

CECCHETTI
SCHOENHOLTZ



MONEY, BANKING,
and FINANCIAL MARKETS

Fourth Edition

Money, Banking, and Financial Markets

Fourth Edition

Stephen G. Cecchetti

Brandeis International Business School

Kermit L. Schoenholtz

New York University
Leonard N. Stern School of Business





MONEY, BANKING, AND FINANCIAL MARKETS, FOURTH EDITION

Published by McGraw-Hill Education, 2 Penn Plaza, New York, NY 10121. Copyright © 2015 by McGraw-Hill Education. All rights reserved. Printed in the United States of America. Previous editions © 2011, 2008, and 2006. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written consent of McGraw-Hill Education, including, but not limited to, in any network or other electronic storage or transmission, or broadcast for distance learning.

Some ancillaries, including electronic and print components, may not be available to customers outside the United States.

This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 0 DOW/DOW 1 0 9 8 7 6 5 4

ISBN 978-0-07-802174-9

MHID 0-07-802174-X

Senior Vice President, Products & Markets: *Kurt L. Strand*

Vice President, Content Production & Technology Services: *Kimberly Meriwether David*

Managing Director: *Douglas Reiner*

Executive Brand Manager: *Michele Janicek*

Executive Director of Development: *Ann Torbert*

Managing Development Editor: *Christina Kouvelis*

Director of Digital Content: *Doug Ruby*

Digital Development Editor: *Kevin Shanahan*

Marketing Manager: *Katie Hoenicke*

Marketing Specialist: *Jennifer M. Jelinski*

Director, Content Production: *Terri Schiesl*

Content Project Manager: *Brian Nacik*

Media Project Manager: *Susan Lombardi*

Senior Buyer: *Debra R. Sylvester*

Design: *Srdjan Savanovic*

Senior Content Licensing Specialist: *Jeremy Cheshareck*

Photo Researcher: *Sarah Evertson*

Typeface: *10.5/12 Times LT Std*

Compositor: *MPS Limited*

Printer: *R. R. Donnelley*

FRED® is a registered trademark and the FRED® Logo and ST. LOUIS FED are trademarks of the Federal Reserve Bank of St. Louis. <http://research.stlouisfed.org/fred2>

All credits appearing on page or at the end of the book are considered to be an extension of the copyright page.

Library of Congress Cataloging-in-Publication Data

Cecchetti, Stephen G. (Stephen Giovanni)

Money, banking, and financial markets / Stephen G. Cecchetti, Brandeis International Business School, Kermit L. Schoenholtz, New York University, Leonard N. Stern School of Business. -- 4th Edition.

pages cm

Includes indexes.

ISBN 978-0-07-802174-9 (alk. paper) -- ISBN 0-07-802174-X (alk. paper)

1. Money. 2. Banks and banking. 3. Finance. 4. Capital market. I. Schoenholtz, Kermit L. II. Title.

HG221.C386 2015

332--dc23

2013037393

The Internet addresses listed in the text were accurate at the time of publication. The inclusion of a website does not indicate an endorsement by the authors or McGraw-Hill Education, and McGraw-Hill Education does not guarantee the accuracy of the information presented at these sites.

Dedication

To my father, Giovanni Cecchetti, who argued tirelessly that financial markets are not efficient; and to my grandfather Albert Schwabacher, who patiently explained why inflation is destructive.

Stephen G. Cecchetti

To my parents, Evelyn and Harold Schoenholtz, and my wife, Elvira Pratsch, who continue to teach me what is true, good, and beautiful.

Kermit L. Schoenholtz

About the Authors



Stephen G. Cecchetti is Professor of International Economics at the Brandeis International Business School. He previously taught at Brandeis from 2003 to 2008. Before rejoining Brandeis in 2014, Cecchetti completed a five-year term as Economic Adviser and Head of the Monetary and Economic Department at the Bank for International Settlements in Basel, Switzerland. He has also taught at the New York University Leonard N. Stern School of Business and, for 15 years, was a member of the Department of Economics at The Ohio State University.

In addition to his other appointments, Cecchetti served as Executive Vice President and Director of Research, Federal Reserve Bank of New York (1997–1999); Editor, *Journal of Money, Credit, and Banking* (1992–2001); Research Associate, National Bureau of Economic Research (1989–2011); and Research Fellow, Centre for Economic Policy Research (2008–present), among others.

Cecchetti's research interests include inflation and price measurement, monetary policy, macroeconomic theory, economics of the Great Depression, and the economics of financial regulation. He has published more than 75 articles in academic and policy journals and has been a regular contributor to the *Financial Times*.

During his time at the Bank for International Settlements, Cecchetti participated in the numerous postcrisis global regulatory reform initiatives. This work included involvement with both the Basel Committee on Banking Supervision and the Financial Stability Board in establishing new international standards.

Cecchetti received an SB in Economics from the Massachusetts Institute of Technology in 1977 and a PhD in Economics from the University of California at Berkeley in 1982.



Kermit L. Schoenholtz is Professor of Management Practice in the Department of Economics of New York University's Leonard N. Stern School of Business, where he teaches courses on financial crises, money and banking, and macroeconomics (<http://pages.stern.nyu.edu/~kschoenh>). He also directs NYU Stern's Center for Global Economy and Business (www.stern.nyu.edu/cgeb). Schoenholtz was Citigroup's global chief economist from 1997 until 2005. After a year's leave, he served until 2008 as senior advisor and managing director in the Economic and Market Analysis (EMA) department at Citigroup.

Schoenholtz joined Salomon Brothers in 1986, working in their New York, Tokyo, and London offices. In 1997, he became chief economist at Salomon, after which he became chief economist at Salomon Smith Barney and later at Citigroup.

Schoenholtz has published extensively for the professional investment community about financial, economic, and policy developments; more recently, he has contributed to policy-focused scholarly research in economics. He has served as a member of the Executive Committee of the London-based Centre for Economic Policy Research and is a panel member of the U.S. Monetary Policy Forum.

From 1983 to 1985, Schoenholtz was a Visiting Scholar at the Bank of Japan's Institute for Monetary and Economic Studies. He received an MPhil in economics from Yale University in 1982 and an AB from Brown University in 1977.

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.mhhe.com/moneyandbanking4e 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.mhhe.com/moneyandbanking4e 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.mhhe.com/moneyandbanking4e 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.³ When you encounter a financial instrument, try to figure out whether it is used primarily for storing value or 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 \$50 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, \$50, 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).^{*}

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*.^{*} 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 financial firms reported more than 20 times that net worth.

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.

^{*}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 Trangolo, 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 telecom 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 "50.63-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 ease 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 some groups buy top-up scratch cards in one country and sell the airtime in another.

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.* The swindle went undetected for decades and affected wealthy individuals and financial firms from 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.

*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					52-WEEK RANGE			% CHG	
	High	Low	Close	Net chg	% chg	High	Low	% chg	YTD	3-yr. ann.
Dow Jones										
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
Nasdaq Stock Market										
Nasdaq Composite	3198.92	3184.84	3198.49	-5.51	-0.17	3193.97	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
Standard & Poor's										
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	511.89	513.94	2.25	0.44	513.94	414.87	12.5	7.8	16.6
Other Indexes										
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	202.38	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	-0.9	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	OCDSL
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.mhhe.com/moneyandbanking4e 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.

Supplements for Students

Online Learning Center

The book's website, www.mhhe.com/moneyandbanking4e, includes a variety of free content for students, including multiple-choice chapter quizzes, PowerPoint slides, and interactive graphs with related exercises. Instructors may access all the book's major supplements using a special password.

McGraw-Hill *Connect*[®] *Economics*

Less Managing. More Teaching. Greater Learning.

McGraw-Hill *Connect Economics* is an online assignment and assessment solution that connects students with the tools and resources they'll need to achieve success.

McGraw-Hill *Connect Economics* helps prepare students for their future by enabling faster learning, more efficient studying, and higher retention of knowledge.



McGraw-Hill *Connect Economics* Features

Connect Economics offers a number of powerful tools and features to make managing assignments easier, so faculty can spend more time teaching. With *Connect Economics*, students can engage with their coursework anytime and anywhere, making the learning process more accessible and efficient. *Connect Economics* offers you the features described below.

Simple Assignment Management With *Connect Economics*, creating assignments is easier than ever, so you can spend more time teaching and less time managing. The assignment management function enables you to:

- Create and deliver assignments easily with selectable end-of-chapter questions and test bank items.
- Streamline lesson planning, student progress reporting, and assignment grading to make classroom management more efficient than ever.
- Go paperless with the eBook and online submission and grading of student assignments.

Smart Grading When it comes to studying, time is precious. *Connect Economics* helps students learn more efficiently by providing feedback and practice material when they need it, where they need it. When it comes to teaching, your time also is precious. The grading function enables you to:

- Have assignments scored automatically, giving students immediate feedback on their work and side-by-side comparisons with correct answers.
- Access and review each response; manually change grades or leave comments for students to review.
- Reinforce classroom concepts with practice tests and instant quizzes.

Instructor Library The *Connect Economics* Instructor Library is your repository for instructor ancillaries and additional resources to improve student engagement in and out of class. You can select and use any asset that enhances your lecture.

Student Study Center The *Connect Economics* Student Study Center is the place for students to access additional resources. The Student Study Center:

- Offers students quick access to lectures, practice materials, eBooks, and more.
- Provides instant practice material and study questions, easily accessible on the go.
- Gives students access to LearnSmart and SmartBook as described next.

Diagnostic and Adaptive Learning of Concepts: LearnSmart LearnSmart is one of the most effective and successful adaptive learning resources in the market today, proven to strengthen memory recall, keep students in class, and boost grades. Distinguishing what students know from what they don't and homing in on concepts they are most likely to forget, LearnSmart continuously adapts to each student's needs by building an individual learning path so students study smarter and retain more knowledge. Reports provide valuable insight to instructors, so precious class time can be spent on higher-level concepts and discussion. LearnSmart:

- Applies an intelligent concept engine to identify the relationships between concepts and to serve new concepts to each student only when he or she is ready.
- Adapts automatically to each student, so students spend less time on the topics they understand and practice more those they have yet to master.
- Provides continual reinforcement and remediation, but gives only as much guidance as students need.
- Integrates diagnostics as part of the learning experience.
- Enables instructors to assess which concepts students have efficiently learned on their own, thus freeing class time for more applications and discussion.

SmartBook SmartBook is the first and only adaptive reading experience available today. SmartBook changes reading from a passive and linear experience to an engaging and dynamic one in which students are more likely to master and retain important concepts, coming to class better prepared. Valuable reports provide instructors insight as to how students are progressing through textbook content and are useful for shaping in-class time or assessment.

Student Progress Tracking *Connect Economics* keeps instructors informed about how each student, section, and class is performing, allowing for more productive use of lecture and office hours. The progress-tracking function enables you to:

- View scored work immediately and track individual or group performance with assignment and grade reports.
- Access an instant view of student or class performance relative to section headings.
- Collect data and generate reports required by many accreditation organizations, such as AACSB.

Lecture Capture Increase the attention paid to lecture discussion by decreasing the attention paid to note taking. For an additional charge Lecture Capture offers new ways for students to focus on the in-class discussion, knowing they can revisit important topics later. Lecture Capture enables you to:

- Record and distribute your lecture with a click of button.
- Record and index PowerPoint presentations and anything shown on your computer so it is easily searchable, frame by frame.
- Offer access to lectures anytime and anywhere by computer, iPod, or mobile device.
- Increase intent listening and class participation by easing students' concerns about note taking. Lecture Capture will make it more likely you will see students' faces, not the tops of their heads.

McGraw-Hill Connect Plus Economics McGraw-Hill reinvents the textbook learning experience for the modern student with *Connect Plus Economics*. A seamless integration of an eBook and *Connect Economics*, *Connect Plus Economics* provides all of the *Connect Economics* features plus the following:



- An integrated eBook, allowing for anytime, anywhere access to the textbook.
- Dynamic links between the problems or questions you assign to your students and the location in the eBook where that problem or question is covered.
- A powerful search function to pinpoint and connect key concepts in a snap.

In short, *Connect Economics* and *Connect Plus Economics* offer you and your students powerful tools and features that optimize your time and energies, enabling you to focus on course content, teaching, and student learning. *Connect Economics* also offers a wealth of content resources for both instructors and students. This state-of-the-art, thoroughly tested system supports you in preparing students for the world that awaits.

For more information about Connect, go to www.mcgrawhillconnect.com, or contact your local McGraw-Hill sales representative.

Tegrity Campus: Lectures 24/7

Tegrity Campus is a service that makes class time available 24/7 by automatically capturing every lecture in a searchable format for students to review when they study and complete assignments. With a simple one-click start-and-stop process, you capture all computer screens and corresponding audio. Students can replay any part of any class with easy-to-use browser-based viewing on a PC or Mac.



Educators know that the more students can see, hear, and experience class resources, the better they learn. In fact, studies prove it. With Tegrity Campus, students quickly recall key moments by using Tegrity Campus's unique search feature. This search helps students efficiently find what they need, when they need it, across an entire semester of class recordings. Help turn all your students' study time into learning moments immediately supported by your lecture.

To learn more about Tegrity watch a 2-minute Flash demo at <http://tegritycampus.mhhe.com>.

Assurance of Learning Ready

Many educational institutions today are focused on the notion of *assurance of learning*, an important element of some accreditation standards. *Money, Banking, and Financial Markets* is designed specifically to support your assurance of learning initiatives with a simple, yet powerful solution.

Each test bank question for *Money, Banking, and Financial Markets* maps to a specific chapter heading listed in the text. You can use our test bank software, EZ Test and EZ Test Online, or in *Connect Economics* to easily query for chapter headings and topic tags that directly relate to your course. You can then use the reporting features of EZ Test to aggregate student results in similar fashion, making the collection and presentation of assurance of learning data simple and easy.

AACSB Statement

The McGraw-Hill Companies is a proud corporate member of AACSB International. Understanding the importance and value of AACSB accreditation, *Money, Banking, and Financial Markets, 4/e* recognizes the curricula guidelines detailed in the AACSB standards for business accreditation by connecting selected questions in the text and test bank to the six general knowledge and skill guidelines in the AACSB standards.

The statements contained in *Money, Banking, and Financial Markets, 4/e* are provided only as a guide for the users of this textbook. The AACSB leaves content coverage and assessment within the purview of individual schools, the mission of the school, and the faculty. While *Money, Banking, and Financial Markets, 4/e* and the teaching package make no claim of any specific AACSB qualification or evaluation, we have within the *Money, Banking, and Financial Markets, 4/e* Solutions Manual and Test Bank labeled selected questions according to the six general knowledge and skills areas.

McGraw-Hill Customer Care Contact Information

At McGraw-Hill, we understand that getting the most from new technology can be challenging. That's why our services don't stop after you purchase our products. You can e-mail our Product Specialists 24 hours a day to get product-training online. Or you can search our knowledge bank of Frequently Asked Questions on our support website. For Customer Support, call **800-331-5094**, or visit www.mhhe.com/support. One of our Technical Support Analysts will be able to assist you in a timely fashion.

Acknowledgments

I owe thanks to many more people than I can possibly list, including a large number of academics, central bankers, and financial market participants around the world. A few of these deserve special mention. I would like to thank Robert M. Solow, who set me on the path doing economics as a 20-year-old undergraduate; George A. Akerlof, whose inspiration still guides me, even more than 25 years after he signed my dissertation; William J. McDonough, who gave me the opportunity to watch and ask questions from inside the Federal Reserve; Peter R. Fisher, who was my day-to-day guide to what I was seeing during my time at the Fed; and Jaime Caruana and Hervé Hannoun, whose patience and understanding helped me appreciate the global central bank community.

Of my numerous collaborators and colleagues over the years, Nelson Mark (now at the University of Notre Dame) is the most important. His encouragement, counsel, and friendship have guided me for more than 15 years. In addition, Michael Bryan of the Federal Reserve Bank of Atlanta has been a constant source of help and encouragement, as have numerous friends throughout the central banking world.

Among all of the professional colleagues who took the time to read early versions of the manuscript, I would like to single out Jim Fackler for his insight and patience. This book is much better for the time he generously devoted to correcting my logical mistakes and helping ensure that the exercises would reinforce the lessons in each chapter.

Without all the people at McGraw-Hill/Irwin this book would never have been written. Gary Burke and Paul Shensa first convinced me that I could write this book, and then taught me how. Erin Strathmann worked tirelessly (and daily) to improve the book. Betty Morgan made my sentences and paragraphs readable. And all of the people in production and design turned the words and charts into a beautiful, readable book. Gregg Forte made a notable contribution to the Third and Fourth Editions through his skilled editing of the manuscript.

Without students, universities would not exist. And without a class in money and banking to teach, I would not have written this book. I owe a debt to every student who has sat in a classroom with me. Several deserve special mention for the time and effort they put in to helping with the manuscript: Margaret Mary McConnell of the Federal Reserve Bank of New York, Roisin O'Sullivan of Smith College, Stefan Krause of the Banque de France, Lianfa Li of Peking University, Craig Evers of Brevan Howard, and Georgios Karras of the University of Illinois at Chicago.

And finally, there is my family; my wife Ruth and our sons Daniel and Ethan. For years they put up with my daily routine of writing, rewriting, and rewriting again and again. To them I owe the biggest thanks.

Stephen G. Cecchetti

Brandeis International Business School

There is not enough space here to thank the many people who taught me about financial markets and institutions during my more than two decades of work as a market economist, but a few deserve special mention. Hugh Patrick was an inspiration in graduate school and remains a friend and guide. In the financial markets, I benefited especially from the wisdom of Henry Kaufman and the economists he gathered at Salomon Brothers in the 1980s—Richard Berner, Robert DiClemente, John Lipsky, and Nicholas Sargen. The members of the economics team that I was privileged to lead at Salomon (and later at Citi) continued my education, including (among many others) Lewis Alexander, Robert DiClemente, Don Hanna, Michael Saunders, Christopher Wiegand, and Jeffrey Young.

I also owe an extraordinary debt to my colleagues at the New York University Leonard N. Stern School of Business, who welcomed me, gave me the privilege of teaching excellent students, and entrusted me with the honor of directing Stern's Center for Global Economy and Business (www.stern.nyu.edu/cgeb). For their sustained support and guidance, I thank former Dean Thomas Cooley, current Dean Peter Henry, former Vice Dean Ingo Walter, and the distinguished current and former chairmen of the Department of Economics—David Backus, Paul Wachtel, Lawrence White, and Stanley Zin. David Backus, Kim Ruhl, and Michael Waugh gave me the

tools to teach MBA students. Jennifer Carpenter has been my partner as Associate Director of the Center for Global Economy and Business, while John Asker, Thomas Philippon, Laura Veldkamp, and Paul Wachtel have all served as Center research group coordinators and my advisors. Jonathan Robidoux keeps the Center operating efficiently and with a smile each day. Many others deserve thanks for making Stern the thriving research and teaching environment that it is today, but I am especially grateful for the support of Viral Acharya, Gian Luca Clementi, Matthew Richardson, and Stijn van Nieuwerburgh. I also thank A. Michael Cristofi for his research assistance in the preparation of this Fourth Edition.

Of course, my greatest debt is to my wife, Elvira Pratsch. I also thank my parents, Harold and Evelyn, as well as my sister and brother, Sharon and Andy.

Kermit L. Schoenholtz
New York University Leonard N. Stern School of Business

Reviewers

Thank you to the following contributing reviewers for this and previous editions.

Burton Abrams <i>University of Delaware</i>	Dong Cho <i>Wichita State University</i>
Douglas Agbetsiafa <i>Indiana University at South Bend</i>	Nan-Ting Chou <i>University of Louisville</i>
Pedro Albuquerque <i>University of Minnesota at Duluth</i>	Isabelle Delalex <i>Pace University</i>
Abdiweli Ali <i>Niagara University</i>	Mamit Deme <i>Middle Tennessee State University</i>
Thomas Martin Allen <i>Texas A&M University</i>	Seija Doolittle <i>Delaware Technical Community College at Wilmington</i>
Brad Altmeyer <i>South Texas College</i>	David Doorn <i>University of Minnesota at Duluth</i>
Harjit Arora <i>Lemoyne College</i>	Demissew Ejara <i>William Patterson University</i>
Foued Ayari <i>Bernard M. Baruch College</i>	Paul Emberton <i>Texas State University</i>
Raymond Batina <i>Washington State University</i>	Robert Eyler <i>Sonoma State University</i>
Clare Battista <i>California Polytechnic State University</i>	Gregory Fallon <i>College of Saint Joseph</i>
Larry Belcher <i>Stetson University</i>	Richard Froyen <i>University of North Carolina at Chapel Hill</i>
Robert Boatler <i>Texas Christian University</i>	Craig Furfine <i>University of Chicago</i>
Christa Bouwman <i>Case Western Reserve University</i>	William Gavin <i>Washington University</i>
Latanya Brown <i>Bowie State University</i>	Ronald Gilbert <i>Texas Tech University</i>
James Butkiewicz <i>University of Delaware</i>	Gregory Gilpin <i>Montana State University</i>
Anne Bynoe <i>Pace University</i>	Lance Girton <i>University of Utah</i>
Douglas Campbell <i>University of Memphis</i>	Stuart Glosser <i>University of Wisconsin at Whitewater</i>
Giorgio Canarella <i>California State University at Los Angeles</i>	William L. Goffe <i>Oswego State University of New York</i>
Bolong Cao <i>Ohio University, Athens</i>	Stephan F. Gohmann <i>University of Louisville</i>
Tina Carter <i>Florida State University at Tallahassee</i>	Elias Grivoyannis <i>Yeshiva University</i>
Matthew S. Chambers <i>Towson University</i>	

- Joanne Guo
Pace University
- David Hammes
University of Hawaii at Hilo
- Scott Hein
Texas Tech University
- Ying Huang
Manhattan College
- Julio Huato
Saint Francis College
- Owen Irvine
Michigan State University at East Lansing
- Aaron Jackson
Bentley College
- Yongbok Jeon
University of Utah at Salt Lake City
- George Jouganatos
California State University at Sacramento
- Chulhee Jun
Texas Technical University
- Chris Kauffman
University of Tennessee at Knoxville
- Andrew Kayanga
Dillard University
- Kathy Kelly
University of Texas, Arlington
- Kent Kimbrough
Duke University
- Paul Kubik
DePaul University
- Pamela Labadie
George Washington University
- Larry Landrum
Virginia Western Community College
- Tom Lee
California State University at Northridge
- Serpil Leveen
Montclair State University
- Melissa Lind
University of Texas, Arlington
- Mark Longbrake
Ohio State University at Columbus
- Fiona Maclachlan
Manhattan College
- Michael Madaris
William Carey University
- Ellie Mafi-Kreft
Indiana University
- Vincent Marra
University of Delaware
- Ralph May
Southwestern Oklahoma State University
- Robert McAuliffe
Babson College
- Chris McHugh
Tufts University
- Alice Melkumian
Western Illinois University
- Alla Melkumian
Western Illinois University
- Jianjun Miao
Boston University
- Peter Mikek
Wabash College
- Ossama Mikhail
University of Central Florida
- Kyoko Mona
Bernard M. Baruch College
- Ray Nelson
Brigham Young University
- James Nguyen
Southeastern Louisiana University
- David O'Dell
McPherson College
- Roisin O'Sullivan
Smith College
- Dennis O'Toole
Virginia Commonwealth University
- Daniel Owens
University of North Dakota
- Hilde Patron-Boenheim
University of West Georgia
- Robert Pennington
University of Central Florida
- Dennis Placone
Clemson University
- Hamideh Ramjerdi
William Patterson University
- Ronald Ratti
University of Western Sydney, Australia

Rupert Rhodd
*Florida Atlantic University
at Davie*

Kevin Salyer
University of California, Davis

Julia Sampson
Malone College

Drew Saunders
Purdue University

Timothy J. Schibik
University of Southern Indiana

Sherrill Shaffer
University of Wyoming

Eugene Sherman
Baruch College

Anna Shostya
Bernard M. Baruch College

Harindar Singh
Grand Valley State University

Robert Sonora
Fort Lewis College

Souren Soumbatiants
Franklin University

Richard Stahl
*Louisiana State University at Baton
Rouge*

Herman Stekler
George Washington University

Mark Strazicich
Appalachian State University

William Stronge
Florida Atlantic University

Scott Sumner
Bentley College

Philip Tew
University of Mississippi

Sven N. Thommesen
Auburn University

Mark Toma
University of Kentucky at Lexington

Kudret Topyan
Manhattan College

Brian Trinqué
University of Texas at Austin

Rubina Vohra
New Jersey City University

William Walsh
University of St. Thomas

Dale Warmingham
Rutgers University at New Brunswick

Chao Wei
George Washington University

Mark Weinstock
Pace University

Niklas Westelius
Hunter College

Eugene White
Rutgers University at New Brunswick

Ruhai Wu
Florida Atlantic University

King-Yuen Yik
University of Michigan at Ann Arbor

Derek Yonai
Campbell University

This page intentionally left blank

Brief Contents

Part I	Money and the Financial System	1
chapter 1	An Introduction to Money and the Financial System	2
chapter 2	Money and the Payments System	23
chapter 3	Financial Instruments, Financial Markets, and Financial Institutions	45
Part II	Interest Rates, Financial Instruments, and Financial Markets	74
chapter 4	Future Value, Present Value, and Interest Rates	75
chapter 5	Understanding Risk	104
chapter 6	Bonds, Bond Prices, and the Determination of Interest Rates	133
chapter 7	The Risk and Term Structure of Interest Rates	162
chapter 8	Stocks, Stock Markets, and Market Efficiency	189
chapter 9	Derivatives: Futures, Options, and Swaps	214
chapter 10	Foreign Exchange	240
Part III	Financial Institutions	267
chapter 11	The Economics of Financial Intermediation	268
chapter 12	Depository Institutions: Banks and Bank Management	295
chapter 13	Financial Industry Structure	327
chapter 14	Regulating the Financial System	359
Part IV	Central Banks, Monetary Policy, and Financial Stability	393
chapter 15	Central Banks in the World Today	394
chapter 16	The Structure of Central Banks: The Federal Reserve and the European Central Bank	421
chapter 17	The Central Bank Balance Sheet and the Money Supply Process	450
chapter 18	Monetary Policy: Stabilizing the Domestic Economy	481
chapter 19	Exchange-Rate Policy and the Central Bank	522
Part V	Modern Monetary Economics	552
chapter 20	Money Growth, Money Demand, and Modern Monetary Policy	553
chapter 21	Output, Inflation, and Monetary Policy	581
chapter 22	Understanding Business Cycle Fluctuations	617
chapter 23	Modern Monetary Policy and the Challenges Facing Central Bankers	649

This page intentionally left blank

Contents

About the Authors iv
Preface v
Learning Tools Walkthrough xiv

Part I Money and the Financial System 1

CHAPTER 1 An Introduction to Money and the Financial System 2

The Six Parts of the Financial System 3
The Five Core Principles of Money and Banking 5
Core Principle 1: Time Has Value 5
Core Principle 2: Risk Requires Compensation 6
Core Principle 3: Information Is the Basis for Decisions 7
Core Principle 4: Markets Determine Prices and Allocate Resources 7
Core Principle 5: Stability Improves Welfare 8
Special Features of This Book 9
Your Financial World 9
Applying the Concept 10
Lessons from the Crisis 10
In the News 11
Tools of the Trade 11
End-of-Chapter Sections 11
The Organization of This Book 13

Learning Tools Your Financial World: Guard Your Identity 10

Terms 14
Using FRED: Codes for Data in This Chapter 14
Chapter Lessons 15
Conceptual and Analytical Problems 15
Data Exploration 16
APPENDIX A TO CHAPTER 1: Measuring Economic Activity, Prices, and the Inflation Rate 18
APPENDIX B TO CHAPTER 1: Using FRED 21

CHAPTER 2 Money and the Payments System 23

Money and How We Use It 24
Means of Payment 24
Unit of Account 24
Store of Value 25
The Payments System 26
Commodity and Fiat Monies 26

	<i>Checks</i>	28
	<i>Electronic Payments</i>	31
	The Future of Money	33
	Measuring Money	35
<hr/>		
<i>Learning Tools</i>	Your Financial World: Debit Cards versus Credit Cards	25
	Your Financial World: Paper Checks Become Digital Images	30
	Lessons from the Crisis: Market Liquidity, Funding Liquidity, and Making Markets	32
	In the News: Airtime Is Money: The Other Type of Mobile Money	34
	Tools of the Trade: The Consumer Price Index	38
	Applying the Concept: Where Are All Those \$100 Bills?	39
<hr/>		
	Terms	41
	Using FRED: Codes for Data in This Chapter	42
	Chapter Lessons	42
	Conceptual and Analytical Problems	43
	Data Exploration	44
CHAPTER 3	Financial Instruments, Financial Markets, and Financial Institutions	45
	Financial Instruments	47
	<i>Uses of Financial Instruments</i>	48
	<i>Characteristics of Financial Instruments: Standardization and Information</i>	49
	<i>Underlying versus Derivative Instruments</i>	51
	<i>A Primer for Valuing Financial Instruments</i>	51
	<i>Examples of Financial Instruments</i>	52
	Financial Markets	54
	<i>The Role of Financial Markets</i>	55
	<i>The Structure of Financial Markets</i>	57
	<i>Characteristics of a Well-Run Financial Market</i>	64
	Financial Institutions	64
	<i>The Role of Financial Institutions</i>	66
	<i>The Structure of the Financial Industry</i>	66
<hr/>		
<i>Learning Tools</i>	Lessons from the Crisis: Leverage	50
	Your Financial World: Disability Income Insurance	53
	Tools of the Trade: Trading in Financial Markets	56
	In the News: High-Frequency Trading	61
	Lessons from the Crisis: Interbank Lending	62
	Lessons from the Crisis: Shadow Banks	65
	Your Financial World: Shop for a Mortgage	68
<hr/>		

Terms	69
Using FRED: Codes for Data in This Chapter	69
Chapter Lessons	70
Conceptual and Analytical Problems	71
Data Exploration	73

Part II Interest Rates, Financial Instruments, and Financial Markets 74

CHAPTER 4 Future Value, Present Value, and Interest Rates 75

Valuing Monetary Payments Now and in the Future	76
<i>Future Value and Compound Interest</i>	76
<i>Present Value</i>	80
Applying Present Value	84
<i>Internal Rate of Return</i>	85
<i>Bonds: The Basics</i>	88
Real and Nominal Interest Rates	92

<i>Learning Tools</i>	<i>Your Financial World: How Long Does Your Investment Take to Double?</i>	79
	<i>Lessons from the Crisis: Risk Taking and the Search for Yield</i>	81
	<i>Tools of the Trade: Computing Compound Annual Rates</i>	84
	<i>Your Financial World: Should You Buy a New Car Now or Wait?</i>	85
	<i>Applying the Concept: Early Retirement</i>	87
	<i>In the News: Economic Scene: Pentagon Shows That It Doesn't Always Pay to Take the Money and Run</i>	88
	<i>Your Financial World: Pay Off Your Credit Card Debt as Fast as You Can</i>	93
	<i>Applying the Concept: High Interest Rates, Low Interest Rates</i>	95

Terms	96
Using FRED: Codes for Data in This Chapter	97
Chapter Lessons	97
Conceptual and Analytical Problems	98
Data Exploration	100
APPENDIX TO CHAPTER 4: The Algebra of Present-Value Formulas	102

CHAPTER 5 Understanding Risk 104

Defining Risk	105
Measuring Risk	106
<i>Possibilities, Probabilities, and Expected Value</i>	106
<i>Measures of Risk</i>	109
Risk Aversion, the Risk Premium, and the Risk-Return Tradeoff	117
Sources of Risk: Idiosyncratic and Systematic Risk	118
Reducing Risk through Diversification	120
<i>Hedging Risk</i>	120
<i>Spreading Risk</i>	121

<i>Learning Tools</i>	Applying the Concept: It's Not Just Expected Return That Matters	107
	Your Financial World: Choosing the Right Amount of Car Insurance	111
	Tools of the Trade: The Impact of Leverage on Risk	114
	Lessons from the Crisis: Systemic Risk	116
	Your Financial World: Your Risk Tolerance	119
	In the News: Risk-On, Risk-Off May Be Ending	122

	Terms	124
	Using FRED: Codes for Data in This Chapter	125
	Chapter Lessons	125
	Conceptual and Analytical Problems	126
	Data Exploration	128
	APPENDIX A TO CHAPTER 5: A Quick Test to Measure Investment Risk Tolerance	129
	APPENDIX B TO CHAPTER 5: The Mathematics of Diversification	131
CHAPTER 6	Bonds, Bond Prices, and the Determination of Interest Rates	133
	Bond Prices	134
	<i>Zero-Coupon Bonds</i>	134
	<i>Fixed-Payment Loans</i>	135
	<i>Coupon Bonds</i>	136
	<i>Consols</i>	136
	Bond Yields	137
	<i>Yield to Maturity</i>	137
	<i>Current Yield</i>	138
	<i>Holding Period Returns</i>	139
	The Bond Market and the Determination of Interest Rates	141
	<i>Bond Supply, Bond Demand, and Equilibrium in the Bond Market</i>	141
	<i>Factors That Shift Bond Supply</i>	145
	<i>Factors That Shift Bond Demand</i>	146
	<i>Understanding Changes in Equilibrium Bond Prices and Interest Rates</i>	149
	Why Bonds Are Risky	150
	<i>Default Risk</i>	152
	<i>Inflation Risk</i>	154
	<i>Interest-Rate Risk</i>	155

<i>Learning Tools</i>	Your Financial World: Know Your Mortgage	136
	Tools of the Trade: Reading the Bond Page	142
	Your Financial World: Understanding the Ads in the Newspaper	148
	Applying the Concept: When Russia Defaulted	151
	Applying the Concept: Securitization	153
	Your Financial World: Bonds Indexed to Inflation	154
	In the News: Gross's Burning Bond Market Fails to Frighten Investors	156

	Terms	157
	Using FRED: Codes for Data in This Chapter	157
	Chapter Lessons	158
	Conceptual and Analytical Problems	158
	Data Exploration	161
CHAPTER 7	The Risk and Term Structure of Interest Rates	162
	Ratings and the Risk Structure of Interest Rates	163
	<i>Bond Ratings</i>	163
	<i>Commercial Paper Ratings</i>	167
	<i>The Impact of Ratings on Yields</i>	168
	Differences in Tax Status and Municipal Bonds	171
	The Term Structure of Interest Rates	172
	<i>The Expectations Hypothesis</i>	172
	<i>The Liquidity Premium Theory</i>	177
	The Information Content of Interest Rates	179
	<i>Information in the Risk Structure of Interest Rates</i>	179
	<i>Information in the Term Structure of Interest Rates</i>	180
<i>Learning Tools</i>	<i>Lessons from the Crisis: Subprime Mortgages</i>	165
	<i>Lessons from the Crisis: Rating Agencies</i>	166
	<i>Your Financial World: Your Credit Rating</i>	169
	<i>Lessons from the Crisis: Asset-Backed Commercial Paper</i>	171
	<i>Tools of the Trade: Reading Charts</i>	176
	<i>Applying the Concept: The Flight to Quality</i>	179
	<i>In the News: Banks Decline Yield Curve Invitation to Party On</i>	182
	Terms	184
	Using FRED: Codes for Data in This Chapter	185
	Chapter Lessons	185
	Conceptual and Analytical Problems	186
	Data Exploration	188
CHAPTER 8	Stocks, Stock Markets, and Market Efficiency	189
	The Essential Characteristics of Common Stock	190
	Measuring the Level of the Stock Market	193
	<i>The Dow Jones Industrial Average</i>	194
	<i>The Standard & Poor's 500 Index</i>	194
	<i>Other U.S. Stock Market Indexes</i>	196
	<i>World Stock Indexes</i>	196
	Valuing Stocks	198
	<i>Fundamental Value and the Dividend-Discount Model</i>	198
	<i>Why Stocks Are Risky</i>	200
	<i>Risk and the Value of Stocks</i>	202
	<i>The Theory of Efficient Markets</i>	203

Investing in Stocks for the Long Run 205
 The Stock Market's Role in the Economy 208

Learning Tools Your Financial World: A Home Is a Place to Live 192
 Tools of the Trade: Reading Stock Indexes in the Business News 195
 Your Financial World: Beware Percentage Changes 201
 Applying the Concept: The Chinese Stock Market 203
 Your Financial World: Should You Own Stocks? 206
 In the News: Bubble Spotting 207
 Applying the Concept: What Was the Internet Bubble All About? 209

Terms 210
 Using FRED: Codes for Data in This Chapter 210
 Chapter Lessons 210
 Conceptual and Analytical Problems 211
 Data Exploration 213

CHAPTER 9 Derivatives: Futures, Options, and Swaps 214

The Basics: Defining Derivatives 215
 Forwards and Futures 216
 Margin Accounts and Marking to Market 218
 Hedging and Speculating with Futures 219
 Arbitrage and the Determinants of Futures Prices 219
 Options 222
 Calls, Puts, and All That: Definitions 222
 Using Options 223
 Pricing Options: Intrinsic Value and the Time Value of the Option 225
 The Value of Options: Some Examples 228
 Swaps 230
 Interest-Rate Swaps 230
 Credit-Default Swaps 234

Learning Tools Lessons from the Crisis: Central Counterparties and Systemic Risk 220
 Your Financial World: Should You Believe Corporate Financial Statements? 224
 Your Financial World: Should You Accept Options as Part of Your Pay? 228
 Applying the Concept: What Was Long-Term Capital Management Doing? 231
 In the News: No Insurance Pay-Out on Greek Debt 233

Terms 235
 Using FRED: Codes for Data in This Chapter 236
 Chapter Lessons 236
 Conceptual and Analytical Problems 237
 Data Exploration 239

CHAPTER 10 Foreign Exchange 240

Foreign Exchange Basics	242
<i>The Nominal Exchange Rate</i>	242
<i>The Real Exchange Rate</i>	244
<i>Foreign Exchange Markets</i>	245
Exchange Rates in the Long Run	246
<i>The Law of One Price</i>	246
<i>Purchasing Power Parity</i>	249
Exchange Rates in the Short Run	253
<i>The Supply of Dollars</i>	253
<i>The Demand for Dollars</i>	253
<i>Equilibrium in the Market for Dollars</i>	254
<i>Shifts in the Supply of and Demand for Dollars</i>	254
<i>Explaining Exchange Rate Movements</i>	256
Government Policy and Foreign Exchange Intervention	258

<i>Learning Tools</i>	<i>Tools of the Trade: Following Exchange Rates in the News</i>	246
	<i>Your Financial World: Investing Abroad</i>	248
	<i>Applying the Concept: The Big Mac Index</i>	252
	<i>Your Financial World: Don't Bet on Exchange Rates</i>	254
	<i>Lessons from the Crisis: Currency Risk and Rollover Risk</i>	257
	<i>In the News: Foreign Exchange: Neighbors Show Little Appetite for Brazil's "War"</i>	259

Terms	260
Using FRED: Codes for Data in This Chapter	260
Chapter Lessons	260
Conceptual and Analytical Problems	261
Data Exploration	264
APPENDIX TO CHAPTER 10: Interest-Rate Parity and Short-Run Exchange Rate Determination	265

Part III Financial Institutions 267**CHAPTER 11 The Economics of Financial Intermediation 268**

The Role of Financial Intermediaries	270
<i>Pooling Savings</i>	273
<i>Safekeeping, Payments System Access, and Accounting</i>	273
<i>Providing Liquidity</i>	275
<i>Diversifying Risk</i>	276
<i>Collecting and Processing Information</i>	276
Information Asymmetries and Information Costs	277
<i>Adverse Selection</i>	278
<i>Solving the Adverse Selection Problem</i>	280
<i>Moral Hazard: Problem and Solutions</i>	283

Financial Intermediaries and Information Costs	286
<i>Screening and Certifying to Reduce Adverse Selection</i>	286
<i>Monitoring to Reduce Moral Hazard</i>	287
<i>How Companies Finance Growth and Investment</i>	289

<i>Learning Tools</i>	Your Financial World: Your First Credit Card	274
	Applying the Concept: The Madoff Scandal	278
	Your Financial World: Private Mortgage Insurance	280
	Applying the Concept: Deflation, Net Worth, and Information Costs	281
	Lessons from the Crisis: Information Asymmetry and Securitization	285
	In the News: China Shadow Bankers Go Online as Peer-to-Peer Sites Boom	288

Terms	290
Using FRED: Codes for Data in This Chapter	290
Chapter Lessons	290
Conceptual and Analytical Problems	291
Data Exploration	293

CHAPTER 12 Depository Institutions: Banks and Bank Management 295

The Balance Sheet of Commercial Banks	296
<i>Assets: Uses of Funds</i>	296
<i>Liabilities: Sources of Funds</i>	299
<i>Bank Capital and Profitability</i>	303
<i>Off-Balance-Sheet Activities</i>	306
Bank Risk: Where It Comes from and What to Do about It	308
<i>Liquidity Risk</i>	308
<i>Credit Risk</i>	312
<i>Interest-Rate Risk</i>	312
<i>Trading Risk</i>	315
<i>Other Risks</i>	317

<i>Learning Tools</i>	Your Financial World: Choosing the Right Bank for You	300
	Tools of the Trade: A Catalog of Depository Institutions	304
	Applying the Concept: Growth and Banking in China and India	306
	Your Financial World: The Cost of Payday Loans	307
	Lessons from the Crisis: Insufficient Bank Capital	314
	In the News: Lessons from the London Whale	316
	Applying the Concept: The Tri-Party Repo Market	319

Terms	320
Using FRED: Codes for Data in This Chapter	321
Chapter Lessons	321
Conceptual and Analytical Problems	322
Data Exploration	325

CHAPTER 13 Financial Industry Structure 327

- Banking Industry Structure 329
 - A Short History of U.S. Banking* 329
 - Competition and Consolidation* 331
 - The Globalization of Banking* 335
 - The Future of Banks* 336
- Nondepository Institutions 339
 - Insurance Companies* 340
 - Pension Funds* 344
 - Securities Firms: Brokers, Mutual Funds, and Investment Banks* 346
 - Finance Companies* 347
 - Government-Sponsored Enterprises* 349

-
- Learning Tools*
- Your Financial World: Pawnshops 333
 - Applying the Concept: The LIBOR Scandal 337
 - Your Financial World: How Much Life Insurance Do You Need? 342
 - Applying the Concept: Reinsurance and “Cat Bonds” 344
 - Applying the Concept: Public Pensions and the Social Security System 346
 - Tools of the Trade: Hedge Funds 348
 - In the News: Fed’s Tarullo Says Reviving Glass-Steagall May Be Costly 350
 - Your Financial World: Annuities 352
-

- Terms 354
- Using FRED: Codes for Data This Chapter 354
- Chapter Lessons 354
- Conceptual and Analytical Problems 356
- Data Exploration 357

CHAPTER 14 Regulating the Financial System 359

- The Sources and Consequences of Runs, Panics, and Crises 361
- The Government Safety Net 364
 - The Unique Role of Banks and Shadow Banks* 365
 - The Government as Lender of Last Resort* 366
 - Government Deposit Insurance* 369
 - Problems Created by the Government Safety Net* 369
- Regulation and Supervision of the Financial System 372
 - Restrictions on Competition* 375
 - Asset Holding Restrictions and Minimum Capital Requirements* 376
 - Disclosure Requirements* 378
 - Supervision and Examination* 380
 - Evolving Challenges for Regulators and Supervisors* 381
 - Micro-Prudential Versus Macro-Prudential Regulation* 382
 - Regulatory Reform: The Dodd-Frank Act of 2010* 385

<i>Learning Tools</i>	Your Financial World: The Securities Investor Protection Corporation	367
	Applying the Concept: The Day the Bank of New York Borrowed \$23 Billion	368
	Lessons from the Crisis: Should the Lender of Last Resort Also Supervise?	370
	Applying the Concept: Does Deposit Insurance Really Work?	373
	Your Financial World: Are Your Deposits Insured?	375
	Tools of the Trade: The Basel Accords: I, II, III, and Counting . . .	378
	In the News: How to Shrink the “Too-Big-to-Fail” Banks	382

	Terms	388
	Using FRED: Codes for Data in This Chapter	388
	Chapter Lessons	389
	Conceptual and Analytical Problems	390
	Data Exploration	391

Part IV Central Banks, Monetary Policy, and Financial Stability 393

CHAPTER 15	Central Banks in the World Today	394
	The Basics: How Central Banks Originated and Their Role Today	395
	<i>The Government’s Bank</i>	395
	<i>The Bankers’ Bank</i>	397
	Stability: The Primary Objective of All Central Banks	399
	<i>Low, Stable Inflation</i>	400
	<i>High, Stable Real Growth</i>	402
	<i>Financial System Stability</i>	403
	<i>Interest-Rate and Exchange-Rate Stability</i>	404
	Meeting the Challenge: Creating a Successful Central Bank	405
	<i>The Need for Independence</i>	407
	<i>Decision Making by Committee</i>	408
	<i>The Need for Accountability and Transparency</i>	409
	<i>The Policy Framework, Policy Tradeoffs, and Credibility</i>	410
	Fitting Everything Together: Central Banks and Fiscal Policy	412

<i>Learning Tools</i>	Applying the Concept: Why Is Stable Money Such a Big Deal?	397
	Your Financial World: Why Inflation Is Bad for You	401
	Lessons from the Crisis: Threats to Fed Independence	406
	Applying the Concept: Independent Central Banks Deliver Lower Inflation	409
	In the News: The Politicisation (or Not) of Central Banks	414

	Terms	416
	Using FRED: Codes for Data in This Chapter	417

	Chapter Lessons	417
	Conceptual and Analytical Problems	418
	Data Exploration	420
CHAPTER 16	The Structure of Central Banks: The Federal Reserve and the European Central Bank	421
	The Structure of the Federal Reserve System	422
	<i>The Federal Reserve Banks</i>	423
	<i>The Board of Governors</i>	426
	<i>The Federal Open Market Committee</i>	428
	Assessing the Federal Reserve System's Structure	432
	<i>Independence from Political Influence</i>	432
	<i>Decision Making by Committee</i>	433
	<i>Accountability and Transparency</i>	433
	<i>Policy Framework</i>	435
	The European Central Bank	436
	<i>Organizational Structure</i>	437
	<i>Accountability and Transparency</i>	441
	<i>The Price Stability Objective and Monetary Policy Strategy</i>	444
<i>Learning Tools</i>	Your Financial World: Treasury Direct	427
	Tools of the Trade: Decoding the FOMC Statement	431
	Applying the Concept: The Evolution of Federal Reserve Independence	433
	Your Financial World: The Fed Can't Save You from a Stock-Market Crash	434
	In the News: Should the Fed Change Its Target?: Interview with Michael Woodford	440
	Lessons from the Crisis: The Euro-Area Crisis and the ECB	442
	Terms	445
	Using FRED: Codes for Data in This Chapter	446
	Chapter Lessons	446
	Conceptual and Analytical Problems	447
	Data Exploration	448
CHAPTER 17	The Central Bank Balance Sheet and the Money Supply Process	450
	The Central Bank's Balance Sheet	452
	<i>Assets</i>	452
	<i>Liabilities</i>	453
	<i>The Importance of Disclosure</i>	455
	<i>The Monetary Base</i>	456
	Changing the Size and Composition of the Balance Sheet	456
	<i>Open Market Operations</i>	457
	<i>Foreign Exchange Intervention</i>	458
	<i>Discount Loans</i>	459
	<i>Cash Withdrawal</i>	460

The Deposit Expansion Multiplier 462
Deposit Creation in a Single Bank 462
Deposit Expansion in a System of Banks 464
 The Monetary Base and the Money Supply 467
Deposit Expansion with Excess Reserves and Cash Withdrawals 467
The Arithmetic of the Money Multiplier 468
The Limits of the Central Bank’s Ability to Control the Quantity of Money 473

Learning Tools Applying the Concept: The Fed’s Balance Sheet: Impact of the Crisis 454
 Your Financial World: Why We Still Have Cash 459
 Applying the Concept: The Fed’s Response on September 11, 2001 463
 Your Financial World: Your Excess Reserves 470
 Lessons from the Crisis: The Impact on Money Supply 471
 Applying the Concept: Monetary Policy in the 1930s 473
 In the News: The Monetary Base Is Exploding. So What? 475

Terms 476
 Using FRED: Codes for Data in This Chapter 476
 Chapter Lessons 476
 Conceptual and Analytical Problems 477
 Data Exploration 479

CHAPTER 18 Monetary Policy: Stabilizing the Domestic Economy 481

The Federal Reserve’s Conventional Policy Toolbox 484
The Target Federal Funds Rate and Open Market Operations 486
Discount Lending, the Lender of Last Resort, and Crisis Management 488
Reserve Requirements 491
 Operational Policy at the European Central Bank 493
The ECB’s Target Interest Rate and Open Market Operations 493
The Marginal Lending Facility 495
The Deposit Facility 495
Reserve Requirements 496
 Linking Tools to Objectives: Making Choices 497
Desirable Features of a Policy Instrument 497
Operating Instruments and Intermediate Targets 499
 A Guide to Central Bank Interest Rates: The Taylor Rule 500
 Unconventional Policy Tools 506
Forward Guidance 508
Quantitative Easing 509
Targeted Asset Purchases 511
Making an Effective Exit 512
 Concluding Remarks 514

<i>Learning Tools</i>	Your Financial World: What the Federal Funds Rate Means to You	490
	Applying the Concept: The Channel System and the Future of Monetary Policy	494
	Applying the Concept: Inflation Targeting	499
	In the News: How Jawboning Works	504
	Tools of the Trade: Some Unconventional Policy Tools	507
	Your Financial World: Economic History Is Constantly Changing	515

	Terms	516
	Using FRED: Codes for Data in This Chapter	517
	Chapter Lessons	517
	Conceptual and Analytical Problems	518
	Data Exploration	520

CHAPTER 19 Exchange-Rate Policy and the Central Bank 522

	Linking Exchange-Rate Policy with Domestic Monetary Policy	524
	<i>Inflation and the Long-Run Implications of Purchasing Power Parity</i>	524
	<i>Interest Rates and the Short-Run Implications of Capital Market Arbitrage</i>	525
	<i>Capital Controls and the Policymakers' Choice</i>	527
	Mechanics of Exchange-Rate Management	529
	<i>The Central Bank's Balance Sheet</i>	529
	<i>Sterilized Intervention</i>	532
	The Costs, Benefits, and Risks of Fixed Exchange Rates	533
	<i>Assessing the Costs and Benefits</i>	533
	<i>The Danger of Speculative Attacks</i>	535
	<i>Summarizing the Case for a Fixed Exchange Rate</i>	537
	Fixed Exchange-Rate Regimes	538
	<i>Exchange-Rate Pegs and the Bretton Woods System</i>	538
	<i>Hard Pegs: Currency Boards and Dollarization</i>	539

<i>Learning Tools</i>	Your Financial World: Emerging Market Crises and You	526
	Applying the Concept: Malaysia Imposes Capital Controls	528
	Applying the Concept: The Gold Standard: an Exchange-Rate Regime Whose Time Has Passed	537
	Lessons of the Crisis: Oasis of Stability	539
	Applying the Concept: Implications of China's Exchange-Rate Regime	540
	In the News: Phony Currency Wars	542

	Terms	545
	Using FRED: Codes for Data in This Chapter	545
	Chapter Lessons	546
	Conceptual and Analytical Problems	547

Data Exploration 548

APPENDIX TO CHAPTER 19: What You Really Need to Know about the Balance of Payments 550

Part V Modern Monetary Economics 552

CHAPTER 20 Money Growth, Money Demand, and Modern Monetary Policy 553

Why We Care about Monetary Aggregates 554

The Quantity Theory and the Velocity of Money 557

Velocity and the Equation of Exchange 557

The Quantity Theory of Money 559

The Facts about Velocity 560

The Demand for Money 563

The Transactions Demand for Money 564

The Portfolio Demand for Money 566

Targeting Money Growth in a Low-Inflation Environment 567

The Instability of U.S. Money Demand 569

Targeting Money Growth: The Fed and the ECB 571

Learning Tools Applying the Concept: Inflation and the Collapse of the Soviet Union 556

Your Financial World: Understanding Inflation Statistics 560

Applying the Concept: The ECB's Reference Value For Money Growth 564

Your Financial World: Free Checking Accounts Are Rarely Free 566

Tools of the Trade: Using Statistical Models in Policy Evaluation 570

Applying the Concept: Financial Innovation and the Shifting Velocity of Money 572

In the News: Will Fed's "Easy Money" Push Up Prices? 574

Terms 576

Using FRED: Codes for Data in This Chapter 577

Chapter Lessons 577

Conceptual and Analytical Problems 578

Data Exploration 579

CHAPTER 21 Output, Inflation, and Monetary Policy 581

Output and Inflation in the Long Run 582

Potential Output 582

Long-Run Inflation 583

Monetary Policy and the Dynamic Aggregate Demand Curve 584

Aggregate Expenditure and the Real Interest Rate 586

Inflation, the Real Interest Rate, and the Monetary Policy Reaction Curve 590

The Dynamic Aggregate Demand Curve 595

Aggregate Supply 600
 Short-Run Aggregate Supply 600
 Shifts in the Short-Run Aggregate Supply Curve 600
 The Long-Run Aggregate Supply Curve 602
 Equilibrium and the Determination of Output and Inflation 605
 Short-Run Equilibrium 605
 Adjustment to Long-Run Equilibrium 605
 The Sources of Fluctuations in Output and Inflation 607
 What Causes Recessions? 608

Learning Tools Your Financial World: Using the Word *Inflation* 583
 Applying the Concept: Investment and the Business Cycle 592
 Your Financial World: It's the Real Interest Rate That Matters 597
 Applying the Concept: Inflation Changes and Output Gaps 603
 Tools of the Trade: Output Growth and Output Gaps 605
 In the News: Yellen Says Higher Rates Not Assured after Thresholds Hit 610

Terms 611
 Using FRED: Codes for Data in This Chapter 612
 Chapter Lessons 612
 Conceptual and Analytical Problems 613
 Data Exploration 615

CHAPTER 22 Understanding Business Cycle Fluctuations 617

Sources of Fluctuations in Output and Inflation 619
 Shifts in the Dynamic Aggregate Demand Curve 619
 Shifts in the Short-Run Aggregate Supply Curve 624
 Using the Aggregate Demand–Aggregate Supply Framework 625
 How Do Policymakers Achieve Their Stabilization Objectives? 625
 What Accounts for the Great Moderation? 632
 What Happens When Potential Output Changes? 634
 What Are the Implications of Globalization for Monetary Policy? 638
 Can Policymakers Distinguish a Recessionary Gap from a Fall in Potential Output? 638
 Can Policymakers Stabilize Output and Inflation Simultaneously? 640

Learning Tools Tools of the Trade: Defining a Recession: The NBER Reference Cycle 626
 Your Financial World: Stabilizing Your Consumption 630
 Your Financial World: The Problem with Measuring GDP 641
 In the News: Potential Output: Risking Permanent Damage 644

Terms 645
 Using FRED: Codes for Data in This Chapter 645

Chapter Lessons 645
Conceptual and Analytical Problems 646
Data Exploration 648

CHAPTER 23 Modern Monetary Policy and the Challenges Facing Central Bankers 649

The Monetary Policy Transmission Mechanism 651
The Traditional Channels: Interest Rates and Exchange Rates 651
Bank-Lending and Balance-Sheet Channels 653
Asset-Price Channels: Wealth and Investment 657
Financial Crises and the Transmission of Monetary Policy 660
The Challenges Modern Monetary Policymakers Face 661
Booms and Busts in Property and Equity Prices 661
Deflation and the Zero Nominal-Interest-Rate Bound 664
The Evolving Structure of the Financial System 669

Learning Tools Tools of the Trade: Correlation Does Not Imply Causality 653
Your Financial World: Don't Count on Inflation to Bail You Out 656
Applying the Concept: What Happened in Japan? 658
Your Financial World: Know the Level of Inflation 665
In the News: Should the Fed Pop Bubbles by Raising Interest Rates? 668

Terms 671
Using FRED: Codes for Data in This Chapter 671
Chapter Lessons 671
Conceptual and Analytical Problems 672
Data Exploration 674

Glossary G-1
Photo Credits PC-0
Notation Index N-1
Index I-1

Part I

Money and the Financial System

Chapter 1

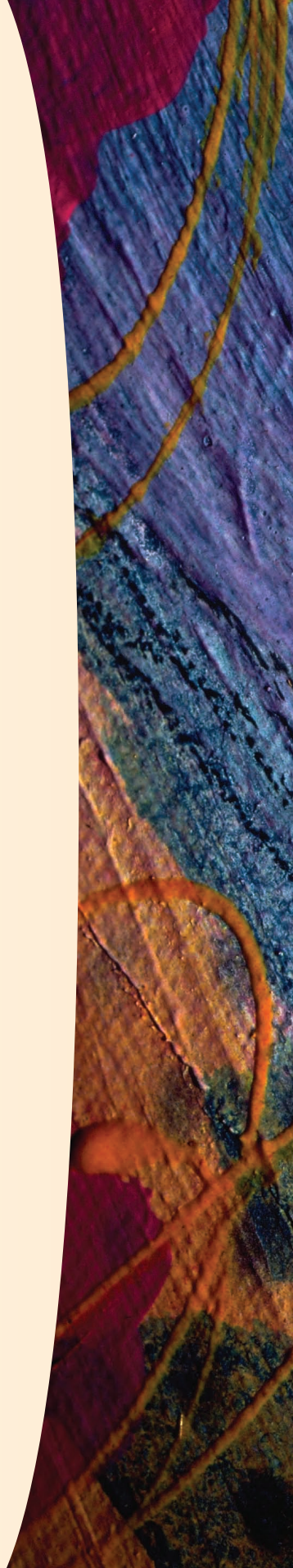
An Introduction to Money and the Financial System

Chapter 2

Money and the Payments System

Chapter 3

Financial Instruments, Financial Markets,
and Financial Institutions





Chapter 1

An Introduction to Money and the Financial System

Learning Objectives

Understand . . .

- LO1*** The parts of the financial system
- LO2** The core principles of money and banking
- LO3** Special features and organization of the book

This morning, a typical American college student bought coffee at the local café, paying for it with an ATM card. Then she jumped into her insured car and drove to the university, which she attends thanks to her student loan. She may have left her parents' home, which is mortgaged, a few minutes early to avoid construction work on a new dormitory, financed by bonds issued by the university. Or perhaps she needed to purchase this book online, using her credit card, before her first money and banking class began.

Beneath the surface, the financial transactions embedded in this story—even the seemingly simple ones—are quite complicated. If the café owner and the student use different banks, paying for the coffee will require an interbank funds transfer. The company that insures the student's car has to invest the premiums she pays until they are needed to pay off claims. The student's parents almost surely obtained their home mortgage through a mortgage broker, whose job was to find the cheapest mortgage available. And the bonds the university issued to finance construction of the new dormitory were created with the aid of an investment bank.

This brief example hints at the complex web of interdependent institutions and markets that is the foundation for our daily financial transactions. The system is so efficient that most of us rarely take note of it. But a financial system is like air to an economy: If it disappeared suddenly, everything would grind to a halt.

In the autumn of 2008, we came closer to such a financial meltdown than at any time since the 1930s. In the earlier episode, the collapse of the banking system led to the Great Depression. In the recent crisis, some of the world's largest financial institutions failed. Key markets stopped functioning. Credit dried up, even for sound borrowers. As a result, vibrant companies that relied on short-term loans to pay their employees and buy materials faced potential ruin. Even some fundamental ways that we make payments for goods and services were threatened.

Gasping for air in this financial crisis, the global economy during 2008 and 2009 sank into the deepest, broadest, and longest downturn since the 1930s. Around the

*LO Learning Objective

world, tens of millions of people lost their jobs. In the United States, millions lost their homes and their life's savings. Others became unable to borrow to buy a home or go to college. And the weakness added to financial fragility elsewhere, especially in Europe, where the viability of the euro, the world's leading currency after the U.S. dollar, was threatened. The chances are good that you know someone—in your neighborhood, your school, or your family—whose life was changed for the worse by the crisis.

So, what happens in the financial system—whether for good or for bad—matters greatly for all of us. To understand the system—both its strengths and its vulnerabilities—let's take a closer look.

The Six Parts of the Financial System

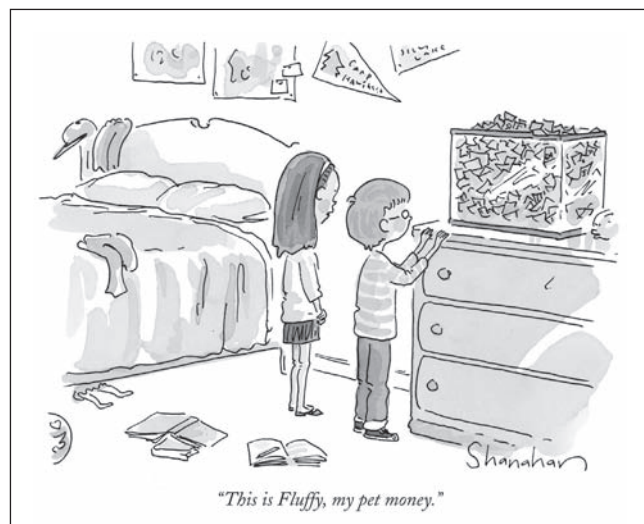
The **financial system**¹ has six parts, each of which plays a fundamental role in our economy. Those parts are money, financial instruments, financial markets, financial institutions, government regulatory agencies, and central banks.

We use the first part of the system, **money**, to pay for our purchases and to store our wealth. We use the second part, **financial instruments**, to transfer resources from savers to investors and to transfer risk to those who are best equipped to bear it. Stocks, mortgages, and insurance policies are examples of financial instruments. The third part of our financial system, **financial markets**, allows us to buy and sell financial instruments quickly and cheaply. The New York Stock Exchange is an example of a financial market. **Financial institutions**, the fourth part of the financial system, provide a myriad of services, including access to the financial markets and collection of information about prospective borrowers to ensure they are creditworthy. Banks, securities firms, and insurance companies are examples of financial institutions. Government **regulatory agencies** form the fifth part of the financial system. They are responsible for making sure that the elements of the financial system—including its instruments, markets, and institutions—operate in a safe and reliable manner. Finally, **central banks**, the sixth part of the system, monitor and stabilize the economy. The **Federal Reserve System** is the central bank of the United States.

While the essential functions that define these six categories endure, their form is constantly evolving. *Money* once consisted of gold and silver coins. These were eventually replaced by paper currency, which today is being eclipsed by electronic funds transfers. Methods of accessing means of payment have changed dramatically as well. As recently as 1970, people customarily obtained currency from bank tellers when they cashed their paychecks or withdrew their savings from the local bank. Today, they can get cash from practically any ATM anywhere in the world. To pay their bills, people once wrote checks and put them in the mail, then waited for their monthly bank statements to make sure the transactions had been processed correctly. Today, payments can be made automatically, and account holders can check the transactions at any time on their bank's website or on their smartphone.

Financial instruments (or securities, as they are often called) have evolved just as much as currency. In the last few centuries, investors could buy individual stocks through stockbrokers, but the transactions were costly. Furthermore, putting together a portfolio of even a small number of stocks and bonds was extremely time consuming; just collecting the information necessary to evaluate a potential investment was a daunting task. As a result, investing was an activity reserved for the wealthy. Today, financial institutions offer people with as little as \$1,000 to invest the ability to purchase

¹Throughout the book, terms in bold red are “key terms” listed at the end of each chapter and defined in the glossary.



SOURCE: 1999 © Danny Shanahan/The New Yorker Collection/www.cartoonbank.com.

shares in *mutual funds*, which pool the savings of a large number of investors. Because of their size, mutual funds can construct portfolios of hundreds or even thousands of different stocks and/or bonds.

The markets where stocks and bonds are sold have undergone a similar transformation. Originally, *financial markets* were located in coffeehouses and taverns where individuals met to exchange financial instruments. The next step was to create organized markets, like the New York Stock Exchange—trading places specifically dedicated to the buying and selling of stocks and bonds. Today, much of the activity that once occurred at these big-city financial exchanges is handled by electronic networks. Buyers and sellers obtain price information and initiate transactions from their desktop computers or from handheld devices. Because electronic

networks have reduced the cost of processing financial transactions, even small investors can afford to participate in them. Just as important, today's financial markets offer a much broader array of financial instruments than those available even 50 years ago.

Financial institutions have changed, as well. Banks began as vaults where people could store their valuables. Gradually, they developed into institutions that accepted deposits and made loans. For hundreds of years, in fact, that was what bankers did. Today, a bank is more like a financial supermarket. Walk in and you will discover a huge assortment of financial products and services for sale, from access to the financial markets to insurance policies, mortgages, consumer credit, and even investment advice.

The activities of government regulatory agencies and the design of **regulation** have been evolving and have entered a period of more rapid change, too. In the aftermath of the financial crisis of 1929–1933, when the failure of thousands of banks led to the Great Depression, the U.S. government introduced regulatory agencies to provide wide-ranging financial regulation—rules for the operation of financial institutions and markets—and **supervision**—oversight through examination and enforcement. The U.S. agencies established in the 1930s to issue and enforce these financial rules still operate.

Yet, the evolution of financial instruments, institutions, and markets has led to many changes in the ways that regulatory agencies work. A bank examiner used to count the money in the cash drawers and call borrowers to see if the loans on a bank's books were real. They might even visit workplaces to see if the loans were used as designed to buy equipment or build a factory. Today, banks engage in millions of transactions, many of which are far more complex and difficult to understand than a loan or a mortgage. So, a government examiner also looks at the systems that a bank uses to manage its various risks. In doing so, regulators try to encourage best practices throughout the financial industry.

However, the failure of regulators in the United States and elsewhere around the world to anticipate or prevent the financial crisis of 2007–2009 has led many governments to undertake far-reaching changes to financial regulation and the regulatory agencies. The Dodd-Frank Wall Street Reform and Consumer Protection Act, adopted

in 2010 and known as the **Dodd-Frank Act**, is the largest U.S. regulatory change since the 1930s. Also in 2010, regulators of many nations agreed on a third, major update of standards for internationally active banks—known as **Basel III** after the Swiss city where the policymakers meet. Both reforms will take years to implement, and their influence will shape the financial system for decades.

Finally, *central banks* have changed a great deal. They began as large private banks founded by monarchs to finance wars. For instance, King William of Orange created the Bank of England in 1694 for the express purpose of raising taxes and borrowing to finance a war between Austria, England, and the Netherlands on one side and Louis XIV's France on the other. Eventually, these government treasuries grew into the modern central banks we know today. While only a few central banks existed in 1900, now nearly every country in the world has one, and they have become one of the most important institutions in government. Central banks control the availability of money and credit to promote low inflation, high growth, and the stability of the financial system. Because their current mission is to serve the public at large rather than land-hungry monarchs, their operating methods have changed as well. A central bank's decisions used to be shrouded in mystery, but today's policymakers strive for transparency in their operations. Officials at the **European Central Bank** and the U.S. Federal Reserve—two of the most important central banks in the world—go out of their way to explain the rationale for their decisions.

Though the changing nature of our financial system is a fascinating topic, it poses challenges for both students and instructors. How can we teach and learn about money and banking in a way that will stand the test of time, so that the knowledge we gain won't become outmoded? The answer is that we must develop a way to understand and adapt to the evolutionary structure of the financial system. That means discussing money and banking within a framework of core principles that do not change over time. The next section introduces the five core principles that will guide our studies throughout this book.

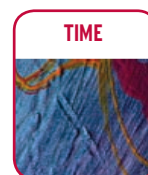
The Five Core Principles of Money and Banking

Five core principles will inform our analysis of the financial system and its interaction with the real economy. Once you have grasped these principles, you will have a better understanding not only of what is happening in the financial world today but of changes that will undoubtedly occur in the future. The five principles are based on **Time, Risk, Information, Markets, and Stability**.

Core Principle 1: Time Has Value

The first principle of money and banking is that *time has value*. At some very basic level, everyone knows this. If you take a job at the local supermarket, you will almost surely be paid by the hour. An hour's worth of work equals a certain number of dollars. Literally, your time has a price.

On a more sophisticated level, **time** affects the value of financial transactions. Most loan contracts allow the borrower to spread out the payments over time. If you take out an auto loan, for example, the lender will allow you to make a series of monthly payments over three, four, or even five years. If you add up the payments, you'll discover that the total exceeds the amount of the loan. At an interest rate of 4 percent, a four-year, \$10,000 car loan will require 48 monthly payments of \$226 each. That means



you will repay a total of \$10,848 (48 times \$226). The reason your repayments total more than the loan amount is that you are paying interest to compensate the lender for the time during which you use the funds. That is, the resources you borrowed have an opportunity cost to the lender so you have to pay rent on them.

Interest payments are fundamental to a market economy. In Chapter 4, we will develop an understanding of interest rates and how to use them. Then, throughout the remainder of Part II, we will apply the principle that time has value in our discussion of the valuation of bonds, stocks, and other financial instruments involving future payments. How much should you be willing to pay for a particular stock or bond? Figuring out what alternative investments are worth, and comparing them, means valuing payments made on different future dates. The same principle applies to the question of how much you must invest today to achieve a particular financial objective in the future. How much of your salary, for example, do you need to save each month to meet your goal of buying a house? The length of time your savings will be earning interest is a key to answering this question.



Core Principle 2: Risk Requires Compensation

The world is filled with uncertainty. More events, both good and bad, *can* happen than *will* happen. Some of the possibilities, such as the likelihood of your home doubling in value after you buy it, are welcome. Other possibilities, such as the chance that you might lose your job and not be able to make your car payments, are distinctly unwelcome. Dealing effectively with **risk** requires that you consider the full range of possibilities in order to eliminate some risks, reduce others, pay someone to assume particularly onerous risks, and just live with what's left. Needless to say, no one will assume your risks for free, which brings us to the second core principle of money and banking: *Risk requires compensation*. In the financial world, compensation is made in the form of explicit payments. That is, investors must be paid to assume risk; the higher the risk, the bigger the required payment.

Car insurance is a common example of paying someone else to shoulder a risk you don't want to take. If your car is wrecked in an accident, you will want to be able to repair it. But beyond that, auto insurance shelters drivers from the possibility of losing all their wealth in the event that they cause an accident in which someone is seriously injured. Although the chances of causing such an accident are quite small, the results can be so serious that, even if the government didn't require it, most of us would voluntarily purchase auto insurance. Driving without it just isn't worth the risk. The insurance company pools the premiums that policyholders pay and invests them. Even though some of the premiums will be spent to settle claims when cars are stolen or damaged by collisions, the chance to make a profit is good. So both the insurance company and the drivers who buy policies are ultimately better off.

Bearing in mind that time has value and risk requires compensation, we can begin to see the rationale behind the valuation of a broad set of financial instruments. For example, a lender will charge a higher interest rate on a loan if there is a chance that the borrower will not repay. In Chapters 6 and 7, we will use this principle when we examine the interest rates on bonds. As we will see, a company or a government that is on the verge of being unable to pay its bills may still be able to issue bonds (called *junk bonds*), but it will have to pay an extremely high interest rate to do so. The reason is that the lender must be compensated for the substantial risk that the company will not repay the loan. Risk requires compensation.

Core Principle 3: Information Is the Basis for Decisions

Most of us collect **information** before making decisions. The more important the decision, the more information we gather. Think of the difference between buying a \$5 sandwich and a \$10,000 used car. You will surely spend more time comparing cars than comparing sandwiches.

What's true for sandwiches and cars is true for finance as well. That is, *information is the basis for decisions*. In fact, the collection and processing of information is the foundation of the financial system. In Chapter 11, we will learn how financial institutions like banks funnel resources from savers to investors. Before a bank makes a loan, a loan officer will investigate the financial condition of the individual or firm seeking it. Banks want to provide loans only to the highest-quality borrowers. Thus, they spend a great deal of time gathering the information needed to evaluate the creditworthiness of loan applicants.

To understand the problem faced by the two parties to any financial transaction, think about a home mortgage. Before making the loan, the mortgage broker examines the applicant's finances and researches the home's value to make sure the applicant can afford the monthly payments and the property is more valuable than the loan.

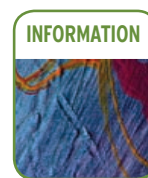
And before the broker transfers the funds to the seller, the new homeowner must purchase fire insurance. All these requirements arise from the fact that the lender doesn't know much about the borrower and wants to make sure the loan will be repaid. When lenders fail to assess creditworthiness properly, they end up with more borrowers who are unable to repay their loans in the future. Large mistakes like these were a key factor in the wave of U.S. mortgage delinquencies and defaults that preceded the financial crisis of 2007–2009. Even five years later, nearly one-fifth of residential mortgages still exceeded the underlying property value.

Information plays a key role in other parts of the financial system as well. In Chapters 2 and 3, we'll see that many types of transactions are arranged so that the buyer doesn't need to know anything about the seller. When merchants accept cash, they don't need to worry about the customer's identity. When stocks change hands, the buyer doesn't need to know anything about the seller, or vice versa. Stock exchanges are organized to eliminate the need for costly information gathering, facilitating the exchange of securities. In one way or another, information is the key to the financial system.

Core Principle 4: Markets Determine Prices and Allocate Resources

Markets are the core of the economic system. They are the place, physical or virtual, where buyers and sellers meet, where firms go to issue stocks and bonds, and where individuals go to trade assets. Financial markets are essential to the economy, channeling its resources and minimizing the cost of gathering information and making transactions. In fact, well-developed financial markets are a necessary precondition for healthy economic growth. For the most part, the better developed a country's financial markets, the faster the country will grow.

The reason for this connection between markets and growth is that *markets determine prices and allocate resources*. Financial markets gather information from a large number of individual participants and aggregate it into a set of prices that signals what is valuable and what is not. Thus, markets are sources of information. By attaching prices to different stocks or bonds, they provide a basis for the allocation of capital.



To see how prices in the financial markets allocate capital, think about a large firm wishing to finance the construction of a new factory costing several hundred million dollars. To raise the funds, the firm can go directly into the financial markets and issue stocks or bonds. The higher the price investors are willing to pay in the market, the more appealing the idea will be, and the more likely it is that the firm will issue securities to raise the capital for the investment.

We will refer to the financial markets throughout much of this book. While our primary focus in Part II will be the nature of financial instruments, we will also study the markets in which those instruments are traded. Chapters 6 through 10 describe the markets for bonds, stocks, derivatives, and foreign currencies.

Importantly, financial markets do not arise by themselves—at least, not the large, well-oiled ones we see operating today. Markets like the New York Stock Exchange, where billions of shares of stock change hands every day, require rules in order to work properly, as well as authorities to police them. Otherwise, they will not function. For people to be willing to participate in a market, they must perceive it as fair. As we will see, this creates an important role for the government. Regulators and supervisors of the financial system make and enforce the rules, punishing people who violate them. When the government protects investors, financial markets work well and help promote economic growth; otherwise they don't.

Finally, even well-developed markets can break down. When they do—as some did during the financial crisis of 2007–2009—the financial system as a whole can be at risk. So today, governments must also play a role in promoting the healthy operation of markets.



Core Principle 5: Stability Improves Welfare

Most of us prefer stable to variable incomes. We like getting raises, but the prospect of a salary cut is not a pleasant one. This brings us to the fifth core principle of money and banking: *Stability improves welfare*. **Stability** is a desirable quality, not just in our personal lives but in the financial system as a whole. As we saw at the start of this chapter, financial instability in the autumn of 2008 brought us closer to a collapse of the system than at any time since the 1930s, triggering the worst global downturn since the Great Depression. And the banking and government debt crisis in the euro area partly reversed Europe's financial integration, a cornerstone of its successful economic and political framework in recent decades.

If you are wondering whether this principle is related to Core Principle 2 (risk requires compensation), you are right. Because volatility creates risk, reducing volatility reduces risk. But while individuals can eliminate many risks on their own (we'll see how when we study financial instruments in Part II), some risks can only be reduced by government policymakers. Business cycle fluctuations are an example of the sort of instability individuals can't eliminate on their own. And though "automatic stabilizers" like unemployment insurance and the income tax system reduce the burden of recessions on individuals, they cannot eliminate an economic slowdown. Monetary policymakers can moderate these downswings by carefully adjusting interest rates. Central banks also have powerful tools to steady fragile financial systems and to repair or support dysfunctional markets. In stabilizing the economy as a whole, they eliminate risks that individuals can't, improving everyone's welfare in the process.

As we will learn in Part IV of this book, stabilizing the economy is a primary function of central banks like the Federal Reserve and the European Central Bank. Officials of these institutions are charged with controlling inflation and reducing business cycle fluctuations. That is, they work to keep inflation low and stable and to keep growth

high and stable. They also have key roles in securing financial stability. When they are successful, they reduce both the risk that individuals will lose their jobs and the uncertainty that firms face in making investment decisions. Not surprisingly, a stable economy grows faster than an unstable economy. Stability improves welfare.



Throughout the book you will notice icons like this in the margin at various points. These will guide you to the core principle that provides the foundation for what is being discussed at that point in the text.

Special Features of This Book

The very first special feature of every chapter in this book is its introduction—each one presents a real-world example that leads to the big questions the chapter is designed to answer, such as: What is money? What do banks do? How does the bond market work? What does the Federal Reserve do to prevent or limit financial crises?

After that real-world setup, the text of each chapter presents the economic and financial theory you need to understand the topics covered. Learning objectives listed at the beginning of the chapter outline the core concepts that are discussed and should be mastered. Each chapter also contains a series of inserts that apply the theory. There are five types of inserts: Your Financial World, Applying the Concept, Lessons from the Crisis, In the News, and Tools of the Trade. Finally, the end of each chapter is divided into four sections: Key Terms, Using FRED, Chapter Lessons, and Problems. Here are some guidelines for using the inserts and end-of-chapter materials.

Your Financial World

When most people decide to make a major purchase, they begin by collecting information. If they are considering buying a car, they will first try to decide which model is best for them and then work hard to pay the lowest price possible. Even for smaller purchases, like clothes or groceries, people first gather information and then buy.

Financial transactions should be no different from consumer purchases. Become informed first, and then buy. If you're thinking, "That's easier said than done," you're right. The problem is that most people have very little knowledge of the financial system, so they don't know how to start or what kind of information to collect.

That's where Your Financial World comes in. These inserts provide basic guidelines for applying economic theory to the bread-and-butter financial decisions you make nearly every day. Your Financial World answers questions about:

- Banking and Payments
 - What's the difference between credit and debit cards?
 - How should you pick a bank?
- Investments
 - Should you own stocks or bonds or gold?
 - Should you invest in the company you work for?
- Credit, Loans, and Mortgages
 - What do you need to know when you shop for a mortgage?
 - What is your credit score and why is it important?
- Insurance
 - How much life insurance do you need?
 - How much car insurance do you need?