Money,
the Financial System,
and the Economy

Fourth Edition

R. GLENN HUBBARD

Money, the Financial System, and the Economy

Fourth Edition

R. GLENN HUBBARD



Boston San Francisco New York
London Toronto Sydney Tokyo Singapore Madrid
Mexico City Munich Paris Cape Town Hong Kong Montreal

For Constance, Raph, and Will

Editor-in-Chief: Denise Clinton

Executive Development Manager: Sylvia Mallory

Senior Production Supervisor: Juliet Silveri Production Coordinator: Heather Bingham Supplements Editor: Meredith Gertz

Marketing Manager: Adrienne D'Ambrosio Cover and Interior Designer: Joyce Cosentino

Design Supervisor: Regina Hagen

Copyeditor: Jill Hobbs Proofreader: Jan Cocker

Senior Prepress Supervisor: Caroline Fell Manufacturing Supervisor: Hugh Crawford Typesetter: Lynn Lowell, Electronic Publisher

Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and when Addison-Wesley was aware of a trademark claim, the designations have been printed in initial caps or all caps.

Library of Congress Cataloging-in-Publication Data

Hubbard, R. Glenn.

Money, the financial system, and the economy / R. Glenn Hubbard.—4th ed.

p. cm.

Includes index.

ISBN 0-201-72614-9 (hardbound)

1. Finance. 2. Money. 3. Banks and banking. 4. Monetary policy—United States. 5. International finance. I. Title.

HG173 .H8 2001 332.1—dc21

2001033494

For information on obtaining permission for the use of material from this work, please submit a written request to Pearson Education, Inc., Rights and Contracts Department, 75 Arlington Street, Suite 300, Boston, MA 02116, or fax your request to (617) 848-7047.

Copyright © 2002 by Pearson Education, Inc.

All rights reserved. No part of this publication may be reproduced, stored in a database or retrieval system, distributed, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. Printed in the United States of America.

Preface

Thinking About the Book

When I studied money and banking as an undergraduate in 1979, the course emphasized real-world topics: Why is inflation high (as it was in those days), and where does it come from anyway? Why does a boom in the stock or bond market excite news commentators, and how are prices of stocks and bonds determined in the first place? What do banks do with my money? How do economic events in other nations affect financial markets and interest rates in the United States? Like me, students often come to this course expecting to learn simple answers to such questions. The answers were not simple in 1979, and they are even more complex in the early twenty-first century. Today's students face an even greater challenge: trying to understand the organization of U.S. financial markets and institutions and the Federal Reserve System in the face of domestic and global change.

Having taught money and banking courses to undergraduate and graduate students over many years, I was frustrated that existing books simply stressed the current organization of the financial system and failed to give students a coherent framework for understanding new regulations and events. Adding to my dissatisfaction was the way these texts included new developments: They simply increased the number of topics to be covered during an already crowded term. Even with all this material, students still lacked the tools to predict the effects of changes to the financial system.

A Better Approach

My goal in writing this text is to present to students underlying economic explanations for why the financial system is organized as it is and to show

them the interconnection of the financial system and the economy. With this presentation, the student learns a paradigm for interpreting events, not a laundry list of facts that quickly becomes outdated. I wanted to go beyond the traditional approach and teach students how to apply the theory that they learn in the classroom to the practice of the real world. To achieve this goal, I have built three advantages into this text: (1) a framework for understanding, evaluating, and predicting; (2) a contemporary economic approach; and (3) integration of international material throughout the book.

Framework of the text: understand, evaluate, predict. The framework underlying all discussion in this text has three levels: First, the student learns to *understand* economic analysis. "Understanding" refers to the development of economic intuition for organizing concepts and facts. Second, economic analysis is used to *evaluate* current developments and the financial news, challenging the student to use financial data and to think critically about interpretations of current events. Finally, the student uses economic tools and principles to *predict* future events, applying economic analysis to anticipate the effects of changes in the economy and the financial system.

This presentation offers students a way to think critically about developments in financial markets and institutions and in monetary institutions and policy. Students then can interpret current events as the logical outcome of principles. For example, Parts 2, 3, and 4, which examine the roles of financial markets and institutions in the economy, repeatedly use the concepts of risk-sharing, liquidity, and information services demanded of and supplied by the financial system to explain such topics as how different financial arrangements bring together borrowers and savers (Chapters 3, 12, and 13), how they respond to changes in regulation (Chapter 15), why they differ in different countries (Chapter 16), and how their functioning affects the macroeconomy (Chapter 27).

A contemporary approach. Throughout this text, I incorporate recent research in a way that is accessible to students. Current research on monetary policy, financial institutions, and inflation is used to develop a general model for how monetary policy affects the economy (Chapter 26). The examination of credit crunches (Chapter 27) integrates the economic role of financial institutions in a simple macro model. Efficient markets are covered early (Chapter 10) to lay a groundwork for the discussion of information problems in financial markets (Chapters 11, 12, 13, and 27).

Integration of international topics. Students today are keenly interested in the workings of the international financial system and in differences in financial systems across countries. To address this issue, international applications have been integrated throughout the text. For example, international comparisons of financial systems and international constraints on central bank decision making are discussed concurrently with events in the United States (Chapter 22). Separate, optional chapters on exchange rates (Chapter 8), international banking (Chapter 16), and the international monetary and financial system (Chapter

22) appear where they fall naturally. Instructors who wish to omit these topics or cover them later in the course can easily do so.

New Developments in the Fourth Edition

I established three objectives in revising the content of the fourth edition.

The first objective is the integration of recent developments in financial markets and institutions and the international monetary and financial system with the text's analytical foundations. The major changes in the regulation of U.S. financial institutions in the wake of the Gramm-Leach-Bliley Financial Services Modernization Act of 1999 offer the opportunity to apply ideas of how financial institutions evolve to provide risk-sharing, liquidity, and information services and to understand the current blurring of lines among financial institutions. The debate over reform of the International Monetary Fund in the aftermath of the Asian financial crisis of the late 1990s provides a backdrop for emphasizing the economics of banking and financial regulation, as well as illuminating currency crises and monetary policy and economic performance. The banking and financial crisis in Japan gives students an opportunity to link lessons of the U.S. S&L crisis of the 1990s with current financial developments. The rise of hedge funds and the collapse of Long-Term Capital Management offer a window on the economic analysis of financial institutions and on the prospects for success of emerging institutions. I use the early years of the euro and the European Central Bank to explore exchange rate determination, central bank organization, monetary policy tools, and monetary policy effectiveness. The U.S. productivity boom of the late 1990s is a useful case study for illustrating determinants of output growth and inflation in the economy. Finally, many innovations-from on-line banking to U.S. Treasury inflation-indexed bonds to new futures markets to institutional reform in Japan to corporate control in China to consequences of U.S. government budget surpluses—are discussed using the text's economic tools.

Second, the framework of risk sharing/liquidity/information, which was so successful in linking diverse topics in the first, second, and third editions, has been expanded in the fourth edition. I believe that this framework is successful because it helps students understand what services financial markets and institutions provide—and why—and how markets and institutions evolve over time. In the fourth edition, applications of the framework relate developments in financial markets and institutions, regulation, and macroeconomic model building to economic principles.

Third, I wanted to maintain the sense of dynamism in the financial system introduced in the text through examples and boxed features. To achieve this, all of the *Moving from Theory to Practice* news spreads have been updated to include significant financial events that have occurred over the past year or so and analyses of these events that reinforce the chapter theory. Similarly, the *Using the News* sections, in which students observe patterns in reported financial data, have been updated. Examples describing new developments in markets, institutions, regulation, and public policies are cited liberally throughout each chapter.

I made these content changes on the basis of economic events, reactions of my own and other students, suggestions from users of the previous editions, and reviewer comments.

The fourth edition allows significant flexibility for use in undergraduate courses in two-year and four-year institutions and in graduate courses in economics, finance, and public policy. The *Instructor's Resource Manual* describes several alternative paths through the text. Some sample course sequences include the following:

General Money and Banking Course: Chapters 1–7, 10–15, 17, 19, 22, 27 General Course with International Topics: Chapters 1–8, 10–17, 19–23, 27 Financial Markets and Institutions: Chapters 1–15, 8–9 (optional), 16 Monetary Institutions and Policy: Chapters 1–3, 13, 14, 17–21, 22 (optional) Monetary Economics: Chapters 13–15, 17–21, 22 (optional), 23–28

Putting the Book to Work: Chapter Pedagogy

The features of this text are intended to help the student learn to view the financial system and the economy as an economist does. As much as possible, I have placed the student in the role of decision maker. In addition, I use real-world situations throughout the text so that students see the usefulness of economic analysis in interpreting events.

Chapter openers. The episode that begins each chapter shows students the real-world relevance and application of the material. The opening scenario is followed by an overview of the topics to be studied in the chapter. The chapter opener provides the student with an application to consider as the chapter develops its themes.

Checkpoints. These features test students' understanding by applying the chapter's economic approach to real-world situations. They address such issues as why some firms in cyclical industries don't rely on debt (p. 269) and how one can discern the Fed's goals from its actions (p. 522). These study aids help students prepare to answer the end-of-chapter exercises.

Consider this. I have drawn these topical illustrations of the chapter's economic approach from current events or research. Included are discussions of "rock star bonds" as a financial innovation (p. 50), behavioral finance (p. 242), whether bank consolidation is good for business (p. 362), whether currency boards are likely to be successful (p. 598), and ways in which the different sensitivity of economic activity to interest rates makes the job of the European Central Bank more difficult (p. 698).

Other times, other places. These features extend the chapter's economic approach to historical events or to developments in other countries. Examples include learning about money from Moscow cab drivers (p. 22), ways in which the Asian financial crisis affected European bond markets (p. 160),

links between financial regulation and financial crisis in Russia and Japan (p. 403), and how the conduct of monetary policy responds to political pressures (p. 556).

Using the news. These excerpts present data from *The Wall Street Journal* and other sources. Students learn not only how to read and interpret such information, but also how to use it for predicting changes within the financial system and the economy.

Case studies. Many chapters conclude with detailed descriptions of recent events that extend the theory in the chapter. These longer applications are developed from recent events, adding to the currency of the revision. Included are discussions of what happened in the Orange County derivatives crisis (p. 222), the rise of hedge funds and the fall of Long-Term Capital Management (p. 302), whether the U.S. banking industry is in decline (p. 369), the Asian financial crisis (p. 597), and how monetary policy affects aggregate demand (p. 699).

Moving from theory to practice. In my experience, students are especially interested in applying the economic tools that they acquire to analyze events and policy developments in the news. To help students learn how to read news about the financial system and the economy critically, I have included an application feature at the end of each chapter. It consists of an actual news article (often from *The Wall Street Journal*) followed by a section that uses the chapter's economic principles to evaluate the argument of the article. Articles deal with both domestic and international situations, including differences in men's and women's attitudes toward stock ownership (p. 112), consequences of sharp reductions in outstanding Treasury debt (p. 172), "clicks" versus "bricks" in banking (p. 340), the European Central Bank in the "terrible twos" (p. 508), advice to the Bank of Japan (p. 686), and the debate in 2000 over whether the new economy should change the Fed's outlook for the U.S. economy's growth potential (p. 762).

Summary tables. These pedagogical aids present easy-to-understand explanations of the causes and effects of changes within the financial system and the economy. They frequently use small analytical diagrams to reinforce relationships visually.

Process diagrams. Because many students learn visually, the text has many process diagrams that illustrate the underlying economic forces that shape events, institutions, and markets. For example, I introduce a basic diagram in Chapter 3 (p. 38) showing that savers and borrowers value risk-sharing, liquidity, and information services. The basic diagram, shown there, is modified and repeated so that students internalize the model and can begin to make predictions based on it.

Analytical graphs. To aid students in seeing the principles and factors underlying events in the financial system and the economy, I use color functionally in

analytical graphs. For example, on page 150, the initial conditions are consistently indicated by blue curves, and the final state by red curves. A blue-to-red shift arrow highlights the curves' movement, and beige "shock" boxes are numbered, allowing students to follow the sequence of events easily by referring to the numbers in the captions that accompany the graphs. These captions explain the economic factors fully so that students do not have to search for explanations within the text.

End-of-chapter summary. An aid for exam review, this summary feature presents the key terms and concepts and summarizes the main points of the chapter.

End-of-chapter exercises. Each chapter concludes with three types of exercises. *Review Questions* test students' recall of concepts and events. *Analytical Problems* give students a chance to apply the chapter's economic approach to specific cases and events. *Data Questions* ask students to collect data from specific sources in the library and use them to evaluate an economic argument. I have provided numerous questions to give the instructor maximum flexibility in making assignments. In addition, review questions and analytical problems in each chapter highlight the applicability of the chapter's economic approach to current events.

Content and Organization

The text's consistent theoretical approach and thorough coverage of contemporary events, institutions, and data offer students a well-balanced picture of the interactions among money, the financial system, and the economy. Within each part, the presentation develops economic models and then offers applications and analysis to help the student understand, evaluate, and predict financial events. Although related economic models are used throughout the book, instructors can easily use individual parts and chapters of the book independently. It is not necessary to cover the chapters in sequence.

Part 1: Introduction (Chapters 1-3). This introduction to the text includes the reasons for using an economic approach to studying money, financial markets and institutions, and the economy (Chapter 1); the role of money within the financial system (Chapter 2); and an overview of the role played by different elements of the financial system in matching savers and borrowers and providing risk-sharing, liquidity, and information services (Chapter 3).

Part 2: Interest Rates (Chapters 4-7). In Part 2, the focus shifts to how interest rates are determined. The student observes how the decisions of thousands of individual lenders and borrowers in the United States and around the world set the market interest rates that we read about in the newspaper. (Later, Part 5 explores how decisions of the Federal Reserve affect interest rates.) Chapter 4 explains what interest rates are, how they are measured, and where students can obtain information about interest rates to

inform their financial decisions. Chapter 5 looks at how savers compare interest rates and returns on assets to allocate their savings in a portfolio, or collection of assets. Chapters 6 and 7 are the key analytical chapters. Chapter 6 studies how decisions about lending and borrowing determine bond prices and market interest rates in the United States and the international capital market. Chapter 7 extends the analysis to encompass the hundreds of interest rates that are reported each business day. That chapter examines how differences in risk, liquidity, information costs, taxation, and maturity affect interest rates.

Part 3: Financial Markets (Chapters 8–11). Whereas Part 2 concentrates on interest rates and the bond market, these chapters extend the analysis to encompass financial markets more broadly. Chapter 8 investigates the market for foreign exchange, focusing on how exchange rates are determined and how movements in exchange rates and interest rates are related. Chapter 9 examines the operation of derivative markets, looks at the services they provide, and studies why market prices fluctuate. Chapters 10 and 11 consider how financial markets evaluate and communicate information. Chapter 10 theorizes why prices of stocks, bonds, foreign-exchange, and derivative instruments contain information about assets' fundamental value for savers and borrowers. It also checks whether the evidence from financial markets supports the theory. Chapter 11 examines the costs that are imposed on financial markets by asymmetric information, and observes how financial markets respond to information problems.

Part 4: Financial Institutions (Chapters 12–16). Part 4 continues to use the concepts of risk sharing, liquidity, and information to explain why and how financial institutions and instruments evolve. Chapter 12 explains how the provision of risk-sharing, liquidity, and information services results in the development of different financial institutions. Chapter 13 examines the activities of banking firms and concludes with an analysis of how banks have exploited transactions cost and information cost advantages to enter new lines of business. Chapter 14 analyzes the development and current organization of the U.S. banking industry (and banking industries in other countries) and summarizes economic arguments for and against regulation. Chapter 15 examines financial regulation using a model of crisis, regulation, financial innovation, and regulatory response. This chapter also offers an up-to-date description of the regulatory debate surrounding the passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, as well as the implementation of the Gramm-Leach-Bliley Financial Services Modernization Act of 1999. Chapter 16 focuses on banks' provision of risk-sharing, liquidity, and information services in international transactions and introduces students to Euromarkets and global trends.

Part 5: The Money Supply Process and Monetary Policy (Chapters 17–22). This part opens the discussion of the links between the financial system and the macroeconomy. It begins with the money supply process, focusing on the role of the Fed, banks, and the nonbank public in determining the monetary base

and the money multiplier (Chapter 17). Next is an optional chapter on the determinants of changes in the monetary base (Chapter 18). Chapter 19 analyzes the organization of the Fed and offers comparisons with the central banks of other countries. Chapter 20 introduces the tools of monetary policy and offers a simple graphical analysis of the reserves market so that students can apply their understanding. The conduct of monetary policy and contemporary developments in central banking such as inflation targeting are explored in Chapter 21. Chapter 22, an optional chapter, examines constraints on the conduct of monetary policy in an open economy using the model of exchange rate determination that was introduced in Chapter 8; Chapter 22 applies the model to analyze the currency crises that rocked the international financial system in the late 1990s.

Part 6: The Financial System and the Macroeconomy (Chapters 23–28). final part studies the impact of monetary policy on the macroeconomy. Chapter 23 explains the demand for money based on the determinants of portfolio allocation and discusses the measurement of money. For those instructors who wish to use the IS-LM model, Chapter 24 presents a modern development of the model using the full-employment output line and a synthesis of the models of lending and borrowing, portfolio allocation, and money demand that were developed earlier in the book. For instructors who wish to use the aggregate demand-aggregate supply model, Chapter 25 intuitively derives the AD curve and presents a modern development of aggregate supply and the AS curve in the short run and the long run. Chapter 26 provides a concise treatment of short-run economic impacts of monetary policy, with analysis of competing approaches and empirical evidence. Chapter 27 expands the analysis of the role of financial institutions in macroeconomic models, including the debate over the extent to which a credit crunch worsened the 1990-1991 recession in the United States and the Japanese economic downturn of the late 1990s and early 2000s. Chapter 28 uses the AD-AS framework to analyze determinants of inflation in the short run and the long run.

Supplements

We are pleased to introduce with this fourth edition of the textbook an all-new Mini-Cases supplement. Written by Michael Brandl of the University of Texas at Austin, the nine original mini-cases involve students in applying the concepts covered in the textbook to real-world decision-making situations from the realms of business and financial markets. The task of the students is to analyze each of the potential decisions carefully and to conduct an informed cost-benefit analysis of each decision. Allowing the course to move beyond the lecture format, the mini-cases promote student interaction and discussion.

The Study Guide has been updated and expanded by Michael R. Redfearn of the University of North Texas. Carefully coordinated with the main text, it contains chapter overviews, a summary of key points, practice exercises, and analytical problems. This student resource also has two midterm and final

exams that allow students to test their cumulative understanding of the material, as well as a comprehensive glossary.

Fully updated for the new edition, the Instructor's Resource Manual, Teaching Notes for the Mini-Cases, and Test Bank, by Anthony O'Brien of Lehigh University and Michael Brandl of the University of Texas at Austin, has three sections. The Instructor's Resource Manual section, written by Professor O'Brien, features chapter outlines, solutions to end-of-chapter questions and problems in the main text, essay and discussion questions, references for additional readings, and thumbnail printouts of all the PowerPoint lecture slides. The Teaching Notes for the Mini-Cases section comprises a wealth of tips and ideas for instructors on using the new mini-cases supplement described above. In particular, these notes, written by Michael Brandl, give advice and insight to instructors as to possible directions for discussion of the cases in class. The notes are designed to be useful to novices as well as to experienced case discussion leaders. Finally, the Test Bank portion of the manual, also by Professor O'Brien, contains over 2,300 multiple-choice questions, more than 200 of which are new to this edition.

The Instructor's Resource CD-ROM contains the Test Bank in Test Generator Software (TestGen-EQ with QuizMaster-EQ) for Windows and Macintosh. TestGen-EQ's updated and revised graphical interface enables instructors easily to view, edit, and add questions; transfer questions to tests; and print different forms of tests. Search and sort features allow the instructor to locate questions and arrange them in a preferred order quickly. QuizMaster-EQ, designed for your school's computer network, automatically grades the exams, stores results on disk, and allows the instructor to view and print a variety of reports.

Also on the Instructor's Resource CD-ROM are PowerPoint Lecture Slides by David Macpherson of Florida State University. The PowerPoint lectures have been updated and enhanced to include key figures in the text, along with detailed lecture notes. The Instructor's Resource CD-ROM may be obtained through your Addison-Wesley representative.

The text's Companion Web site is available at http://www.aw.com/hubbard. This site offers multiple-choice and essay quizzes as well as additional resources and numerous Web links for each chapter.

We are pleased, too, to offer the flexible, state-of-the art online course-management system CourseCompassTM with the new edition of Hubbard. CourseCompassTM combines the strength of Addison-Wesley content with today's best e-learning tools. CourseCompassTM is a nationally hosted, dynamic, interactive system powered by Blackboard, a leader in the development of Internet-based learning tools. This easy-to-use and customizable program enables professors to tailor content and functionality to meet individual course needs. Every CourseCompassTM course includes a range of pre-loaded content such as testing and assessment question pools, chapter-level objectives, chapter summaries, photos, illustrations, videos, animations, and Web activities—all designed to help students master core course objectives. For more information

or to see a demo, visit http://www.coursecompass.com or contact your local Addison-Wesley sales representative.

Addison-Wesley's Product Support Web site, located at http://www.aw.com/techsupport, provides media product information and technical help for all technology-oriented supplements. In addition to information about how to contact product support staff, the site includes product descriptions, answers to frequently asked questions, hardware requirements, and software downloads.

Acknowledgments

Maureen Burton

State University

California Polytechnic

In the years during which I developed the material for this book, I learned much from the reactions of my students at Northwestern University and Columbia University. I have also received critical, substantive suggestions from the following reviewers and focus group participants, to whom I extend sincere thanks:

Douglas Agbetsiafa Charles Calomiris Gerald Epstein Indiana University at Columbia University University of South Bend Massachusetts, Amherst Doug Cho Martin D. Evans Ehsan Ahmed Wichita State Georgetown University Iames Madison University University Mariorie Flavin Christine Amsler Steven Cobb University of California, Michigan State University Xavier University San Diego David Aschauer Doug Copeland Garry Fleming Bates College Iohnson County Roanoke College Community College John W. Bay Peter Frevert University of Southern Hugh Courtney Kansas University Maine McKinsey and Company Edward N. Gamber Teresa Beckham Dean Croushore Lafayette College Rhodes College Federal Reserve Bank of Neil Garston Philadelphia Willie Belton California State Georgia Institute of Steven Cunningham University, Los Angeles Technology University of Connecticut Mark Gertler Ben Bernanke Edward Day New York University Princeton University University of Central Joshua A. Gotkin Florida Robert W. Boatler University of Arizona Robert Defina Texas Christian University Harry Greenbaum Villanova University Frank J. Bonello South Dakota State University of Notre Dame Don Dutkowsky University Syracuse University Michael Brandl Owen Gregory University of Texas at Stephanie Ellis University of Illinois at Austin University of Michigan, Chicago Dearborn

Mary English

DePaul University

David R. Hakes

Iowa

University of Northern

Bassam Harik Chris Lawrey Williams Baptist College Western Michigan University Charles Leathers University of Alabama John T. Harvey Texas Christian University Sung Lee St. Iohn's University Thomas Havrilesky Duke University Robert D. Ley Bemidji State University Robert Herren North Dakota State Ron Liggett University University of Texas, Arlington Melissa J. Hieger Boston University Richard MacDonald Saint Cloud State Ferdaus Hossain University Iowa State University David Macpherson Regina Hughes Florida State University University of Texas, Austin Michael Marlow Nancy Jianakoplos California Polytechnic Colorado State University State University Karen Johnson V. T. Mathews Baylor University Seton Hall University Fred Joutz Stephen McCafferty George Washington Ohio State University University Hal McClure Magda Kandil Villanova University University of Wisconsin at Milwaukee W. Douglas McMillin Louisiana State University, Jules Kaplan Baton Rouge University of Colorado, Boulder Ron McNamara Bentley College Anil Kashyap University of Chicago Paul A. Meyer University of Maryland Thomas Kopp Siena College Steve Miller University of Connecticut Faik Koray at Storrs Louisiana State University Frank Mixon Viju C. Kulkarni University of Southern San Diego State Mississippi University Anthony O'Brien Patricia Kuzyk Lehigh University Washington State Rowena Pecchenino University Michigan State University John Lapp

Chung Pham

University of New Mexico

North Carolina State

University

Dean Popp San Diego State University Prosper Raynold Miami University Michael Redfearn University of North Texas Walter Rogers Middle Tennessee State University Steven Russell Indiana University-Purdue University at Indianapolis Robert S. Rycroft Mary Washington College Ira Saltz Florida Atlantic University Eugene Sarver Pace University Richard Schiming Mankato State University Calvin Siebert University of Iowa Frank Steindl Oklahoma State University Fred Thum University of Texas at Austin Robert Tokle Idaho State University Steven Tomlinson University of Texas at Austin Richard J. Torz St. Joseph's College Paul Wachtel New York University John Wassom Western Kentucky University Eugene White

Rutgers University

I am also fortunate to have worked with the individuals who prepared the supplements that accompany the text: Michael Redfearn, David Macpherson, Anthony O'Brien, and Michael Brandl.

The publication of the book is a team effort in the truest sense, and I have been gratified to work with so many talented professionals at Addison-Wesley. Editor-in-chief Denise Clinton and especially executive development manager Sylvia Mallory contributed challenging and valuable input at every stage; the book has been greatly improved by their efforts. I would also like to thank the production supervisors, Heather Bingham and Juliet Silveri; the supplements editor, Meredith Gertz; the Web project editor, Melissa Honig; and the marketing manager, Adrienne D'Ambrosio, for all of their hard work and enthusiasm about the book.

It is traditional to conclude acknowledgments by thanking one's family members for their support. I cannot begin to thank my wife Constance for her emotional support, patience, ideas, and countless hours of assistance in preparing the manuscript. She often reminded me that my reason for writing and revising this book was to synthesize ideas from my research and teaching that I believed would further the development of the course. Our sons Raph and Will have taken it all in stride. I can only hope that this book will please them.

R.G.H. New York, New York

About the Author

Currently the Chairman of President George W. Bush's Council of Economic Advisers, Russell L. Carson Professor of Economics and Finance at the Graduate School of Business, and Professor of Economics in the Department of Economics at Columbia University, Glenn Hubbard received his B.A. and B.S. from the University of Central Florida and A.M. and Ph.D. in economics from Harvard University, where he was honored with both National Science Foundation and Alfred P. Sloan Foundation fellowships. He served as deputy assistant secretary of the U.S. Treasury Department in Washington, D.C., during the administration of George H. W. Bush.

Hubbard has published numerous articles—on financial economics, public finance, macroeconomics, industrial organization, energy economics, and public policy—in such journals as American Economic Review; Annales d'Economie et de Statistique; Brookings Papers on Economic Activity; European Economic Review; Journal of Banking and Finance; Journal of Business; Journal of Finance; Journal of Financial Economics; Journal of Industrial Economics; Journal of Law and Economics; Journal of Money, Credit, and Banking; Journal of Political Economy; Management Science; National Tax Journal; Quarterly Journal of Economics; Rand Journal of Economics; and Review of Economics and Statistics. He has been a research consultant for the Federal Reserve Board, the Federal Reserve Bank of New York, the Internal Revenue Service, the Social Security Administration, the U.S. Department of the Treasury, the U.S. International Trade Commission, the National Science Foundation, and the World Bank. Hubbard has also advised numerous private financial institutions on developments in public policy and regulation.

He has also served as a visiting professor at Harvard's John F. Kennedy School of Government and Harvard Business School, as a John M. Olin Visiting

Professor at the Graduate School of Business at the University of Chicago, and as a John M. Olin Fellow at the National Bureau of Economic Research, where he remains a research associate. He has also been a visiting scholar at the American Enterprise Institute.

Hubbard has also been honored with research grants from the National Bureau of Economic Research, the National Science Foundation, the U.S. Department of Energy, the Bradley Foundation, and the Institute for Fiscal Studies.

Hubbard, his wife Constance, and their sons Raph and Will live in New York City.



Brief Contents

Part 1	Introduction 1
1 2 3	Introducing Money and the Financial System 2 Money and the Payments System 14 Overview of the Financial System 35
Part 2	Interest Rates 67
4 5 6 7	Interest Rates and Rates of Return 68 The Theory of Portfolio Allocation 97 Determining Market Interest Rates 116 Risk Structure and Term Structure of Interest Rates 146
Part 3	Financial Markets 177
8 9 10 11	The Foreign-Exchange Market and Exchange Rates Derivative Securities and Derivative Markets 210 Information and Financial Market Efficiency Reducing Transactions Costs and Information Costs 258
Part 4	Financial Institutions 277
12 13 14 15 16	What Financial Institutions Do 278 The Business of Banking 312 The Banking Industry 346 Banking Regulation: Crisis and Response 380 Banking in the International Economy 411
Part 5	The Money Supply Process and Monetary Policy 433
17 18 19 20 21 22	The Money Supply Process 434 Changes in the Monetary Base 471 Organization of Central Banks 491 Monetary Policy Tools 512 The Conduct of Monetary Policy 539 The International Financial System and Monetary Policy 569
Part 6	The Financial System and the Macroeconomy 605
23 24 25 26 27 28	The Demand for Money 606 Linking the Financial System and the Economy: The IS-LM-FE Model 627 Aggregate Demand and Aggregate Supply 662 Money and Output in the Short Run 690 Information Problems and Channels for Monetary Policy 714 Inflation: Causes and Consequences 739