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SECOND EDITION

Gordon growth model
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 2007-2009
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Money, Banking, and the Financial System

Second Edition

R. Glenn Hubbard

Columbia University

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Lehigh University

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**For Cindy, Matthew, Andrew,
and Daniel**
—*Anthony Patrick O'Brien*

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Preface

Do You Think This Might Be Important?

It's customary for authors to begin textbooks by trying to convince readers that their subject is important—even exciting. Following the events of the financial crisis and recession of 2007–2009, we doubt anyone needs to be convinced that the study of money, banking, and financial markets is important. And it's exciting . . . maybe a little too exciting. Nothing comparable to the upheaval of 2007–2009 had happened in the financial system since the Great Depression of the 1930s. The financial crisis changed virtually every aspect of how money is borrowed and lent, how banks and other financial firms operate, and how policy-makers regulate the financial system. More than five years after the beginning of the crisis, there seems little doubt that its effects will linger for a very long time, just as did the effects of the Great Depression.

New to This Edition

We were gratified by the enthusiastic response of students and instructors who used the first edition. The response confirmed our view that a modern, relatively brief approach, paying close attention to recent developments in policy and theory, would find a receptive audience. In this second edition, we retain the approach of our first edition while making several changes to address feedback from instructors and students and also to reflect our own classroom experiences. Here is a summary of our key changes. Please see the pages that follow for details about these changes:

- Replaced 7 chapter-opening cases and updated retained cases
- Added 16 new *Making the Connection* features, including several that appeal to students' personal lives and decisions
- Added more than 40 new real-time data exercises that students can complete on MyEconLab
- Added 2 new *Solved Problems* features, and updated retained *Solved Problems*. Some *Solved Problems* also involve subjects that appeal to students' personal lives and decisions.
- Replaced or updated approximately one-half of the questions and problems at the end of each chapter
- Updated graphs and tables with the latest available data

New Chapter-Opening Cases

Each chapter-opening case provides a real-world context for learning, sparks students' interest in money and banking, and helps to unify the chapter. The second edition includes the following new chapter-opening cases:

- “Will Investors Lose Their Shirts in the Market for Treasury Bonds?” (Chapter 3, “Interest Rates and Rates of Return”)
- “Are There Any Safe Investments?” (Chapter 4, “Determining Interest Rates”)
- “Searching for Yield” (Chapter 5, “The Risk Structure and Term Structure of Interest Rates”)
- “Using Financial Derivatives to Reduce Risk” (Chapter 7, “Derivatives and Derivative Markets”)
- “Is Ben Bernanke Responsible for Japanese Firms Moving to the United States?” (Chapter 8, “The Market for Foreign Exchange”)

- “Should You Crowd-Fund Your Startup?” (Chapter 9, “Transactions Costs, Asymmetric Information, and the Structure of the Financial System”)
- “To Buy a House, You Need a Loan” (Chapter 10, “The Economics of Banking”)

New Making the Connection Features and Supporting Exercises at the End of Each Chapter


Each chapter includes two or more *Making the Connection* features that provide real-world reinforcement of key concepts. Several of these *Making the Connections* cover topics that apply directly to the personal lives and decisions that students make and include the subtitle of *In Your Interest*.

- “Microlending Aids U.S. Small Businesses” (Chapter 1, “Introducing Money and the Financial System”)
- “What Do People Do with Their Savings?” (Chapter 1, “Introducing Money and the Financial System”)
- “*In Your Interest*: Interest Rates and Student Loans” (Chapter 3, “Interest Rates and Rates of Return”)
- “Why Are Bond Interest Rates So Low?” (Chapter 4, “Determining Interest Rates”)
- “*In Your Interest*: Should You Invest in Junk Bonds?” (Chapter 5, “The Risk Structure and Term Structure of Interest Rates”)
- “*In Your Interest*: Should You Invest in Emerging Markets?” (Chapter 8, “The Market for Foreign Exchange”)
- “*In Your Interest*: Is It Safe to Invest Through Crowd-funding?” (Chapter 9, “Transactions Costs, Asymmetric Information, and the Structure of the Financial System”)
- “*In Your Interest*: Corporations Are Issuing More Bonds; Should You Buy Them?” (Chapter 9, “Transactions Costs, Asymmetric Information, and the Structure of the Financial System”)
- “*In Your Interest*: Your Bank’s Message to You: ‘Please Go Away!’” (Chapter 10, “The Economics of Banking”)
- “*In Your Interest*: ‘Is Your Neighborhood ATM About to Disappear?’” (Chapter 10, “The Economics of Banking”)
- “*In Your Interest*: Would You Invest in a Hedge Fund if You Could?” (Chapter 11, “Investment Banks, Mutual Funds, Hedge Funds, and the Shadow Banking System”)
- “Greece Experiences a ‘Bank Jog’” (Chapter 12, “Financial Crises and Financial Regulation”)
- “The Consumer Financial Protection Bureau: The New Sheriff of Financial Town” (Chapter 12, “Financial Crises and Financial Regulation”)
- “Fedspeak vs. Transparency” (Chapter 13, “The Federal Reserve and Central Banking”)
- “*In Your Interest*: If You Were Greek, Would You Prefer the Euro or the Drachma?” (Chapter 16, “The International Financial System and Monetary Policy”)
- “‘Fracking’ Transforms Energy Markets in the United States” (Chapter 17, “Monetary Theory I: The Aggregate Demand and Aggregate Supply Model”)

Added More Than 40 New Real-Time Data Exercises That Students Can Complete on MyEconLab

MyEconLab is a powerful assessment and tutorial system that works hand-in-hand with *Money, Banking, and the Financial System*. MyEconLab includes comprehensive homework, quiz, test, and tutorial options, allowing instructors to manage all assessment needs

in one program. Key innovations in the MyEconLab course for *Money, Banking, and the Financial System*, second edition, include the following:

- Real-time *Data Analysis Exercises*, marked with , allow students and instructors to use the absolute latest data from FRED, the online macroeconomic data bank from the Federal Reserve Bank of St. Louis. By completing the exercises, students become familiar with a key data source, learn how to locate data, and develop skills to interpret data.
- In the eText available in MyEconLab, select figures labeled **MyEconLab** *Real-time data* allow students to display a popup graph updated with real-time data from FRED.
- Current News Exercises, new to this edition of the MyEconLab course, provide a turn-key way to assign gradable news-based exercises in MyEconLab. Every week, Pearson scours the news, finds a current article appropriate for the money and banking course, creates an exercise around this news article, and then automatically adds it to MyEconLab. Assigning and grading current news-based exercises that deal with the latest money, banking, financial system events and policy issues has never been more convenient.

Other Changes

- *New Solved Problems*—Many students have great difficulty handling problems in applied economics. We help students overcome this hurdle by including worked-out problems in each chapter. The following *Solved Problems* are new to this edition:
 - “*In Your Interest: How Do You Value a College Education?*” (Chapter 3, “Interest Rates and Rates of Return”)
 - “*In Your Interest: Should You Worry About Falling Bond Prices When the Inflation Rate Is Low?*” (Chapter 4, “Determining Interest Rates”)
- Replaced or updated approximately one-half of the questions and problems at the end of each chapter
- Updated graphs and tables with the latest available data

Our Approach

In this book, we provide extensive analysis of the financial events of the past few years. We believe these events are sufficiently important to be incorporated into the body of the text rather than just added as boxed features. In particular, we stress a lesson policymakers recently learned the hard way: What happens in the shadow banking system is as important to the economy as what happens in the commercial banking system.

We realize, however, that the details of the financial crisis and recession will eventually pass into history. What we strive to do in this text is not to add to the laundry list of facts that students must memorize. Instead, we present students with the underlying economic explanations of why the financial system is organized as it is and how the financial system is connected to the broader economy. We are gratified by the success of our principles of economics textbook, and we have employed a similar approach in this textbook: We provide students with a framework that allows them to apply the theory that they learn in the classroom to the practice of the real world. By learning this framework, students will understand not just the 2007–2009 financial crisis and other past events but also developments in the financial system during the years to come. To achieve this goal, we have built four advantages into this text:

1. A framework for understanding, evaluating, and predicting
2. A modern approach

3. Integration of international topics
4. A focus on the Federal Reserve

Framework of the Text: Understand, Evaluate, Predict

The framework underlying all discussions in this text has three levels. First, students learn to *understand* economic analysis. “Understanding” refers to students developing the economic intuition they need to organize concepts and facts. Second, students learn to *evaluate* current developments and the financial news. Here, we challenge students to use financial data and economic analysis to think critically about how to interpret current events. Finally, students learn to use economic analysis to *predict* likely changes in the economy and the financial system. Having just come through a period in which Federal Reserve officials, members of Congress, heads of Wall Street firms, and nearly everyone else failed to predict a huge financial crisis, the idea that we can prepare students to predict the future of the financial system may seem overly ambitious—to say the least. We admit, of course, that some important events are difficult to anticipate. But knowledge of the economic analysis we present in this book does make it possible to predict many aspects of how the financial system will evolve. For example, in Chapter 12, “Financial Crises and Financial Regulation,” we discuss the ongoing cycle of financial crisis, regulatory response, financial innovation, and further regulatory response. The latest episode in this cycle was the passage in July 2010 of the Dodd-Frank *Wall Street Reform and Consumer Protection Act*. With our approach, students learn not just the new regulations contained in Dodd-Frank but, more importantly, the key lesson that over time innovations by financial firms are likely to supersede many of the provisions of Dodd-Frank. In other words, students will learn that the financial system is not static—it evolves over time in ways that can be understood using economic analysis.

A Modern Approach

Textbooks are funny things. Most contain a mixture of the current and the modern alongside the traditional. Material that is helpful to students is often presented along with material that is not so helpful or that is—frankly—counterproductive. We believe the ideal is to produce a textbook that is modern and incorporates the best of recent research on monetary policy and the financial system without chasing every fad in economics or finance. In writing this book, we have looked at the topics in the money and banking course with fresh eyes. We have pruned discussion of material that is less relevant to the modern financial system or no longer considered by most economists to be theoretically sound. We have also tried to be as direct as possible in informing students of what is and is not important in the financial system and policymaking as they exist today. For example, rather than include the traditional long discussion of the role of reserve requirements as a monetary policy tool, we provide a brief overview and note that the Federal Reserve has not changed reserve requirements since 1992. Similarly, it has been several decades since the Fed paid serious attention to targets for M1 and M2. Therefore, in Chapter 18, “Monetary Theory II: The *IS-MP* Model,” we replace the *IS-LM* model—which assumes that the central bank targets the money stock, rather than an interest rate—with the *IS-MP* model, first suggested by David Romer more than 15 years ago. We believe that our modern approach improves the ability of students to make the connection between the text material and the economic and financial world they read about. (For those who do wish to cover the *IS-LM* model, we provide an appendix on that model at the end of Chapter 18.)

By cutting out-of-date material, we have achieved two important goals: (1) We provide a much briefer and more readable text, and (2) we have made room for discussion of essential topics, such as the “shadow banking system” of investment banks, hedge

funds, and mutual funds, as well as the origins and consequences of financial crises. See Chapter 11, “Investment Banks, Mutual Funds, Hedge Funds, and the Shadow Banking System,” and Chapter 12, “Financial Crises and Financial Regulation.” Other texts either omit these topics or cover them only briefly.

We have both taught money and banking to undergraduate and graduate students for many years. We believe that the modern, real-world approach in our text will engage students in ways that no other text can.

Integration of International Topics

When the crisis in subprime mortgages began, Federal Reserve Chairman Ben Bernanke famously observed that it was unlikely to cause much damage to the U.S. housing market, much less the wider economy. (We discuss Bernanke’s argument in Chapter 12, “Financial Crises and Financial Regulation,” where we note that he was hardly alone in making such statements.) As it turned out, of course, the subprime crisis devastated not only the U.S. housing market but the U.S. financial system, the U.S. economy, and the economies of most of the developed world. That a problem in one part of one sector of one economy could cause a worldwide crisis is an indication that a textbook on money and banking must take seriously the linkages between the U.S. and other economies. Our text consists of only 18 chapters and is one of the briefest texts on the market. We achieved this brevity by carefully pruning many out-of-date and esoteric topics to focus on the essentials, which includes a careful exploration of international topics. We devote two full chapters to international topics: Chapter 8, “The Market for Foreign Exchange,” and Chapter 16, “The International Financial System and Monetary Policy.” In these chapters, we discuss such issues as the European sovereign debt crisis and the increased coordination of monetary policy actions among central banks. We realize, however, that, particularly in this course, what is essential to one instructor is optional to another. So, we have written the text in a way that allows instructors to skip one or both of the international chapters.

A Focus on the Federal Reserve

We can hardly claim to be unusual in focusing on the Federal Reserve in a money and banking textbook . . . but we do! Of course, all money and banking texts discuss the Fed, but generally not until near the end of the book—and the semester. Based on speaking to instructors in focus groups and based on our own teaching experience, we believe that this approach is a serious mistake. We have found that students often have trouble integrating the material in the money and banking course. To them, the course often seems a jumble of unrelated topics. Particularly in light of recent events, the role of the Fed can serve as a unifying theme for the course. Accordingly, we provide an introduction and overview of the Fed in Chapter 1, “Introducing Money and the Financial System,” and in each subsequent chapter, we expand on the Fed’s role in the financial system. So, by the time students read Chapter 13, “The Federal Reserve and Central Banking,” where we discuss the details of the Fed’s operation, students already have a good idea of the Fed’s importance and its role in the system.

Special Features

We can summarize our objective in writing this textbook as follows: to produce a streamlined, modern discussion of the economics of the financial system and of the links between the financial system and the economy. To implement this objective, we have developed a number of special features. Some are similar to the features that have proven popular and effective aids to learning in our principles of economics textbook, while others were developed specifically for this book.

Key Issue and Question

Issue: During the financial crisis, the bond rating agencies were criticized for having given high ratings to securities that proved to be very risky.

Question: Should the government more closely regulate the credit rating agencies?

Answered on page 151

Answering the Key Question

Continued from page 124

At the beginning of this chapter, we asked:
 “Should the government more closely regulate credit rating agencies?”

Like other policy questions we will encounter in this book, this question has no definitive answer. We have seen in this chapter that many investors rely on the credit rating agencies for important information on the default risk on bonds. During the financial crisis of 2007–2009, many bonds—particularly mortgage-backed securities—turned out to have much higher levels of default risk than the credit rating agencies had indicated. Some observers argued that the rating agencies had given those bonds inflated ratings because the agencies have a conflict of interest in being paid by the firms whose bond issues they rate. Other observers, though, argued that the ratings may have been accurate when given, but the creditworthiness of the bonds declined rapidly following the unexpected severity of the housing bust and the resulting financial crisis.

Key Issue–and–Question Approach

We believe that having a key issue and related key question in each chapter provides us with an opportunity to explain how the financial system works within the context of topics students read about online and in newspapers and discuss among themselves and with their families. In Chapter 1, “Introducing Money and the Financial System,” we cover the key components of the financial system, introduce the Federal Reserve, and preview the important issues facing the financial system. At the end of Chapter 1, we present 17 key issues and questions that provide students with a roadmap for the rest of the book and help them to understand that learning the basic principles of money, banking, and the financial system will allow them to analyze in-

telligently the most important issues about the financial system and monetary policy. The goal here is not to make students memorize a catalog of facts. Instead, we use these key issues and questions to demonstrate that an economic analysis of the financial system is essential to understanding recent events. See pages 18–20 in Chapter 1 for a complete list of the issues and questions.

We start each subsequent chapter with a key issue and key question and end each of those chapters by using the concepts introduced in the chapter to answer the question.

Contemporary Opening Cases

Each chapter-opening case provides a real-world context for learning, sparks students’ interest in money and banking, and helps to unify the chapter. For example, Chapter 11, “Investment Banks, Mutual Funds, Hedge Funds, and the Shadow Banking System,” opens with a discussion of the rise of the shadow banking system in a case study entitled “When Is a Bank Not a Bank? When It’s a Shadow Bank!” We revisit this topic throughout the chapter.

CHAPTER 11

Investment Banks, Mutual Funds, Hedge Funds, and the Shadow Banking System

Learning Objectives
 After studying this chapter, you should be able to:

- 11.1** Explain how investment banks operate (pages 314–327)
- 11.2** Distinguish between mutual funds and hedge funds and describe their roles in the financial system (pages 327–334)
- 11.3** Explain the roles that pension funds and insurance companies play in the financial system (pages 334–338)
- 11.4** Explain the connection between the shadow banking system and systemic risk (pages 339–342)

When Is A Bank Not A Bank? When It’s A Shadow Bank!

What is a hedge fund? What is the difference between a commercial bank and an investment bank? At the beginning of the financial crisis of 2007–2009, most Americans would have been unable to answer these questions. Many members of Congress were in a

been deposited in banks, and they were using these funds to provide credit that banks had previously provided. These nonbanks were using newly developed financial securities that even long-time veterans of Wall Street often did not fully understand.

and later became secretary of the Treasury administration. A Federal Reserve study that by 2008, the shadow banking system had grown to be more than 50% larger than the commercial banking system. The crisis worsened, two large investment banks—Lehman Brothers—and American International Group failed in the fall of 2008. Although many banks were also drawn into the crisis, 2007–2008 was the first time in U.S. history that a major part of the financial system was not originated in the commercial banking system. But a number of policymakers and economists continue to believe that shadow banking remains a source of instability in the financial system.

Partly as a result of the financial crisis, the size of the shadow banking system has declined relative to the size of the commercial banking system, although shadow banking remains larger. Following the financial crisis, in 2010 Congress passed the Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, which increased to some extent federal regulation of the shadow banking system. But a number of policymakers and economists continue to believe that shadow banking remains a source of instability in the financial system.

and regulatory structures were based on the assumption

Sources: Zoltan Pozar, et al., “The Shadow Banking System,” Federal Reserve Bank of New York, Staff Report No. 458, July 2010, Revised February 2012; Timothy F. Geithner, “Reducing Systemic Risk in a Dynamic Financial System,” talk at The Economic Club of New York, June 9, 2008, and Paul McCulley, “Discussion,” Federal Reserve Bank of Kansas City, *Housing, Housing Finance, and Monetary Policy*, 2007, p. 485.

Making the Connection Features

Each chapter includes two to four *Making the Connection* features that present real-world reinforcement of key concepts and help students learn how to interpret what they read on the Web and in newspapers. Most *Making the Connection* features use relevant, stimulating, and provocative news stories, many focused on pressing policy issues. Several of these *Making the Connections* cover topics that apply directly to the personal lives and decisions that students make and include the subtitle of *In Your Interest*.

Here are examples:

- “*In Your Interest: Interest Rates and Student Loans*” (Chapter 3, page 61)
- “*In Your Interest: Interest Rates and Student Loans*” (Chapter 3, page 61)
- “*In Your Interest: How Much Volatility Should You Expect in the Stock Market?*” (Chapter 7, page 210)
- “*Has Securitization Increased Adverse Selection Problems in the Financial System?*” (Chapter 9, page 263)
- “*In Your Interest: Your Bank’s Message to You: ‘Please Go Away!’*” (Chapter 10, page 291)
- “*Did Moral Hazard Derail Investment Banks?*” (Chapter 11, page 322)
- “*Why Was the Severity of the 2007–2009 Recession So Difficult to Predict?*” (Chapter 12, page 355)

Each *Making the Connection* has at least one supporting end-of-chapter problem to allow students to test their understanding of the topic discussed.

Solved Problem Features

Many students have great difficulty handling problems in applied economics. We help students overcome this hurdle by including worked-out problems in each chapter. Our goals are to keep students focused on the main ideas of each chapter and to give students a model of how to solve an economic problem by breaking it down step by step. Several of these *Solved Problems* cover topics that apply directly to the personal lives and decisions that students make and include the subtitle *In Your Interest*.

Additional exercises in the end-of-chapter *Problems and Applications* section are tied to every *Solved Problem*. Students can also complete related *Solved Problems* on www.myeconlab.com. (See page xxv of this preface for more on MyEconLab.)

Making the Connection
In Your Interest

Interest Rates and Student Loans

With rising tuition costs, more students are taking out student loans, and the loans are for larger amounts. In 2012, the total amount of student loans outstanding passed \$1 trillion for the first time—more than the total value of credit card debt. Student loan payments are often the largest item in the budgets of recent college graduates. Even future presidents are not immune. According to Michelle Obama: “In fact, when [Barack and I] were first married . . . our combined monthly student loan bills were actually higher than our mortgage.”

There are three main types of student loans:

1. Subsidized student loans
2. Unsubsidized student loans
3. Private loans

In 2012, most undergraduate students were eligible to borrow up to \$31,000 in federal student loans, with a maximum of \$23,000 being subsidized loans. In 2012, subsidized federal student loans had a fixed interest rate of 3.4% and unsubsidized federal loans had an interest rate of 6.8%. Under the standard repayment plan, federal student loans are paid back over 10 years. Private student loans, obtained from banks, have a variety of interest rates and repayment times.

We can use the concept of compounding and discounting to analyze some of the

With a payback or many other that make is a years, you

are paying down the \$20,000 principal more slowly, so you are paying more in total interest over the life of your loan. With a 10-year payback period, your total interest payments are \$7,619.28, while with a 30-year payback period, your total interest payments are nearly \$27,000, or almost four times as high.

Being familiar with the interest rate concepts we are discussing in this chapter can help students and their parents as they decide how to finance a college education. Helpful loan calculators are available on the studentaid.ed.gov and bankrate.com Web sites.

Sources: Rachel Louise Ensign, “Time to Repay Student Loans,” *Wall Street Journal*, September 15, 2012; Charlie Spiering, “At Princeton, Michelle Obama Complains about Her Student Loans,” *Washington Examiner*, September 24, 2012; “Student Loans,” *New York Times*, September 9, 2012; and studentaid.ed.gov.

See related problem 2.6 at the end of the chapter.

Solved Problem 3.1A
In Your Interest

Using Compound Interest to Select a Bank CD

Suppose you are considering investing \$1,000 in one of the following bank CDs:

- The first CD will pay an interest rate of 4% per year for three years
- The second CD will pay an interest rate of 10% the first year, 1% the second year, and 1% the third year

Which CD should you choose?

Solving the Problem

Step 1 Review the chapter material. This problem is about compound interest, so you may want to review the section “Compounding for More Than One Period” on page 52.

Step 2 Calculate the future value. The interest rate is the same for both CDs, so the interest earned will be equal to the principal, multiplied by 1.04 for the first CD and 1.10 for the second CD.

\$1,000

Step 3 Calculate the future value of the second CD, the interest rate is different compounding for each year.

$\$1,000 \times (1 + 0.10)$

Step 4 Decide which CD you should choose. You should choose the investment with the highest future value, so you should choose the first CD.

EXTRA CREDIT: Note that the average interest rate received across the three years is 4% for both CDs. When asked to guess the answer to this problem without first doing the calculations, many students choose the second CD. They reason that the high 10% interest rate received in the first year means that even though the interest rates in the second and third years are low, the second CD will end up with the higher future value. As the table below shows, although the first CD starts out well behind after the first year, it finishes the third year with the higher value. This example illustrates the sometimes surprising results of compounding.

	First CD	Second CD
After 1 year	\$1,040.00	\$1,100.00
After 2 years	1,081.60	1,111.00
After 3 years	1,124.86	1,122.11

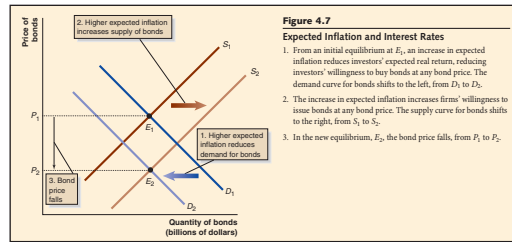
See related problem 1.6 at the end of the chapter.

All else being equal, an increase in ...	causes the demand for bonds to ...	because ...	Graph of effect on equilibrium in the bond market
wealth	increase	more funds are allocated to bonds.	
expected returns on bonds	increase	holding bonds is relatively more attractive.	
expected inflation	decrease	holding bonds is relatively less attractive.	
expected returns on other assets	decrease	holding bonds is relatively less attractive.	
riskiness of bonds relative to other assets	decrease	holding bonds is relatively less attractive.	
liquidity of bonds relative to other assets	increase	holding bonds is relatively more attractive.	
information costs of bonds relative to other assets	decrease	holding bonds is relatively less attractive.	

Graphs and Summary Tables

We use four devices to help students read and interpret graphs:

1. Detailed captions
2. Boxed notes
3. Color-coded curves
4. Summary tables with graphs



Key Terms and Problems

Key Terms

- Bond rating, p. 126
- Default risk (or credit risk), p. 126
- Expectations theory, p. 140
- Liquidity premium theory (or preferred habitat theory), p. 147
- Municipal bonds, p. 132
- Risk structure of interest rates, p. 125
- Segmented markets theory, p. 146
- Term premium, p. 147
- Term structure of interest rates, p. 137

5.1 The Risk Structure of Interest Rates

Explain why bonds with the same maturity can have different interest rates.

Review Questions

- 1.1 Briefly explain why bonds that have the same maturities often do not have the same interest rates.
- 1.2 How is a bond's rating related to the bond issuer's creditworthiness?
- 1.3 How does the interest rate on an illiquid bond compare with the interest rate on a liquid bond? How does the interest rate on a bond with high information costs compare with the interest rate on a bond with low information costs?

1.10 [Related to the Making the Connection on page 129]

According to an article in the *New York Times*, "It was the near universal agreement that potential conflicts were embedded in the [bond] ratings model." What is the bond ratings model? What potential conflicts are embedded in it?
 Source: David Segal, "Debt Raters Avoid Overhaul After Crisis," *New York Times*, December 7, 2009.

Problems

- 1.11 Some economists have argued that one important role of rating agencies of firms that issue bonds is to reduce the information costs of funds raised in ways that are in the best interests of the issuer. Why might the market goals of the rating agencies be in conflict with the goals of the issuer? How does this conflict reduce the information costs of funds raised by the issuer?

1.8 [Related to the Chapter Opener on page 124]

According to an article in the *New York Times*, in 2012, "everyone has piled into" the junk bond market. The article also observed, "The average yields on these bonds have dropped to 6.6 percent, hovering near a record low."

- a. What are junk bonds?
- b. Is there a connection between everyone's demand for Spanish government bonds was increasing or decreasing? Briefly explain.
- c. Can we tell from the headline whether the prices of Spanish government bonds were increasing or decreasing? Briefly explain.
- d. The article observes that Spain is "reaping the bitter harvest of a decade of ambitious and often unchecked spending on infrastructure and services." What does this observation have to do with the article's headline?

5.2 The Term Structure of Interest Rates

Explain why bonds with different maturities can have different interest rates.

Review Questions

- 2.1 How does the Treasury yield curve illustrate the term structure of interest rates?
- 2.2 What are three key facts about the term structure?
- 2.3 Briefly describe the three theories of the term structure.

Problems and Applications

- 2.4 Suppose that you want to invest for three years to earn the highest possible return. You have three options: (a) Roll over three one-year bonds, which pay interest rates of 8% in the first year, 11% in the second year, and 7% in the third year; (b) buy a two-year bond with a 10% interest rate
- 2.6 Suppose that the interest rate on a one-year Treasury bill is currently 1% and that investors expect that the interest rates on one-year Treasury bills over the next three years will be 2%, 3%, and 2%. Use the expectations theory to calculate the current interest rates on two-year, three-year, and four-year Treasury notes


Review Questions and Problems and Applications—Grouped by Learning Objective to Improve Assessment

The end-of-chapter *Review Questions and Problems and Applications* are grouped under learning objectives. The goals of this organization are to make it easier for instructors to assign problems based on learning objectives, both in the book and in MyEconLab, and to help students efficiently review material that they find difficult. If students have difficulty with a particular learning objective, an instructor can easily identify which end-of-chapter questions and problems support that objective and assign them as homework or discuss them in class. Exercises in a chapter's *Problems and Applications* section are available in MyEconLab. Using MyEconLab, students can complete these and many other exercises online, get tutorial help, and receive instant feedback and assistance on exercises they answer incorrectly. Also, student learning will be enhanced by having the summary material and problems grouped together by learning objective, which will allow students to focus on the parts of the chapter they find most challenging. Each major section of the chapter, paired with a learning objective, has at least two review questions and three problems.

We include one or more end-of-chapter problems that test students' understanding of the content presented in each *Solved Problem*, *Making the Connection*, and chapter opener. Instructors can cover a feature in class and assign the corresponding problem for homework. The Test Item Files also include test questions that pertain to these special features.

Data Exercises

Each chapter ends with at least two *Data Exercises* that help students become familiar with a key data source, learn how to locate data, and develop skills to interpret data.

Real-time *Data Analysis Exercises*, marked with , allow students and instructors to use the very latest data from FRED, the online macroeconomic data bank from the Federal Reserve Bank of St. Louis.

Data Exercises

D5.1: [The yield curve and recessions] Go to the Web site of the Federal Reserve Bank of St. Louis (FRED) (research.stlouisfed.org/fred2/) and for the period from January 1957 to the present download to the same graph the data series for the 3-month Treasury bill (TB3MS) and the 10-year Treasury note (GS10). Go to the Web site of the National Bureau of Economic Research (nber.org) and find the dates for business cycle peaks and troughs (the period between a business cycle peak and trough is a recession). During which months was the yield curve inverted? How

many of these periods were followed within a year by a recession?

D5.2: [Predicting with the yield curve] Go to www.treasury.gov and find the page "Daily Treasury Yield Curve Rates." Briefly describe the current shape of the yield curve. Can you use the yield curve to draw any conclusion about what investors in the bond market expect will happen to the economy in the future?


org/fred2/) and for the period from January 1997 to the present, download to the same graph the data series for the BoFA Merrill Lynch US Corporate AAA Effective Yield (BAMLC0A1CAAAY) and the BoFA Merrill Lynch US High Yield CCC or Below Effective Yield (BAMLH0A3HYCFY). Describe how the difference between the yields on high-grade corporate bonds and on junk bonds have changed over this period.

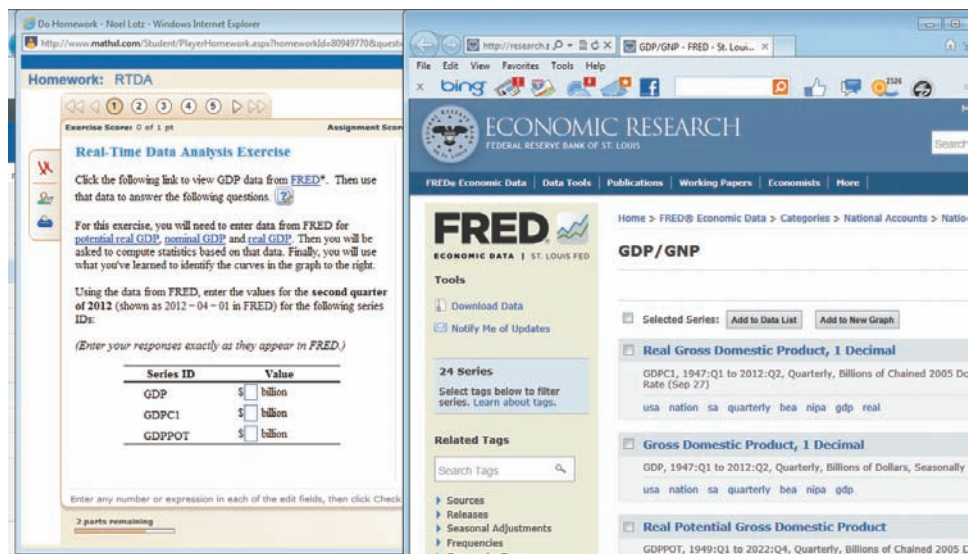
Supplements

The authors and Pearson Education have worked together to integrate the text, print, and media resources to make teaching and learning easier.

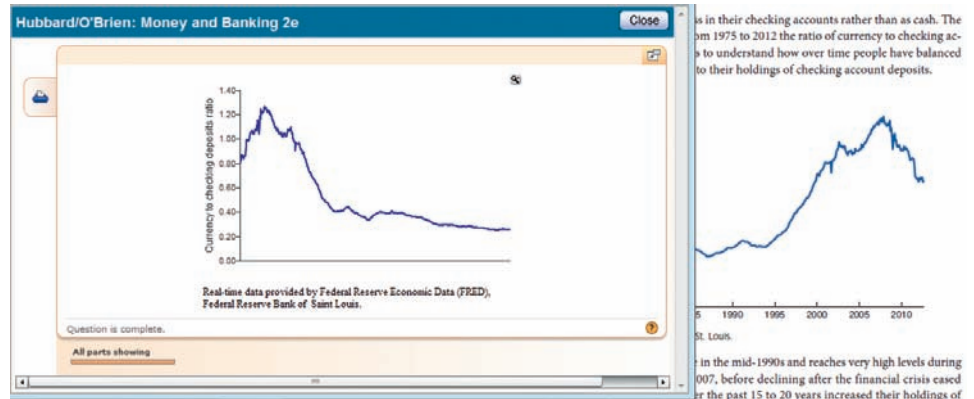
MyEconLab

MyEconLab is a powerful assessment and tutorial system that works hand-in-hand with *Money, Banking, and the Financial System*, second edition. MyEconLab includes comprehensive homework, quiz, test, and tutorial options, allowing instructors to manage all assessment needs in one program. Key innovations in the MyEconLab course for *Money, Banking, and the Financial System*, second edition, include the following:

- Real-time *Data Analysis Exercises*, marked with , allow students and instructors to use the very latest data from FRED, the online macroeconomic data bank from the Federal Reserve Bank of St. Louis. By completing the exercises, students become familiar with a key data source, learn how to locate data, and develop skills to interpret data.



- In the eText available in MyEconLab, select figures labeled **MyEconLab Real-time data** allow students to display a popup graph updated with real-time data from FRED.



- Current News Exercises, new to this edition of the MyEconLab course, provide a turn-key way to assign gradable news-based exercises in MyEconLab. Each week, Pearson scours the news, finds a current article appropriate for the money and banking course, creates an exercise around this news article, and then automatically adds it to MyEconLab. Assigning and grading current news-based exercises that deal with the latest macro events and policy issues has never been more convenient.

Other features of MyEconLab include:

- All end-of-chapter Questions and Problems, including algorithmic, graphing, and numerical questions and problems, are available for student practice and instructor assignment. Test Item File multiple-choice questions are available for assignment as homework.
- The Custom Exercise Builder allows instructors the flexibility of creating their own problems or modifying existing problems for assignment.
- The powerful Gradebook records each student's performance and time spent on the Tests and Study Plan and generates reports by student or chapter.

A more detailed walk-through of the student benefits and features of MyEconLab can be found at the beginning of this book. Visit www.myeconlab.com for more information on and an online demonstration of instructor and student features.

MyEconLab content has been created through the efforts of Melissa Honig, executive media producer, and Noel Lotz and Courtney Kamauf, content leads.

Access to MyEconLab can be bundled with your printed text or purchased directly with or without the full eText, at www.myeconlab.com.

Test Item File

William Seyfried of Rollins College prepared the *Test Item File*, which includes more than 1,500 multiple-choice and short-answer questions. Test questions are annotated with the following information:

- **Difficulty:** 1 for straight recall, 2 for some analysis, and 3 for complex analysis
- **Type:** Multiple-choice, short-answer, and essay
- **Topic:** The term or concept that the question supports
- **Learning objective:** The major sections of the main text and its end-of-chapter questions and problems are organized by learning objective. The Test Item File questions continue with this organization to make it easy for instructors to assign questions based on the objective they wish to emphasize.
- **Advanced Collegiate Schools of Business (AACSB) Assurance of Learning Standards:**
 - Communication
 - Ethical Reasoning
 - Analytic Skills
 - Use of Information Technology
 - Multicultural and Diversity
 - Reflective Thinking
- **Page number:** The page in the main text where the answer appears allows instructors to direct students to where supporting content appears.
- **Special features in the main book:** Chapter-opening story, the *Key Issue & Question*, *Solved Problem*, and *Making the Connection*.

The Test Item File is available for download from the Instructor's Resource Center (www.pearsonhighered.com/hubbard).

The multiple-choice questions in the Test Item File are also available in TestGen software for both Windows and Macintosh computers, and questions can be assigned via MyEconLab. The computerized TestGen package allows instructors to customize, save, and generate classroom tests. The TestGen program permits instructors to edit, add, or delete questions from the Test Item Files; analyze test results; and organize a database of tests and student results. This software allows for extensive flexibility and ease of use. It provides many options for organizing and displaying tests, along with search and sort features. The software and the Test Item Files can be downloaded from the Instructor's Resource Center (www.pearsonhighered.com/hubbard).

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Instructors can use the PowerPoint slides for class presentations, and students can use them for lecture preview or review. These slides include all the graphs, tables, and equations from the textbook. Student versions of the PowerPoint slides are available as PDF files. These files allow students to print the slides and bring them to class for note taking. Instructors can download these PowerPoint presentations from the Instructor's Resource Center (www.pearsonhighered.com/hubbard).

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Accuracy Checkers, Class Testers, and Reviewers

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Introducing Money and the Financial System

Learning Objectives

After studying this chapter, you should be able to:

- 1.1** Identify the key components of the financial system (pages 2–15)
- 1.2** Provide an overview of the financial crisis of 2007–2009 (pages 15–18)
- 1.3** Explain the key issues and questions the financial crisis raises (pages 18–20)

Is Prosperity Just Around the Corner?

In 2007, the United States entered what is likely to be the worst recession of your lifetime. Millions of people lost their jobs during the recession. Although the recession ended in June 2009, the recovery was weak and in late 2012, the unemployment rate was still very high at just below 8%. When the recession began, few economists or policymakers suspected that it would be so deep or that the recovery would be so slow.

The only comparable episode in the past 100 years was the Great Depression of the 1930s. In 1931, President Herbert Hoover famously announced, “Prosperity is just around the corner,” even though nine more years of high unemployment lay ahead. During and after the recession of 2007–2009, some policymakers and economists made similarly incorrect predictions that prosperity would soon return. In the fall of 2012, there were some signs that the economic recovery was picking up steam and the unemployment rate was heading toward more normal levels. Even the most optimistic forecasters, however, believed it would take several more years for the economy to return to unemployment rates of 5% to 5.5%, which economists consider to be full employment.

Why was the recession of 2007–2009 so severe, and why was the recovery so weak? The simple answer is that unlike any other recession since the Great Depression of the 1930s, the recession of 2007–2009 had been accompanied by a financial crisis.

To understand why a financial crisis deepens a recession, think about how dependent farmers are on water. Large areas of southern Arizona and California’s central valley have rich soils but receive very little rain. Without an elaborate irrigation system of reservoirs and canals, water would not flow to these areas, and farmers could not raise their vast crops of lettuce, asparagus, cotton, and more. The financial system is like an irrigation system, although it is money, not water, that flows through the financial system. During the economic crisis that began in 2007, the financial system was disrupted, and large sections of the U.S. economy were cut off from the flow of funds they needed to thrive. Just as cutting off the irrigation water in California’s San Joaquin Valley would halt the production of crops, the financial crisis resulted in a devastating decline in production of goods and services throughout the economy.

Like engineers trying to repair a damaged irrigation canal to restore the flow of water, officials of the U.S. Treasury Department and the Federal Reserve (the Fed) took strong actions during the financial crisis to restore the flow of money through banks and financial markets to the firms and households that depend on it. Although some of these policies were controversial, most economists believe that some government intervention was necessary to pull the economy out of a deep recession.

Few households or firms escaped the fallout from the financial crisis and the recession it caused, so they came to realize the importance of the financial system. However, people also came to realize that the financial system had become very complex.

In this chapter, we provide an overview of the important components of the financial system and introduce key issues and questions that we will explore throughout the book.

1.1

Learning Objective

Identify the key components of the financial system.

Key Components of the Financial System

The purpose of this book is to provide you with the tools you need to understand the modern financial system. First, you should be familiar with the three major components of the financial system:

1. Financial assets
2. Financial institutions
3. The Federal Reserve and other financial regulators

As vendors in baseball parks like to yell: “You can’t tell the players without a program.” We will briefly consider each of these components now and then return to them in later chapters.

Financial Assets

An **asset** is anything of value owned by a person or a firm. A **financial asset** is a financial claim, which means that if you own a financial asset, you have a claim on someone else to pay you money. For instance, a bank checking account is a financial asset because it represents a claim you have against a bank to pay you an amount of money equal to the dollar value of your account. Economists divide financial assets into those that are *securities* and those that aren’t. A **security** is *tradable*, which means that it can be bought and sold in a *financial market*. **Financial markets** are places or channels for buying and selling stocks, bonds, and other securities, such as the New York Stock Exchange. If you own a share of stock in Apple or Google, you own a security because you can sell that share in the stock market. If you have a checking account at Citibank or Wells Fargo, you can’t sell it. So, your checking account is an asset but not a security.

In this book, we will discuss many financial assets. The following are five key categories of assets:

1. Money
2. Stocks
3. Bonds
4. Foreign exchange
5. Securitized loans

Money Although we typically think of “money” as coins and paper currency, even the narrowest government definition of *money* includes funds in checking accounts. In fact,

Asset Anything of value owned by a person or a firm.

Financial asset An asset that represents a claim on someone else for a payment.

Security A financial asset that can be bought and sold in a financial market.

Financial market A place or channel for buying or selling stocks, bonds, and other securities.

economists have a very general definition of **money**: Anything that people are willing to accept in payment for goods and services or to pay off debts. The **money supply** is the total quantity of money in the economy. As we will see in Chapter 2, money plays an important role in the economy, and there is some debate about the best way to measure it.

Stocks **Stocks**, also called *equities*, are financial securities that represent partial ownership of a corporation. When you buy a share of Microsoft stock, you become a Microsoft *shareholder*, and you own part of the firm, although only a tiny part because Microsoft has issued millions of shares of stock. When a firm sells additional stock, it is doing the same thing that the owner of a small firm does when taking on a partner: increasing the funds available to the firm, its *financial capital*, in exchange for increasing the number of the firm's owners. As an owner of a share of stock in a corporation, you have a legal claim to a share of the corporation's assets and to a share of its profits, if there are any. Firms keep some of their profits as retained earnings and pay the remainder to shareholders in the form of **dividends**, which are payments corporations typically make every quarter.

Bonds When you buy a **bond** issued by a corporation or a government, you are lending the corporation or the government a fixed amount of money. The **interest rate** is the cost of borrowing funds (or the payment for lending funds), usually expressed as a percentage of the amount borrowed. For instance, if you borrow \$1,000 from a friend and pay him back \$1,100 a year later, the interest rate on the loan was $\$100/\$1,000 = 0.10$, or 10%. Bonds typically pay interest in fixed dollar amounts called *coupons*. When a bond *matures*, the seller of the bond repays the principal. For example, if you buy a \$1,000 bond issued by IBM that has a coupon of \$65 per year and a maturity of 30 years, IBM will pay you \$65 per year for the next 30 years, at the end of which IBM will pay you the \$1,000 principal. A bond that matures in one year or less is a *short-term bond*. A bond that matures in more than one year is a *long-term bond*. Bonds can be bought and sold in financial markets, so, bonds are securities just as stocks are.

Foreign Exchange Many goods and services purchased in a country are produced outside that country. Similarly, many investors buy financial assets issued by foreign governments and firms. To buy foreign goods and services or foreign assets, a domestic business or a domestic investor must first exchange domestic currency for foreign currency. For example, consumer electronics giant Best Buy exchanges U.S. dollars for Japanese yen when importing Sony televisions. **Foreign exchange** refers to units of foreign currency. The most important buyers and sellers of foreign exchange are large banks. Banks engage in foreign currency transactions on behalf of investors who want to buy foreign financial assets. Banks also engage in foreign currency transactions on behalf of firms that want to import or export goods and services or to invest in physical assets, such as factories, in foreign countries.

Securitized Loans If you don't have the cash to pay the full price of a car or a house, you can apply for a loan at a bank. Similarly, if a developer wants to build a new office building or shopping mall, the developer can also take out a loan with a bank. Until about 30 years ago, banks made loans with the intention of making profits by collecting interest

Money Anything that is generally accepted in payment for goods and services or to pay off debts.

Money supply The total quantity of money in the economy.

Stock Financial securities that represent partial ownership of a firm; also called *equities*.

Dividend A payment that a corporation makes to its shareholders.

Bond A financial security issued by a corporation or a government that represents a promise to repay a fixed amount of money.

Interest rate The cost of borrowing funds (or the payment for lending funds), usually expressed as a percentage of the amount borrowed.

Foreign exchange Units of foreign currency.

Securitization The process of converting loans and other financial assets that are not tradable into securities.

Financial liability A financial claim owed by a person or a firm.

Financial intermediary A financial firm, such as a bank, that borrows funds from savers and lends them to borrowers.

payments on a loan until the borrower paid off the loan. It wasn't possible to sell most loans in financial markets, so loans were financial assets but not securities. Then, the federal government and some financial firms created markets for many types of loans (see Chapter 11). Loans that banks could sell on financial markets became securities, so the process of converting loans into securities is known as **securitization**.

For example, a bank might grant a *mortgage*, which is a loan a borrower uses to buy a home, and sell it to a government-sponsored enterprise or a financial firm that will bundle the mortgage together with similar mortgages that other banks granted. This bundle of mortgages will form the basis of a new security called a *mortgage-backed security* that will function like a bond. Just as an investor can buy a bond from IBM, the investor can buy a mortgage-backed security from the government agency or financial firm. The bank that grants, or *originates*, the original mortgages will still collect the interest paid by the borrowers and send those interest payments to the government agency or financial firm to distribute to the investors who have bought the mortgage-backed security. The bank will receive fees for originating the loan and for collecting the loan payments from borrowers and distributing them to lenders.

Note that what a saver views as a financial asset a borrower views as a *financial liability*. A **financial liability** is a financial claim owed by a person or a firm. For example, if you take out a car loan from a bank, the loan is an asset from the viewpoint of the bank because it represents your promise to make a certain payment to the bank every month until the loan is paid off. But the loan is a liability to you, the borrower, because you owe the bank the payments specified in the loan.

Financial Institutions

The financial system matches savers and borrowers through two channels: (1) Banks and other *financial intermediaries* and (2) *financial markets*. These two channels are distinguished by how funds flow from savers, or lenders, to borrowers and by the financial institutions involved.¹ Funds flow from lenders to borrowers indirectly through **financial intermediaries**, such as banks, or directly through financial markets, such as the New York Stock Exchange.

If you get a loan from a bank to buy a car, economists refer to this flow of funds as *indirect finance*. The flow is indirect because the funds the bank lends to you come from people who have put money in checking or savings deposits in the bank; in that sense, the bank is not lending its own funds directly to you. On the other hand, if you buy stock that a firm has just issued, the flow of funds is *direct finance* because the funds are flowing directly from you to the firm.

Savers and borrowers can be households, firms, or governments, both domestic and foreign. Figure 1.1 shows that the financial system channels funds from savers to borrowers, and channels *returns* back to savers, both directly and indirectly. Savers receive

¹Note that for convenience, we sometimes refer to households, firms, and governments that have funds they are willing to lend or invest as *lenders*, and we refer to households, firms, and governments that wish to use those funds as *borrowers*. These labels are not strictly accurate because the flow of funds does not always take the form of loans. For instance, investors who buy stock are buying part ownership in a firm, not lending money to the firm.

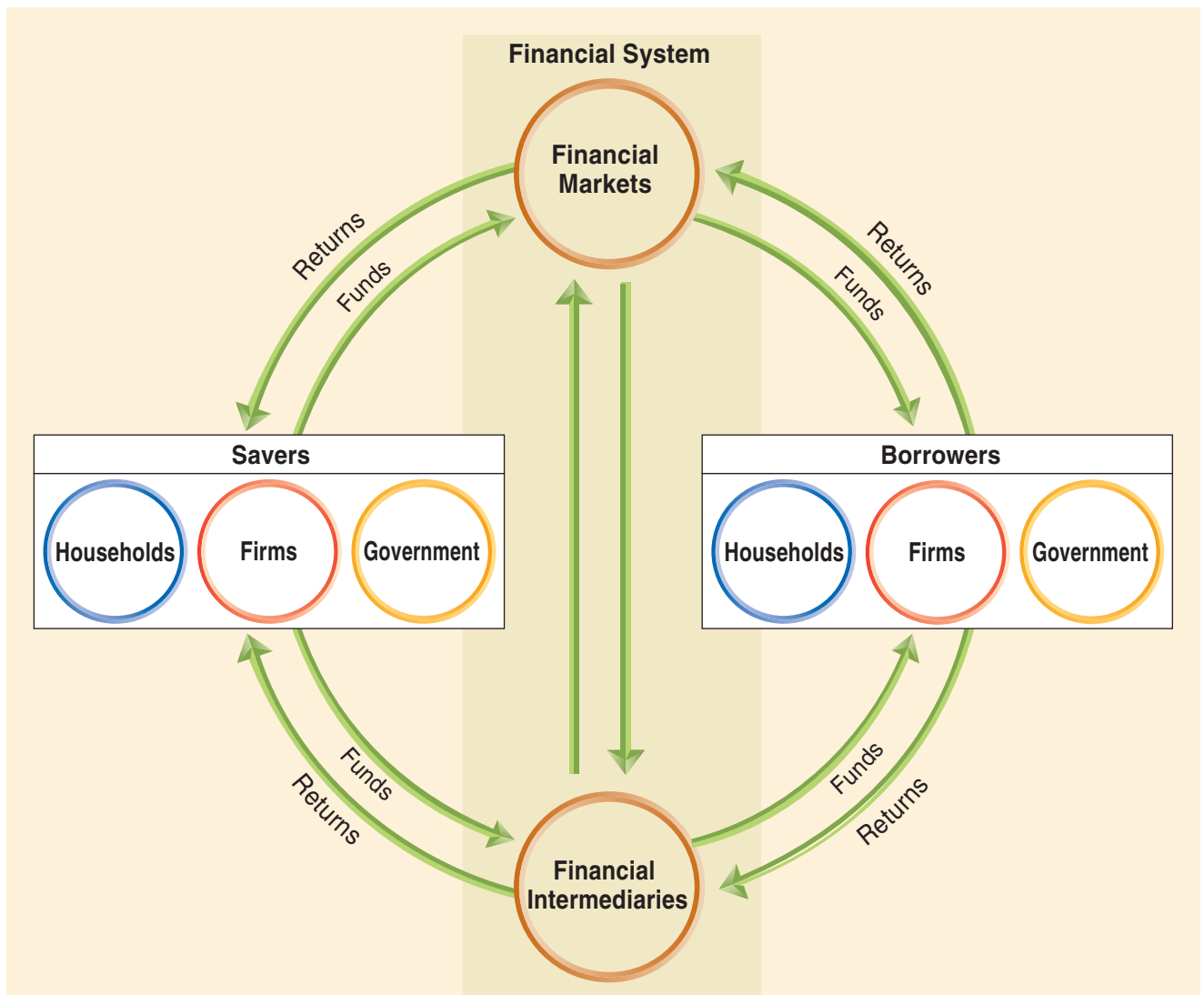


Figure 1.1 Moving Funds Through the Financial System

The financial system transfers funds from savers to borrowers. Borrowers transfer returns back to savers through the financial system. Savers and borrowers include domestic and foreign households, businesses, and governments.

their returns in various forms, including dividend payments on stock, coupon payments on bonds, and interest payments on loans.

Financial Intermediaries **Commercial banks** are the most important financial intermediaries. Commercial banks play a key role in the financial system by taking in deposits from households and firms and investing most of those deposits, either by making loans to households and firms or by buying securities, such as government bonds or securitized loans. Most households rely on borrowing money from banks when they purchase

Commercial bank A financial firm that serves as a financial intermediary by taking in deposits and using them to make loans.

“big-ticket items,” such as cars or homes. Similarly, many firms rely on bank loans to meet their short-term needs for *credit*, such as funds to pay for inventories or to meet their payrolls. Many firms rely on bank loans to bridge the gap between the time they must pay for inventories or meet their payrolls and when they receive revenues from the sales of goods and services. Some firms also rely on bank loans to meet their long-term credit needs, such as funds they require to physically expand the firm.

In each chapter, the *Making the Connection* feature discusses a news story or another application related to the chapter material. Read the following *Making the Connection* for a discussion of how firms were affected by the decline in bank lending during the financial crisis that began in 2007.

Making the Connection

Microlending Aids U.S. Small Businesses

Low-income countries generally have poorly developed financial markets. Typically, these countries have no stock and bond markets and only weak banking systems. As a result, the owners of small firms in these countries have had to rely for funds on their own savings, the savings of relatives and friends, or a few local lenders who often charge very high interest rates. In recent years, some small firms have gained access to funds through *microlending* or *microfinance*. Microlending involves making small loans, often just a few hundred dollars or less, to people attempting to start or expand small businesses. The loans are made by a variety of groups, including pooled savings from a village, international aid agencies, or large financial firms, such as Citigroup, often operating through small local banks.

According to many economists, microlending has aided economic growth in low-income countries. Few economists saw microlending playing a role in the U.S. financial system because U.S. firms typically have access to bank loans. But the financial crisis of 2007–2009 greatly reduced the ability of small businesses to borrow from banks.

Large businesses can raise funds in financial markets by selling stocks and bonds, but small businesses don’t have this option. Because it’s costly for investors to gather information on small businesses, these businesses cannot sell stocks and bonds and must rely instead on loans from banks. Firms use bank loans for a variety of purposes, including to bridge the gap between when the firms must pay employees and suppliers and when they receive revenue from selling their products.

Over the past 20 years, the relationship between banks and small businesses has changed. At one time, government regulations kept many banks small. As a result, banks made most of their loans in a limited geographic area. In those circumstances, bank loan officers usually had extensive personal knowledge of the finances of most local businesses and used that knowledge to determine whether to grant loans. By the 2000s, changes in banking law meant that many small businesses were receiving loans from banks that operated on a regional, or even national, basis. These larger banks typically applied fixed guidelines for granting loans that left little room for the personal judgment traditionally exercised by loan officers of small banks. Such guidelines were both good news and bad news for small businesses. On the one hand, businesses that met the

guidelines would receive loans even if aspects of their financial situation not covered by the guidelines made them riskier borrowers. On the other hand, businesses that failed to meet the guidelines might be turned down for loans even though they were very likely to be able to make their payments.

By the mid-2000s, though, many banks became convinced that it would be profitable to loosen their loan guidelines to make more borrowers eligible to receive credit. These banks believed that the larger number of borrowers who would *default* on their loans because of the looser guidelines would be more than offset by the payments received from the additional borrowers who would now qualify for loans. Unfortunately, during the financial crisis that began in mid-2007, the number of borrowers defaulting on loans turned out to be much higher than banks had predicted. Loan losses began rising in the spring of 2008, and by the end of 2009, they were four times greater than at the end of 2007.

In fact, the loan losses during 2007–2009 were by far the largest since the Great Depression of the 1930s. Partly as a result of these losses and partly because of pressure from government bank regulators, most banks tightened their loan guidelines, which made it much more difficult for households and businesses to qualify for loans. Between 2009 and 2010, business loans declined by about 40% before beginning to recover. Large U.S. banks have significantly reduced their small business lending, offering these businesses credit cards instead. Because the credit cards often have low credit limits, involve fees, and have high interest rates, many small businesses find credit cards much less desirable than loans.

Cut off from their normal source of funds, many small businesses had to resort to drastic measures, such as borrowing from pawnshops or borrowing from friends and family members, in order to survive. It was no surprise, then, when many economists argued during the crisis that the economy would not recover until banks increased their lending to small businesses.

In 2012, some small firms began to turn to lenders willing to make microloans similar to those seen in low-income countries. For example, Mohamed Diallo is a cab driver in New York City who needed a loan to buy a cab and go into business for himself. Unable to find a bank willing to lend him money, he was finally able to secure a \$2,000 microloan from the Business Center for New Americans, a nonprofit organization. The U.S. Small Business Administration, a federal government agency, has provided funds to a number of microlenders across the country, in an attempt to increase lending to small businesses.

As the U.S. financial system has evolved since the financial crisis, a surprising change has been the increased importance of microlending to small businesses.

Sources: Joseph Adinolfi, "Mini Loans Feed Bigger Ambitions," *Wall Street Journal*, September 8, 2012; Ian Mount, "When Banks Won't Lend, There Are Alternatives, Though Often Expensive," *New York Times*, August 1, 2012; and Gary Fields, "People Pulling Up to Pawnshops Today Are Driving Cadillacs and BMWs," *Wall Street Journal*, December 30, 2008.

See related problem 1.8 at the end of the chapter.

Nonbank Financial Intermediaries Some financial intermediaries, such as *savings and loans*, *savings banks*, and *credit unions*, are legally distinct from banks, although these "nonbanks" operate in a very similar way by taking in deposits and making loans. Other

financial intermediaries include investment banks, insurance companies, pension funds, mutual funds, and hedge funds. Although these institutions don't at first glance appear to be very similar to banks, they fulfill a similar function in the financial system by channeling funds from savers to borrowers.

Investment Banks Investment banks, such as Goldman Sachs and Morgan Stanley, differ from commercial banks in that they do not take in deposits and rarely lend directly to households. Instead, they provide advice to firms issuing stocks and bonds or considering mergers with other firms. They also engage in *underwriting*, in which they guarantee a price to a firm issuing stocks or bonds and then make a profit by selling the stocks or bonds at a higher price. In the late 1990s, investment banks increased their importance as financial intermediaries by becoming heavily involved in the securitization of loans, particularly mortgage loans. Investment banks also began to engage in *proprietary trading*, which involves earning profits by buying and selling securities.

Insurance Companies Insurance companies specialize in writing contracts to protect their policyholders from the risk of financial losses associated with particular events, such as automobile accidents or fires. Insurance companies collect *premiums* from policyholders, which the companies then invest to obtain the funds necessary to pay claims to policyholders and to cover their other costs. So, for instance, when you buy an automobile insurance policy, the insurance company may lend the premiums you pay to a hotel chain that needs funds to expand.

Pension Funds For many people, saving for retirement is the most important form of saving. Pension funds invest contributions from workers and firms in stocks, bonds, and mortgages to earn the money necessary to pay pension benefit payments during workers' retirements. With about \$13 trillion in assets in 2011, private and state and local government pension funds are an important source of demand for financial securities.

Mutual Funds A mutual fund, such as Fidelity Investment's Magellan Fund, obtains money by selling shares to investors. The mutual fund then invests the money in a **portfolio** of financial assets, such as stocks and bonds, typically charging a small management fee for its services. By buying shares in a mutual fund, savers reduce the costs they would incur if they were to buy many individual stocks and bonds. Small savers who have only enough money to buy a few individual stocks and bonds can also lower their investment risk by buying shares in a mutual fund because most mutual funds hold a large number of stocks and bonds. If a firm issuing a stock or a bond declares bankruptcy, causing the stock or bond to lose all of its value, the effect on a mutual fund's portfolio is likely to be small. The effect might be devastating, though, on a small investor who had invested most of his or her savings in the stock or bond. Because mutual funds are willing to buy back their shares at any time, they also provide savers with easy access to their money.

Hedge Funds Hedge funds, such as Bridgewater run by Ray Dalio, are similar to mutual funds in that they accept money from investors and use the funds to buy a portfolio of assets. However, a hedge fund typically has no more than 99 investors, all of whom are wealthy individuals or institutions such as pension funds. Hedge funds typically make riskier investments than do mutual funds, and they charge investors much higher fees.

Portfolio A collection of assets, such as stocks and bonds.

Financial Markets Financial markets are places or channels for buying and selling stocks, bonds, and other securities. Traditionally, financial markets have been physical places, such as the New York Stock Exchange, which is located on Wall Street in New York City, or the London Stock Exchange, which is located in Paternoster Square in London. On these exchanges, dealers would meet face-to-face to trade stocks and bonds. Today, most securities trading takes place electronically between dealers linked by computers and is called “over-the-counter” trading. *NASDAQ*, which originally stood for the *National Association of Securities Dealers Automated Quotation System*, is an over-the-counter market on which the stocks of many high-tech firms such as Apple and Intel are traded. Stocks and bonds sold in a particular market are “listed” on that market. For instance, General Electric is listed on the New York Stock Exchange, and Apple is listed on NASDAQ.

Economists make a distinction between *primary markets* and *secondary markets*. A **primary market** is a financial market in which stocks, bonds, and other securities are sold for the first time. An *initial public offering (IPO)* refers to when a company for the first time sells its stock in the primary market. For example, Facebook’s IPO took place in May 2012. A **secondary market** is a financial market in which investors buy and sell already existing securities. For example, if you purchased Facebook stock in 2012 and sold it in 2013, that sale took place in the secondary market. Primary and secondary markets can be in the same physical—or virtual—place, as when an IPO takes place for a stock listed on the New York Stock Exchange or on NASDAQ.

Primary market A financial market in which stocks, bonds, and other securities are sold for the first time.

Secondary market A financial market in which investors buy and sell existing securities.

Making the Connection

What Do People Do with Their Savings?

If you’re like most college students, your primary financial asset is your checking account. After you begin your career, though, you’ll accumulate a variety of different assets. The Federal Reserve System publishes data on household holdings of financial assets that shows how households divide up their total financial wealth. The figure below compares households’ holdings of financial assets in 1978 and 2012. Some assets, such as stocks and bonds, are supplied by financial markets. Other assets, such as bank deposits and mutual fund shares, are supplied by financial intermediaries.

