In exchange for the use of the venture capital, the firm receives an equity share in the new business. Venture capital firms have their own people participating in the management of the firm (i.e. easier profit verification and thus lower moral hazard). Moreover, the equity in the firm is not marketable to anyone but the venture capital firm (i.e. this eliminates the free-riding of other investors on the venture capital's verification activities).

Fourth, debt contracts are a way to reduce moral hazard. Moral hazard affects equity contracts because they are claims on profits in all situations, whether the firm makes or loses money. Consequently, there is the need to structure a contract that confines moral hazard to certain situations, and thus reduces the need to monitor managers. This is a debt contract, a contractual agreement to pay the lender a fixed amount of money independently from the profits of the firm. Therefore debt contracts are preferred to equity contracts as they require less monitoring . The presence of moral hazard in equity markets explains why stocks are not the most important external source of financing for firms.

How to reduce/solve the problems arising from moral hazard in debt markets

Although debt contracts reduce the amount of moral hazard in comparison to equity contracts, they do not solve the problem. Borrowers have incentives to take investments riskier than lenders would like: borrowers, get all the gains from a risky investment if they succeed, but lenders lose most, if not all, of their loan, if borrowers do not succeed. The solution to the problems of moral hazard lies again in financial intermediaries. However, other tools also enable us to reduce moral hazard. The full range of tools includes:

1. making debt contracts incentive-compatible (i.e. align the incentives of borrowers and lenders)
2. monitoring and enforcement of restrictive covenants
3. financial intermediaries.

First, borrowers are more likely to take on riskier investment projects when using borrowed funds than when using their own funds. Thus the moral hazard problem can be reduced by increasing the stake of borrowers own personal net worth (the difference between personal assets and liabilities) in the investment project. Now that borrowers could potentially lose some of their wealth if the project fails they have an incentive to make the project less risky. Thus, one way to reduce the moral hazard problem is to make the debt contract incentive-compatible, or rather to align the incentives of the borrowers and lenders.

Activity 4.9

How does the moral hazard problem explain why you are more willing to make a loan to a borrower who uses his own capital to finance two-thirds of the total value of a project than one who uses of one-third?

A second way in which the moral hazard problem can be reduced is by introducing restrictive covenants into debt contracts. A restrictive covenant is a provision aimed at restricting the borrower's activity. There are four types of possible covenants:

1. Those which discourage undesirable behaviour by the borrower (i.e. not to undertake risky investment projects). Examples are:

   i. to use the debt contract only to finance specific activities, such as the purchase of a fixed asset
   ii. to prohibit the firm from issuing new debt, or disposing of its assets
   iii. to restrict dividend payments if some ratios (such as the leverage ratio, the ratio of debt to equity) has not reached a critical level
   iv. to limit purchases of major assets or merger activities.
2. Those which encourage desirable behaviour from the lender's point of view. One example is a mortgage loan with a provision that requires the borrower to purchase life insurance that pays off the loan in the event of the borrower's death.
3. Covenants that keep collateral valuable.
4. Covenants that provide information about the activities of the borrowing firm, such as quarterly accounting and income reports.

The presence of covenants reduces moral hazard problems and explains why debt contracts are often complicated legal documents.

Activity 4.10

Are accounts always reliable? In every country? Is this a problem where you live – untrustworthy accounts? What does this mean for moral hazard?

Third, although covenants reduce moral hazard problems, they do not eliminate them: it is not possible to rule out every risky activity. Moreover, in order to make covenants effective, they must be monitored and enforced.

Monitoring typically involves increasing returns to scale, which implies that it is more efficiently performed by specialised financial institutions. We made this point earlier in this chapter – look back to refresh your memory. Individual lenders tend to delegate the monitoring activities instead of performing them directly. Thus the monitor has to be given an incentive to do its job properly.

However, because monitoring and enforcement are costly activities, investors can free-ride on the monitoring and enforcement undertaken by other investors. Thus in the bond market (as well as in the stock market) the free-rider problem arises. The consequence will be that insufficient resources will be devoted to these activities.

Financial intermediaries, and especially banks, can be seen to provide solutions both to the incentive problem and to the free-rider problem. They solve the incentive problem using several mechanisms, such as reputation effects, and the option for depositors to withdraw their money should the bank managers prove incompetent. They do not face the same free-rider problem, as they primarily make private loans not traded on the market. Banks therefore gain the full benefits of their monitoring and enforcement activities and have an incentive to devote sufficient resources to them. The possibility of overcoming moral hazard with adequate instruments (such as screening and monitoring), favoured by the existence of established long-term relationships, enables this theory to emphasise the special nature and role of banks in the allocation process.

Activity 4.11

Explain how loan contracts solve free-riding problems in a better way than bond contracts. If you need help, look at the Essential reading (Mishkin and Eakins, 2009, Chapter 15).

A theory on financial intermediaries and moral hazard: delegated monitoring

Since monitoring borrowers is costly, it is efficient for surplus units (lenders) to delegate the task of monitoring to specialised agents such as banks. Banks have a comparative advantage relative to direct lending in monitoring activities in the context of costly state verification. In fact, they have a better ability to reduce monitoring costs because of their ability to diversify loans. This is the main idea of the delegated monitoring theory, as formulated by Diamond (1984).

Several conditions are required for delegated monitoring to work:

- existence of scale economies in monitoring, which means that a typical bank finances many projects
- small capacity of investors as compared to the size of investments, which means that each project needs the funds of several investors
- low cost of delegation, which means that the cost of monitoring the financial intermediary itself has to be less than the benefit gained from exploiting scale economies in monitoring investment projects.

The framework of the delegated monitoring theory, as provided in Diamond (1984), is based on: the existence of n identical firms that seek to finance projects and the requirement by each firm of an investment of one unit.

The cash flow y that the firm obtains from its investment is a priori unobservable to lenders. This is where moral hazard arises. Moral hazard can be solved by:

- either 'monitoring' the firm (at cost K)
- or 'designing' a debt contract characterised by a non-pecuniary cost C (i.e. unmonitored direct lending)

Assume that $K<C$. If the firm has a unique financier, it would be efficient to choose the monitoring option. However, assume that each investor has available to lend only $1/m$, so that m of them are needed for financing a project. Assume also that the total number of investors is $m*n$, so that all the projects can be financed. Direct lending implies that each of the m investors monitors the financed firm: the total cost is $n*m*K$.

If a bank (financial intermediary) emerges, it can monitor each firm (total cost $n*K$). The benefits of a bank monitoring the debt arises from the specialised skill that a bank possesses and a reduction in the duplication of effort. Thus it makes sense for the bank to become a delegated monitor, which monitors borrowers on behalf of lenders (note that the bank is not monitored by its lenders – the depositors). Financial intermediation (delegated monitor) dominates direct lending as soon as n is large enough: this means that diversification exists (i.e. a large number of loans is held by the intermediary). Diversification is important because it reduces risk to the bank and so increases the probability that the intermediary has sufficient loan proceeds to repay a fixed debt claim to depositors.

Before moving to the next section, focus your attention on Table 4.2, which provides a summary of the corollaries of the asymmetric information problem, the ways to reduce/solve the market imperfections and the relevant financial intermediation theories.

Type of asymmetric information	Adverse selection	Moral hazard
Corollaries	Free-rider problem	Principal-agent problem
		Free-rider problem
Ways to reduce/solve the market imperfection	Private production	Monitoring of equity contracts
	Government regulation	Government regulation
	Financial intermediaries	Debt contracts
		Monitoring and enforcement of covenants
		Financial intermediaries
Theory of financial intermediation	Informational economies of scale (Leland and Pyle, 1977)	Delegated monitoring (Diamond, 1984)

Table 4.2: Asymmetric information problems and ways to reduce/solve them

What is the future for financial intermediaries?

The relevance of traditional banking has declined in recent years in countries such as the USA and the UK. The share of financial assets held by different types of US financial intermediaries changed over the period 1970–2005. As shown in Figure 4.2, since 1970 the bank share of financial assets has steadily declined, and thrift institutions (primarily savings and loan associations) have lost even more ground than banks. However, over the same period some other types of intermediaries, notably mutual companies, have increased their market share dramatically. (Read Boyd and Gertler, 1994.)

Before reading further, see if you can guess why banks have lost out in some ways. Do you think they have been able to make gains in other directions? Think how they have done this. We shall see below that there is an interesting story of both decline and increase.

The decline in the share of financial assets held by banks does not necessarily indicate that the banking industry is in decline. In fact we have two indicators that banks have been doing quite well. First, both the ratio of US commercial bank assets to nominal gross domestic product (GDP) and the ratio of commercial bank loans to nominal GDP increased over the last four decades (Boyd and Gettler, 1994). Second, as shown in Figures 4.2 and 4.3, US banking profitability relative to GDP has shown a sharp increase from 1992 and remained substantially stable over the 1993–2006 period, after a bad performance in the late 1980s and early 1990s (Mishkin and Eakins, 2009). Specifically, the US banking return on equity (ROE) was 13.86 per cent in 1992 and 13.06 per cent in 2006,

with a maximum of 16.03 per cent in 1993; return on assets (ROA) was 0.94 per cent in 1992 and 1.33 per cent in 2006 with a maximum of 1.4 in 2003. Similarly, EU banking ROE rose to just under 20 per cent in 2005 (up from 16.5 per cent in 2004) with a degree of dispersion of performances around the average ROE considerably narrower in 2005 compared with 2004.

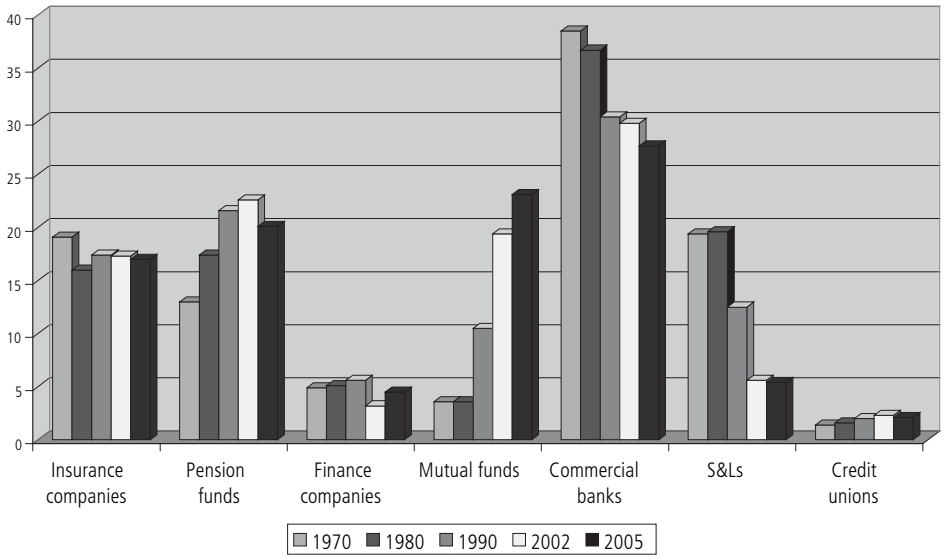

Figure 4.2: Shares of financial assests held by different types of US financial intermediairies over the period 1970–2005

Source: Graph created using data from US Federal Reserve Flow of Funds Accounts, 9 June 2005.

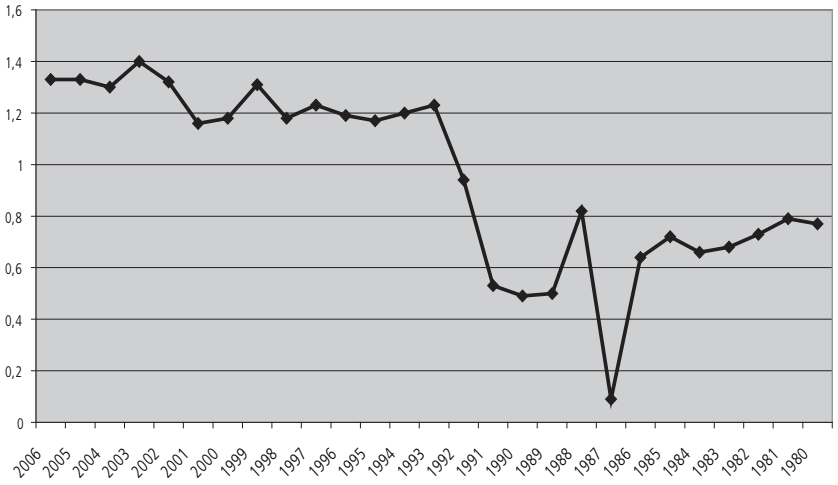

Figure 4.3: Return on assets %

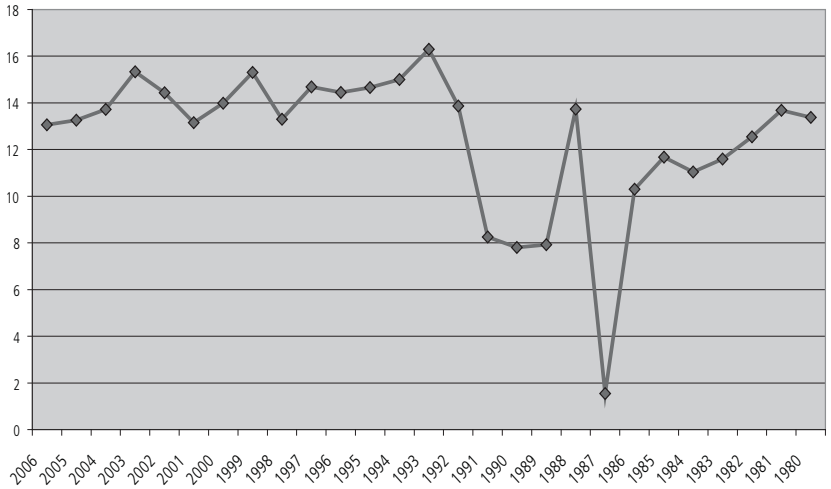

Figure 4.4: Return on equity %

Source: Graph created using data fromt he FDIC website (www2.fdic.gov/qbp).

This complex picture can be explained by looking at two main areas of banking activity (Mishkin and Eakins, 2009, Chapter 18):

1. Reduction in cost advantages in acquiring funds: in the 1960s the increase in inflation, associated with the regulatory restriction on interest payable on checkable deposits, increased the investors' sensitivity to interest rate differentials. Therefore low-cost deposits from the public were not as readily available as a source of funds for banks. This had three main consequences.

- First, a disintermediation process occurred: the low interest rate on chequeable and time deposits induced investors to take their money out of banks and to look for higher-yielding investment opportunities.
- Second, money market mutual funds appeared in the early 1980s and grew dramatically in the USA: this new financial intermediary issued shares (like mutual funds) to raise funds to be invested in short-term money market securities, on which investors get interest payments. Moreover, they enable the investor to write cheques against the held shares (like banks), although they are not legally deposits and are not subject to reserve requirements and prohibitions on interest payments. As a result investors could both obtain checking account-like services and earn high interest.
- Third, in the 1980s changes in regulation (elimination of ceilings on time deposit interest rates) helped banks in the competitive process for the acquisition of funds, but involved them in higher costs. Thus banks experienced a reduced cost-competitive advantage over other institutions.

2. Reduction in income advantages in using funds:

- First, improvements in information technology and the diffusion of credit rating agencies make it easier for firms to issue securities directly to the public. These securities are either short-term (commercial papers) or long-term (bonds). Because investors can screen out bad and good credit risks, firms go to the cheaper commercial paper market – rather than to banks – to raise short-term funds. For the same reason, firms go to the bond market – and use banks less often – even if they are less well-known corporations with lower credit ratings. This explains the development of the so-called junk bond market, or rather long-term corporate bonds whose ratings have fallen below a given score calculated in accordance with credit rating agencies (rated below Baa by Moody's rating agency or BBB by S&P).
- Second, improvements in information technology and statistical methods favoured the process of securitisation, which is the process of transforming illiquid financial assets (such as loans and mortgages) into marketable securities (see Figure 4.5 to get a sense of the increase in the relevance of securitisation in the EU). Financial intermediaries can cheaply bundle together a portfolio of loans (e.g. mortgages, credit card receivables, commercial and computer leases) with varying small denominations (often less than $100,000), collect the interest and principal payments on the loans in the bundle, and then pay them out to third parties. By dividing the portfolio of loans into standardised amounts, the claims to the principal and interests can be sold to third parties as securities. These securities are liquid and well diversified. Financial institutions make profits by servicing the loans and charge a fee to the third party for this service. The development of securitisation allows other financial institutions, and not only banks, to originate loans, accurately evaluate credit risks, bundle these loans and sell

them as securities. Banks have therefore lost their advantage in the loan business. Of course, securitisation reached a peak in 2007 but has declined dramatically following the problems with securitised sub-prime mortgage debt and other securitised debt products during the financial crisis of 2007–09 – see Chapter 3 for more details.

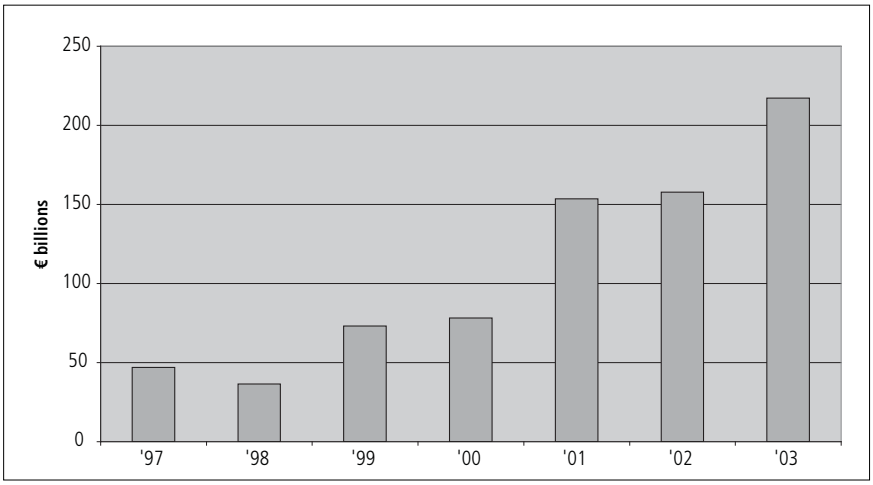

Figure 4.5: Securitisation activities in the EU (1997–2003)

Source: Graph created using data from www.europeansecuritisation.com.

Activity 4.12

What is the relevance of traditional banking in your country in comparison to the situation in the USA?

How can you link this evidence with the arguments on bank-oriented systems and market-oriented systems presented in Chapter 3?

What are the reactions of banks to this decline in their intermediation role?

1. They have expanded into new, riskier areas of lending (e.g. lending to real estate companies, to corporate takeovers and to leverage buyouts). The higher risk associated with these new areas of lending is well illustrated by the problems of the Japanese banking system in the 1990s. As a consequence of the deregulation process, Japanese banks expanded their lending rapidly during the 1980s. In particular, bank lending was increasingly directed towards the real estate and construction sectors. A sharp increase in interest rates in 1990 burst the asset price bubble, and land prices declined sharply over several years. This caused the emergence of a large number of 'bad loans' (loans that would not be repaid in full, if at all). Moreover, the economic downturn in Japan and the crisis in Asia have produced a further deterioration in bank loan portfolios. During 1997, the problems in the banking system became increasingly apparent when an attempted merger between the tenth largest commercial bank in Japan – Hokkaido Takushoku Bank – and a smaller regional bank stalled, leading to the collapse of the larger bank. Similar problems affected banks in the US and Europe during the financial crisis of 2007–09 as banks lent to borrowers to finance house purchases in a period of rapidly rising house prices. When the housing bubble burst the banks found themselves with large amounts of bad debt. This created serious solvency problems for many banks.

Activity 4.13

Read the International Monetary Fund Survey (August 17, 1998: pp.253–55) available at: www.imf.org/external/pubs/ft/survey/pdf/081798.pdf. Write a one-page essay explaining the reasons for the Japanese banking sector problems, emphasising the failure of Hokkaido Takushoku bank.

2. Banks are now pursuing new off-balance sheet activities, such as loan commitments and letters of credit. These activities produce fee income instead of interest income. Note that total bank income can be expressed as the sum of net interest income (earnings from balance sheet assets net of interest costs) and non-interest income (non-interest earnings from off-balance activities). There has been a strong increase in income from off-balance sheet activities as a share of total bank income in the period since the 1960s. Given that the total profitability of banks has been substantially stable in this same period, this implies that the share of traditional banking businesses has declined. However, note that non-traditional activities might be riskier for banks.
3. Banks have also increased proprietary trading whereby they hold positions in assets and derivatives for speculative purposes (hoping to profit from price changes). This increased dramatically in the 15 years prior to the 2007 financial crisis. Of course a bank's trading activities give rise to market risk which is discussed in more detail in Chapter 5.

Activity 4.14

Visit the FDIC website at www2.fdic.gov/SDI/SOB/ and answer the following questions (produce a graph to support your answer):

What is the share of the income of US banks coming from off-balance sheet activities? What was the trend during the period 1992–2006?

Summary

In this chapter we investigated how several theories explain why there are financial intermediaries. They exist to:

- transform assets in order to satisfy simultaneously the different requirements of lenders and borrowers in terms of maturity, size and risk
- reduce transaction costs by taking advantage of economies of scale, economies of scope and expertise
- satisfy the liquidity needs of individual investors
- reduce problems arising out of asymmetric information. On the one hand, financial intermediaries reduce adverse selection thanks to their expertise in information production and their ability to avoid the free-rider problem by issuing private securities (loans) against collateral. On the other hand, they reduce moral hazard because they gain the full benefits of their monitoring and enforcement, and have an incentive to devote sufficient resources to these activities.

The final issue concerns the future of financial intermediaries. The traditional intermediation services provided by banks have declined in recent years, and banks have sought to maintain profits by expansion into other areas of business. However, this expansion exposed banks to new and greater risks and contributed to the financial crisis of 2007–09.

Key terms

adverse selection	asset transformation	asymmetric information
delegated monitoring theory	disintermediation	diversifying risks
economies of scale system	economies of scope	fractional reserve system
free-rider problem	informational economies of scale theory	liquidity insurance theory
liquidity transformation	market imperfections	maturity transformation
moral hazard	pooling risks	principal-agent problem
risk transformation	Securities and Exchange Commision	securitisation
size transformation	transaction costs	theory of transaction costs

A reminder of your learning outcomes

By the end of this chapter, and having completed the essential readings and activities, you should be able to:

- explain why financial intermediaries exist
- discuss how the presence of market imperfections explains the importance of financial intermediaries (and the relative unimportance of financial markets) in the financing of corporations
- explain how financial intermediaries are able to reduce the transaction cost problem
- explain how financial intermediaries are able to reduce/solve the problems arising from adverse selection and moral hazard
- discuss the expected developments affecting the role of the different types of financial intermediaries (especially banks) in the future.

Sample examination questions

1. Discuss how the key economic theories of financial intermediation enable us to understand the existence (and relevance) of financial intermediaries.
2. a. Describe how the presence of market imperfections explains the importance of financial intermediaries (and the relative unimportance of financial markets) in the financing of corporations.
   b. What are the forms of asset transformation undertaken by banks?
3. a. Explain how financial intermediaries are able to reduce transaction costs in the economy.
   b. Explain how financial intermediaries are able to reduce/solve the problems arising from adverse selection and moral hazard.
4. a. Explain the hypotheses, the framework and the main findings of the delegated monitoring theory.
   b. How is the free-rider problem related to information asymmetries in financial markets?
5. 'There is evidence that traditional banking has declined in recent years in countries such as the USA and the UK.' Discuss.

6. a. What factors have caused the decline in the share of financial assets held by the US banks in recent years?

   b. What have been the main consequences of disintermediation for banks?