The Economics of Money, Banking & Financial Markets

European Edition

Frederic S. Mishkin
Kent Matthews
Massimo Giuliodori

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The Economics of Money, Banking and Financial Markets

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The Economics of Money, Banking and Financial Markets

EUROPEAN EDITION

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BRIEF CONTENTS

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PREFACE

Hallmarks

Although this text has undergone a major revision and adaptation for the European context it retains the basic hallmarks of all past Global editions that have made it the best-selling textbook on money and banking over the past editions:

- A unifying, analytic framework that uses a few basic economic principles to organize students' thinking about the structure of financial markets, the foreign exchange markets, financial institution management and the role of monetary policy in the economy
- A careful, step-by-step development of models (an approach found in the best principles of economics textbooks), which makes it easier for students to learn
- The complete integration of an international perspective throughout the text
- A thoroughly up-to-date treatment of the latest developments in monetary theory
- A special feature called 'Following the financial news' to encourage reading of a financial newspaper
- An applications-oriented perspective with numerous applications and special-topic boxes that increase students' interest by showing them how to apply theory to real-world examples

What's new in the European adaptation

The basis of the adaptation was the 9th Global edition. The figures and data have been replaced by or supplemented with UK and other European countries' data. The text in each chapter reflects the Europeanization of the material while retaining the essential features of the original Global editions. There is major new material in every part of the text.

Chapter 1 Why study money, banking and financial markets?

This chapter lays the foundations for the following chapters. It contains new material that refers to the interest rates of the UK and the major economies of the euro area. The broad sweep of the history and volatility of stock markets in the twentieth and twenty-first centuries is discussed by comparing the evolution of the FT30 index and the Dow-Jones from 1935. The foreign exchange market is given greater prominence in the book and is introduced earlier in this chapter.

The structure of the chapter follows closely the 9th Global edition but the examples of money and business cycles and the long-run relationship between inflation and money is taken from the UK. There are two reasons why the UK is used to illustrate the long-run relationships between money, interest rates, the business cycle and inflation. The first is that the euro area has not been in existence for long enough to provide an undisturbed long series of data that will adequately illustrate the economic relationships explored in the chapter. The second reason is that the UK provides an undisturbed example of long-term trends that have relevance for the euro area.

Chapter 2 An overview of the financial system

This chapter stays close to the structure of the 9th Global edition and provides data on the principal money market and capital market instruments in the UK as examples of the types of

financial instruments that are traded in an advanced financial market. The principal financial intermediaries in the euro area and the UK are described and the boxes on 'Following the financial news' take examples from the *Financial Times*.

Chapter 3 What is money? A comparative approach to measuring money

The difference between the definition of money and the measurement of money is discussed in a special 'Closer look' box. It uses the evolution of the measures of money in the UK as examples of circumstances when financial innovation blurs the distinction between different means of payment systems, leading to changes in the measures of money while retaining the fundamental definition. The different measures of money in the euro area, the UK and the US are discussed and presented in Table 3.1 and the detailed components of the various measures of the euro area money supply are shown in Table 3.2.

Chapter 4–6 Understanding interest rates, The behaviour of interest rates and The risk and term structure of interest rates

These three chapters have remained largely unchanged as they are theoretical in substance. A notable addition in Chapter 4 is the 'Closer look' box that discusses the observation of real interest rates from the yields on UK index-linked bonds. Additionally Figure 4.1 shows how real interest rates can be backed out by subtracting econometrically generated inflation expectations following the Mishkin (1981) method, from the UK short-term rate of interest. Figure 5.7 uses the UK data on short-term interest to illustrate the relationship between the rate of interest and the business cycle. The 'Following the financial news' box contains a column from the *Financial Times* on UK index-linked bonds which is explained and analysed in the text. Chapter 6 uses the spread between the UK commercial bill rate and the UK risk-free rate of interest to illustrate the risk premium in short-term bonds. It also includes a discussion of the risk premium on interest rates due to sovereign debt default within the euro area. 'Following the financial news' includes a discussion and an analysis on UK yield curves produced by the *Financial Times* for yield curve shapes from 1981 to 2011.

Chapter 8 An economic analysis of financial structure

The context for this chapter is the European sovereign debt crisis that followed the global financial crisis which was itself sparked by the subprime crisis. The banking crisis and the impacts on the financial system in the euro area and the UK are explored in this chapter. The financial structure of the three largest economies in the euro area, the UK and the US are described. The chapter shows data for the sources of external funds for non-financial businesses in the US, the UK, France, Germany and Italy. The euro area and UK financial structure fits in with the eight basic facts about company financial structure. The attempts to remedy conflicts of interest in the US (Sarbanes–Oxley Act of 2002 and the Global Legal Settlement of 2002) are supplemented with a discussion of European Union Directives.

Chapter 9 Financial crises and the subprime meltdown

The 9th Global edition included an extensive analysis of why financial crises like the subprime crisis occur and why they have such devastating effects on the economy. This chapter follows the structure of the original edition and examines why financial crises occur and why they have such devastating effects on the economy. This analysis is used to explain the course of events in a number of past financial crises throughout the world, including the collapse of the European Exchange Rate Mechanism. A particular focus of the chapter is the explanation of the recent subprime crisis and the sovereign debt crisis in the euro area economies. A special section is on the dynamics of the euro area financial crisis and an additional application is the box on the sovereign debt crisis in the EU and the attempts by the ECB, the EU and the IMF to deal with a crisis that keeps on developing. The material in this chapter is very exciting for European students as it is as bang up to date in its information and

analysis as the publication of a textbook will allow. As this book goes to print the sovereign debt crisis and the banking crisis have had political upheavals in Europe with changing governments in Italy, France and Greece. Far from coming to any form of resolution, the banking crisis has worsened in Spain.

Chapter 10 Banking and the management of financial institutions

Understanding the workings of banks begins with understanding the balance sheet of the banks. This chapter begins with the consolidated balance sheet of all commercial banks in the euro area. This is then compared with the balance sheet of a single universal bank in Germany as an example with the similarities and differences highlighted in the discussion. The process of maturity transformation is explained and the methods by which banks make profits are described by referring to the income statement of a large German bank.

Chapter 11 Economic analysis of financial regulation

The material in the Global box 'The spread of deposit insurance' has been updated to include information on the spread of deposit insurance as a result of the 2008 financial crisis. The extent of deposit insurance in the European Union is shown in Table 11.1. Examples of direct government help to banks in the European Union and the problem of moral hazard are explained. The notion of 'too important to fail' is explored in a seperate section. This is a case when the government thinks that a bank failure would infect the rest of the financial system, but even though it may not commit public funds to the exercise, the intervention alone could create moral hazard. An explicit exploration of the regulations in the Basle 1 is contained in a 'Closer look' box with an explanation of how the capital-adequacy ratio is calculated. The Global box on International financial regulation has been extended to deal with the Basle 3 regulations that are to be phased in by 2019. An additional section on the advantages and disadvantages of bank regulation is included as well as an EU-wide discussion on where regulation is going in the light of banking crises in Europe and the sovereign debt crisis.

Chapter 12 Banking industry: structure and competition

This chapter begins with the creation and development of the single banking market in the European Union. The result of attempts to promote competition has led to greater consolidation. Deregulation has occured in phases and these phases are discussed in a special section on deregulation and competition. The impact of deregulation and competition on bank structures is discussed in a special section on consolidation and downsizing. A special section on the structure of the banking sector in Europe discusses issues of concentration and competitiveness. A further section discusses the internationalization of banking.

Chapter 13 The goals and structure of central banks

This chapter has been substantially rewritten and contains a wider coverage of the goals and structure of central banks with special emphasis on the Bank of England, the ECB and the Federal Reserve. It includes a box on the benefits of price stability. Also the description of the Federal Reserve System includes a box on the differing styles of Bernanke and Greenspan as Governors. The independence of the ECB contains material that discusses the pressures it faces during the current financial crisis. Additional material in the section on central banks around the world includes a description of the central banks of Sweden and Norway. The chapter also includes an additional section on central banks in transition countries. The discussion on central bank behaviour is expanded and includes two additional boxes on making central banks more accountable and whether independence for central banks leads to lower inflation.

Chapters 14–15 The money supply process and The tools of monetary policy

While retaining the theoretical features of the 9th Global edition, these chapters have been reorganized to reflect the European context. The specific factors that determine the money supply in the context of the money multiplier are elaborated in Chapter 14. The historic trend of the UK M3 money multiplier is described as an example and recent trends are examined with the M3 multiplier of the euro area and the M1 multiplier of the US. A special box describing the operations of the monetary counterparts process explains the link between bank lending, the government budget deficit and funding of the deficit through bond sales. The counterparts process has a stronger resonance with the operations of the monetary process in the UK and the ECB than the simple textbook money supply process. Chapter 15 on the tool of monetary policy has been substantially rewritten to accommodate a more general framework which is useful to analyse the market for reserves in the euro area, the UK and the US, and to understand how the respective central banks can use their tools to affect the interest rates. This chapter also includes a number of boxes describing the unconventional monetary policies implemented by the Bank of England, the ECB and the Fed over the last few years. More specifically, a new box describes the mechanics of quantitative easing by the Bank of England. Further analysis of the European context includes a special box on extraordinary policy responses by the ECB to the current crisis in the form of the enhanced credit support and the securities markets programme. The box on the Fed's response to the crisis has also been updated.

Chapter 16 The conduct of monetary policy: strategy and tactics

The first part of this chapter has a section on the experience of monetary targeting in the UK, the US and Germany. The chapter continues with an extensive discussion of inflation targeting. In order to stress the importance of transparency and regular communication with the public, a special box that describes the working of the inflation fan chart used by the Bank of England is included. This chapter also features an extended coverage of the two-pillar monetary policy strategy of the ECB. After a discussion of the monetary strategy of the Fed, the chapter discusses the main tactics in choosing the policy instruments. Within this context, an updated section on the Taylor rule includes figures that show the rate generated by the Taylor rule and the respective policy rate of the UK and the US. The Fed Watchers box in the 9th Global edition is replaced by a Central Bank Watchers box that focuses on the Bank of England and the ECB.

Chapters 17–18 The foreign exchange market and The international financial system

The structure and theoretical content of the working of the foreign exchange market in Chapter 17 remains mostly unchanged with the context focusing on Europe. Additions worth mentioning are a discussion of alternative methods used in expressing the exchange rate and an updated application on the euro and the global financial crisis. Chapter 18 has also been rewritten to reflect a European focus, but the theoretical aspects remain largely unchanged. The section on the balance of payments describes the UK system as an example. The box on why large current account deficits worry economists has been extended to Germany and the UK. Following the recent proposals of policymakers, a new 'Reading the financial news' section on the Tobin tax has been added. The section that covers dollarization, currency boards and monetary unions now includes an extensive coverage of the benefits and costs of a monetary union. On top of a special box on the potential for a monetary union in the Arab Gulf Cooperation Council, this section features two new boxes discussing whether the existing euro area constitutes an optimal currency area and whether the EU countries outside the euro area will join the euro area.

Chapter 19 The demand for money

Chapter 19 is contextualized in the European setting with long-run movements in the velocity of circulation for broad money in the UK examined alongside the US. In particular the changes in the UK velocity are matched against recessions from 1915 onwards. The stability of the demand for money is examined in the context of the experience of M3 velocity in the euro area.

Chapters 20–23 The *ISLM* model, Monetary and fiscal policy, Aggregate demand and supply analysis and Transmission mechanisms of monetary policy

As theoretical chapters, these have had only a light revision to reflect the European context. In Chapter 20 the application of the collapse of investment spending demonstrates the effect for the UK economy in the 1930s. The application in Chapter 21 of the economic stimulus following the 2008 downturn includes stimulus plans by the European economies. A further application examines the effect of the British fiscal austerity programme of 2010 and the reunification of Germany in 1990. The theoretical model is extended to examine the mix of fiscal and monetary policy in unison. In Chapter 22, the effect of negative supply shocks is traced through unemployment and inflation for the UK and the euro area as well as the US in 1973–5. Similarly the effect of negative demand shocks during the 1980–3 period are traced through on inflation and unemployment in the UK and the US. Finally, this chapter includes a section on the effect of the global financial crisis on unemployment and inflation during 2007–8 for the UK, the US, the euro area and Japan. Chapter 23 includes a discussion of UK reform of the monetary mechanism and its effect on structural model evidence. The section on the traditional interest-rate channels includes a special box that summarizes the research on the pass-through of retail bank rates in the euro area. Additionally the credit view is expanded to include data from the euro area, the UK and the US. The application on the subprime crisis has been extended to include the policy of quantitative easing by the Bank of England.

Chapters 24–25 Money and inflation and Rational expectations: implications for policy

Chapter 24 has been rewritten to reflect global, European and UK episodes of inflation and money growth. It starts with an extended section on the empirical relationship between money and inflation in the UK and the euro area. This chapter also includes an application to the UK experience of inflation during the period 1960–2009 and the underlying political economy factors that explain the rise in inflation to 1980. A final application discusses the importance of credibility for the curbing of inflation in the UK. Chapter 25, being largely theoretical, has remained much the same as in the 9th Global edition, with the context focusing on Europe. A relevant application in the European context is the credibility enhancing condition for entry to EMU enshrined in the Maastricht Treaty of 1992. The evidence on inflation in the euro area is examined in the application.

Flexibility

In using previous editions, adopters, reviewers and survey respondents have continually praised this text's flexibility. There are as many ways to teach money, banking and financial markets as there are instructors. To satisfy the diverse needs of instructors, the text achieves flexibility as follows:

- Core chapters provide the basic analysis used throughout the book, and other chapters or sections of chapters can be used or omitted according to instructor preferences. For example, Chapter 2 introduces the financial system and basic concepts such as

transaction costs, adverse selection and moral hazard. After covering Chapter 2, the instructor may decide to give more detailed coverage of financial structure by assigning Chapter 8, or may choose to skip Chapter 8 and take any of a number of different paths through the book.

- The text also allows instructors to cover the most important issues in monetary theory and policy without having to use the *ISLM* model in Chapters 20 and 21, while more complete treatments of monetary theory make use of the *ISLM* chapters.
- The internationalization of the text through marked international sections within chapters, as well as through complete separate chapters on the foreign exchange market and the international monetary system, is comprehensive yet flexible. Although many instructors will teach all the international material, others will not. Instructors who want less emphasis on international topics can easily skip Chapter 17 on the foreign exchange market and Chapter 18 on the international financial system and monetary policy. The international sections within chapters are self-contained and can be omitted with little loss of continuity.

To illustrate how this book can be used for courses with varying emphases, several course outlines are suggested for a semester teaching schedule. More detailed information about how the text can be used flexibly in your course is available in the Instructor's Manual.

- *General money and banking course:* Chapters 1–5, 10–13, 15, 16, 22, 24, with a choice of 6 of the remaining 12 chapters.
- *General money and banking course with an international emphasis:* Chapters 1–5, 10–13, 15–18, 22, 24 with a choice of 4 of the remaining 10 chapters.
- *Financial markets and institutions course:* Chapters 1–12, with a choice of 7 of the remaining 13 chapters.
- *Monetary theory and policy course:* Chapters 1–5, 13–16, 19, 22–25, with a choice of 5 of the remaining 11 chapters.

Pedagogical aids

In teaching theory or its applications, a textbook must be a solid motivational tool. To this end, we have incorporated a wide variety of pedagogical features to make the material easy to learn:

- **Previews** at the beginning of each chapter tell students where the chapter is heading, why specific topics are important, and how they relate to other topics in the book.
- **Applications**, numbering around 50, demonstrate how the analysis in the book can be used to explain many important real-world situations.
- **'Following the financial news'** boxes introduce students to relevant news articles and data that are reported daily in the press and explain how to read them.
- **Global** boxes include interesting material with an international focus.
- **'Closer look'** boxes highlight dramatic historical episodes, interesting ideas and intriguing facts related to the subject matter.
- **Summary tables** provide a useful study aid in reviewing material.
- **Key statements** are important points set in boldface italic type so that students can easily find them for later reference.
- **Graphs** with captions, numbering more than 150, help students clearly understand the interrelationship of the variables plotted and the principles of analysis.
- **Summary** at the end of each chapter lists the main points covered.
- **Key terms** are important words or phrases, boldface when they are defined for the first time and listed by page number at the end of the chapter.

- **End-of-chapter questions and problems**, numbering more than 400, help students learn the subject matter by applying economic concepts, including a special class of problems that students find particularly relevant, under the heading 'Using economic analysis to predict the future'.
- **Web exercises** encourage students to collect information from online sources or use online resources to enhance their learning experience.
- **Web sources** report the Web URL source of the data used to create the many tables and charts.
- **Useful websites** point the student to websites that provide information or data that supplement the text material.
- **Glossary** at the back of the book provides definitions of all the key terms.

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Professor Mishkin's research focuses on monetary policy and its impact on financial markets and the aggregate economy. He is the author of more than 15 books, including *Financial Markets and Institutions*, sixth edition (Addison-Wesley, 2009); *Monetary Policy Strategy*, (MIT Press, 2007) *The Next Great Globalization: How Disadvantaged Nations Can Harness Their Financial Systems to Get Rich* (Princeton University Press, 2006); *Inflation Targeting: Lessons from the International Experience* (Princeton University Press, 1999); *Money, Interest Rates, and Inflation* (Edward Elgar, 1993); and *A Rational Expectations Approach to Macroeconometrics: Testing Policy Ineffectiveness and Efficient Markets Models* (University of Chicago Press, 1983). In addition, he has published more than 150 articles in such journals as *American Economic Review*, *Journal of Political Economy*, *Econometrica*, *Quarterly Journal of Economics*, *Journal of Finance*, and *Journal of Monetary Economics*.

Professor Mishkin has served on the editorial board of *American Economic Review* and has been an associate editor at *Journal of Business and Economic Statistics*, the *Journal of Applied Econometrics*, and *Journal of Money, Credit and Banking*; he also served as the editor of the Federal Reserve Bank of New York's Economic Policy Review. He is currently an associate editor (member of the editorial board) at six academic journals, including *Macroeconomics and Monetary Economics Abstracts*; *Journal of International Money and Finance; International Finance; Finance India; Economic Policy Review; and Emerging Markets, Finance and Trade.* He has been a consultant to the Board of Governors of the Federal Reserve System, the World Bank, and the International Monetary Fund, as well as to many central banks throughout the world. He was also a member of the International Advisory Board to the Financial Supervisory Service of South Korea and an advisor to the Institute for Monetary and Economic Research at the Bank of Korea. Professor Mishkin was a Senior Fellow at the Federal Deposit Insurance Corporation's Center for Banking Research and was an academic consultant to and served on the Economic Advisory Panel of the Federal Reserve Bank of New York.

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GUIDED TOUR

PREVIEW

On the evening TV news you see images of people carrying cardboard boxes leaving a glass-plated building in the City of London. The scene cuts to a trading screen on the London Stock Exchange flashing red numbers and the TV commentary says something about the collapse of a major US bank. You have just heard that the Bank of England is to cut the base rate once again and stock markets in Frankfurt and Paris have shown falls in share prices. Why should financial events in New York have any implications for the stock market in London, Frankfurt or Paris? What effect might the cut in the base rate have on mortgage payments? Will the global collapse of stock markets make it easier or harder for you to get a job next year?

Previews at the beginning of each chapter tell you what topics to expect, why they are important, and how they relate to other topics in the book.

Key terms are important words or phrases, emboldened when they are defined for the first time, and listed by page number at the end of the chapter.

Fiscal policy involves decisions about government spending and taxation. A **budget deficit** is the excess of government expenditures over tax revenues for a particular time period, typically a year, while a **budget surplus** arises when tax revenues exceed government expenditures. The government must finance any deficit by borrowing, which leads to a higher government debt burden while a budget surplus leads to a lower government debt burden. Figure 1.8 shows the budget deficit for the euro economies relative to the size of its economy (as calculated by the **gross domestic product**, or GDP,

'Closer look' boxes encourage you to explore the subject further to deepen your understanding.

APPLICATION

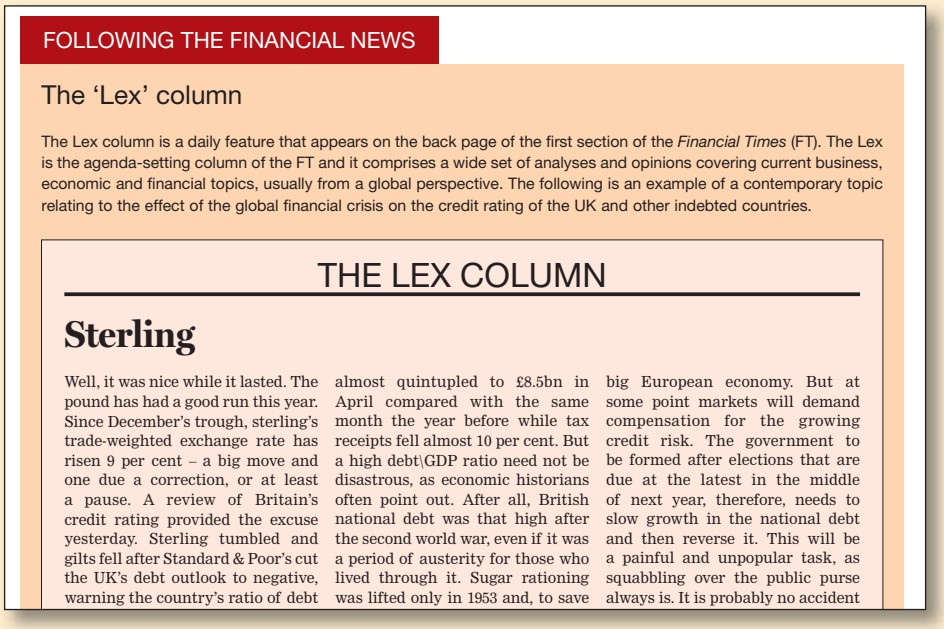
Interpreting yield curves, 1981–2011

Figure 6.8 illustrates several yield curves that have appeared for British government securities in recent years. What do these yield curves tell us about the public's expectations of future movements of short-term interest rates?

The steep inverted yield curve that occurred on 30 September 1981, indicated that short-term interest rates were expected to decline sharply in the future. For longer-term interest rates with their positive liquidity premium to be well below the short-term interest rate, short-term interest rates must be expected to decline so sharply that their average is far below the current short-term rate. Indeed, the public's expectations of sharply lower short-term interest rates evident in the yield curve were realized soon after September; by November, three-month Treasury bill rates had declined from 15.1% to 13.8% and by February 1982 they had fallen to 12.5%.

The steep upward-sloping yield curves on 28 February 1993 and 30 April 2011 indicated that short-term interest rates would climb in the future. The long-term interest rate is higher than the short-term interest rate when short-term interest rates are expected to rise because their average plus the liquidity premium will be higher than the current short-term rate. The moderately upward-sloping yield curves on 30 November 1996 indicated that short-term

Applications demonstrate how the analysis can be used to explain many important real-world situations.



FOLLOWING THE FINANCIAL NEWS

The 'Lex' column

The Lex column is a daily feature that appears on the back page of the first section of the *Financial Times* (FT). The Lex is the agenda-setting column of the FT and it comprises a wide set of analyses and opinions covering current business, economic and financial topics, usually from a global perspective. The following is an example of a contemporary topic relating to the effect of the global financial crisis on the credit rating of the UK and other indebted countries.

THE LEX COLUMN

Sterling

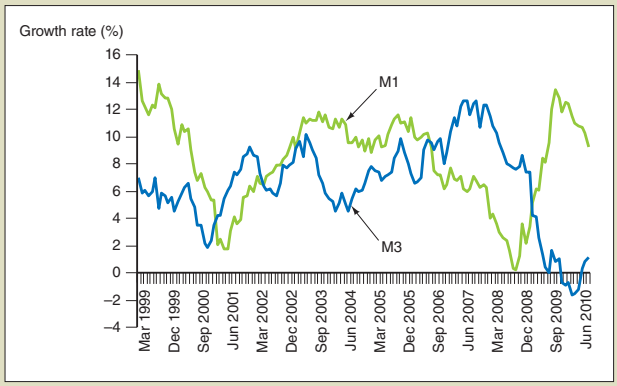
Well, it was nice while it lasted. The pound has had a good run this year. Since December's trough, sterling's trade-weighted exchange rate has risen 9 per cent – a big move and one due a correction, or at least a pause. A review of Britain's credit rating provided the excuse yesterday. Sterling tumbled and gilts fell after Standard & Poor's cut the UK's debt outlook to negative, warning the country's ratio of debt almost quintupled to £8.5bn in April compared with the same month the year before while tax receipts fell almost 10 per cent. But a high debt\GDP ratio need not be disastrous, as economic historians often point out. After all, British national debt was that high after the second world war, even if it was a period of austerity for those who lived through it. Sugar rationing was lifted only in 1953 and, to save big European economy. But at some point markets will demand compensation for the growing credit risk. The government to be formed after elections that are due at the latest in the middle of next year, therefore, needs to slow growth in the national debt and then reverse it. This will be a painful and unpopular task, as squabbling over the public purse always is. It is probably no accident

'Following the financial news' boxes introduce relevant news articles and data that are reported daily in the press and explain how to read them.

'Inside the Federal Reserve' boxes provide an insight into what is important in the operation and structure of the Federal Reserve system.

'Global' boxes offer an international focus.

FIGURE 3.1



Growth rates of the ECB M1 and M3 monetary aggregates 1999–2010

Sources: ECB. 'Money, banking and investment funds', *Monetary Statistics*, p. S12. Copyright © European Central Bank, Frankfurt am Main, Germany. Figures are available free of charge via the ECB website.

ECB, which is to maintain inflation below 2%. Yet this was a temporary and necessary policy needed to solve the more serious problem of a deep recession.

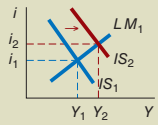
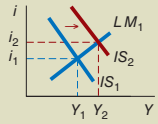
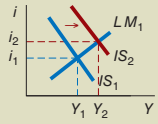
Hence, from all the above you can see that obtaining a single precise, correct measure of

Figures and graphs help you clearly understand the principles of the analysis.

Summary tables provide a useful study aid to review material.

SUMMARY TABLE 21.1

Effects from factors that shift the *IS* and *LM* curves

Factors	Autonomous change in factor	Response	Reason	
Consumer expenditure, C	↑	Y↑, i↑	C↑ ⇒ Y^{ad}↑ ⇒ *IS* shifts right	
Investment, I	↑	Y↑, i↑	I↑ ⇒ Y^{ad}↑ ⇒ *IS* shifts right	
Government spending, G	↑	Y↑, i↑	G↑ ⇒ Y^{ad}↑ ⇒ *IS* shifts right	

Summary

1 To economists, the word *money* has a different meaning from *income* or *wealth*. Money is anything that is generally accepted as payment for goods or services or in the repayment of debts.

2 Money serves three primary functions: as a medium of exchange, as a unit of account and as a store of value. Money as a medium of exchange avoids the problem of double coincidence of wants that arises in a barter economy, and thus lowers transaction costs and encourages specialization and the division of labour. Money as a unit of account reduces the number of prices needed in the economy, which also reduces transaction costs. Money also functions as a store of value, but performs this role poorly if it is rapidly losing value due to inflation.

3 The payments system has evolved over time. Until still further. We are currently moving toward an electronic payments system in which paper is eliminated and all transactions are handled by computers. Despite the potential efficiency of such a system, obstacles are slowing the movement to the cashless society and the development of new forms of electronic money.

4 There is no uniform definition of monetary aggregates, but in general monetary aggregates range from narrow to broad definitions. Since monetary aggregates do not usually move together, they cannot be used interchangeably by policymakers. It is imperative to measure different monetary aggregates so that the central bank can intervene if any of the components change.

5 Another problem in the measurement of money is that

'Summary' at the end of each chapter lists the main points covered.

'Questions and problems' sections enable you to test your understanding and practise your knowledge by applying economic concepts.

QUESTIONS AND PROBLEMS

All questions and problems are available in MyEconLab at **www.myeconlab.com/mishkin**.

1 Explain why you would be more or less willing to buy a share of Microsoft stock in the following situations:

(a) Your wealth falls.
(b) You expect the stock to appreciate in value.
(c) The bond market becomes more liquid.
(d) You expect gold to appreciate in value.
(e) Prices in the bond market become more volatile.

2 Explain why you would be more or less willing to buy a house under the following circumstances:

(a) You just inherited €100,000.
(b) Real estate commissions fall from 6% of the sales price to 5% of the sales price.
(c) You expect Microsoft stock to double in value next year.
(d) Prices in the stock market become more volatile.
(e) You expect housing prices to fall.

3 Explain why you would be more or less willing to buy gold under the following circumstances:

7 Using both the liquidity preference framework and the supply and demand for bonds framework, show why interest rates are procyclical (rising when the economy is expanding and falling during recessions).

8 Why should a rise in the price level (but not in expected inflation) cause interest rates to rise when the nominal money supply is fixed?

9 Go to **www.ft.com** and click on 'Capital Markets' in markets. Examine the statements made on the online articles, and draw the appropriate supply and demand diagrams that support these statements.

10 What effect will a sudden increase in the volatility of gold prices have on interest rates?

11 How might a sudden increase in people's expectations of future real estate prices affect interest rates?

12 Explain what effect a large government deficit might have on interest rates.

'Web exercises' prompt you to use online resources to enhance your learning.

WEB EXERCISES

1 This chapter discusses how an understanding of adverse selection and moral hazard can help us better understand financial crises. The greatest financial crisis faced by the United States was the Great Depression of 1929–33. Go to **www.amatecon.com/greatdepression.html**. This site contains a brief discussion of the factors that led to the Great Depression. Write a one-page summary explaining how adverse selection and moral hazard contributed to the Great Depression.

2 Go to the International Monetary Fund's Financial Crisis page at **www.imf.org/external/np/exr/key/finstab.htm**fi Report on the most recent three countries that the IMF has given emergency loans to in response to a financial crisis. According to the IMF, what caused the crisis in each country?

3 One of the countries hardest hit by the global financial crisis of 2008 was Iceland. Go to **assets.opencrs.com /rpts/RS22988_20081120.pdf** and summarize the causes and events that led to the crisis in Iceland.

'Useful websites' point you to websites that provide information or data that support the text material.

Useful websites

www.amatecon.com/gd/gdtimeline.html A time line of the Great Depression.

www.imf.org The International Monetary Fund is an organization of 185 countries that works on global policy coordination (both monetary and trade),stable and sustainable economic prosperity, and the reduction of poverty.

www.publicpolicy.umd.edu/news/Reinhart%20paper.pdf Paper by Carmen Reinhart and Kenneth Rogoff comparing the 2007 subprime crisis to other international crises.

www.earth.columbia.edu/sitefiles/File/about/director/pubs/paper27.pdf Non-technical paper by Steven Radelet and Jeffrey Sachs on the causes of the East Asian financial crisis.

assets.opencrs.com/rpts/RS22988_20081120.pdf The Congressional Research Service (CRS) report to congress about Iceland's financial crisis of 2008.

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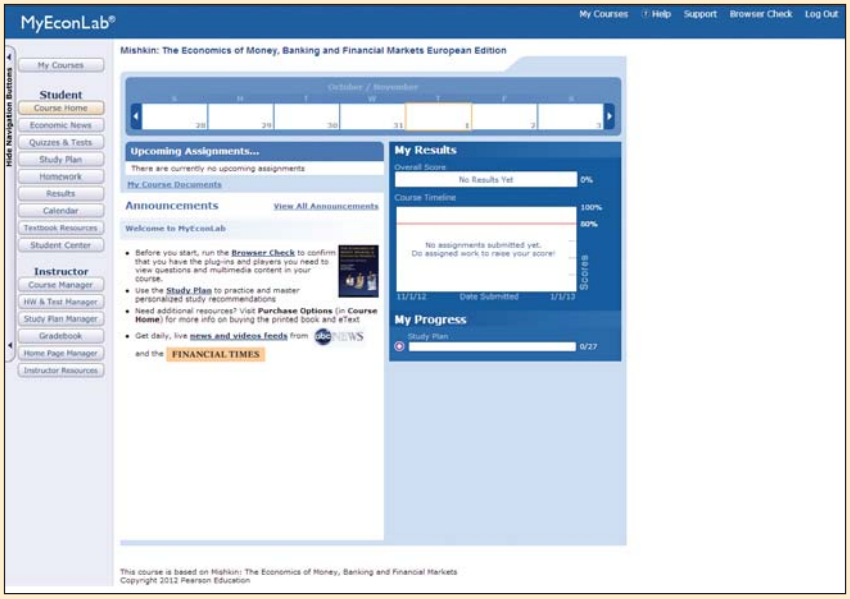
MyEconLab is an online assessment and revision tool that puts you in control of your learning through a suite of study and practice tools tied to the online eText.

How do I use MyEconLab?

The **Course Home page** is where you can view announcements from your instructor and see an overview of your personal progress.

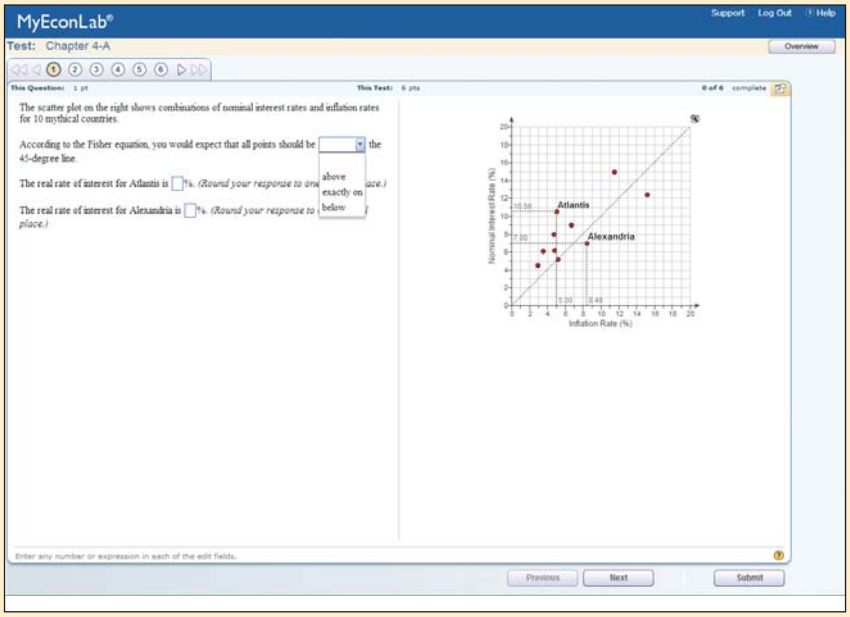
View the **Calendar** to see the dates for online homework, quizzes and tests that your instructor has set for you.

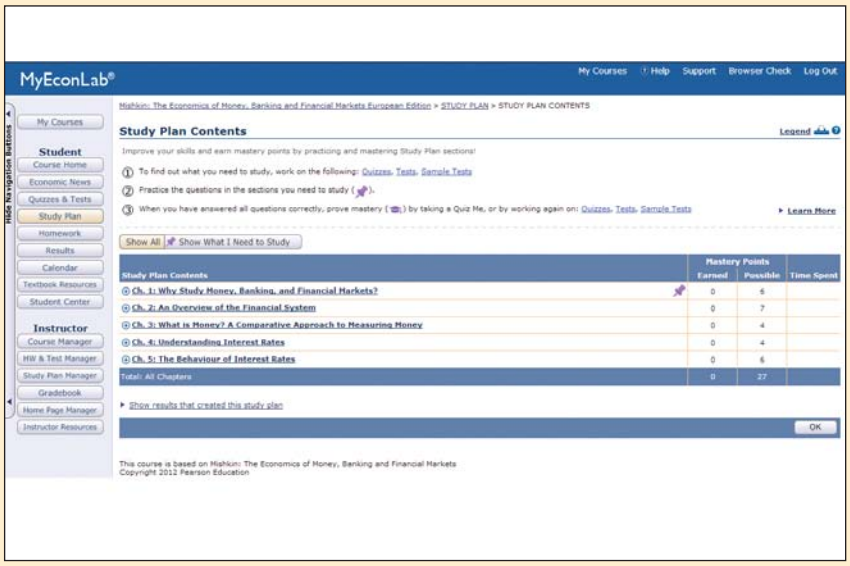
Your lecturer may have chosen **MyEconLab** to provide online homework, quizzes and texts. Check here to access the homework that has been set for you.



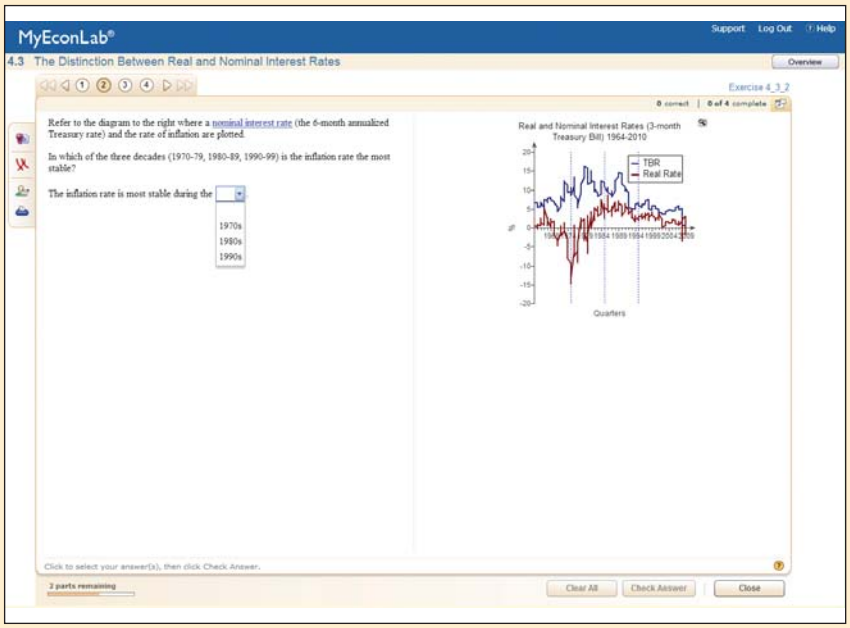
Practice tests for each chapter of the textbook enable you to check your understanding and identify the areas in which you need to do further work. Lecturers can customise and assign the practice tests or students can complete the tests on their own.

Keep track of your results in your own gradebook.





Work through the questions in your personalised **Study Plan** at your own pace. Because the Study Plan is tailored to each student, you will be able to study more efficiently by only reviewing areas where you still need practice. The Study Plan also saves your results, helping you see at a glance exactly which topics you need to review.



Additional instruction is provided in the form of detailed, step-by-step solutions to worked exercises. The figures in many of the exercises in **MyEconLab** are generated algorithmically, containing different values each time they are used. This means that you can practise individual concepts as often as you like.

There is also a link to the **eText** from every question in the Study Plan, so you can easily review and master the content.

View supporting multimedia resources such as links to the eText and **Glossary Flashcards**.

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To find details of your local sales representatives, go to **www.pearsoned.co.uk/replocator**.

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PART 1
INTRODUCTION

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CHAPTER 1

Why study money, banking and financial markets?

PREVIEW

On the evening TV news you see images of people carrying cardboard boxes leaving a glass-plated building in the City of London. The scene cuts to a trading screen on the London Stock Exchange flashing red numbers and the TV commentary says something about the collapse of a major US bank. You have just heard that the Bank of England is to cut the base rate once again and stock markets in Frankfurt and Paris have shown falls in share prices. Why should financial events in New York have any implications for the stock market in London, Frankfurt or Paris? What effect might the cut in the base rate have on mortgage payments? Will the global collapse of stock markets make it easier or harder for you to get a job next year?

This book provides answers to these and other questions by examining how financial markets (such as those for bonds, stocks and foreign exchange) and financial institutions (banks, insurance companies, mutual funds and other institutions) work and by exploring the role of money in the economy. Financial markets and institutions not only affect your everyday life but also involve flows of billions of pounds and euros throughout the economy, which in turn affect business profits, the production of goods and services in Europe, and even the economic well-being of countries in the Far East. What happens to financial markets, financial institutions and money is of great concern to politicians and can even have a major impact on elections. The study of money, banking and financial markets will reward you with an understanding of many exciting issues. In this chapter, we provide a road map of the book by outlining these issues and exploring why they are worth studying.

Why study financial markets?

Part 2 of this book focuses on **financial markets**, markets in which funds are transferred from people who have an excess of available funds to people who have a shortage. Financial markets such as bond and stock markets are crucial to promoting greater economic efficiency by channelling funds from people who do not have a productive use for them to those who do. Indeed, well-functioning financial markets are a key factor in producing high economic growth, and poorly performing financial markets are one reason that many countries in the world remain desperately poor. Activities in financial markets also have direct effects on personal wealth, the behaviour of businesses and consumers, and the cyclical performance of the economy.

The bond market and interest rates

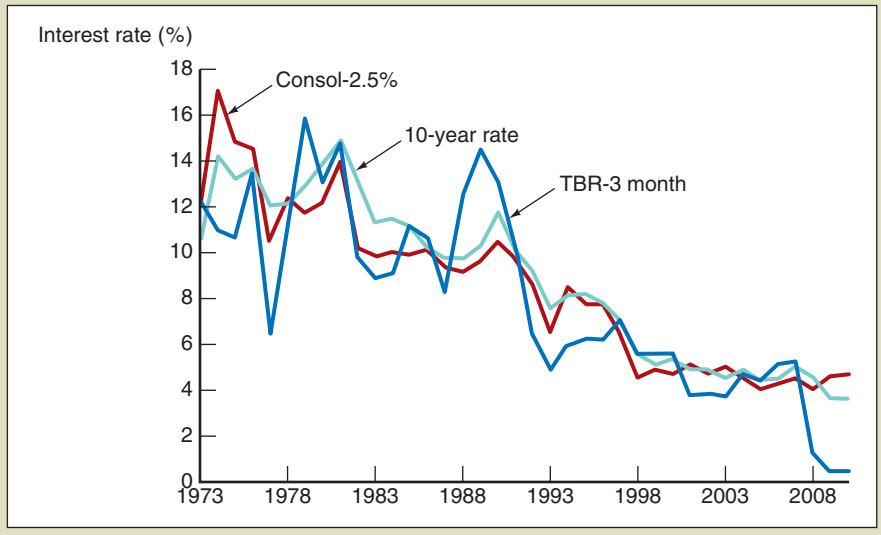
A **security** (also called a *financial instrument*) is a claim on the issuer's future income or **assets** (any financial claim or piece of property that is subject to ownership). A **bond** is a debt security that promises to make payments periodically for a specified period of time.[1] The bond market is especially important to economic activity because it enables corporations and governments to borrow to finance their activities and because it is where interest rates are determined. An **interest rate** is the cost of borrowing or the price paid for the rental of funds (usually expressed as a percentage of the rental of €100 per year). There are many interest rates in the economy – mortgage interest rates, car loan rates, and interest rates on many different types of bonds.

Interest rates are important on a number of levels. On a personal level, high interest rates could deter you from buying a house or a car because the cost of financing it would be high. Conversely, high interest rates could encourage you to save because you can earn more interest income by putting aside some of your earnings as savings. On a more general level, interest rates have an impact on the overall health of the economy because they affect not only consumers' willingness to spend or save but also businesses' investment decisions. High interest rates, for example, might cause a company to postpone building a new plant that would provide more jobs.

Because changes in interest rates have important effects on individuals, financial institutions, businesses and the overall economy, it is important to explain fluctuations in interest rates that have been substantial over the past thirty years. Take a look at Figure 1.1a which shows the movements of three different interest rates in the UK. Notice how the three-month Treasury bill rate moves close together.

Because different interest rates have a tendency to move in unison, economists frequently lump interest rates together and refer to 'the' interest rate. As Figure 1.1a shows, however, interest rates on several types of financial instruments can differ substantially. The interest rate on three-month Treasury bills, for example, fluctuates more than the other interest rates and is lower, on average. Figure 1.1a shows the interest rate on two types. The interest on 10-year bonds is the interest rate on UK government bonds that have a maturity of 10 years. The interest rate on 10-year bonds follows the same pattern as long-term government bonds that have no maturity date. These types of bonds are referred to as consols. Both 10-year bond rates and consol rates fluctuate less than the Treasury bill rate (TBR) but are higher,

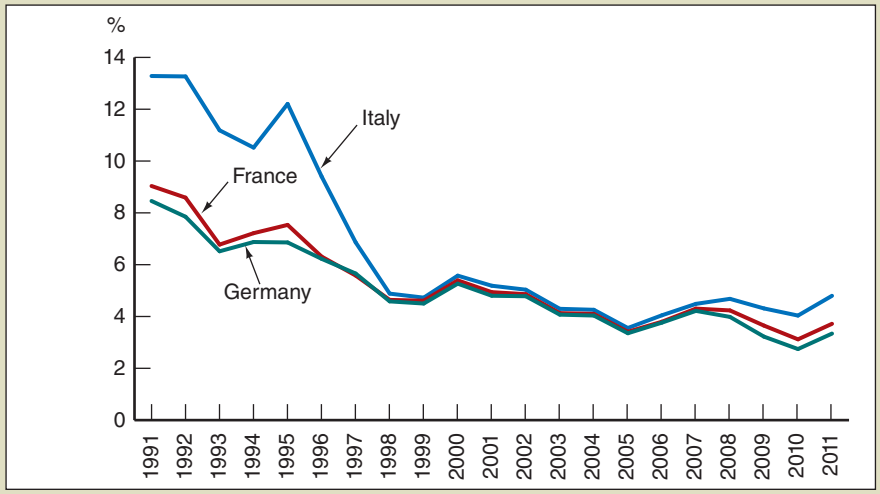
FIGURE 1.1a



Selected UK interest rates

Source: ONS online and Annual Abstract of Statistics.

FIGURE 1.1b



10-year bond rates of three eurozone economies

Source: OECD.

on average, than the Treasury bill rate. The spread between the consol rate and the Treasury bill rate was greatest during the late 1970s, the late 1980s and in recent years. The interest rate on three-month Treasury bills peaked at over 16% in 1979, fell to 8% in 1987, rose to 15% in 1989, fell to 5% in 1993 and after some wobbles fell to $\frac{1}{2}$% in 2009.

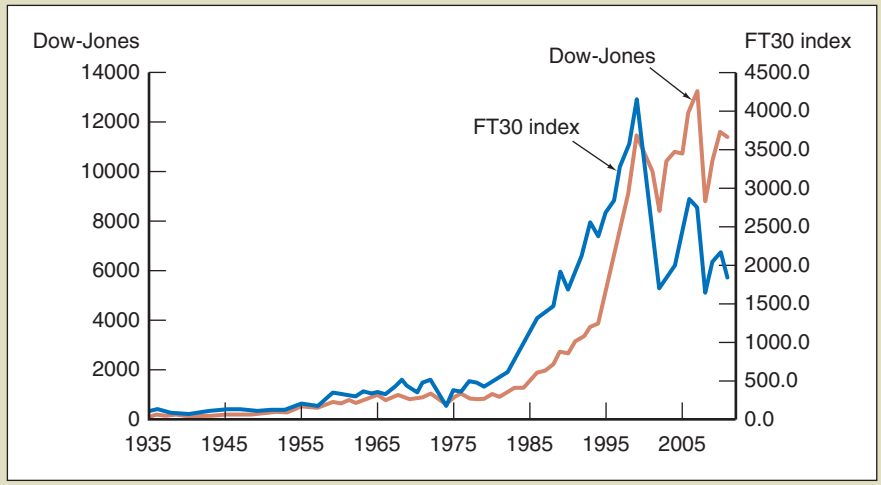
Now look at Figure 1.1b which shows the interest rate on 10-year maturity government bonds for Germany, France and Italy. These interest rates will differ from each other because of differences between the countries relating to inflation risk, political risk and default risk. Notice how the interest rate of Italy differed markedly from that of Germany in the 1990s. This is because Italy had traditionally higher inflation in the past than Germany and Italian bonds had to pay a higher rate of interest to compensate for this risk. Notice how the interest rates converge just prior to the creation of the single currency in Europe. This was because in a single currency the inflation differences between countries should theoretically be like the inflation differences between New England and California in the US. However, this is not the case in reality. California and the New England states are part of a single political union. Not so for Germany, France and Italy. Notice how the interest rates begin to differ after 2007, reflecting the impact of the global banking crisis on the eurozone sovereign debt crisis.

In Chapter 2 we study the role of bond markets in the economy, and in Chapters 4 to 6 we examine what an interest rate is, how the common movements in interest rates come about, and why the interest rates on different bonds vary.

The stock market

A **common stock** (typically just called a **stock**) represents a share of ownership in a corporation. It is a security that is a claim on the earnings and assets of the corporation. Issuing stock and selling it to the public is a way for corporations to raise funds to finance their activities. The stock market, in which claims on the earnings of corporations (shares of stock) are traded, is the most widely followed financial market in almost every country that has one; that's why it is often called simply 'the market'. A big swing in the prices of shares in the stock market is always a major story on the evening news. People often speculate on where the market is heading and get very excited when they can brag about their latest 'big killing', but they become depressed when they suffer a big loss. The attention the market receives can probably be best explained by one simple fact: it is a place where people can get rich – or poor – quickly.

FIGURE 1.2



Stock prices – the Dow Jones and FT30 index

Source: www.FT.com, http://finance.yahoo.com/?u.

As Figure 1.2, which shows the FT30 for the UK (right-side axis) and the Dow Jones Industrial Average for the US (left-side axis), indicates, stock prices are extremely volatile. After the market rose in the 1980s, on 'Black Monday', 19 October 1987, markets all over the world experienced sharp falls in share prices following a panic sell-off of shares on Wall Street on the Friday previously. In the USA the market experienced the worst one-day drop in its entire history, with the Dow Jones Industrial Average (DJIA) falling by 22%. In London the FT30 index fell by 10%, wiping out £50 billion of shares. However, as Figure 1.2 shows, from then until 1999, the stock market experienced one of the greatest bull markets in its history. With the collapse of the high-tech bubble in 2000, the stock market fell sharply again, dropping by over 50% by late 2002. It then recovered again and reached a new peak by the end of 2006, only to fall by 43% by the end of 2008 in the wake of the global financial crisis. These considerable fluctuations in stock prices affect the size of people's wealth and as a result may affect their willingness to spend.

The stock market is also an important factor in business investment decisions, because the price of shares affects the amount of funds that can be raised by selling newly issued stock to finance investment spending. A higher price for a firm's shares means that it can raise a larger amount of funds, which it can use to buy production facilities and equipment.

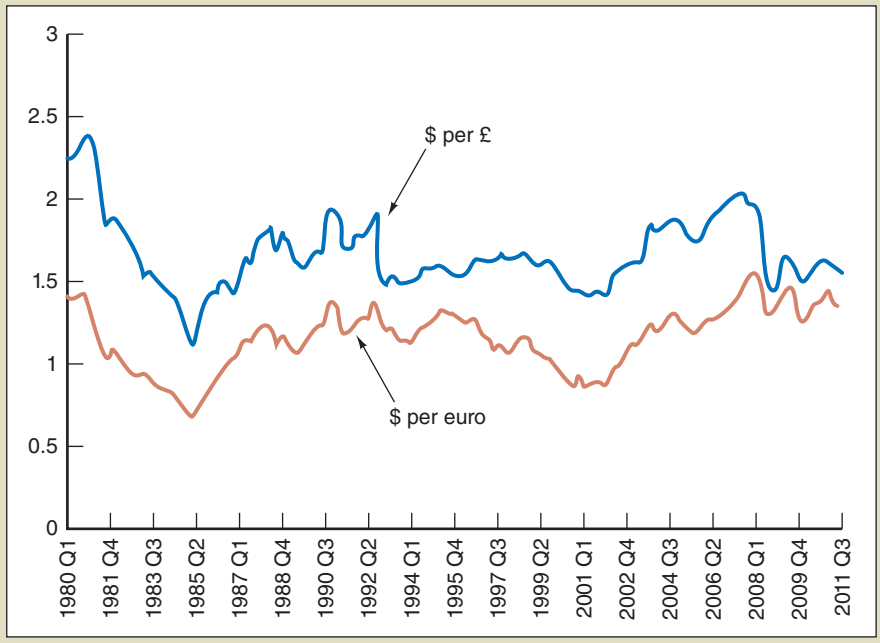
In Chapter 2 we examine the role that the stock market plays in the financial system, and we return to the issue of how stock prices behave and respond to information in the marketplace in Chapter 7.

The foreign exchange market

When funds are transferred from one country to another, they have to be converted from the currency of the country of origin (say sterling or euros) into the currency of the country they are going to (say US dollars). This conversion takes place in the **foreign exchange market**. This is the market where one currency is bought and sold using another currency. The price at which one currency is exchanged for another is known as the **foreign exchange rate**.

Figure 1.3 shows the exchange rate of the pound sterling from 1980 to 2011 measured as the number of US dollars per pound and the same for the number of US dollars per euro. This way of expressing the exchange rate is known as the indirect quote (foreign currency per unit of domestic). The advantage of using this way of expressing the exchange rate is

FIGURE 1.3



Exchange rates 1980–2011

Source: ONS online, ECB Online.

that a rise represents an appreciation and a fall is depreciation. There have been considerable fluctuations in the exchange rate over this period. You can see from Figure 1.3 that the pound sterling against the dollar fell from a peak in late 1980 of $2.39 to a low of $1.12 in early 1985. It then fluctuated between $1.80 and $1.40 and then reached a peak of around $2.00 by 2007. The €/$ exchange rate mirrors the fluctuations in the £/$ exchange rate which means that there was greater stability between the pound and the euro. However, both the euro and the pound sterling fell in 2008, reflecting the fall in demand for sterling and the euro during the global financial crisis.

In Chapter 17 we study how the exchange rate is determined in the foreign exchange market, where pounds sterling or euros are bought and sold for non-EU currencies.

Why study financial institutions and banking?

Part 3 of this book focuses on financial institutions and the business of banking. Banks and other financial institutions are what make financial markets work. Without them, financial markets would not be able to move funds from people who save to people who have productive investment opportunities. Thus they play a crucial role in the economy.

Structure of the financial system

The financial system is complex, comprising many different types of private sector financial institutions, including banks, insurance companies, mutual funds, finance companies and investment banks, all of which are heavily regulated by the government. If an individual wanted to make a loan to BP or BT, for example, he or she would not go directly to the president of the company and offer a loan. Instead, he or she would lend to such companies indirectly through **financial intermediaries**, institutions that borrow funds from people who have saved and in turn make loans to others.

Why are financial intermediaries so crucial to well-functioning financial markets? Why do they extend credit to one party but not to another? Why do they usually write complicated legal documents when they extend loans? Why are they the most heavily regulated businesses in the economy?

We answer these questions in Chapter 8 by developing a coherent framework for analysing financial structure in the eurozone economies and the United Kingdom.

Financial crises

At times, the financial system seizes up and produces **financial crises**, major disruptions in financial markets that are characterized by sharp declines in asset prices and the failures of many financial and non-financial firms. Financial crises have been a feature of capitalist economies for hundreds of years and are typically followed by the worst business cycle downturns. Starting in August of 2007, the United States economy was hit by the worst financial crisis since the Great Depression. Defaults in subprime residential mortgages led to major losses in financial institutions, producing not only numerous bank failures but also the demise of Bear Stearns and Lehman Brothers, two of the largest investment banks in the United States. The interconnectedness of the international financial system meant that the financial crisis that began in the United States was rapidly passed on to the rest of the world, resulting in the global financial crisis and the onset of the 'great recession'.

The sovereign debt crisis of the eurozone arrived hot on the heels of the global financial crisis. The need to protect the banking sector of countries in the eurozone exposed the parlous state of the fiscal deficits of many countries – the debts they owed to investors in their own country and overseas were increased by having to guarantee the debts of the banking system.

Why these crises occur and do so much damage to the economy is discussed in Chapter 9.

Banks and other financial institutions

Banks are financial institutions that accept deposits and make loans. Included under the term *banks* are firms such as commercial banks, building societies (in the UK), mutual savings banks and credit unions. Banks are the financial intermediaries that the average person interacts with most frequently. A person who needs a loan to buy a house or a car usually obtains it from a local bank. Most individuals keep a large proportion of their financial wealth in banks in the form of cheque accounts, savings accounts, or other types of bank deposits. Because banks are the largest financial intermediaries in the economy and are involved in the payments mechanism (which means people use bank cheques, debit cards or other electronic transfers to make payments), they deserve the most careful study. However, banks are not the only important financial institutions. Indeed, in recent years, other financial institutions such as insurance companies, finance companies, pension funds, mutual funds and investment banks have been growing at the expense of banks, so we need to study them as well.

In Chapter 10, we examine how banks and other financial institutions manage their assets and liabilities to make profits. In Chapter 11, we extend the economic analysis in Chapter 8 to understand why financial regulation takes the form it does and what can go wrong in the regulatory process. In Chapter 12, we look at the banking industry; we examine how the competitive environment has changed in this industry and learn why some financial institutions have been growing at the expense of others.

Financial innovation

In the good old days, when you took cash out of the bank or wanted to check your account balance, you got to say hello to a friendly human teller. Nowadays you are more likely

to interact with an automatic teller machine (ATM) when withdrawing cash, and you can get your account balance from your home computer. To see why these options have developed, in Chapter 12 we study why and how financial innovation takes place, with particular emphasis on how the dramatic improvements in information technology have led to new means of delivering financial services electronically, in what has become known as **e-finance**. We also study financial innovation because it shows us how creative thinking on the part of financial institutions can lead to higher profits. By seeing how and why financial institutions have been creative in the past, we obtain a better grasp of how they may be creative in the future. This knowledge provides us with useful clues about how the financial system may change over time and will help keep our knowledge about banks and other financial institutions from becoming obsolete.

Why study money and monetary policy?

Money, also referred to as the **money supply**, is defined as anything that is generally accepted in payment for goods or services or in the repayment of debts. Money is linked to changes in economic variables that affect all of us and are important to the health of the economy. The final two parts of the book examine the role of money in the economy.

Money and business cycles

In 1980–1, total production of goods and services (called **aggregate output**) in the UK economy fell and the **unemployment rate** (the percentage of the available labour force unemployed) rose to 10%. After 1982, the economy began to expand rapidly, and by 1990 the unemployment rate had declined to 7%. In 1990, the 8-year expansion came to an end, with the unemployment rate rising above 7%. The economy bottomed out in late 1991, and the subsequent recovery was one of the longest in the UK's history, with the unemployment rate falling to around 5%. Starting in 2008 second quarter, the economy went into recession and by the first quarter of 2010 the unemployment rate rose to 8%.

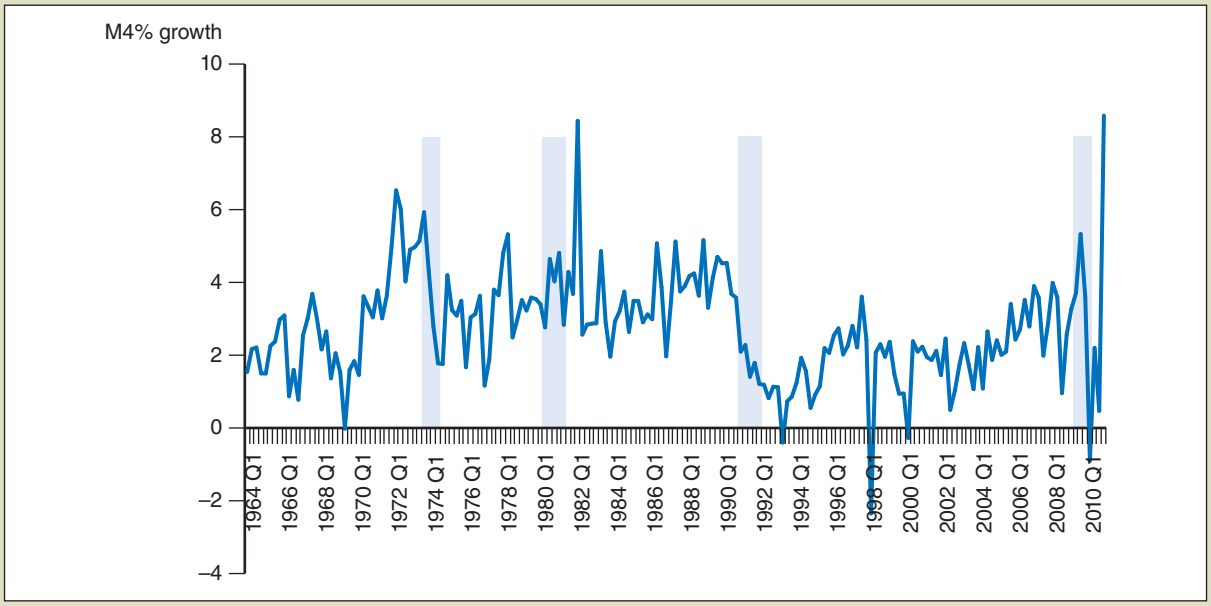
Why did the economy expand from 1982 to 1990, contract in 1990 to 1991, boom again from 1991 and contract again in 2008? Evidence suggests that money plays an important role in generating **business cycles**, the upward and downward movement of aggregate output produced in the economy. Business cycles affect all of us in immediate and important ways. When output is rising, for example, it is easier to find a good job; when output is falling, finding a good job might be difficult. Figure 1.4 shows the movements of the quarterly rate of money growth for the UK over the 1964–2010 period, with the shaded areas representing **recessions**, periods of declining aggregate output. What we see is that the rate of money growth has declined before every recession, indicating that changes in money might be a driving force behind business cycle fluctuations. However, not every decline in the rate of money growth is followed by a recession.

We explore how money might affect aggregate output in Chapters 19 to 25 in Part 6 of this book, where we study **monetary theory**, the theory that relates changes in the quantity of money to changes in aggregate economic activity and the price level.

Money and inflation

Thirty years ago, the movie you might have paid £8 to see last week would have set you back only 50p for two. In fact, for £8 you could probably have had dinner, seen the movie and bought yourself a tub of ice cream. As shown in Figure 1.5, which illustrates the movement of average prices in the UK from 1950 to 2009, the prices of most items are quite a bit higher now than they were then. The average price of goods and services in an economy is called the **aggregate price level**, or, more simply, the *price level* (a more precise definition is found

FIGURE 1.4



Money supply growth in the UK, 1964–2010

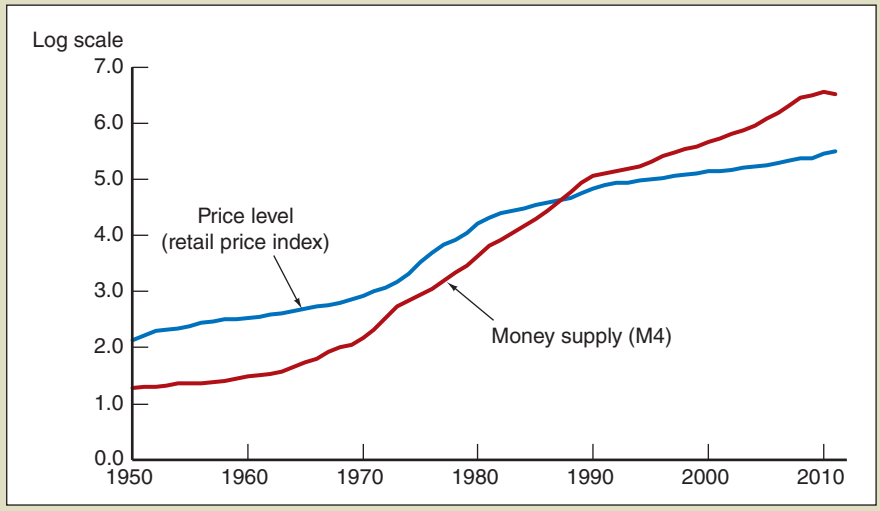
(The shaded areas represent recessions.)

Source: ONS Online.

in the appendix to this chapter). From 1950 to 2009, the price level increased 25-fold. **Inflation**, a continual increase in the price level, affects individuals, businesses and the government. It is generally regarded as an important problem to be solved and is often at the top of the political and policymaking agendas. To solve the inflation problem, we need to know something about its causes.

What explains inflation? One clue to answering this question is found in Figure 1.5, which plots the money supply and the price level. As we can see, the price level and the money supply generally rise together. These data seem to indicate that a continuing increase in the

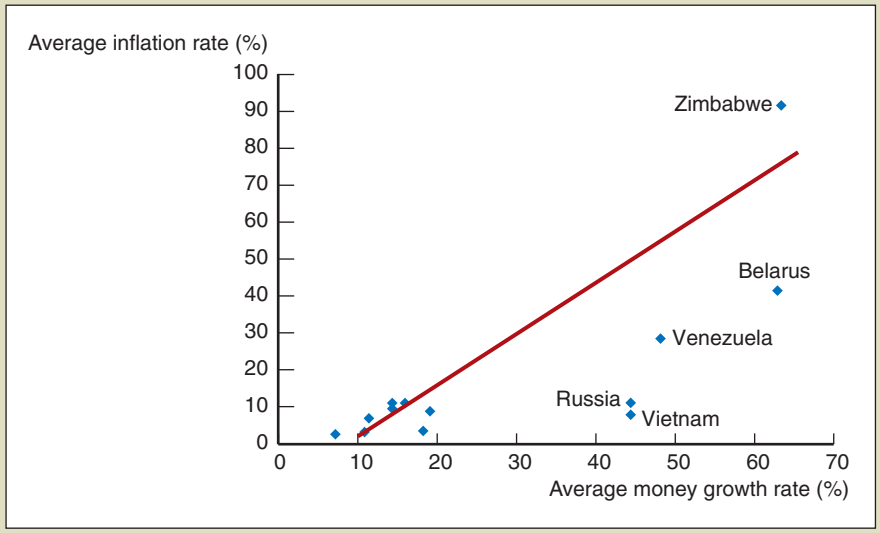
FIGURE 1.5



The price level and the money supply in the UK before 1950

Source: ONS online and F. Capie and A. Weber, *A Monetary History of the United Kingdom, 1870–1982*, Allen & Unwin, London, 1985.

FIGURE 1.6



Average inflation rate versus average rate of money growth for selected countries, 1999–2009

Source: Internatonal Monetary Fund.

money supply might be an important factor in causing the continuing increase in the price level that we call inflation.

Further evidence that inflation may be tied to continuing increases in the money supply is found in Figure 1.6. For a number of countries, it plots the average **inflation rate** (the rate of change of the price level, usually measured as a percentage change per year) over the ten-year period 1999–2009 against the average rate of money growth over the same period. As you can see, there is a positive association between inflation and the growth rate of the money supply. The countries with the highest inflation rates are also the ones with the highest money growth rates. Belarus, Brazil, Romania, Russia and Zimbabwe, for example, experienced high inflation during this period, and their rates of money growth were high. By contrast, the United Kingdom and the United States had low inflation rates over the same period, and their rates of money growth have been low. Such evidence led Milton Friedman, a Nobel laureate in economics, to make the famous statement, 'Inflation is always and everywhere a monetary phenomenon'.[2] We look at money's role in creating inflation in Chapter 24.

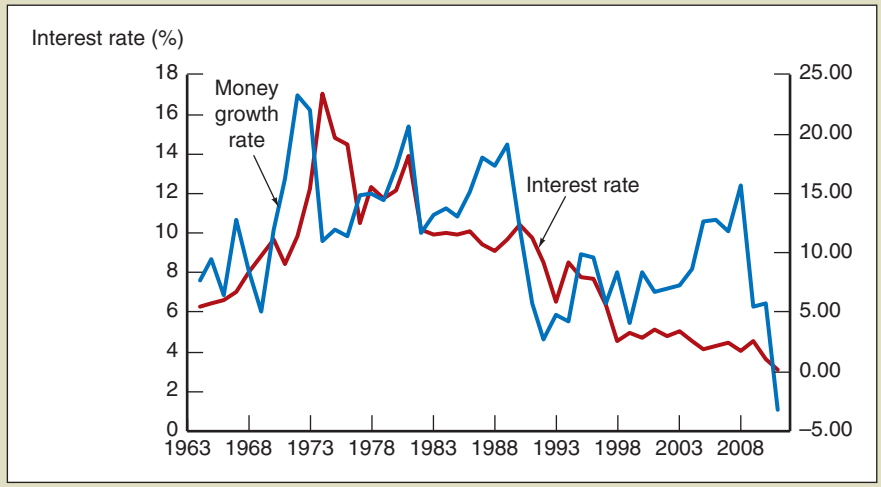
Money and interest rates

In addition to other factors, money plays an important role in interest-rate fluctuations, which are of great concern to businesses and consumers. Figure 1.7 shows the changes in the interest rate on long-term Treasury bonds in the UK and the rate of money growth. As the money growth rate rose in the 1960s and 1970s, the long-term bond rate rose with it. However, the relationship between money growth and interest rates has been less clear-cut since the late 1980s. We analyse the relationship between money and interest rates when we examine the behaviour of interest rates in Chapter 5.

Conduct of monetary policy

Because money can affect many economic variables that are important to the well-being of the economy, politicians and policymakers throughout the world care about the conduct of **monetary policy**, the management of money and interest rates. The organization

FIGURE 1.7



UK money growth (M4) and long-term interest rate, 1964–2011

Source: ONS Online.

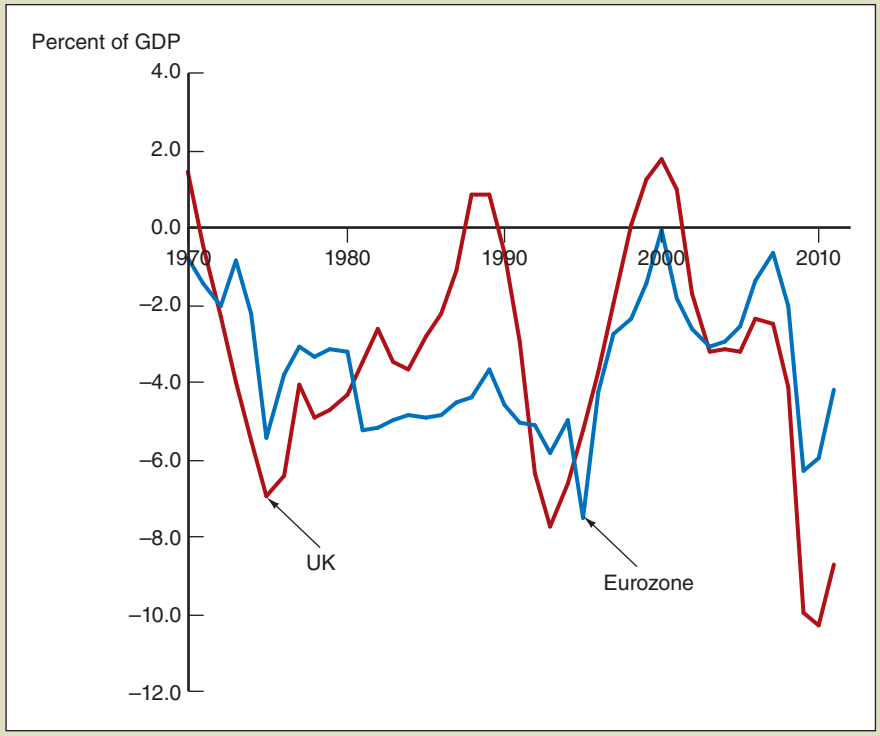
responsible for the conduct of a nation's monetary policy is the **central bank**. The central bank of the eurozone countries is the European Central Bank (ECB) in Frankfurt and the central bank for the UK is the Bank of England. In Chapters 13–16 (Part 4), we study how central banks around the world can affect the quantity of money and interest rates in the economy and then we look at how monetary policy is actually conducted in the eurozone, the UK and elsewhere.

Fiscal policy and monetary policy

Fiscal policy involves decisions about government spending and taxation. A **budget deficit** is the excess of government expenditures over tax revenues for a particular time period, typically a year, while a **budget surplus** arises when tax revenues exceed government expenditures. The government must finance any deficit by borrowing, which leads to a higher government debt burden while a budget surplus leads to a lower government debt burden. Figure 1.8 shows the budget deficit for the euro economies relative to the size of its economy (as calculated by the **gross domestic product**, or GDP, a measure of aggregate output described in the appendix to this chapter) and the budget deficit of the UK relative to GDP. As Figure 1.8 shows, the budget deficit, relative to the size of the UK economy, reached its highest in 2009 at 10% of national output. The UK has had more years of budget deficit than surplus since 1970. The budget reached a surplus in 2000 but swung into deficit by 2002 and was strongly in deficit long before the global financial crisis and the great recession hit the UK. Meanwhile, the total budget of the euro economies as a whole was always in deficit over this period. The coordinated fiscal stimulus packages run by governments all over the world in response to the global downturn only pushed the budget deficit higher. What to do about the budget deficit in the euro countries and the UK is a topic that has exercised international investors, the ECB, political parties and the International Monetary Fund.

You may have heard statements in newspapers or on TV that budget surpluses are a good thing while deficits are undesirable. We explore the accuracy of such claims in Chapters 9 and 18 by seeing how budget deficits might lead to a financial crisis as they did in Argentina in 2001 or in Greece in recent years. In Chapter 24, we examine why

FIGURE 1.8



Government budget deficits as a percentage of GDP in the UK and eurozone, 1970–2011

Source: ONS Online and OECD.

deficits might result in a higher rate of money growth, a higher rate of inflation and higher interest rates.

Why study international finance?

The globalization of financial markets has accelerated at a rapid pace in recent years. Financial markets have become increasingly integrated throughout the world. European companies often borrow in foreign financial markets and foreign companies borrow in European financial markets. Banks and other financial institutions, such as JPMorgan Chase, Citigroup, HSBC and Deutsche Bank, have become increasingly international, with operations in many countries throughout the world. Part 5 of this book explores the foreign exchange market and the international financial system.

In Figure 1.3 we looked at the euro and sterling exchange rates for the US dollar. The fluctuations in prices in this market have also been substantial. But what have these fluctuations in the exchange rate meant to households and businesses? A change in the exchange rate has a direct effect on consumers because it affects the cost of imports. In 2007 the pound was worth $2.00 and British consumers could purchase US goods cheaply. Indeed, it was said that British shoppers went to New York to do their Christmas shopping. When the pound subsequently weakened in 2009, US goods became more expensive. Thus a weaker pound leads to more expensive foreign goods, makes holidaying in the US more expensive, and raises the cost of indulging your desire for imported delicacies. Fluctuations in the foreign exchange markets have major consequences for the economy.

In Chapter 17 we study how exchange rates are determined in the foreign exchange market in which dollars are bought and sold for foreign currencies.

The international financial system

The tremendous increase in capital flows among countries heightens the international financial system's impact on domestic economies. Issues we will explore in Chapter 18 include:

- How does a country's decision to fix its exchange rate to that of another nation shape the conduct of monetary policy?
- What is the impact of capital controls that restrict mobility of capital across national borders on domestic financial systems and the performance of the economy?
- What role should international financial institutions such as the International Monetary Fund play in the international financial system?

How we will study money, banking and financial markets

This textbook stresses the economic way of thinking by developing a unifying framework to study money, banking and financial markets. This analytic framework uses a few basic economic concepts to organize your thinking about the determination of asset prices, the structure of financial markets, bank management, and the role of money in the economy. It encompasses the following basic concepts:

- A simplified approach to the demand for assets
- The concept of equilibrium
- Basic supply and demand to explain behaviour in financial markets
- The search for profits
- An approach to financial structure based on transaction costs and asymmetric information
- Aggregate supply and demand analysis

The unifying framework used in this book will keep your knowledge from becoming obsolete and make the material more interesting. It will enable you to learn what *really* matters without having to memorize a mass of dull facts that you will forget soon after the final exam. This framework will also provide you with the tools you need to understand trends in the financial marketplace and in variables such as interest rates, exchange rates, inflation and aggregate output.

To help you understand and apply the unifying analytic framework, simple models are constructed in which the variables held constant are carefully delineated, each step in the derivation of the model is clearly and carefully laid out, and the models are then used to explain various phenomena by focusing on changes in one variable at a time, holding all other variables constant.

To reinforce the models' usefulness, this text uses case studies, applications and special-interest boxes to present evidence that supports or casts doubts on the theories being discussed. This exposure to real-life events and empirical data should dissuade you from thinking that all economists make abstract assumptions and develop theories that have little to do with actual behaviour.

To function better in the real world outside the classroom, you must have the tools to follow the financial news that appears in leading financial publications such as the *Financial Times*. To help and encourage you to read the financial section of your newspaper, this book contains a set of special boxed inserts titled 'Following the financial news' that contain actual columns and data from the *Financial Times*, which

typically appear daily or periodically. These applications show you how you can use the analytic framework in the book directly to make sense of the daily columns in an international financial newspaper. In addition to these applications, this book also contains nearly 400 end-of-chapter problems that ask you to apply the analytic concepts you have learned to other real-world issues. Particularly relevant is a special class of problems headed 'Using economic analysis to predict the future'. These give you an opportunity to review and apply many of the important financial concepts and tools presented throughout the book.

Exploring the Web

The World Wide Web has become an extremely valuable and convenient resource for financial research. We emphasize the importance of this tool in several ways. First, wherever we utilize the Web to find information to build the charts and tables that appear throughout the text, we include the source site's URL. These sites often contain additional information and are updated frequently. Second, we have Web exercises towards the end of each chapter. These exercises prompt you to visit sites related to the chapter and to work with real-time data and information. We also have Web references at the end of each chapter that list the URLs of sites related to the material being discussed. Visit these sites to further explore a topic you find of particular interest. Website URLs are subject to frequent change. We have tried to select stable sites, but we realize that even government URLs change. The publisher's website (**www.myeconlab.com/mishkin**) will maintain an updated list of current URLs for your reference.

Collecting and graphing data

The following Web exercise is especially important because it demonstrates how to export data from a website into Microsoft® Excel for further analysis. We suggest you work through this problem on your own so that you will be able to perform this activity when prompted in subsequent Web exercises.

Concluding remarks

The topic of money, banking and financial markets is an exciting field that directly affects your life – interest rates influence earnings on your savings and the payments on loans you may seek on a car or a house, and monetary policy may affect your job prospects and the prices of goods in the future. Your study of money, banking and financial markets will introduce you to many of the controversies about the conduct of economic policy that are hotly debated in the political arena and will help you gain a clearer understanding of economic phenomena you hear about in the news media. The knowledge you gain will stay with you and benefit you long after the course is done.

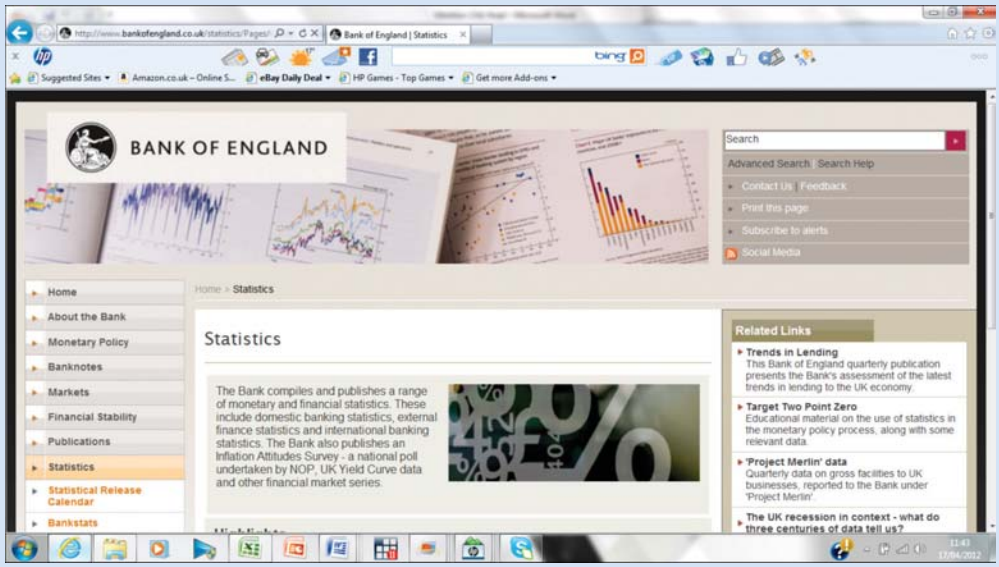
WEB EXERCISE

You have been hired by Risky Ventures, Inc., as a consultant to help the company analyse interest-rate trends. Your employers are initially interested in determining the historical relationship between long- and short-term interest rates. The biggest task you must immediately

undertake is collecting market interest-rate data. You know the best source of this information is the Web.

1 You decide that your best indicator of long-term interest rates is the twenty-year UK Government bonds. Your first task is to gather historical data. Go to **www.bankofengland.co.uk/**

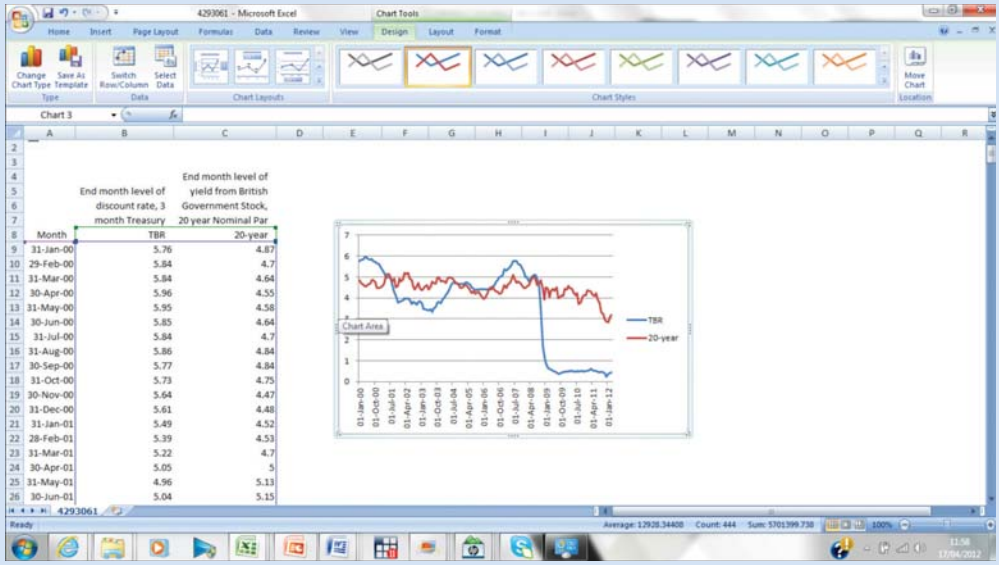
2 Click on Statistics. Now scroll down to 'Statistical Interactive Database – interest & exchange rates data' and click. A list will pop up. Then click on 'Nominal par yields' and go to 20 year and choose end month by ticking the box. There are many different frequencies to choose from.



3 Now go back up and click on 'Wholesale interest and discount rates'. Scroll down to Treasury Bills 3 month and tick Sterling end month.

Now you have located an accurate source of historical interest rate data, the next step is getting it onto a spreadsheet. You click 'show data' and a menu will pop up for how you want the data downloaded. Click on the Excel button and the data will be downloaded and appear before you. Save this to a disk or hard drive.

4 You now want to analyse the interest rates by graphing them. Again highlight the two columns of data you just created in Excel. Click on the charts icon on the toolbar (or INSERT/CHART). Select scatter diagram and choose any type of scatter diagram that connects the dots. Let the Excel wizard take you through the steps of completing the graph.



Summary

1 Activities in financial markets have direct effects on individuals' wealth, the behaviour of businesses and the efficiency of our economy. Three financial markets deserve particular attention: the bond market (where interest rates are determined), the stock market (which has a major effect on people's wealth and on firms' investment decisions), and the foreign exchange market (because fluctuations in the foreign exchange rates have major consequences for the eurozone economies and the UK economy).

2 Banks and other financial institutions channel funds from people who might not put them to productive use to people who can do so and thus play a crucial role in improving the efficiency of the economy.

3 Money appears to be a major influence on inflation, business cycles and interest rates. Because these economic variables are so important to the health of the economy, we need to understand how monetary policy is and should be conducted. We also need to study government fiscal policy because it can be an influential factor in the conduct of monetary policy.

4 This textbook stresses the economic way of thinking by developing a unifying analytic framework for the study of money, banking and financial markets using a few basic economic principles. This textbook also emphasizes the interaction of theoretical analysis and empirical data.

Key terms

aggregate income p. 20
aggregate output p. 9
aggregate price level p. 9
asset p. 4
banks p. 8
bond p. 4
budget deficit p. 12
budget surplus p. 12
business cycles p. 9
central bank p. 12
common stock p. 5
e-finance p. 9
financial crises p. 8
financial intermediaries p. 7
financial markets p. 3
fiscal policy p. 12
foreign exchange market p. 6
foreign exchange rate p. 6
gross domestic product p. 12, 20
inflation p. 10
inflation rate p. 11
interest rate p. 4
monetary policy p. 11
monetary theory p. 9
money (money supply) p. 9
recession p. 9
security p. 4
stock p. 5
unemployment rate p. 9

QUESTIONS AND PROBLEMS

All questions and problems are available in MyEconLab at **www.myeconlab.com/mishkin.**

1 Has the inflation rate in the euro area increased or decreased in the past few years? What about interest rates?

2 If history repeats itself and we see a decline in the rate of money growth, what might you expect to happen to

(a) real output?
(b) the inflation rate?
(c) interest rates?

3 When was the most recent recession in the euro area?

4 When interest rates fall, how might you change your economic behaviour?

5 Can you think of any financial innovation in the past ten years that has affected you personally? Has it made you better off or worse off? Why?

6 Is everybody worse off when interest rates rise?

7 What is the basic activity of banks?

8 Why are financial markets important to the health of the economy?

9 What is the typical relationship between interest rates on three-month Treasury bills and long-term government bonds in the euro area?

10 What effect might a fall in stock prices have on business investment?

11 What effect might a rise in stock prices have on consumers' decisions to spend?

12 How does a fall in the value of the pound sterling affect British consumers?

13 How does an increase in the value of the pound sterling affect American businesses?

14 Looking at Figure 1.3, in which years would an American have chosen to visit the Grand Canyon in Arizona rather than the Leaning Tower of Pisa?

15 When the dollar is worth more in relation to currencies of other countries, would an American be more likely to buy American-made or foreign-made jeans? Are US companies that manufacture jeans happier when the dollar is strong or when it is weak? What about an American company that is in the business of importing jeans into the United States?

WEB EXERCISES

1 In this exercise we will practise collecting data from the Web and graphing it using Excel. Use the example on page 16 as a guide. Go to **http://finance.yahoo.com/**, click on FTSE100 at the top of the page, then choose the 'Historical Prices' option. Set the data range to cover the past five years and choose 'weekly' data. Click the 'Get Prices' button.

(a) Using the 'Download to Spreadsheet' link at the bottom of the page, move the data into an Excel spreadsheet.
(b) Using the data from part a, prepare a graph. Use the graphing wizard to properly label your axes.

2 In Web Exercise 1 you collected and graphed the FTSE100. Yahoo! Finance also has data on other stock market indices. Repeat the process for either the German DAX stock market index.

(a) Using the data in Excel, compare the DAX versus the FTSE100 over the past five years.
(b) Yahoo! Finance allows you to compare the performance between several stock markets directly under 'Charts'. Using either the Interactive or Basic Chart, graph the FTSE100 versus the DAX. What differences do you observe between the Yahoo! Finance chart and your own Excel graph? How can they be reconciled?

Notes

1 The definition of *bond* used throughout this book is the broad one in common use by academics, which covers both short- and long-term debt instruments. However, some practitioners in financial markets use the word *bond* to describe only specific long-term debt instruments such as UK government gilt-edged securities.
2 Milton Friedman, *Dollars and Deficits* (Upper Saddle River, NJ: Prentice Hall, 1968), p. 39.

Useful websites

www.ecb.int/home/html/index.en.html Provides euro area data on yields, interest rates, foreign exchange rates and money supply aggrgegates.

www.bankofengland.co.uk Daily, weekly, monthly, quarterly and annual releases and historical data for selected interest rates, foreign exchange rates.

http://www.ons.gov.uk/ons/datasets-and-tables/index.html Provides all data collected by the UK Office for National Statistics.

http://www.reuters.com/financen Reuters Finance is one of the most comprehensive finance sites on the web.

http://www.ft.com/home/uk The *Financial Times* has market data, breaking news and insightful commentary.

http://stockcharts.com/charts/historical Historical charts of various stock indexes over differing time periods.

www.federalreserve.gov General information, monetary policy, banking system, research and economic data of the Federal Reserve.

http://finance.yahoo.com/ Yahoo! Finance allows you to download data, track current news and get corporate data.

APPENDIX TO CHAPTER 1

Defining aggregate output, income, the price level and the inflation rate

Because these terms are used so frequently throughout the text, we need to have a clear understanding of the definitions of *aggregate output*, *income*, the *price level* and the *inflation rate*.

Aggregate output and income

The most commonly reported measure of aggregate output, the **gross domestic product (GDP)**, is the market value of all final goods and services produced in a country during the course of the year. This measure excludes two sets of items that at first glance you might think it would include. Purchases of goods that have been produced in the past, whether a Rembrandt painting or a house built twenty years ago, are not counted as part of GDP, nor are purchases of stocks or bonds. None of these enter into GDP because they are not goods and services produced during the course of the year. Intermediate goods, which are used up in producing final goods and services, such as the sugar in a candy bar or the energy used to produce steel, are also not counted separately as part of GDP. Because the value of the final goods already includes the value of the intermediate goods, to count them separately would be to count them twice.

Aggregate income, the total income of *factors of production* (land, labour and capital) from producing goods and services in the economy during the course of the year, is best thought of as being equal to aggregate output. Because the payments for final goods and services must eventually flow back to the owners of the factors of production as income, income payments must equal payments for final goods and services. For example, if the economy has an aggregate output of €1 trillion, total income payments in the economy (aggregate income) are also €1 trillion.

Real versus nominal magnitudes

When the total value of final goods and services is calculated using current prices, the resulting GDP measure is referred to as *nominal GDP*. The word *nominal* indicates that values are measured using current prices. If all prices doubled but actual production of goods and services remained the same, nominal GDP would double even though people would not enjoy the benefits of twice as many goods and services. As a result, nominal variables can be misleading measures of economic well-being.

A more reliable measure of economic production expresses values in terms of prices for an arbitrary base year. GDP measured with constant prices is referred to as *real GDP*, the word *real* indicating that values are measured in terms of fixed prices. Real variables thus measure the quantities of goods and services and do not change because prices have changed, but rather only if actual quantities have changed.

A brief example will make the distinction clearer. Suppose that you have a nominal income of €30,000 in 2010 and that your nominal income was €15,000 in 2000. If all prices doubled between 2000 and 2010, are you better off? The answer is no: although your income has doubled, your €30,000 buys you only the same amount of goods because prices have also doubled. A real income measure indicates that your income in terms of the goods it can buy is the same. Measured in 2000 prices, the €30,000 of nominal income in 2010 turns out to be only €15,000 of real income. Because your real income is actually the same in the two years, you are no better or worse off in 2010 than you were in 2000.

Because real variables measure quantities in terms of real goods and services, they are typically of more interest than nominal variables. In this text, discussion of aggregate output or aggregate income always refers to real measures (such as real GDP).

Aggregate price level

In this chapter, we defined the aggregate price level as a measure of average prices in the economy. Three measures of the aggregate price level are commonly encountered in economic data. The first is the *GDP deflator*, which is defined as nominal GDP divided by real GDP. Thus, if 2010 nominal GDP is €10 trillion but 2010 real GDP in 2000 prices is €9 trillion,

$$GDP\ deflator = \frac{€10\ \text{trillion}}{€9\ \text{trillion}} = 1.11$$

The GDP deflator equation indicates that, on average, prices have risen 11% since 2000. Typically, measures of the price level are presented in the form of a price index, which expresses the price level for the base year (in our example, 2000) as 100. Thus the GDP deflator for 2010 would be 111.

Another popular measure of the aggregate price level is the *PCE deflator*, which is similar to the GDP deflator and is defined as nominal personal consumption expenditures (PCE) divided by real PCE.

The measure of the aggregate price level that is most frequently reported in the press is the *consumer price index (CPI)*. The CPI is measured by pricing a 'basket' of goods and services bought by a typical urban household. If, over the course of the year, the cost of this basket of goods and services rises from €500 to €600, the CPI has risen by 20%. The CPI is also expressed as a price index with the base year equal to 100.

The CPI, the PCE deflator and the GDP deflator measures of the price level can be used to convert or deflate a nominal magnitude into a real magnitude. This is accomplished by dividing the nominal magnitude by the price index. In our example, in which the GDP deflator for 2010 is 1.11 (expressed as an index value of 111), real GDP for 2010 equals

$$\frac{€10\ \text{trillion}}{1.11} = €9\ \text{trillion in 2000 prices}$$

which corresponds to the real GDP figure for 2010 assumed earlier.

Growth rates and the inflation rate

The media often talk about the economy's growth rate, and particularly the growth rate of real GDP. A growth rate is defined as the percentage change in a variable, i.e.

$$\text{growth rate} = \frac{x_t - x_{t-1}}{x_{t-1}} \times 100$$

where t indicates today and $t - 1$ a year earlier.

For example, if real GDP grew from \$9 trillion in 2010 to \$9.5 trillion in 2011, then the GDP growth rate for 2011 would be 5.6%:

$$\text{GDP growth rate} = \frac{\text{€9.5 trillion} - \text{€9 trillion}}{\text{€9 trillion}} \times 100 = 5.6\%$$

The inflation rate is defined as the growth rate of the aggregate price level. Thus, if the GDP deflator rose from 111 in 2010 to 113 in 2011, the inflation rate using the GDP deflator would be 1.8%:

$$\text{inflation rate} = \frac{113 - 111}{111} \times 100 = 1.8\%$$

If the growth rate is for a period less than one year, it is usually reported on an annualized basis; that is, it is converted to the growth rate over a year's time, assuming that the growth rate remains constant. For GDP, which is reported quarterly, the annualized growth rate would be approximately four times the percentage change in GDP from the previous quarter. For example, if GDP rose $\frac{1}{2}\%$ from the first quarter of 2010 to the second quarter of 2010, then the annualized GDP growth rate for the second quarter of 2010 would be reported as $2\%\left(= 4 \times \frac{1}{2}\%\right)$. (A more accurate calculation would be 2.02%, because a precise quarterly growth rate should be compounded on a quarterly basis.)

CHAPTER 2

An overview of the financial system

PREVIEW

Andrew Gordon was dismissed from *Dragons' Den*, the BBC reality show, for inventing a device that props up wobbly table legs. After his rejection, he took a bank loan to launch his product 'Wobbly wizard' and has since clocked up £1 million of orders. Percy the Pensioner has plenty of savings, which he and his wife accumulated over the years. If Andrew and Percy could have got together so that Percy could provide funds to Andrew to launch his 'Wobbly wizard' Andrew would not have had to take a bank loan. But Percy has partly funded Andrew because he holds his savings in bank deposits, and some bonds and stocks. It was the bank using its deposits that advanced Andrew the funds to start up his business.

Financial markets (bond and stock markets) and financial intermediaries (such as banks, insurance companies, pension funds) have the basic function of getting people like Andrew and Percy together by moving funds from those who have a surplus of funds (Percy) to those who have a shortage of funds (Andrew). More realistically, when Apple invents a better iPad, it may need funds to bring its new product to market. Similarly, when a local government needs to build a road or a school, it may need more funds than local property taxes provide. Well-functioning financial markets and financial intermediaries are crucial to economic health.

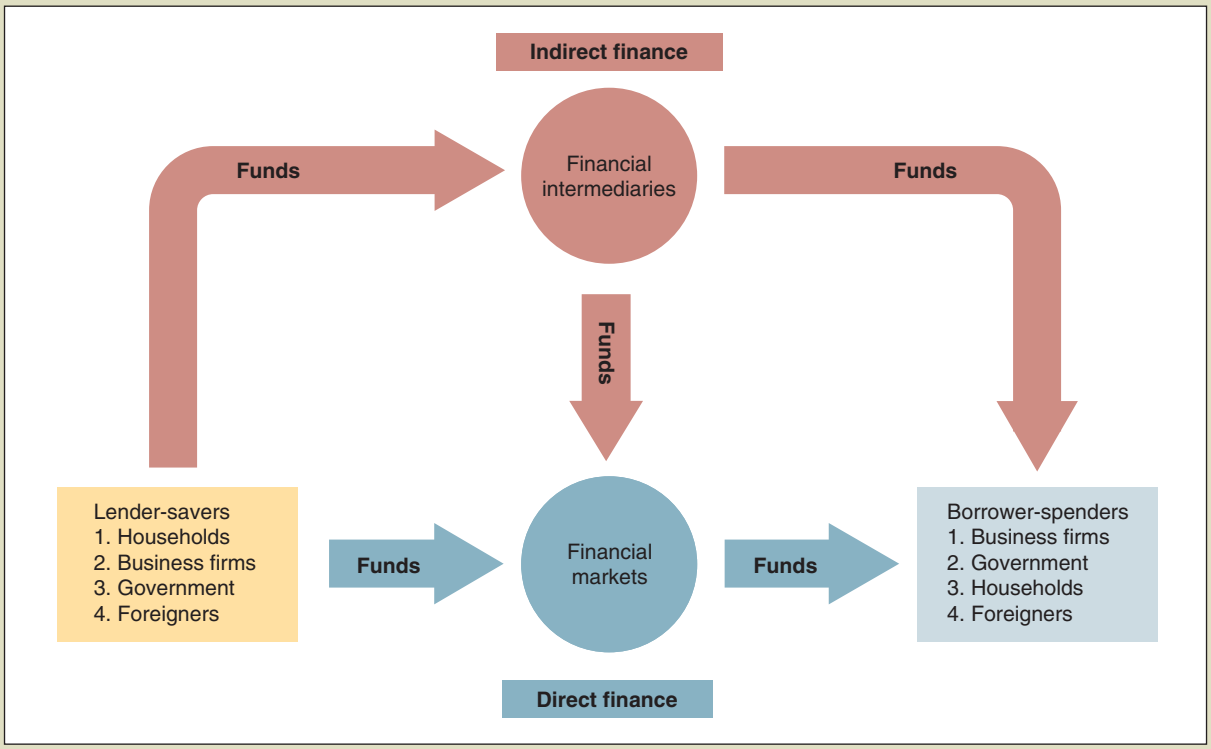
To study the effects of financial markets and financial intermediaries on the economy, we need to acquire an understanding of their general structure and operation. In this chapter, we learn about the major financial intermediaries and the instruments that are traded in financial markets as well as how these markets are regulated.

This chapter presents an overview of the fascinating study of financial markets and institutions. We return to a more detailed treatment of the regulation, structure and evolution of the financial system in Chapters 8 to 12.

Function of financial markets

Financial markets perform the essential economic function of channelling funds from households, firms and governments that have saved surplus funds by spending less than their income to those that have a shortage of funds because they wish to spend more than their income. This function is shown schematically in Figure 2.1. Those who have saved and are lending funds, the lender–savers, are at the left, and those who must borrow funds to finance their spending, the borrower–spenders, are at the right. The principal lender–savers are households, but business enterprises and the government (particularly central and local government), as well as foreigners and their governments, sometimes also find themselves with excess funds and so lend them out. The most important borrower–spenders are businesses and the government (particularly the central government), but households

FIGURE 2.1



Flows of funds through the financial system

and foreigners also borrow to finance their purchases of cars, furniture and houses. The arrows show that funds flow from lender–savers to borrower–spenders via two routes.

In *direct finance* (the route at the bottom of Figure 2.1), borrowers borrow funds directly from lenders in financial markets by selling them *securities* (also called *financial instruments*), which are claims on the borrower's future income or assets. Securities are assets for the person who buys them but **liabilities** (IOUs or debts) for the individual or firm that sells (issues) them. For example, if Renault needs to borrow funds to pay for a new factory to manufacture electric cars, it might borrow the funds from savers by selling them a *bond*, a debt security, that promises to make payments periodically for a specified period of time, or a *stock*, a security that entitles the owner to a share of the company's profits and assets.

Why is this channelling of funds from savers to spenders so important to the economy? The answer is that the people who save are frequently not the same people who have profitable investment opportunities available to them, the entrepreneurs. Let's first think about this on a personal level. Suppose that you have saved €1,000 this year, but no borrowing or lending is possible because there are no financial markets. If you do not have an investment opportunity that will permit you to earn income with your savings, you will just hold on to the €1,000 and will earn no interest. However, Carl the carpenter has a productive use for your €1,000: he can use it to purchase a new tool that will shorten the time it takes him to build a house, thereby earning an extra €200 per year. If you could get in touch with Carl, you could lend him the €1,000 at a rental fee (interest) of €100 per year, and both of you would be better off. You would earn €100 per year on your €1,000, instead of the zero amount that you would earn otherwise, while Carl would earn €100 more income per year (the €200 extra earnings per year minus the €100 rental fee for the use of the funds).

In the absence of financial markets, you and Carl the carpenter might never get together. You would both be stuck with the status quo, and both of you would be worse off. Without financial markets, it is hard to transfer funds from a person who has no investment opportunities to one who has them. Financial markets are thus essential to promoting economic efficiency.

The existence of financial markets is beneficial even if someone borrows for a purpose other than increasing production in a business. Say that you are recently married, have a good job, and want to buy a house. You earn a good salary, but because you have just started to work, you have not saved much. Over time, you would have no problem saving enough to buy the house of your dreams, but by then you would be too old to get full enjoyment from it. Without financial markets, you are stuck; you cannot buy the house and must continue to live in your tiny apartment.

If a financial market were set up so that people who had built up savings could lend you the funds to buy the house, you would be more than happy to pay them some interest so that you could own a home while you are still young enough to enjoy it. Then, over time, you would pay back your loan. If this loan could occur, you would be better off, as would the persons who made you the loan. They would now earn some interest, whereas they would not if the financial market did not exist.

Now we can see why financial markets have such an important function in the economy. They allow funds to move from people who lack productive investment opportunities to people who have such opportunities. Financial markets are critical for producing an efficient allocation of **capital** (wealth, either financial or physical, that is employed to produce more wealth), which contributes to higher production and efficiency for the overall economy. Indeed, as we will explore in Chapter 9, when financial markets break down during financial crises, as they have in Mexico, East Asia and Argentina in recent years, but most recently the global financial crisis that followed the subprime loans crisis in the USA, severe economic hardship results.

Well-functioning financial markets also directly improve the well-being of consumers by allowing them to time their purchases better. They provide funds to young people to buy what they need and can eventually afford without forcing them to wait until they have saved up the entire purchase price. Financial markets that are operating efficiently improve the economic welfare of everyone in the society.

Structure of financial markets

Now that we understand the basic function of financial markets, let's look at their structure. The following descriptions of several categorizations of financial markets illustrate essential features of these markets.

Debt and equity markets

A firm or an individual can obtain funds in a financial market in two ways. The most common method is to issue a debt instrument, such as a bond or a mortgage, which is a contractual agreement by the borrower to pay the holder of the instrument fixed amounts of euros at regular intervals (interest and principal payments) until a specified date (the maturity date), when a final payment is made. The **maturity** of a debt instrument is the number of years (term) until that instrument's expiration date. A debt instrument is **short-term** if its maturity is less than a year and **long-term** if its maturity is longer than one year.

The second method of raising funds is by issuing **equities**, such as common stock, which are claims to share in the net income (income after expenses and taxes) and the assets of a business. If you own one share of common stock in a company that has issued one million shares, you are entitled to one millionth of the firm's net income and one millionth of the

firm's assets. Equities often make periodic payments (**dividends**) to their holders and are considered long-term securities because they have no maturity date. In addition, owning stock means that you own a portion of the firm and thus have the right to vote on issues important to the firm and to elect its directors.

The main disadvantage of owning a corporation's equities rather than its debt is that an equity holder is a *residual claimant*; that is, the corporation must pay all its debt holders before it pays its equity holders. The advantage of holding equities is that equity holders benefit directly from any increases in the corporation's profitability or asset value because equities confer ownership rights on the equity holders. Debt holders do not share in this benefit, because their payments in euros are fixed. We examine the pros and cons of debt versus equity instruments in more detail in Chapter 8, which provides an economic analysis of financial structure.

The total value of equities in the UK has typically fluctuated between £0.9 and £3.8 trillion since 1990, depending on the prices of shares. Although the average person is more aware of the stock market than any other financial market, the size of the debt market is often substantially larger than the size of the equities market: the total value of debt instruments was approximately £7 trillion at the end of 2009.

Primary and secondary markets

A **primary market** is a financial market in which new issues of a security, such as a bond or a stock, are sold to initial buyers by the corporation or government agency borrowing the funds. A **secondary market** is a financial market in which securities that have been previously issued can be resold.

The primary markets for securities are not well known to the public because the selling of securities to initial buyers often takes place behind closed doors. An important financial institution that assists in the initial sale of securities in the primary market is the **investment bank**. It does this by **underwriting** securities: it guarantees a price for a corporation's securities and then sells them to the public.

The New York Stock Exchange, London Stock Exchange and Frankfurt Stock Exchange are the best-known examples of secondary markets, although the bond markets, in which previously issued bonds of major corporations and the UK and other European governments are bought and sold, actually have a larger trading volume. Other examples of secondary markets are foreign exchange markets, futures markets and options markets. Securities brokers and dealers are crucial to a well-functioning secondary market. **Brokers** are agents of investors who match buyers with sellers of securities; **dealers** link buyers and sellers by buying and selling securities at stated prices.

When an individual buys a security in the secondary market, the person who has sold the security receives money in exchange for the security, but the corporation that issued the security acquires no new funds. A corporation acquires new funds only when its securities are first sold in the primary market. Nonetheless, secondary markets serve two important functions. First, they make it easier and quicker to sell these financial instruments to raise cash; that is, they make the financial instruments more **liquid**. The increased liquidity of these instruments then makes them more desirable and thus easier for the issuing firm to sell in the primary market. Second, they determine the price of the security that the issuing firm sells in the primary market. The investors who buy securities in the primary market will pay the issuing corporation no more than the price they think the secondary market will set for this security. The higher the security's price in the secondary market, the higher the price that the issuing firm will receive for a new security in the primary market, and hence the greater the amount of financial capital it can raise. Conditions in the secondary market are therefore the most relevant to corporations issuing securities. It is for this reason that books like this one, which deal with financial markets, focus on the behaviour of secondary markets rather than primary markets.

Exchanges and over-the-counter markets

Secondary markets can be organized in two ways. One method is to organize **exchanges**, where buyers and sellers of securities (or their agents or brokers) meet in one central location to conduct trades. The London Stock Exchange for stocks and the London Metal Exchange for commodities (aluminium, copper, tin, plastics etc.) are examples of organized exchanges.

The other method of organizing a secondary market is to have an **over-the-counter (OTC) market**, in which dealers at different locations who have an inventory of securities stand ready to buy and sell securities 'over the counter' to anyone who comes to them and is willing to accept their prices. Because over-the-counter dealers are in computer contact and know the prices set by one another, the OTC market is very competitive and not very different from a market with an organized exchange.

Many common stocks are traded over-the-counter, although a majority of the largest corporations have their shares traded at organized stock exchanges. The US government bond market, with a larger trading volume than the New York Stock Exchange, by contrast, is set up as an over-the-counter market. Forty or so dealers establish a 'market' in these securities by standing ready to buy and sell US government bonds. Other over-the-counter markets include those that trade other types of financial instruments such as negotiable certificates of deposit, commercial paper and foreign exchange.

Money and capital markets

Another way of distinguishing between markets is on the basis of the maturity of the securities traded in each market. The **money market** is a financial market in which only short-term debt instruments (generally those with original maturity of less than one year) are traded; the **capital market** is the market in which longer-term debt instruments (generally those with original maturity of one year or greater) and equity instruments are traded. Money market securities are usually more widely traded than longer-term securities and so tend to be more liquid. In addition, as we will see in Chapter 4, short-term securities have smaller fluctuations in prices than long-term securities, making them safer investments. As a result, corporations and banks actively use the money market to earn interest on surplus funds that they expect to have only temporarily. Capital market securities, such as stocks and long-term bonds, are often held by financial intermediaries such as insurance companies and pension funds, which have little uncertainty about the amount of funds they will have available in the future.

Financial market instruments

To complete our understanding of how financial markets perform the important role of channelling funds from lender–savers to borrower–spenders, we need to examine the securities (instruments) traded in financial markets. We first focus on the instruments traded in the money market and then turn to those traded in the capital market.

Money market instruments (MMIs)

Because of their short terms to maturity, the debt instruments traded in the money market undergo the least price fluctuations and so are the least risky investments. The money market has undergone great changes in the past three decades, with the amount of some financial instruments growing at a far more rapid rate than others.

The London money market is one of the most liquid in the world. The principal money market instruments are listed in Table 2.1 along with the amount outstanding at the end of 2000 and 2009. The 'Following the financial news' box illustrates how the interest rates on many of the instruments are reported.

TABLE 2.1

Principal money market instruments (London money market)

	Amount outstanding (£ billions, end of year)		
Type of instrument	**1990**	**2000**	**2009**
Treasury bills	9.0	3.3	47.6
Bank bills	23.0	11.0	1.4
Sterling certificates of deposit	53.0	151.2	208.9
Commercial paper	5.0	18.0	15.0
Interbank deposits	89.0	151.0	335.4
Gilt repos	–	128.4	373.1

Source: www.bankofengland.co.uk/statistics/bankstats and ONS online.

Treasury bills

These are short-term debt instruments of the UK government and issued in one-, three- and six-month maturities to finance government spending. They pay a set amount at maturity and have no interest payments, but they effectively pay interest by initially selling at a discount, that is, at a price lower than the set amount paid at maturity. For instance, on 6 August 2010 you might buy a three-month Treasury bill for £1,498 that can be redeemed on 5 November 2010 for £1,500.

Treasury bills are highly liquid because they are the easiest to trade. They are also the safest of all money market instruments because there is almost no possibility of **default**, a situation in which the party issuing the debt instrument (HM government in this case) is unable to make interest payments or pay off the amount owed when the instrument matures. HM government is always able to meet its debt obligations because it can raise taxes or issue **currency** (paper money or coins) to pay off its debts. Treasury bills are held mainly by banks, although small amounts are held by households, corporations and other financial intermediaries. However, sterling Treasury bills are the smallest in volume of trades compared with other instruments. In 2000 they were less than 1% of the total money market instruments.

Bank bills

Bank bills are like Treasury bills and are issued by the banks and bought mostly by other banks. They have the same maturity as Treasury bills but they differ by being sold at a greater discount (higher implied yield). You can see from the table that in 1990 bank bills were a significant part of the sterling MMIs but by the end of 2009 had fallen to £1.4 billion.

Certificates of deposit

A **certificate of deposit** (CD) is a debt instrument sold by a bank to depositors that pays annual interest of a given amount and at maturity pays back the original purchase price. Negotiable CDs are CDs that are sold in secondary markets, with the amount outstanding. Negotiable CDs are an extremely important source of funds for commercial banks, from corporations, mutual funds, charitable institutions and government agencies. Certificates of deposits issued by the euro area banks reached €733 billion in 2009, having reached a peak of €822 billion in 2008.

Commercial paper

Commercial paper is a short-term debt instrument issued by large banks and well-known corporations, such as British Telecom and BAT. Growth of the commercial paper market has been substantial: the amount of commercial paper outstanding has increased by over

300% (from £5 billion to £15 billion) in the period 1990–2009. Commercial paper issued by companies in the euro area was €71 billion in 2009 after reaching a peak of €116 billion in 2008. We will discuss why the commercial paper market has had such tremendous growth in Chapter 12.

Interbank deposits

The interbank market is one where surplus banks can lend to cash-short banks sometimes substantial amounts. Interbank deposits are of varying maturities and go from overnight, seven days, one-month, three-, six- and twelve-month maturities. The growth of the interbank market shows the increased dependency of the UK commercial banks on interbank sources of funds. This dependence created a strain on the banks that expected the interbank market to source short-term funds when funds were not forthcoming during the credit crunch period of 2007–8.

Gilt repurchase agreements

Repurchase agreements (repos) are effectively short-term loans (usually with a maturity of less than two weeks) for which UK government gilt-edged securities (bonds, Treasury bills) but also high-grade commercial paper and certificate of deposits act as collateral. The gilt repo market is relatively new in the UK and began in 1996. It is a market where a borrowing institution will sell a gilt-edged security to a lending institution with a promise to buy it back at some predetermined maturity. It is also the market in which the Bank of England makes funds available to the banking system. A repo works as follows: the Bank of England buys a security from a commercial bank, which agrees to repurchase it at a specified period at a slightly higher price. The effect of this agreement is that the Bank of England has made a loan to the commercial bank and holds an equivalent value of gilts until the bank repurchases them to pay off the loan.

Capital market instruments

Capital market instruments are debt and equity instruments with maturities of greater than one year. They have far wider price fluctuations than money market instruments and are considered to be fairly risky investments. The principal capital market instruments are listed in Table 2.2, which shows the amount outstanding at the end of 1990, 2000 and 2009 for the UK. 'The following the financial news' box illustrates how the interest rates on many of these instruments are reported.

Stocks

Stocks are equity claims on the net income and assets of a corporation. Their value of £1.6 trillion at the end of 2009 exceeds that of any other type of security in the capital market. However, the fall in the value of stocks following the global financial crisis has meant that the market value of all quoted shares was lower at the end of 2009 than in 2000. Stocks are held mainly by individuals, pension funds, mutual funds and insurance companies. The total value of shares and equity which includes unquoted shares and private equity investment is typically twice the value of quoted shares shown in Table 2.2. The total value of quoted shares in the euro area was €998 billion in 1990, €5,555 billion in 2000 and €4,410 billion in 2009.

Mortgages

Mortgages are loans to households or firms to purchase housing, land, or other real structures, where the structure or land itself serves as collateral for the loans. The mortgage market is one of the largest debt markets in the UK, with most mortgages being taken by individuals. The building societies' primary asset is residential mortgages. Commercial banks also make residential mortgage loans but have a wider portfolio of lending to firms, individuals and other financial institutions.

FOLLOWING THE FINANCIAL NEWS

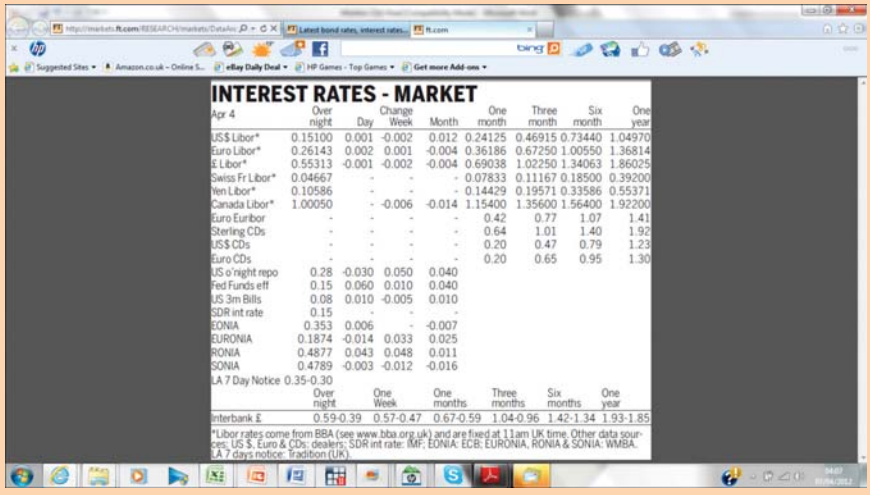
Money market rates

The *Financial Times* publishes daily a listing of interest rates on many different financial instruments in its 'Market Interest Rates' column and 'Official interest rates' in the Companies and Markets section. You can access these by logging on to **www.ft.com**

Click on 'markets data' and 'bonds and rates'. Under 'Data Archive' select 'Market Interest Rate Summary' and 'Official Interest Rates'.

The four interest rates in the 'Money rates' and 'Official rates' columns that are monitored by the financial press are these:

- *UK Repo rate:* The interest rate at which the Bank of England makes secured loans to commercial banks
- £ *Libor rate:* The daily reference interest rate at which banks can borrow unsecured funds from other banks in the London wholesale market and is a sensitive indicator of the stance of monetary policy. The rates are set by the British Bankers Association and have maturities ranging from overnight to one year.
- *Euro Repo rate:* The interest rate at which the European Central Bank through the eurozone national central banks make funds available to the banking market (for maturities of usually 2 weeks). The funds are made available through repurchase agreements with a wide range of marketed and non-marketed debt instruments used as collateral **www.ecb.int/mopo/implement/intro/html/index.en.html**.
- *Euro Euribor rate:* A reference rate of interest at which banks in the eurozone offer to make unsecured loans to other banks in the eurozone through the euro wholesale money market.

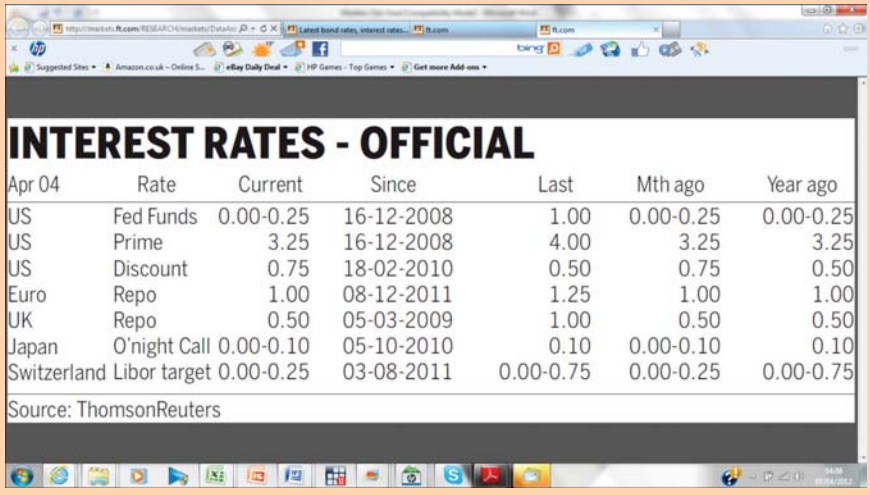


INTEREST RATES - MARKET

Apr 4	Over night	Change Day	Change Week	Change Month	One month	Three month	Six month	One year
US$ Libor*	0.15100	0.001	-0.002	0.012	0.24125	0.46915	0.73440	1.04970
Euro Libor*	0.26143	0.002	0.001	-0.004	0.36186	0.67250	1.00550	1.36814
£ Libor*	0.55313	-0.001	-0.002	-0.004	0.69038	1.02250	1.34063	1.86025
Swiss Fr Libor*	0.04667	-	-	-	0.07833	0.11167	0.18500	0.39200
Yen Libor*	0.10586	-	-	-	0.14429	0.19571	0.33586	0.55371
Canada Libor*	1.00050	-	-0.006	-0.014	1.15400	1.35600	1.56400	1.92200
Euro Euribor	-	-	-	-	0.42	0.77	1.07	1.41
Sterling CDs	-	-	-	-	0.64	1.01	1.40	1.92
US$ CDs	-	-	-	-	0.20	0.47	0.79	1.23
Euro CDs	-	-	-	-	0.20	0.65	0.95	1.30
US o'night repo	0.28	-0.030	0.050	0.040				
Fed Funds eff	0.15	0.060	0.010	0.040				
US 3m Bills	0.08	0.010	-0.005	0.010				
SDR int rate	0.15	-	-	-				
EONIA	0.353	0.006	-	-0.007				
EURONIA	0.1874	-0.014	0.033	0.025				
RONIA	0.4877	0.043	0.048	0.011				
SONIA	0.4789	-0.003	-0.012	-0.016				
LA 7 Day Notice	0.35-0.30							

	Over night	One Week	One months	Three months	Six months	One year
Interbank £	0.59-0.39	0.57-0.47	0.67-0.59	1.04-0.96	1.42-1.34	1.93-1.85

*Libor rates come from BBA (see www.bba.org.uk) and are fixed at 11am UK time. Other data sources: US $, Euro & CDs: dealers; SDR int rate: IMF; EONIA: ECB; EURONIA, RONIA & SONIA: WMBA. LA 7 days notice: Tradition (UK).



INTEREST RATES - OFFICIAL

Apr 04	Rate	Current	Since	Last	Mth ago	Year ago
US	Fed Funds	0.00-0.25	16-12-2008	1.00	0.00-0.25	0.00-0.25
US	Prime	3.25	16-12-2008	4.00	3.25	3.25
US	Discount	0.75	18-02-2010	0.50	0.75	0.50
Euro	Repo	1.00	08-12-2011	1.25	1.00	1.00
UK	Repo	0.50	05-03-2009	1.00	0.50	0.50
Japan	O'night Call	0.00-0.10	05-10-2010	0.10	0.00-0.10	0.10
Switzerland	Libor target	0.00-0.25	03-08-2011	0.00-0.75	0.00-0.25	0.00-0.75

Source: ThomsonReuters

FT *Source:* www.ft.com 4 April 2012.

TABLE 2.2

Principal capital market instruments in the UK

	Amount outstanding (£ billions, end of year)		
Type of instrument	**1990**	**2000**	**2009**
Corporate stocks (quoted shares)	452	1754	1600
Mortgages	293	535	1235
Corporate bonds	80	410	1457
UK government securities (marketable long-term bonds)	108	329	798
UK local authority bonds	0.2	0.8	1
Long-term bonds issued by banks and other financial institutions	11	75	389
Bank loans (other than mortgages)	372	697	1601

Source: ONS online.

Corporate bonds

These long-term bonds are issued by corporations with very strong credit ratings. The typical **corporate bond** sends the holder an interest payment twice a year and pays off the face value when the bond matures. Some corporate bonds, called **convertible bonds**, have the additional feature of allowing the holder to convert them into a specified number of shares of stock at any time up to the maturity date. This feature makes these convertible bonds more desirable to prospective purchasers than bonds without it and allows the corporation to reduce its interest payments because these bonds can increase in value if the price of the stock appreciates sufficiently. Because the outstanding amount of both convertible and non-convertible bonds for any given corporation is small, they are not nearly as liquid as other securities such as UK government bonds.

The corporate bond market has been traditionally smaller than the stock market; however, the recent monetary policy of the Bank of England of asset purchases as a means of injecting liquidity into the markets and stimulating the economy following the great recession has encouraged the growth of the corporate bond market. Thus the behaviour of the corporate bond market is probably far more important to a firm's financing decisions than the behaviour of the stock market. The principal buyers of corporate bonds are life insurance companies; pension funds and households are other large holders.

UK government bonds

These long-term debt instruments are issued by the UK government Debt Management Office to finance the deficit of the government. Because UK government bonds have the highest rating (AAA) they are a highly liquid security traded in the capital market. They are held by the Bank of England, commercial banks, pension funds, life insurance companies, households and foreigners.

Local authority bonds

These long-term bonds are issued by various local authorities in the UK and were very popular in the 1980s as a means of financing capital projects in individual cities. At one time it was a standing joke that the bankers of Switzerland had claim to all the public buildings in Liverpool because of the outstanding long-term bonds they held issued by the Liverpool Corporation. Many of these bonds are implicitly guaranteed by the Treasury but the size of the market is small compared to other instruments in the bond market.

Bank and building society bonds

Banks and building societies issue long-term bonds of typically fixed rates of 1 to 5 years maturity. However, some banks issue bonds based on investments in selected stocks and provide a guaranteed minimum rate of return and therefore have some of the properties of equity rather than debt.

Bank and building society loans (excluding mortgages)

These loans are made principally to businesses. Unsecured lending to individuals (consumer credit and credit cards) amount to 10% of total bank loans excluding mortgages.

Internationalization of financial markets

The growing internationalization of financial markets has become an important trend. Before the 1980s, financial markets in the US were much larger than financial markets elsewhere, but in recent years the dominance of US markets has been disappearing. (See the Global box 'Are US capital markets losing their edge?'.) The extraordinary growth of foreign financial markets has been the result of both large increases in the pool of savings in foreign countries such as Japan and the deregulation of foreign financial markets, which has enabled foreign markets to expand their activities. American corporations and banks are

GLOBAL

Are US capital markets losing their edge?

Over the past few decades the United States lost its international dominance in a number of manufacturing industries, including automobiles and consumer electronics, as other countries became more competitive in global markets. Recent evidence suggests that financial markets now are undergoing a similar trend: just as Ford and General Motors have lost global market share to Toyota and Honda, US stock and bond markets recently have seen their share of sales of newly issued corporate securities slip. In 2008 the London and Hong Kong stock exchanges each handled a larger share of initial public offerings (IPO) of stock than did the New York Stock Exchange, which had been by far the dominant exchange in terms of IPO value just five years before. Likewise, the portion of new corporate bonds issued worldwide that are initially sold in US capital markets has fallen below the share sold in European debt markets in each of the past two years.*

Why do corporations that issue new securities to raise capital now conduct more of this business in financial markets in Europe and Asia? Among the factors contributing to this trend are quicker adoption of technological innovation by foreign financial markets, tighter immigration controls in the United States following the terrorist attacks in 2001, and perceptions that listing on American exchanges will expose foreign securities issuers to greater risks of lawsuits. Many people see burdensome financial regulation as the main cause, however, and point specifically to the Sarbanes–Oxley Act of 2002. Congress passed this act after a number of accounting scandals involving US corporations and the accounting firms that audited them came to light. Sarbanes–Oxley aims to strengthen the integrity of the auditing process and the quality of information provided in corporate financial statements. The costs to corporations of complying with the new rules and procedures are high, especially for smaller firms, but largely avoidable if firms choose to issue their securities in financial markets outside the United States. For this reason, there is much support for revising Sarbanes–Oxley to lessen its alleged harmful effects and induce more securities issuers back to United States financial markets. However, there is not conclusive evidence to support the view that Sarbanes–Oxley is the main cause of the relative decline of US financial markets and therefore in need of reform.

Discussion of the relative decline of US financial markets and debate about the factors that are contributing to it likely will continue. Chapter 8 provides more detail on the Sarbanes–Oxley Act and its effects on the US financial system.

*'Down in the Street', *The Economist,* 25 November 2006, pp. 69–71.

now more likely to tap international capital markets to raise needed funds, and American investors often seek investment opportunities abroad. Similarly, foreign corporations and banks raise funds from Americans, and foreigners have become important investors in the United States. A look at international bond markets and world stock markets will give us a picture of how this globalization of financial markets is taking place.

International bond market, Eurobonds and Eurocurrencies

The traditional instruments in the international bond market are known as **foreign bonds**. Foreign bonds are sold in a foreign country and are denominated in that country's currency. For example, if the German car maker Porsche sells a bond in the United States denominated in US dollars, it is classified as a foreign bond. Foreign bonds have been an important instrument in the international capital market for centuries. In fact, a large percentage of US railroads built in the nineteenth century were financed by sales of foreign bonds in Britain.

A more recent innovation in the international bond market is the **Eurobond**, a bond denominated in a currency other than that of the country in which it is sold – for example, a bond denominated in US dollars sold in London. Currently, over 80% of the new issues in the international bond market are Eurobonds, and the market for these securities has grown very rapidly. As a result, the Eurobond market is now larger than the US corporate bond market.

A variant of the Eurobond is **Eurocurrencies**, which are foreign currencies deposited in banks outside the home country. The most important of the Eurocurrencies are **eurodollars**, which are US dollars deposited in foreign banks outside the United States or in foreign branches of US banks. Because these short-term deposits earn interest, they are similar to short-term Eurobonds. American banks borrow eurodollar deposits from other banks or from their own foreign branches, and eurodollars are now an important source of funds for American banks.

Note that the new currency, the euro, can create some confusion about the terms Eurobond, Eurocurrencies and eurodollars. A bond denominated in euros is called a Eurobond only *if it is sold outside the countries that have adopted the euro.* In fact, most Eurobonds are not denominated in euros but are instead denominated in US dollars. Similarly, eurodollars have nothing to do with euros, but are instead US dollars deposited in banks outside the United States.

World stock markets

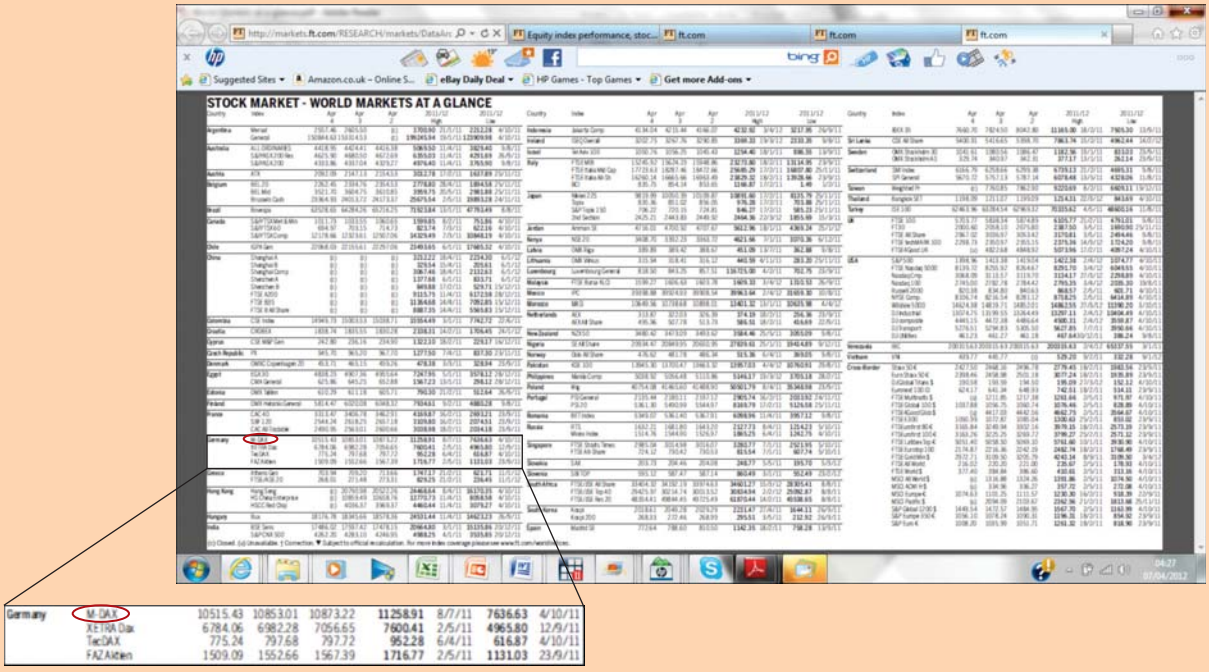
Until recently, the US stock market was by far the largest in the world, but other stock markets have been growing in importance, with the United States not always being number one. The increased interest in foreign stocks has prompted the development in the United States of mutual funds that specialize in trading in foreign stock markets. Investors in the USA pay attention not only to the Dow Jones Industrial Average but also to stock price indexes for foreign stock markets such as the Nikkei 300 Average (Tokyo) and the Financial Times Stock Exchange (FTSE) 100-Share Index (London).

The internationalization of financial markets is having profound effects on the United States. Foreigners, particularly Japanese investors, are not only providing funds to corporations in the United States, but are also helping finance the federal government. One of the largest holders of US Treasury bills is the People's Republic of China. Without these foreign funds, the US economy would have grown far less rapidly in the last twenty years. Similarly, in the UK it was the international money market that made funds available to British banks through the interbank market to increase their lending in excess of their own funds prior to the credit crunch. The internationalization of financial markets is also leading the way to a more integrated world economy in which flows of goods and technology

FOLLOWING THE FINANCIAL NEWS

Foreign stock market indexes

Foreign stock market indexes are published daily in the *Financial Times* which reports developments in foreign stock markets. The first column identifies the country of the foreign stock exchange, and the second column gives the market index; for example, the circled entry for the M-DAX in Germany. The third column, gives the closing value of the index on the date at the top of the column which was 10515.43 for the M-DAX Average on 4 April 2012. The next column is the closing value of the index in the previous day which in the case of the M-DAX was 10853.01. You should be able to calculate the percentage change in the index, which is −3.1%.



Source: Financial Times, Friday 6 August 2009.

between countries are more commonplace. In later chapters, we will encounter many examples of the important roles that international factors play in the US economy (see the 'Following the financial news' box).

Function of financial intermediaries: indirect finance

As shown in Figure 2.1, funds can move from lenders to borrowers by a second route, called *indirect finance* because it involves a financial intermediary that stands between the lender–savers and the borrower–spenders and helps transfer funds from one to the other. A financial intermediary does this by borrowing funds from the lender–savers and then using these funds to make loans to borrower–spenders. For example, a bank might acquire funds by issuing a liability to the public (an asset for the public) in the form of savings deposits. It might then use the funds to acquire an asset by making a loan to British Telecom or by buying a government bond in the financial market. The ultimate result is that funds have been transferred from the public (the lender–savers) to BT or HM Treasury (the borrower–spender) with the help of the financial intermediary (the bank).

The process of indirect finance using financial intermediaries, called **financial intermediation**, has traditionally been the primary route for moving funds from lenders to borrowers. Although the media focus much of their attention on securities markets, particularly the stock market, financial intermediaries are also an important source of financing for corporations. This is also true for other industrialized countries, particularly the eurozone economies (see the Global box overleaf). Why are financial intermediaries and indirect finance so important in financial markets? To answer this question, we need to understand the role of transaction costs, risk sharing and information costs in financial markets.

Transaction costs

Transaction costs, the time and money spent in carrying out financial transactions, are a major problem for people who have excess funds to lend. As we have seen, Carl the carpenter needs €1,000 for his new tool, and you know that it is an excellent investment opportunity. You have the cash and would like to lend him the money, but to protect your investment you have to hire a lawyer to write up the loan contract that specifies how much interest Carl will pay you, when he will make these interest payments, and when he will repay you the €1,000. Obtaining the contract will cost you €500. When you figure in this transaction cost for making the loan, you realize that you can't earn enough from the deal (you spend €500 to make perhaps €100) and reluctantly tell Carl that he will have to look elsewhere.

This example illustrates that small savers like you or potential borrowers like Carl might be frozen out of financial markets and thus be unable to benefit from them. Can anyone come to the rescue? Financial intermediaries can.

Financial intermediaries can substantially reduce transaction costs because they have developed expertise in lowering them; and because their large size allows them to take advantage of **economies of scale**, the reduction in transaction costs per euro of transactions as the size (scale) of transactions increases. For example, a bank knows how to find a good lawyer to produce an airtight loan contract, and this contract can be used over and over again in its loan transactions, thus lowering the legal cost per transaction. Instead of a loan contract (which may not be all that well written) costing €500, a bank can hire a top-flight lawyer for €5,000 to draw up an airtight loan contract that can be used for 2,000 loans at a cost of €2.50 per loan. At a cost of €2.50 per loan, it now becomes profitable for the financial intermediary to lend Carl the €1,000.

Because financial intermediaries are able to reduce transaction costs substantially, they make it possible for you to provide funds indirectly to people like Carl with productive investment opportunities. In addition, a financial intermediary's low transaction costs mean that it can provide its customers with **liquidity services**, services that make it easier for customers to conduct transactions. For example, banks provide depositors with current accounts that enable them to pay their bills easily. In addition, depositors can earn interest on current and savings accounts and yet still convert them into goods and services whenever necessary.

Risk sharing

Another benefit made possible by the low transaction costs of financial institutions is that they can help reduce the exposure of investors to **risk** – that is, uncertainty about the returns investors will earn on assets. Financial intermediaries do this through the process known as **risk sharing**: they create and sell assets with risk characteristics that people are comfortable with, and the intermediaries then use the funds they acquire by selling these assets to purchase other assets that may have far more risk. Low transaction costs allow financial intermediaries to share risk at low cost, enabling them to earn a profit on the