

# Preface

The worldwide financial crisis of 2007–2009 was the most severe since that of the 1930s, and the recession it triggered was by far the most widespread and costly since the Great Depression. Around the world, it cost tens of millions of workers their jobs. In the United States, millions of families lost their homes and their wealth. In Europe, a subsequent crisis threatened a breakup of the European Monetary Union, home of the world's second most important currency. To stem these crises, governments and central banks took aggressive and, in many ways, unprecedented actions.

As a result, change will continue to sweep through the world of banking and financial markets for years to come. Some of the ways in which people borrowed—to buy a home or a car or to pay for college—have become difficult or unavailable. Some of the largest financial firms have failed, while others—even larger—have risen. In Europe, two governments defaulted, while others required support from neighboring countries to roll over their debt and that of their banks. Some financial markets have disappeared, but new institutions are surfacing that aim to make markets less vulnerable in the future. And governments everywhere are working on new rules to make future crises both less likely and less damaging.

Just as these crises are re-shaping the global financial system and government policy, they also are transforming the study of money and banking. Some old questions are surfacing with new intensity: Why do such costly crises occur? How can they be prevented? How can we limit their impact? How will these changes affect the financial opportunities and risks that people face?

Against this background, students who memorize the operational details of today's financial system are investing in a short-lived asset. Our purpose in writing this book is to focus on the basic functions served by the financial system while deemphasizing its current structure and rules. Learning the economic rationale behind current financial tools, rules, and structures is much more valuable than concentrating on the tools, rules, and structures themselves. It is an approach designed to give students the lifelong ability to understand and evaluate whatever financial innovations and developments they may one day confront.

## The Core Principles Approach

Toward that end, the entire content of this book is based on five *core principles*. Knowledge of these principles is the basis for learning what the financial system does, how it is organized, and how it is linked to the real economy.

1. Time has value.
2. Risk requires compensation.
3. Information is the basis for decisions.
4. Markets determine prices and allocate resources.
5. Stability improves welfare.

These five core principles serve as a framework through which to view the history, current status, and future development of money and banking. They are discussed in

detail in Chapter 1; throughout the rest of the text, marginal icons remind students of the principles that underlie particular discussions.

Focusing on core principles has created a book that is both concise and logically organized. This approach does require some adjustments to the traditional methodology used to teach money and banking, but for the most part they are changes in emphasis only. That said, some of these changes have greatly improved both the ease of teaching and the value students draw from the course. Among them are the emphasis on risk and on the lessons from the financial crisis; use of the term *financial instrument*; parallel presentation of the Federal Reserve and the European Central Bank; a streamlined, updated section on monetary economics; and the adoption of an integrated global perspective.

## Innovations in This Text

In addition to the focus on core principles, this book introduces a series of innovations designed to foster coherence and relevance in the study of money and banking, in both today's financial world and tomorrow's.



Scan here for quick access to the resources for these problems. Need a barcode reader? Try ScanLife, available in your app store.

### Federal Reserve Economic Data (FRED)

The Fourth Edition of *Money, Banking, and Financial Markets* systematically integrates the use of economic and financial data from FRED, the online database provided free of charge to the public by the Federal Reserve Bank of St. Louis. As of this writing, FRED offers nearly 150,000 data series from 50-plus sources, including indicators for about 200 countries. Information on using FRED appears in Appendix B to Chapter 1 and on the book's supplementary website (go to [www.mheducation.asia/olc/cecchetti](http://www.mheducation.asia/olc/cecchetti) and click on Student Edition, then FRED Resources or scan the accompanying QR code, as shown in the margin).

Through frequent use of FRED, students will gain up-to-date knowledge of the U.S. and other economies and an understanding of the real-world challenges of economic measurement; they will also gain skills in analysis and data manipulation that will serve them well for years to come. Many of the graphs in the new edition were produced (and can be easily updated) using FRED. In addition, new end-of-chapter Data Exploration problems call on students to use FRED to analyze key economic and financial indicators highlighted in that chapter. (For detailed instructions for using FRED online to answer the Data Exploration Problems in Chapters 1 to 10, visit [www.mheducation.asia/olc/cecchetti](http://www.mheducation.asia/olc/cecchetti) and click on Student Edition, then Data Exploration Hints, or scan the accompanying QR code, as shown in the margin). Students can even do some assignments using the FRED app for their mobile devices.



Scan here for quick access to the hints for these problems. Need a barcode reader? Try ScanLife, available in your app store.

### Impact of the Crises

The effects of the global financial crisis of 2007–2009 and the euro-area crisis that began in 2010 are transforming money, banking, and financial markets. Accordingly, from beginning to end, the book integrates the issues raised by these crises and by the responses of policymakers.

The concept of a liquidity crisis surfaces in Chapter 2, and the risks associated with leverage and the rise of shadow banking are introduced in Chapter 3. Issues specific to the 2007–2009 crisis—including securitization, rating agencies, subprime

mortgages, over-the-counter trading, and complex financial instruments like credit-default swaps—are included in the appropriate intermediate chapters of the text. Chapter 16 explores the role of the European Central Bank in managing the euro-area crisis. More broadly, the sources of threats to the financial system as a whole are identified throughout the book, and there is a focused discussion on regulatory initiatives to limit such systemic threats. Finally, we present—in a logical and organized manner—the unconventional monetary policy tools that became so prominent in the policy response to the crises and to the weak postcrisis recoveries.

## Early Introduction of Risk

It is impossible to appreciate how the financial system works without understanding risk. In the modern financial world, virtually all transactions transfer some degree of risk between two or more parties. These risk trades can be extremely beneficial, as they are in the case of insurance markets. But there is still potential for disaster. In 2008, risk-trading activity at some of the world's largest financial firms threatened the stability of the international financial system.

Even though risk is absolutely central to an understanding of the financial system, most money and banking books give very little space to the topic. In contrast, this book devotes an entire chapter to defining and measuring risk. Chapter 5 introduces the concept of a risk premium as compensation for risk and shows how diversification can reduce risk. Because risk is central to explaining the valuation of financial instruments, the role of financial intermediaries, and the job of central bankers, the book returns to this concept throughout the chapters.

## Emphasis on Financial Instruments

Financial instruments are introduced early in the book, where they are defined based on their economic function. This perspective leads naturally to a discussion of the uses of various instruments and the determinants of their value. Bonds, stocks, and derivatives all fit neatly into this framework, so they are all discussed together.

This approach solves one of the problems with existing texts, use of the term *financial market* to refer to bonds, interest rates, and foreign exchange. In its conventional microeconomic sense, the term *market* signifies a place where trade occurs, not the instruments that are traded. This book follows standard usage of the term *market* to mean a place for trade. It uses the term *financial instruments* to describe virtually all financial arrangements, including loans, bonds, stocks, futures, options, and insurance contracts. Doing so clears up the confusion that can arise when students arrive in a money and banking class fresh from a course in the principles of economics.

## Parallel Presentation of the Federal Reserve and the European Central Bank

To foster a deeper understanding of central banking and monetary policy, the presentation of this material begins with a discussion of the central bank's role and objectives. Descriptions of the Federal Reserve and the European Central Bank follow. By starting on a theoretical plane, students gain the tools they need to understand how all central banks work. This avoids focusing on institutional details that may quickly become

obsolete. Armed with a basic understanding of what central banks do and how they do it, students will be prepared to grasp the meaning of future changes in institutional structure.

Another important innovation is the parallel discussion of the two most important central banks in the world, the Federal Reserve and the European Central Bank (ECB). Students of the 21st century are ill-served by books that focus entirely on the U.S. financial system. They need a global perspective on central banking, the starting point for which is a detailed knowledge of the ECB.

## Modern Treatment of Monetary Economics

The discussion of central banking is followed by a simple framework for understanding the impact of monetary policy on the real economy. Modern central bankers think and talk about changing the interest rate when inflation deviates from its target and output deviates from its normal level. Yet traditional treatments of monetary economics employ aggregate demand and aggregate supply diagrams, which relate output to the *price level*. Our approach directly links output to *inflation*, simplifying the exposition and highlighting the role of monetary policy. Because this book also skips the IS-LM framework, its presentation of monetary economics is several chapters shorter. Only those topics that are most important in a monetary economics course are covered: long-run money growth and inflation and short-run monetary policy and business cycles. This streamlined treatment of monetary theory is not only concise but more modern and more relevant than the traditional approach. It helps students to see monetary policy changes as part of a strategy rather than as one-off events, and it gives them a complete understanding of business-cycle fluctuations.

## Integrated Global Perspective

Technological advances have dramatically reduced the importance of a bank's physical location, producing a truly global financial system. Twenty years ago money and banking books could afford to focus primarily on the U.S. financial system, relegating international topics to a separate chapter that could be considered optional. But in today's financial world, even a huge country like the United States cannot be treated in isolation. The global financial system is truly an integrated one, rendering separate discussion of a single country's institutions, markets, or policies impossible. This book incorporates the discussion of international issues throughout the text, emphasizing when national borders are important to bankers and when they are not.

## Organization

This book is organized to help students understand both the financial system and its economic effects on their lives. That means surveying a broad series of topics, including what money is and how it is used; what a financial instrument is and how it is valued; what a financial market is and how it works; what a financial institution is and why we need it; and what a central bank is and how it operates. More important, it means showing students how to apply the five core principles of money and banking to the evolving financial and economic arrangements that they inevitably will confront during their lifetimes.

**Part I: Money and the Financial System.** Chapter 1 introduces the core principles of money and banking, which serve as touchstones throughout the book. It also presents FRED, the free online database of the Federal Reserve Bank of St. Louis. The book often uses FRED data for figures and tables, and every chapter calls on students to use FRED to solve end-of-chapter problems. Chapter 2 examines money both in theory and in practice. Chapter 3 follows with a bird’s-eye view of financial instruments, financial markets, and financial institutions. (Instructors who prefer to discuss the financial system first can cover Chapters 2 and 3 in reverse order.)

**Part II: Interest Rates, Financial Instruments, and Financial Markets.**

Part II contains a detailed description of financial instruments and the financial theory required to understand them. It begins with an explanation of present value and risk, followed by specific discussions of bonds, stocks, derivatives, and foreign exchange. Students benefit from concrete examples of these concepts. In Chapter 7 (The Risk and Term Structure of Interest Rates), for example, students learn how the information contained in the risk and term structure of interest rates can be useful in forecasting. In Chapter 8 (Stocks, Stock Markets, and Market Efficiency), they learn about stock bubbles and how those anomalies influence the economy. And in Chapter 10 (Foreign Exchange), they study the Big Mac index to understand the concept of purchasing power parity. Throughout this section, two ideas are emphasized: that financial instruments transfer resources from savers to investors, and that in doing so, they transfer risk to those best equipped to bear it.

**Part III: Financial Institutions.** In the next section, the focus shifts to financial institutions. Chapter 11 introduces the economic theory that is the basis for our understanding of the role of financial intermediaries. Through a series of examples, students see the problems created by asymmetric information as well as how financial intermediaries can mitigate those problems. The remaining chapters in Part III put theory into practice. Chapter 12 presents a detailed discussion of banking, the bank balance sheet, and the risks that banks must manage. Chapter 13 provides a brief overview of the financial industry’s structure, and Chapter 14 explains financial regulation, including a discussion of regulation to limit threats to the financial system as a whole.

**Part IV: Central Banks, Monetary Policy, and Financial Stability.** Chapters 15 through 19 survey what central banks do and how they do it. This part of the book begins with a discussion of the role and objectives of central banks, which leads naturally to the principles that guide central bank design. Chapter 16 applies those principles to the Federal Reserve and the European Central Bank, highlighting the strategic importance of their numerical inflation objectives and their communications. Chapter 17 presents the central bank balance sheet, the process of multiple deposit creation, and the money supply. Chapters 18 and 19 cover operational policy, based on control of both the interest rate and the exchange rate. Chapter 18 also introduces the monetary transmission mechanism and presents a variety of unconventional monetary policy tools that gained prominence during the financial crisis of 2007–2009 and the weak economic expansion that followed. The goal of Part IV is to give students the knowledge they will need to cope with the inevitable changes that will occur in central bank structure.

**Part V: Modern Monetary Economics.** The last part of the book covers modern monetary economics. While most books cover this topic in six or more chapters, this one does it in four. This streamlined approach concentrates on what is important, presenting only the essential lessons that students truly need. Chapter 20 sets the stage by exploring the relationship between inflation and money growth. Starting with inflation keeps the presentation simple and powerful, and emphasizes the way monetary policymakers think about what they do. A discussion of aggregate demand, aggregate supply, and the determinants of inflation and output follows. Chapter 21 presents a complete macroeconomic model with a dynamic aggregate demand curve that integrates monetary policy directly into the presentation, along with short- and long-run aggregate supply curves. In Chapter 22 the model is used to help understand the sources of business cycles, as well as a number of important applications that face monetary policymakers in the world today. Each application stands on its own and the applications are ordered in increasing difficulty to allow maximum flexibility in their use. Finally, Chapter 23 explores the monetary transmission mechanism in some detail and addresses key challenges facing central banks, such as asset price bubbles, the zero bound for nominal rates, and the evolving structure of the financial system.

For those instructors who have the time, we recommend closing the course with a rereading of the first chapter and a review of the core principles. What is the future likely to hold for the six parts of the financial system: money, financial instruments, financial markets, financial institutions, regulatory agencies, and central banks? How do students envision each of these parts of the system 20 or even 50 years from now?

## Organizational Alternatives

While this book greatly streamlines the traditional approach to money and banking, it remains flexible enough to be used in a broad variety of courses; up to 19 of the book's 23 chapters can be assigned in the following courses:

*General Money and Banking Course.* Chapters 1–8, 11, 12, 15, 16, the first section of 17 (through page 462), 18, and 20–22

This course covers the primary material needed to appreciate the connections between the financial system and the economy.

*General Money and Banking Course with International Emphasis.* Chapters 1–8, 10–12, 15–19, and 20

This alternative to the general money and banking course substitutes chapters on foreign exchange and exchange-rate policy for the macroeconomic model included in courses with less international emphasis.

*Financial Markets and Institutions.* Chapters 1–9, 11–18

The traditional financial markets and institutions course covers money, financial instruments and markets, financial institutions, and central banking. The focus is on Parts II and III of the book.

*Monetary Economics and Monetary Policy.* Chapters 1–7, 10–12, 15–23

A course called monetary economics and monetary policy uses the material in Parts II and III as a foundation for understanding the material in Parts IV and V.

A half-semester course for students with a background in financial instruments and institutions might cover only Chapters 1–3 and 15–23.

## What’s New in the Fourth Edition?

Many things have happened since the last edition. For that reason, all of the figures and data have been updated to reflect the most recent available information. In addition, the authors have made numerous, vital changes to enhance the Fourth Edition of *Money, Banking, and Financial Markets* as outlined here.

### New Topics in the Integrated Global Perspective

The Fourth Edition has been revised extensively in light of the regulatory and monetary policy developments in the aftermath of the global financial crisis, and as a result of the euro-area crisis that began in 2010. Throughout the Fourth Edition, the authors have integrated key developments and relevant insights from these experiences. New topics introduced or discussed in much greater detail include:

- Shadow banking
- Systemic risk
- Too big to fail
- Unconventional monetary policy tools
- The euro-area crisis
- The Dodd-Frank financial reform legislation
- Basel III regulatory changes
- Central bank communications

The most extensive changes are in Chapter 14, which now includes a treatment of the Dodd-Frank and Basel III reforms; in Chapter 16, which discusses the Federal Reserve’s introduction of a numerical inflation objective and explores the European Central Bank’s role in managing the euro-area crisis; and in Chapter 18, which has been updated with coverage of the unconventional monetary policy approaches adopted in the aftermath of the financial crisis.

### Data Exploration Problems

Each chapter now includes a set of Data Exploration problems that call on students to use FRED, the online database provided free of charge by the Federal Reserve Bank of St. Louis, to analyze relevant financial and economic data.



### Changes at the Federal Reserve

The discussion of the Federal Reserve now highlights the introduction of a numerical inflation objective and the evolving communications strategy (Chapter 16), the use of unconventional policy tools in addressing the financial crisis (Chapter 18), and the impairment of the monetary transmission process during the crisis (Chapter 23). It also reflects the challenge to Fed independence in the aftermath of the crisis (Chapter 15).

## Updated Coverage of Current Events

Through new and updated Learning Tools inserts, the authors have captured developments since the Third Edition in the key areas of the financial crisis and monetary policy. Here is a complete list of the new features (including those with major updates):

### Lessons from the Crisis

Interbank Lending (Chapter 3)  
 The ECB and the Crisis of the Euro Area (Chapter 16)  
 Oasis of Stability (Chapter 19)

### In the News

Airtime is Money: The Other Type of Mobile Money (Chapter 2)  
 High-Frequency Trading: Wait a Second (Chapter 3)  
 Risk-on, Risk-off May Be Ending (Chapter 5)  
 Gross's Burning Bond Market Fails to Frighten Investors (Chapter 6)  
 Bubble Spotting (Chapter 8)  
 No Insurance Pay-Out on Greek Debt (Chapter 9)  
 Foreign Exchange: Neighbors Show Little Appetite for Brazil's "War" (Chapter 10)  
 China Shadow Bankers Go Online as Peer-to-Peer Sites Boom (Chapter 11)  
 Lessons from the London Whale (Chapter 12)  
 Fed's Tarullo Says Reviving Glass-Steagall May Be Costly (Chapter 13)  
 How to Shrink the "Too-Big-to-Fail" Banks (Chapter 14)  
 The Politicization (or Not) of Central Banks (Chapter 15)  
 Should the Fed Change Its Target? An Interview with Michael Woodford (Chapter 16)  
 The Monetary Base Is Exploding. So What? (Chapter 17)  
 How Jawboning Works (Chapter 18)  
 Phony Currency Wars (Chapter 19)  
 Will Fed's "Easy Money" Push Up Prices? (Chapter 20)  
 Yellen Says Higher Rates Not Assured After Thresholds Hit (Chapter 21)  
 Potential Output: Rising Permanent Damage (Chapter 22)  
 Should the Fed Pop Bubbles by Raising Interest Rates? (Chapter 23)

### Applying the Concept

The Tri-Party Repo Market (Chapter 12)  
 The LIBOR Scandal (Chapter 13)

### Tools of the Trade

The Basel Accords: I, II, III, and Counting . . . (Chapter 14)

## Learning Tools

In a sense, this book is a guide to the principles students will need to critically evaluate and use what they read in the financial press. Reading a newspaper or a blog and applying the information it contains require some basic knowledge. Supplying that knowledge is the purpose of the five types of inserts that complement the chapters, providing a break from the more technical material in the body of the text:

- **Applying the Concept**
- **In the News**
- **Lessons from the Crisis**



- **Tools of the Trade**
- **Your Financial World.**

For a complete listing of the boxed features and their page references, refer to the information found on the inside back cover of this text. At the start of each chapter, the Fourth Edition of the book also introduces *learning objectives*, to which the end-of-chapter problems are linked.

The end-of-chapter material is divided into five sections: *Key Terms*, *Chapter Lessons*, *FRED Data Codes*, *Conceptual and Analytical Problems*, and *Data Exploration*. Key Terms lists all the technical terms introduced and defined in the chapter. The key terms are defined in full in the glossary at the end of the book. To aid student comprehension and retention, Chapter Lessons lists key lessons in an outline that matches the chapter's headings.

For a detailed description of the FRED Data Codes, Data Exploration material, and Conceptual and Analytical Problems, as well as the aforementioned boxed features, please refer to the walkthrough on the pages that follow.

## Supplements for Instructors

The following ancillaries are available for quick download and convenient access via the book website at [www.mheducation.asia/olc/cecchetti](http://www.mheducation.asia/olc/cecchetti) and are password protected for security.

### Instructor's Manual

Tori Knight (Carson-Newman College) has collected a broad array of materials for instructors. This manual includes chapter overviews, outlines, and a discussion of how the core principles apply to each chapter. It also addresses concepts students often find difficult, including suggestions for alleviating confusion.

### Solutions Manual

Detailed solutions to the end-of-chapter problems are provided in a separate manual by James Fackler (University of Kentucky). Tori Knight (Carson-Newman College) and Matthew Alford (Southeastern Louisiana University) verified the accuracy of the solutions.

### Test Bank

Kenneth Slaysman (York College of Pennsylvania) has revised the test bank of 2,500 multiple-choice and 600 short-answer and essay questions. The test bank can be used both as a study guide and as a source for exam questions. It has been computerized to allow for both selective and random generation of test questions.

### PowerPoint Slides

PowerPoint slides for classroom use, updated by Marie Reymore (Marian University), are available with the Fourth Edition. The slides outline the main points in each chapter and reproduce major graphs and charts. This handy, colorful supplement will help to maintain students' interest during lecture sessions.

# Learning Tools Walkthrough

## Learning Objectives

The learning objectives (LOs) introduced at the start of each chapter highlight the material and concepts to be mastered. Every end-of-chapter problem cross-references one LO.

### Learning Objectives

Understand . . .

- LO1** Money and its functions
- LO2** The payments system today and tomorrow
- LO3** Money links: inflation and economic growth

## Core Principle Marginal Icons

The entire text discussion is organized around the following five core principles: *Time* has value; *risk* requires compensation; *information* is the basis for decisions; *markets* set prices and allocate resources; and *stability* improves welfare. Exploring these principles is the basis for learning what the financial system does, how it is organized, and how it is linked to the real economy. They are discussed in detail in Chapter 1; throughout the rest of the text, marginal icons remind students of the principles that underlie particular discussions.

any way that one might want.<sup>5</sup> When you encounter a financial instrument, try to figure out whether it is used primarily for storing value risk. Then try to identify which characteristics determine its value.



### Financial Markets

**Financial markets** are the places where financial instruments are traded. They are the economy's central nervous system, relaying and reacting quickly, allocating resources, and determining prices. In doing so

### YOUR FINANCIAL WORLD

Pay Off Your Credit Card Debt as Fast as You Can



Credit cards are extremely useful. They make buying things easy—sometimes too easy. While we all plan to pay off our credit card balances every month, sometimes we just don't have the resources. So we take advantage of the loans the card issuers offer and pay off only part of what we owe. Suddenly we find ourselves deeply in debt.

How fast should you pay off your credit card balance? All the bank or finance company that issued the card will tell you is the minimum you have to pay. You get to decide whether to pay more, and your decision makes a big difference. We can use the present-value concept to figure out your alternatives.

Let's take a typical example. You have a balance of \$2,000 and can afford to pay at least \$50 per month. How many monthly payments will you need to make to pay off the full debt? What if you paid \$60 or \$75 per month? To find the answer, use equation (8) for the present value of a fixed series of payments. In this case, the present value is the loan amount, \$2,000; the fixed monthly payment is \$50, \$60, or \$75; and the interest rate is whatever your credit card company charges per month—10 to 20 percent a year. (The average rate is around 13 percent.) We need to figure out the number of payments, or  $n$  in equation (8).<sup>\*</sup>

Table 4.4 shows the number of months needed to pay off your \$2,000 balance at various interest rates and payment amounts. The first entry tells you that if your credit card com-

Looking more closely, you can see that making large payments is much more important than getting a low interest rate. The lesson is: Pay off your debts as fast as you possibly can. Procrastination is expensive.

## Lessons from the Crisis

These boxes explain concepts or issues that are both integral to the chapter and central to understanding how the financial crisis of 2007–2009 and the subsequent crisis in the euro area transformed the world of money, banking, and financial markets. The topics range from specific aspects of the crises such as shadow banks and central bank policy responses to broad concepts like liquidity, leverage, sovereign default, and systemic risk.

## Your Financial World

These boxes show students that the concepts taught in the text are relevant to their everyday lives. Among the topics covered are the importance of saving for retirement, the risk in taking on a variable rate mortgage, the desirability of owning stocks, and techniques for getting the most out of the financial news.

### LESSONS FROM THE CRISIS

LEVERAGE



Households and firms often borrow to make investments. Obtaining a mortgage for a new home or selling a corporate bond to build a new plant are common examples. The use of borrowing to finance part of an investment is called *leverage*.<sup>\*</sup> Leverage played a key role in the financial crisis of 2007–2009, so it is worth understanding how leverage relates to risk and how it can make the financial system vulnerable.

Modern economies rely heavily on borrowing to make investments. They are all leveraged. Yet, the more leverage, the greater the risk that an adverse surprise will lead to bankruptcy. If two households own houses of the same value, the one that has borrowed more—the one that is more highly leveraged and has less net worth—is the more likely to default during a temporary slump in income. This example could apply equally well to firms, financial institutions, or even countries.

Financial institutions are much more highly leveraged than households or firms, typically owning assets of about 10 times their net worth. During the crisis, some important fi-

a drop as small as 3 percent in asset prices could eliminate the cushion created by the net worth and lead to bankruptcy. When highly leveraged financial institutions experience a loss, they usually try to reduce their leverage—that is, to deleverage—by selling assets and issuing securities that raise their net worth (see accompanying figure). However, everyone in the financial system cannot deleverage at once. When too many institutions try to sell assets simultaneously, their efforts will almost surely prove counterproductive: falling prices will mean more losses, diminishing their net worth further, raising leverage, and making the assets they hold seem riskier, thereby compelling further sales.

This "paradox of leverage" reinforces the destabilizing liquidity spiral discussed in Chapter 2 (see Lessons from the Crisis: Market Liquidity, Funding Liquidity, and Making Markets). Both spirals feed a vicious cycle of falling prices and widespread deleveraging that was a hallmark of the financial crisis of 2007–2009. The financial system steadied only after a plunge of many asset prices and massive government interventions.

<sup>\*</sup>For a technical definition of leverage, see the Tools of the Trade box in Chapter 5. For the evolution of U.S. commercial bank



## IN THE NEWS

### Airtime Is Money: The Other Type of Mobile Money

#### The Economist

#### The Use of Pre-Paid Mobile-Phone Minutes as a Currency

January 19, 2013

Mobile money in Africa comes in different flavours. The sophisticated sort, exemplified by services such as M-Pesa in Kenya, allows account-holders to transfer legal tender

electronically to fellow account-holders by entering commands on a mobile phone. Popular though such services are, they have not stopped an older form of mobile money flourishing. This sort uses pre-paid mobile-airtime minutes as a de facto currency that can be transferred between phones, exchanged for cash with dealers who rent out phones, or bartered for goods and services.

Pre-paid minutes can be swapped for cash or spent in shops most easily in Côte d'Ivoire, Egypt, Ghana and Uganda, says Chris Chan of Trango, a Malaysian firm that facilitates "airtime remittances" to mobile phones. Airtime

is commonly used as money in Nigeria, too. Hannes Van Rensburg, Visa's boss for sub-Saharan Africa, says this is partly because regulators there have made it difficult for banks to offer the newer form of mobile money.

But even in places like Kenya, airtime minutes are still being used as currency. Unlike mobile money, airtime's value does not rely directly on a government's stability or ability to hold down inflation by, say, showing restraint printing money. Opening a mobile-money account typically requires waiting for days after showing your ID. In contrast, airtime can often be purchased and sent immediately and anonymously. Because many telecoms firms in Africa and elsewhere transfer minutes nationwide free of charge, airtime is especially useful for settling small debts.

In Zimbabwe, for example, American banknotes have largely replaced the hyperinflation-ravaged Zimbabwean dollar. American coins are scarce, however, so pretty much everybody in Zimbabwe transfers airtime in their place at least occasionally, says Oswald Binha, president of the Zimbabwe National Chamber of Commerce in Harare. Zimbabwean shoppers are tired of being given sweets in lieu of change, so shopkeepers who give airtime rather than yet another "30.63-worth of chocolates" have a competitive advantage. Mr Binha says, "Yo! Time, a Harare-based start-up that simplifies these retailer-to-shopper airtime payouts, processes more than 9,000 payouts a day for clients; six months ago the figure was 2,000."

The use of airtime as currency is fuelled by the growing use of sending minutes abroad. A Dublin firm called eZetop, for example, sells airtime for 238 telecoms firms via the web, text messaging and about 450,000 shops in 20 countries. The value of international airtime transfers has

doubled from \$350m in 2011 to \$700m in 2012, estimates Berg Insight, a consultancy.

Some authorities are concerned about airtime's use as money. As one industry executive puts it, network operators are, in effect, "issuing their own currency" and setting its exchange rate; central banks tend to dislike such things. Others worry that airtime could be used by criminal or extremist groups to move money covertly. According to a senior official at the Financial Action Task Force (FATF), an inter-governmental body in Paris, it appears that countries and firms will be asked to set rules to obtain more data on buyers and sellers. Transfer caps may also end up lower. But such rules must be set against the good that tradable airtime still does.

The FATF is studying over 50 instances of "suspicious" dealing in airtime from the past two years and plans to issue new guidelines early this year. It is likely that countries and firms will be asked to set rules to obtain more data on buyers and sellers. Transfer caps may also end up lower. But such rules must be set against the good that tradable airtime still does.

SOURCE: © The Economist Newspaper Limited, London (January 19, 2013).



Can airtime minutes be used as a form of currency?

#### LESSONS OF THE ARTICLE

Almost anything can be a currency, but people prefer currencies that provide a reasonable store of value. And they prefer payments mechanisms that are efficient, anonymous, and allow for big and small transfers. If there is a better currency or payments technology, people can switch. In the story, mobile minutes are attractive for both reasons, beating currencies with uncertain storage value and replacing both cash and coin.

## In the News

One article per chapter is featured from major media such as *The New York Times*, *The Economist*, *The Financial Times*, *The Wall Street Journal*, and *Project Syndicate*. These readings show how concepts introduced in the chapter are applied in the financial press. A brief analysis of the article, called "Lessons," reinforces key concepts.



#### APPLYING THE CONCEPT THE MADOFF SCANDAL

Fraud is the most extreme version of moral hazard. Even so, the fraud perpetrated by Bernard Madoff stands out. Thousands of investors lost billions of dollars, making it among the largest scams in history.<sup>3</sup> The swindle went undetected for decades and affected wealthy individuals and financial firms around the world with extensive experience in finance.

Yet, Madoff's fraud was nothing more than a classic Ponzi scheme. Named after Charles Ponzi, who conducted a similar sting in the United States just after World War I, a Ponzi scheme is a fraud in which an intermediary collects funds from new investors, but instead of investing them, uses the funds to pay off earlier investors. Money has to flow in at least as fast as it flows out. When that flow reverses, the fraud unravels and the final investors become big losers.

How do such frauds succeed at different times in different places? How can they last so long and become so damaging?

The answer is that investors fail to screen and monitor the managers who receive their funds (such as Madoff or Ponzi). Screening and monitoring are costly. The appearance of satisfied early investors discourages new investors

from paying such costs. Many investors assume that others have already done the monitoring needed.

A facade of public respectability contributes to the success of a Ponzi scheme, and Madoff was a master at businishing his reputation in the public eye. He had been the chairman of a major stock exchange (Nasdaq; see Chapter 8) and of the organization of U.S. securities dealers (NASD). He also was a philanthropist.

The U.S. government agency responsible for overseeing Madoff's firm, the Securities and Exchange Commission (SEC), also failed to detect the scheme. One whistleblower warned the oversight agency about possible fraud as early as 2000. Yet, the swindle ended in 2008 only because the financial crisis had prompted withdrawals from many firms, including Madoff's. Otherwise, the scam might still be going on.

With the benefit of hindsight, there were red flags that warned of a problem. Yet, everyone acted as if someone else was monitoring, so they could enjoy the free ride (see page 282 for a definition of a free rider). The Madoff scam is a painful reminder that there is no such free ride.

<sup>3</sup>As of May 2011, the government-appointed trustee responsible for returning investors' stolen money estimated the losses net of funds recovered at about \$10 billion.

## Applying the Concept

These sections showcase history and examine issues relevant to the public policy debate to illustrate how ideas introduced in the chapter can be applied to the world around us. Subjects include the LIBOR scandal; why Long-Term Capital Management caused a near collapse of the world financial system; and what monetary policymakers learned from the Great Depression of the 1930s.



## TOOLS OF THE TRADE

### Reading Stock Indexes in the Business News

Each morning, the business news brings reports of the prior day's changes in all the major stock-market indexes. Table 8.1, reproduced from *The Wall Street Journal* of February 13, 2013, is an example of this sort of summary. It includes a number of indexes besides the DJIA, the S&P 500, and the Nasdaq Composite. Some of them cover firms of a particular size. For example, Standard & Poor's MidCap index covers 400 medium-size firms; its SmallCap index covers 600 small firms. And the Russell 2000 tracks the value of

the smallest two-thirds of the 3,000 largest U.S. companies. Other indexes cover a particular sector or industry. Note that Dow Jones publishes indexes for transportation and utilities; others provide special indexes for biotechnology, pharmaceuticals, banks, and semiconductors. Many more indexes are published, all of them designed for specific functions. When you encounter a new index, make sure you understand both how it is constructed and what it is designed to measure.

Table 8.1 Major U.S. Stock-Market Indexes  
February 12, 2013

	LATEST				% chg	52-WEEK RANGE			% CHG	
	High	Low	Close	Net chg		High	Low	% chg	YTD	3-yr. ann.
<b>Dow Jones</b>										
Industrial Average	14038.97	13968.94	14018.70	47.46	0.34	14018.70	12101.46	8.9	7.0	11.6
Transportation Avg	5921.83	5893.20	5906.86	-2.29	-0.04	5911.33	4847.73	11.8	11.3	14.7
Utility Average	476.74	473.89	476.67	1.84	0.39	496.56	438.05	5.9	5.2	9.4
Total Stock Market	16035.23	15967.40	16008.75	29.42	0.18	16008.75	13329.32	12.7	7.0	12.8
Baron's 400	395.99	395.16	395.62	0.46	0.12	395.83	321.50	9.8	8.1	15.5
<b>Nasdaq Stock Market</b>										
Nasdaq Composite	3196.92	3184.84	3186.49	-5.51	-0.17	3193.87	2747.48	8.7	5.5	13.4
Nasdaq 100	2776.71	2761.41	2762.62	-12.02	-0.43	2864.03	2458.83	7.3	3.8	15.8
<b>Standard &amp; Poor's</b>										
500 Index	1522.29	1515.61	1519.43	2.42	0.16	1519.43	1278.04	12.5	6.5	12.2
MidCap 400	1112.41	1107.01	1111.72	4.67	0.42	1111.72	891.32	14.2	8.9	15.8
SmallCap 600	514.43	511.69	513.94	2.25	0.44	513.94	414.87	12.5	7.8	16.6
<b>Other Indexes</b>										
Russell 2000	918.17	913.73	917.52	4.49	0.49	917.52	737.24	11.8	8.0	14.5
NYSE Composite	8970.90	8918.73	8957.61	38.59	0.43	8965.12	7285.53	11.6	6.1	9.2
Value Line	398.12	396.04	397.76	1.71	0.43	397.76	323.50	9.0	8.1	9.5
NYSE Arca Biotech	1680.80	1663.33	1665.82	-12.30	-0.73	1690.11	1280.90	21.3	7.7	18.9
NYSE Arca Pharma	393.85	391.89	393.03	1.26	0.32	397.24	322.03	17.8	6.3	9.2
KBW Bank	55.79	55.03	55.71	0.58	1.05	55.71	41.00	25.7	8.6	7.6
PHLX Gold/Silver	151.07	148.12	150.62	1.30	0.87	202.36	141.60	-21.1	-9.0	-1.9
PHLX Oil Service	246.78	245.45	246.49	0.80	0.32	260.81	186.27	-9.9	12.0	8.0

## Tools of the Trade

These boxes teach useful skills, including how to read bond and stock tables, how to read charts, and how to do some simple algebraic calculations. Some provide brief reviews of material from the principles of economics course, such as the relationship between the current account and the capital account in the balance of payments.

# End-of-Chapter Features

## Using FRED: Codes for Data in This Chapter

Data Series	FRED Data Code
Price of gold (U.S. dollars)	GOLDAMGBD228NLBM
Consumer price index	CPIAUCSL
M1	M1SL
M2	M2SL
Currency in circulation	CURRSL
Traveler's checks	TVCKSSL
Demand deposits	DEMDEPSL
Other checkable deposits	OCDL
Small-denomination time deposits	STDCBSL
Savings deposits and MMDAs*	SAVINGSL
Retail MMMFs**	RMFSL
Nominal GDP	GDP

\*Money market deposit accounts  
\*\*Money market mutual funds

## FRED Data Codes

The FRED table lists key economic and financial indicators relevant to the chapter and the codes by which they are accessed in FRED, the free online database provided by the Federal Reserve Bank of St. Louis. With the data codes, students can use FRED to analyze key economic patterns and illuminate the ideas in the chapter. See Appendix B to Chapter 1 for help using FRED.

## Data Exploration

New, detailed end-of-chapter questions ask students to use FRED to analyze economic and financial data relevant to the chapter. Appendix B to Chapter 1 provides information on using FRED and sets the stage for its use thereafter. QR codes in the margin directly link students to the FRED-related web resources available for each chapter.



Scan here for quick access to the hints for these problems. Need a barcode reader? Try ScanLife, available in your app store.

## Data Exploration

For detailed instructions on using Federal Reserve Economic Data (FRED) online to answer each of the following problems, visit [www.mheducation.asia/olc/cecchetti](http://www.mheducation.asia/olc/cecchetti) and click on Student Edition, then Data Exploration Hints.

1. Find the most recent level of M2 (FRED code: M2SL) and of the U.S. population (FRED code: POP). Compute the quantity of money divided by the population. Do you think your answer is large? Why? (LO1)
2. Reproduce Figure 2.3 from 1960 to the present, showing the percent change from a year ago of M1 (FRED code: M1SL) and M2 (FRED code: M2SL). Comment on the pattern over the last five years. Would it matter which of the two monetary aggregates you looked at? (LO3)
3. Which usually grows faster: M1 or M2? Produce a graph showing M2 divided by M1. When this ratio rises, M2 outpaces M1 and vice versa. What is the long-run pattern? Is the pattern stable? (LO3)
4. Traveler's checks are a component of M1 and M2. Produce a graph of this component of the monetary aggregates (FRED code: TVCKSSL). Explain the pattern you see. (LO1)

## Conceptual and Analytical Problems

1. Describe at least three ways you could pay for your morning cup of coffee. What are the advantages and disadvantages of each? (LO2)
2. You are the owner of a small sandwich shop. A buyer may offer one of several payment methods: cash, a check drawn on a bank, a credit card, or a debit card. Which of these is the least costly for you? Explain why the others are more expensive. (LO2)
3. Explain how money encourages specialization, and how specialization improves everyone's standard of living. (LO3)
- 4.\* Could the dollar still function as the unit of account in a totally cashless society? (LO2)
5. Give four examples of ACH transactions you might make. (LO2)
6. As of July 2013, 17 of the 28 countries of the European Union have adopted the euro. The remaining 11 countries, including Great Britain, Denmark, and Sweden, have retained their own currencies. What are the advantages of a common currency for someone who is traveling through Europe? (LO1)
7. Why might each of the following commodities not serve well as money? (LO2)
  - a. Tomatoes
  - b. Bricks
  - c. Cattle
8. Despite the efforts of the U.S. Treasury and the Secret Service, someone discov-

## Conceptual and Analytical Problems

Each chapter contains at least 18 conceptual and analytic problems at varying levels of difficulty, which reinforce the lessons in the chapter. All of the problems are available as assignable content within Connect, McGraw-Hill's homework management platform, organized around learning objectives to make it easier to plan, track, and analyze student performance across different learning outcomes.

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