Dear Instructors:

Since its inception, William Baumol and Alan Blinder’s *Economics: Principles and Policy* has been the choice of instructors who, where appropriate, want to teach introductory concepts in the context of real world policy. At no time since the first edition has this approach been more relevant and important. In fact, the recent economic crisis has been called the “teachable moment of the century.”

Because data is so vital to an exploration of economics through policy, having a text that is as current as possible is a must. A number of editions ago, instructors asked us if we could provide a mid-edition update and we are pleased to announce the newest updated edition.

In June, we will be publishing *Economics: Principles and Policy, Update 2010 Edition, 11e*.

This quick online preview gives you a glimpse of what this exciting update has to offer. You will see that the economic data is updated through early spring 2010.

In addition, an all-new Chapter 37, The Financial Crisis and the Great Recession, focuses on the financial crisis of 2007-2009, telling the story of the subprime crisis, the broader financial panic, the ensuing Great Recession, and some of the steps the U.S. government has taken to fight the crisis.

The Update also includes expanded coverage of developing economies in China and India, outsourcing, the impact of human capital on economic growth, consumer choice, and much more.

This will not only be the most up to date text in print, but every day you and your students will have access to the latest journal and news articles, podcasts, data and videos at no additional charge when you request that your text be bundled with The Global Economic Crisis Resource Center.

Contact your local Cengage Learning representative and tell them that you want Baumol and Blinder’s updated edition packaged with the Global Economic Watch at no additional charge.

We hope you enjoy this preview of the updated edition.

Sincerely,

John Carey  
Sr. Marketing Manager, Economics
ECONOMICS
Principles and Policy
Eleventh Edition 2010 Update

William J. Baumol
New York University and Princeton University

Alan S. Blinder
Princeton University
To Sue Anne Batey Blackman: wise, beloved, and irreplaceable.
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As usual, when updating an edition, we have made many small changes to improve clarity of exposition and to update the text both for recent economics events—the global downturn—and for relevant advances in the literature. But this time we have focused on two particular additions. One is a host of changes pertaining to the stunning economic events of 2007–2009. These appear scattered all over the macroeconomic chapters, but especially in the all-new Chapter 37 on the financial crisis and the Great Recession.

The second, introduced in the eleventh edition, is a substantial discussion of the role of the entrepreneurs and of the microtheory of their activities, their pricing and their earnings, and the implications for economic growth. Several studies of the place of the entrepreneur in economics textbooks (including earlier editions of this one) have all reached the same conclusion: that entrepreneurs are either completely invisible or are virtually so. Indeed, in a substantial set of the textbooks the word *entrepreneur* does not even appear in the index.

Now, this omission should appear strange because entrepreneurs are often classified as one of the four factors of production—but the only one to which no chapter is devoted. More than that, it seems universally recognized by economists that economic growth is the prime contributor to the general welfare and that more than 80 percent of the current income of the average American was contributed by growth in the past century alone. Moreover, it is clear that, even though entrepreneurs did not produce this growth by themselves, much, if not most, of this historically unprecedented achievement would not have occurred without them. Yet, in the textbooks, they have been the invisible men and women.

More than that, the description and analysis of the activities of entrepreneurs is evidently a topic in microeconomics: the incentives and the responses of the individual actors in the economy. This means that analysis of economic growth and policies for its stimulation need to be examined from two sides: the macroeconomic, where issues such as the requisite savings and investment are studied, and the microeconomic, where the twin activities of invention and entrepreneurship are analyzed. Yet the discussion of growth in most textbooks is entirely confined to the macro sections of the volume, with the subject completely absent from the micro analysis. In our new edition, as the reader will see, this is no longer so. In addition to the usual discussion of growth in the macro portion of the book, there is a complete chapter on the microeconomics of growth and half a chapter on the entrepreneur as one of the two human factors of production.

This eleventh edition is the product of nearly 30 years of the existence and modification of this book. In the responses to a survey of faculty users, it became clear that a number of chapters were generally not covered by instructors for lack of time, although the material is of considerable interest to students and is not—or need not be—technically demanding. So we simplified several such chapters further—notably Chapter 9 on the stock and bond markets, Chapter 13 on regulation and antitrust, Chapter 17 on environmental economics, and Chapter 21 on poverty and inequality—to make it practical for an instructor to assign any or all of them to the students for reading entirely by themselves.

In the micro sections of the book, we have added a number of new materials in response to requests by correspondents. For example, in the material on the static-optimality properties of perfect competition, we added a discussion of the Coase theorem and more on behavioral economics. But as already indicated, the primary change was in the new material on the microeconomics of growth and entrepreneurship.

In the macroeconomic portions of the book, we try to make the links between the short run and the long run clearer and more explicit with each passing edition. For the updated eleventh edition, we have also added much new material on the problems in the subprime mortgage markets, the ensuing financial crisis and possible recession, and several economic issues in the 2008 presidential campaign. As is our practice, these new materials are scattered over many chapters of the text, so as to locate the discussions of current events...
and policy close to the places where the relevant principles are taught. This edition also adds a bit more material on China; sadly, the experience in Zimbabwe has provided a contemporary example of hyperinflation.

We ended this section of the preface to the tenth edition by singling out the critical contributions of one colleague and friend of amazingly long duration. We now repeat some of our words about the late Sue Anne Batey Blackman, who worked closely with us through 10 editions of this book; for all practical purposes, she had become a co-author. Indeed, the chapter on environmental matters is now largely her product. Her creative mind guided our efforts; her eagle eyes caught our errors; and her stimulating and pleasant company kept us going. Perhaps most important, we loved and valued her most profoundly. Unfortunately, she has been taken from us much too young. Our children and grandchildren will understand and surely support our decision not to dedicate this edition of the book to them, but rather to our precious lost friend, Sue Anne.

**NOTE TO THE STUDENT**

May we offer a suggestion for success in your economics course? Unlike some of the other subjects you may be studying, economics is cumulative: Each week’s lesson builds on what you have learned before. You will save yourself a lot of frustration—and a lot of work—by keeping up on a week-to-week basis.

To assist you in doing so, we provide a chapter summary, a list of important terms and concepts, a selection of questions to help you review the contents of each chapter, as well as the answers to odd-numbered Test Yourself questions. Making use of these learning aids will help you to master the material in your economics course. For additional assistance, we have prepared student supplements to help in the reinforcement of the concepts in this book and provide opportunities for practice and feedback.

The following list indicates the ancillary materials and learning tools that have been designed specifically to be helpful to you. If you believe any of these resources could benefit you in your course of study, you may want to discuss them with your instructor. Further information on these resources is available at [http://academic.cengage.com/economics/baumol](http://academic.cengage.com/economics/baumol).

We hope our book is helpful to you in your study of economics and welcome your comments or suggestions for improving student experience with economics. Please write to us in care of Baumol and Blinder, Editor for Economics, South-Western/Cengage Learning 5191 Natorp Boulevard, Mason, Ohio, 45040, or through the book’s web site at [http://academic.cengage.com/economics/baumol](http://academic.cengage.com/economics/baumol).

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**Study Guide**

The study guide assists you in understanding the text’s main concepts. It includes learning objectives, lists of important concepts and terms for each chapter, quizzes, multiple-choice tests, lists of supplementary readings, and study questions for each chapter—all of which help you test your understanding and comprehension of the key concepts.
Finally, we are pleased to acknowledge our mounting indebtedness to the many who have generously helped us in our efforts through the nearly 30-year history of this book. We often have needed help in dealing with some of the many subjects that an introductory textbook must cover. Our friends and colleagues Charles Berry, Princeton University; Rebecca Blank, University of Michigan; William Branson, Princeton University; Gregory Chow, Princeton University; Avinash Dixit, Princeton University; Susan Feiner, University of Southern Maine; Claudia Goldin, Harvard University; Ronald Grieson, University of California, Santa Cruz; Daniel Hamermesh, University of Texas; Yuzo Honda, Osaka University; Peter Kenen, Princeton University; Melvin Krauss, Stanford University; Herbert Levine, University of Pennsylvania; Burton Malkiel, Princeton University; Edwin Mills, Northwestern University; Janusz Ordover, New York University; David H. Reiley Jr., University of Arizona; Uwe Reinhardt, Princeton University; Harvey Rosen, Princeton University; Laura Tyson, University of California, Berkeley; and Martin Weitzman, Harvard University have all given generously of their knowledge in particular areas over the course of 10 editions. We have learned much from them and have shamelessly relied on their help.

Economists and students at colleges and universities other than ours offered numerous useful suggestions for improvements, many of which we have incorporated into this eleventh edition. We wish to thank Larry Allen, Lamar University; Nestor M. Arguea, University of West Florida; Gerald Bialka, University of North Florida; Kyongwook Choi, Ohio University; Basil G. Coley, North Carolina A &T State University; Carol A. Conrad, Cerro Coso Community College; Brendan Cushing-Daniels, Gettysburg College; Edward J. Deak, Fairfield University; Kruti Dholakia, The University of Texas at Dallas; Aimee Dimmerman, George Washington University; Mark Gius, Quinnipiac University; Ahmed Ispahani, University of La Verne; Jin Kim, Georgetown University; Christine B. Lloyd, Western Illinois University; Laura Maghoney, Solano Community College; Kosmas Marinakis, North Carolina State University; Carl B. Montano, Lamar University; Steve Pecskok, Middlebury College; J. M. Pogodzinski, San Jose State University; Adina Schwartz, Lakeland College; David Tufte, Southern Utah University; and Thierry Warin, Middlebury College for their insightful reviews.

Obviously, the book you hold in your hands was not produced by us alone. An essential role was played by Susan Walsh, who stepped into the space vacated by Sue Anne and handled the tasks superbly, with insight and reliability, and did so in a most pleasant manner. In updating the eleventh edition, Anne Noyes Saini helped to refresh data and information throughout the book, and our colleague William Silber, New York University, generously helped us draft new content on derivatives and securitization—we thank both for their contributions. We also appreciate the contribution of the staff at South-Western Cengage Learning, including Joe Sabatino, Editor-in-Chief; Michael Worls, Executive Editor; John Carey, Senior Marketing Manager; Katie Yanos, Supervising Developmental Editor; Emily Nesheim, Content Project Manager; Deepak Kumar, Media Editor; Michelle Kunkler, Senior Art Director; Deanna Ettinger, Photo Manager; and Sandee Milewski, Senior Manufacturing Coordinator. It was a pleasure to deal with them, and we appreciate their understanding of our approaches, our goals, and our idiosyncrasies. We also thank our intelligent and delightful assistants at Princeton University and New York University, Kathleen Hurley and Janeece Roderick Lewis, who struggled successfully with the myriad tasks involved in completing the manuscript.

And, finally, we must not omit our continuing debt to our wives, Hilda Baumol and Madeline Blinder. They have now suffered through 11 editions and the inescapable neglect and distraction the preparation of each new edition imposes. Their tolerance and understanding has been no minor contribution to the project.

William J. Baumol
Alan S. Blinder
About the Authors

William J. Baumol

William J. Baumol was born in New York City and received his BSS at the College of the City of New York and his Ph.D. at the University of London.

He is the Harold Price Professor of Entrepreneurship and Academic Director of the Berkley Center for Entrepreneurial Studies at New York University, where he teaches a course in introductory microeconomics, and the Joseph Douglas Green, 1895, Professor of Economics Emeritus and Senior Economist at Princeton University. He is a frequent consultant to the management of major firms in a wide variety of industries in the United States and other countries as well as to a number of governmental agencies. In several fields, including the telecommunications and electric utility industries, current regulatory policy is based on his explicit recommendations. Among his many contributions to economics are research on the theory of the firm, the contestability of markets, the economics of the arts and other services—the “cost disease of the services” is often referred to as “Baumol’s disease”—and economic growth, entrepreneurship, and innovation. In addition to economics, he taught a course in wood sculpture at Princeton for about 20 years and is an accomplished painter (you may view some of his paintings at http://pages.stern.nyu.edu/~wbaumol/).

Professor Baumol has been president of the American Economic Association and three other professional societies. He is an elected member of the National Academy of Sciences, created by the U.S. Congress, and of the American Philosophical Society, founded by Benjamin Franklin. He is also on the board of trustees of the National Council on Economic Education and of the Theater Development Fund. He is the recipient of 11 honorary degrees.

Baumol is the author of hundreds of journal and newspaper articles and more than 35 books, including Global Trade and Conflicting National Interests (2000); The Free-Market Innovation Machine (2002); Good Capitalism, Bad Capitalism (2007); and The Microtheory of Innovative Entrepreneurship (2010). His writings have been translated into more than a dozen languages.

Alan S. Blinder

Alan S. Blinder was born in New York City and attended Princeton University, where one of his teachers was William Baumol. After earning a master’s degree at the London School of Economics and a Ph.D. at MIT, Blinder returned to Princeton, where he has taught since 1971, including teaching introductory macroeconomics since 1977. He is currently the Gordon S. Rentschler Memorial Professor of Economics and Public Affairs and co-director of Princeton’s Center for Economic Policy Studies, which he founded.

In January 1993, Blinder went to Washington as part of President Clinton’s first Council of Economic Advisers. Then, from June 1994 through January 1996, he served as vice chairman of the Federal Reserve Board. He thus played a role in formulating both the fiscal and monetary policies of the 1990s, topics discussed extensively in this book. He has also advised several presidential campaigns.

Blinder has consulted for a number of the world’s largest financial institutions, testified dozens of times before congressional committees, and been involved in several entrepreneurial start-ups. For many years, he has written newspaper and magazine articles on economic policy, and he currently has a regular column in the Wall Street Journal. In addition, Blinder’s op-ed pieces still appear periodically in other newspapers. He also appears frequently on PBS, CNN, CNBC, and Bloomberg TV.
Blinder has served as president of the Eastern Economic Association and vice president of the American Economic Association and is a member of the American Philosophical Society, the American Academy of Arts and Sciences, and the Council on Foreign Relations. He has two grown sons, two grandsons, and lives in Princeton with his wife, where he plays tennis as often as he can.

Although its roots go back much further, one of the biggest economic upheavals in the history of the United States began in earnest in September 2008, just a few months after the eleventh edition was first published. Because so much has happened since then, it seems imperative that this mid-edition revision be far more than a routine update. The chapter that follows had no counterpart in the original eleventh edition; it is entirely new for this 2010 update. It tells—albeit in skeletal form—the story of the sub-prime crisis, the broader financial panic, the ensuing Great Recession, and some of the steps the U.S. government has taken to fight the crisis. But, more than that, it emphasizes where and how the principles and policy of macroeconomics that you have learned in this book help make sense of the stunning events of 2007–2009—and where they need to be supplemented.

To be sure, this assessment comes far too soon. Scholars will be studying this episode for decades to come, and final verdicts are a long way off. But recent events are just too important, and too relevant to today’s economy, to wait for history’s judgment.
The Financial Crisis and the Great Recession

We came very, very close to a global financial meltdown.

FEDERAL RESERVE CHAIRMAN BEN BERNANKE

If you have read this book, you have learned a great deal about the causes and consequences of recessions, especially in many of the chapters of Part 6. But the United States has not experienced a recession as severe as the most recent one since the 1930s. The recession of 2007–2009 clearly merits being called the “Great Recession.” You have also learned, especially in Part 7, how fiscal and monetary policies can be used to combat recessions by raising aggregate demand. But the nation has never witnessed a policy response as powerful or multifaceted as what the U.S. government has done to fight the Great Recession. And while this book has devoted some attention to banking and the financial markets, especially in Chapter 29, we have not provided nearly enough material on finance to understand the unprecedented series of events that shook the U.S. economy to its foundations in 2008 and 2009.

This concluding chapter remedies at least some of these omissions. We review the history of the crisis, starting from its antecedents in the financial markets in 2003–2004 and finishing with a snapshot of where things stand at the start of 2010. Our focus is not so much on the chronology of events as on the “missing pieces” that are necessary to understand the crisis—items such as asset bubbles, subprime mortgages, mortgage-backed securities, and leverage—and on some of the lessons that have been learned. Indeed, the chapter closes with a list of such lessons.

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ISSUE: DID THE FISCAL STIMULUS WORK?
LESSONS FROM THE FINANCIAL CRISIS
ROOTS OF THE CRISIS

The rolling series of financial crises that began in the summer of 2007 traces its roots back further in the decade. Indeed, to understand the length and breadth of what followed, it is important to understand that the problems that beset the market for home mortgages were just one manifestation of a broader set of forces that swept through America’s credit markets during the years 2003–2006, leaving the financial system terribly vulnerable.

When the U.S. economy failed to snap back from the mild recession of 2001 and employment kept falling, the Federal Reserve made borrowing cheaper by pushing the federal funds rate all the way down to 1 percent in June 2003, in an effort to stimulate the economy.\(^1\) It then held the rate there for an entire year. Although this super-low interest rate policy was promulgated for sound macroeconomic reasons, it produced several notable side effects that came back to haunt us later.

Most obviously, it pushed up the demand for houses, and therefore house prices—after all, lower mortgage interest rates make it cheaper, and therefore more attractive, to own a home. This boost from monetary policy helped fuel the burgeoning house price \textbf{bubble}.

The paltry returns on safe assets such as Treasury bills also encouraged investors to “reach for yield” by purchasing riskier securities that paid correspondingly higher interest rates. This behavior increased the demands for assets such as “junk” bonds, emerging-market debt, mortgage-backed securities (which will be explained below), and others, thus pushing up their prices and reducing their yields.\(^2\) In other words, the gaps between interest rates on risky assets and the interest rates on safe Treasury securities—called \textbf{interest rate spreads}—were compressed as investors poured money into riskier securities. (See the accompanying boxed insert, “Risk and Reward in Interest Rates”.)

\(^1\) To review the federal funds rate, the Fed’s main policy instrument, see Chapter 30, page 650.

\(^2\) Remember from Chapter 30 (page 652) that when the price of a bond goes up, the effective interest rate it pays goes down.
Risk and Reward in Interest Rates

Up until now, this book has proceeded mainly as if there was only one interest rate in the economy—"the" interest rate. In fact, there are many, and differences among the various rates played a major role in the boom and subsequent bust. One key respect in which interest-bearing securities differ is in their risk of default, that is, the risk that the borrower will not repay the loan.

There is no such risk in U.S. government securities. Dating back to fundamental decisions made by the nation’s first Secretary of the Treasury Alexander Hamilton, the U.S. government has always paid its debts in full and on time. Investors assume it always will. So Treasury securities are considered risk-free. Moving up the risk spectrum, the debts of the nation’s leading corporations carry some small risk of default. Thus, in order to induce investors to buy their securities, corporations must pay higher interest rates than Treasuries. In general:

Riskier borrowers pay higher interest rates than safer borrowers, in order to persuade lenders to accept the higher risk of default.

For example, “junk” bonds—the debts of lesser corporations—carry higher interest rates than, say, the bonds of IBM or AT&T. And the bonds of emerging-market nations typically carry far higher interest rates than the bonds of the U.S. government.

The gap between the interest rate on a risky bond and the corresponding risk-free interest rate on a Treasury bond is called the risk premium, or sometimes just the spread, on that bond. For example, if a 10-year Treasury bond pays 3.4 percent per annum, and the 10-year bond of a corporation pays 6 percent, we say that the spread on that particular bond is 2.6 percentage points over Treasuries—that is, 6 percent minus 3.4 percent. Notice that this spread, which is determined every day in the marketplace by supply and demand, compensates the investor for a 2.6 percent expected annual loss on the corporate bond. The implication is that:

When the perceived risk of default increases, risk spreads widen. When the perceived risk of default decreases, risk spreads narrow.

In the years leading up to the financial crisis, many such risk spreads narrowed—perhaps by more than was justified by the apparently safer lending environment. Then, as the crisis exploded and deepened, risk spreads soared. Finally, as the financial system started to return to normal after March 2009, risk spreads narrowed again. (See the accompanying graph.)

The graph shows one particular interest rate spread, that between Treasury bills and bank-to-bank lending. Normally, this spread is very small because interbank lending is considered nearly riskless. But, during the heat of the crisis, banks became wary of lending even to other banks—so the spread depicted in the graph soared to unprecedented heights. Then, as the worst of the crisis passed, the spread returned to normal. While this is just one example, virtually every interest rate spread displayed a pattern like this over 2007–2009.

Because this pattern was so typical, remembering that there are many different interest rates is essential to understanding how the crisis unfolded. In normal times, the various interest rates rise and fall together; so the convenient fiction that there is only one interest rate does not lead us astray. But during the crisis, there were several periods in which the risk-free Treasury bill rate actually went down while other, riskier rates went up.

This investment trend was compounded by the fact that the frequencies of delinquency (late payment) and default (nonpayment) on virtually all sorts of lending, including home mortgages, were extraordinarily low during the years 2004–2006. Low defaults, in turn, deluded bankers and other lenders into believing that these riskier assets were not so risky after all. And that cavalier attitude, coupled with lax regulation, encouraged and permitted careless lending standards across the board. So, for example, we witnessed an explosion of so-called subprime mortgages and even the notorious NINJA loans (made to people with “no income, no job or assets”). Many of these subprime mortgages were granted with low or negligible down payments to borrowers of questionable credit standing who could make their payments only if the values of their homes increased enough to bail them out of excessive debt burdens. (More on this below.)

The narrowing of interest rate spreads meant, as a matter of arithmetic, that the financial rewards for bearing risk had shrunk. The same amount of risk that used to earn an investor, say, a 3 percent spread over Treasuries might now earn her only a 1 percent...
spread. That compression, in turn, led yield-hungry investors to make heavy use of leverage as a way to boost returns. And all that leverage created tremendous vulnerabilities in our financial system, which made the subsequent crisis far worse than it otherwise would have been. Since leverage played such a major role in the financial crisis, we must understand how it works.

LEVERAGE, PROFITS, AND RISK

When an asset is bought with leverage, the buyer uses borrowed money to supplement his own funds. Leverage is typically measured by the ratio of assets to equity. For example, if the buyer commits $100,000 of his or her own funds and borrows $900,000 to purchase a $1 million asset, we say that leverage is 10-to-1 ($1 million divided by $100,000).

Leverage refers to the use of borrowed funds to purchase assets. The word itself derives from Archimedes, who famously declared that, if given a large enough lever, he could move the earth. (One wonders where he imagined he would place the fulcrum?) There is nothing wrong with leverage per se. However, just as with consumption of alcoholic beverages, excesses can lead to disaster, as we shall see presently.

We have encountered financial leverage before. Back in Chapter 29 (page 636), we studied the balance sheet of the hypothetical Bank-a-Mythica, which is repeated below in Table 1. Notice that this tiny bank owns $5.5 million worth of assets on an equity base (the stockholders’ investment) of only one-half million. Since the degree of leverage is conventionally measured by the ratio of assets to net worth, we say that this bank is leveraged 11-to-1, which is pretty typical for U.S. commercial banks.

<p>| TABLE 1 |
|---|---|
| Balance Sheet of Bank-a-Mythica, December 31, 2007 | |</p>
<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities and Net Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves</td>
<td>Checking deposits $5,000,000</td>
</tr>
<tr>
<td>Loans outstanding</td>
<td>$4,500,000</td>
</tr>
<tr>
<td>Total</td>
<td>$5,500,000</td>
</tr>
<tr>
<td>Addendum: Bank Reserves</td>
<td>Net Worth</td>
</tr>
<tr>
<td>Actual reserves</td>
<td>Stockholders’ equity $500,000</td>
</tr>
<tr>
<td>Required reserves</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Excess reserves</td>
<td>Total $5,500,000</td>
</tr>
</tbody>
</table>

Leverage is a major source of Bank-a-Mythica’s, or any bank’s, profitability. To see why, suppose the bank’s deposits carry an average annual interest cost of 2 percent, or $100,000 per year in total, whereas its loans return, on average, 4 percent a year, or $180,000. The bank is nicely profitable because of the wide spread between its lending and deposit rates. It returns $80,000 per year in profit to its investors, which is a 16 percent rate of return on their invested capital of $500,000.

Now suppose the bank was forced to operate without borrowed funds, which, in this case, means without deposits. In that case, the bank’s far-smaller balance sheet would look like Table 2. A 4 percent return on its $500,000 loan portfolio would now net the bank just $20,000 per year, which is, of course, also a 4 percent rate of return on its $500,000 equity. With such low prospective returns, investors would probably find better uses for their money. So this bank would never exist. Thus:

Leverage is essential to a bank’s profitability, but leverage also exacerbates risk.

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3 For example, the average loan rate might be 7 percent with an average 3 percent loss rate. Alas, not all loans get paid back!

4 Remember from Chapter 29 that bank deposits are liabilities to banks because, when they are cashed in, the bank must pay out the cash. Thus, you lend money to your bank, and the bank borrows money from you, when you make a deposit.
Using the unleveraged balance sheet of Table 2, now suppose that loans decline in value by 10 percent, creating the new balance sheet shown in Table 3. The stockholders have lost 10 percent of their investment, which is bad but not devastating. Now consider the same 10 percent loan losses (which now amount to $450,000) in the highly levered balance sheet we started with (Table 1). We would get the result shown in Table 4. Notice that the bank’s shareholders have now lost 90 percent of their $500,000 investment. They are almost wiped out.

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Unleveraged Balance Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Liabilities and Net Worth</td>
</tr>
<tr>
<td>Loans outstanding</td>
<td>$500,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>Unleveraged Balance Sheet after 10 Percent Loan Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Liabilities and Net Worth</td>
</tr>
<tr>
<td>Loans outstanding</td>
<td>$450,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>Leveraged Balance Sheet after 10 Percent Loan Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Liabilities and Net Worth</td>
</tr>
<tr>
<td>Reserves</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Loans outstanding</td>
<td>$4,050,000</td>
</tr>
<tr>
<td>Total</td>
<td><strong>$5,050,000</strong></td>
</tr>
<tr>
<td>Total</td>
<td><strong>$5,050,000</strong></td>
</tr>
</tbody>
</table>

Thus leverage is the proverbial double-edged sword. It magnifies returns on the upside, which is what investors want, but it also magnifies losses on the downside, which can be fatal. The moral of this story is not that leverage must be shunned. Leverage is, for example, inherent in the very idea of banking, where an “unlevered bank” is an oxymoron because every dollar of deposits is “borrowed” from customers. Rather, the true moral of the story is that a company operating with high leverage should be labeled “Fragile: Handle with Care.” Its shock absorbers are not very resilient.

Unfortunately, too many banks and other financial institutions forgot this elementary lesson during the heady days of the real estate boom. Commercial banks employed legal and accounting gimmicks to push their leverage above the traditional 10-to-1 or 12-to-1 level. Some investment banks operated with 30-to-1 or even 40-to-1 leverage. With 40-to-1 leverage, for example, a mere 2.5 percent decline in the value of your assets is enough to destroy all shareholder value. That’s a risky way to run a business. And when asset values dropped after the housing bubble burst, many of these firms were ill prepared to absorb losses and became insolvent.

So those were the four main ingredients in the dangerous witches’ brew that existed before the housing bubble burst: the bubble itself, lenient lending standards, compressed risk spreads, and high leverage.

But none of this mattered much as long as house prices continued to inflate.

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EXERCISE: Demonstrate this conclusion with a hypothetical balance sheet both before and after a 2.5 percent loss.

A company is insolvent when the value of its liabilities exceeds the value of its assets, that is, when its net worth is negative.
Leverage and Returns: An Example

Leverage magnifies gains on the way up but also magnifies losses on the way down.

To illustrate this general principle, consider the contrasting investment behaviors of Jane Doe and John Dough.

Jane invests $1,000,000 in one-year corporate bonds paying 6 percent interest. At the end of the year, she gets back her $1,000,000 in principal plus $60,000 in interest. Since what she receives is 6 percent more than what she originally paid, her rate of return is, naturally, 6 percent.

Now consider John Dough, who also commits $1,000,000 of his own money to these same bonds. However, John leverages his investment by borrowing another $9,000,000 from a bank, at 3 percent interest, and investing the entire $10,000,000 in the bonds. At year's end, John gets back his $10,000,000 in principal plus $600,000 in interest, or $10,600,000 in total. He repays the bank $9,000,000 in principal plus $270,000 in interest, or $9,270,000 in total. Hence his net earnings are $10,600,000 − $9,270,000 = $1,330,000 on a $1,000,000 investment. Thus, John's rate of return is 33 percent—more than five times higher than Jane's.

So is John, who uses high leverage, a smarter investor than Jane, who does not? Well, maybe not. Let's now suppose that the bond falls 5 percent in value during the year. Jane will now receive $950,000 in principal plus $60,000 in interest, or $1,010,000 in total. Her rate of return is thus a paltry 1 percent. John, on the other hand, will get back $9,500,000 in principal plus $600,000 in interest, or $10,100,000 in total. But he will still have to pay the bank $9,270,000, leaving him with only $830,000 of his original $1,000,000 investment. John's rate of return is therefore minus 17 percent. (He has lost 17 percent of his money.)

Maybe John wasn't so smart after all.

THE HOUSING PRICE BUBBLE AND THE SUBPRIME MORTGAGE CRISIS

Let us now see what all this tells us about how the end of the housing bubble led to the financial crisis. Cracks in the system began to emerge when house prices stopped rising in either 2006 or 2007, depending on what measure you use. Over the period from 2000 until 2006 or 2007, house prices in the United States soared by 60 to 90 percent, which constituted a faster rate of increase than we had ever seen before on a nationwide basis. Many observers believed that such sharp price increases far outstripped what could be justified by the fundamentals, such as rising incomes and falling mortgage interest rates; hence the term bubble. Their warnings were not heeded, however.

Once the bubble burst, house prices began to fall, especially severely in previous boom markets in states like California, Florida, Arizona, and Nevada. Again, depending on how you measure it, the price of an average American home fell about 12 to 25 percent over the next two to three years; in some areas, price declines of 50 percent and more were common. These sharp declines had a number of obvious effects on the economy, plus a few that were not so obvious.

First, plunging prices made both buying and building new homes far less attractive than when prices were soaring. For-sale signs sprouted up everywhere, and inventories of unsold houses piled up, driving prices down further. Think about the profitability of a builder whose construction costs for a certain type of home is $250,000. At a selling price of $300,000, the business is quite profitable, inducing a great deal of new construction. But if the market price drops to $200,000, that's a signal to stop building, which is precisely what many construction companies did. Residential construction tumbled by a remarkable 56 percent between the winter of 2005–2006 and the spring of 2009, when it hit rock bottom. Remember, spending on newly constructed homes is part of investment, I, and this sharp decline starting dragging down GDP growth in late 2005.
Second, a great deal of consumer wealth was destroyed in the process. After all, a house is far and away the most valuable asset for most American families. If the value of the family house falls from, say, $300,000 to $200,000, which happened in many markets, the family is substantially poorer. As we learned in Chapter 25, reduced wealth normally leads to lower consumer spending. It did so in 2008. The roots of recession were sown.

But there was much more. Most houses are purchased mainly with borrowed funds—mortgages. A typical mortgage obligates the homeowner to make monthly payments of a fixed number of dollars over a certain number of years (often 30). Obviously, the more a household borrows, the larger its monthly mortgage payment will be. If the homeowner fails to make the monthly payments, the bank can take back the house—which is the collateral on the loan—through a legal process called foreclosure. Notice that as falling home values reduce the value of the collateral, the bank finds itself in a more precarious position. If it forecloses on a homeowner who fails to make the required payments, the bank might not get all of its money back because the house might be worth less than the mortgage.

Let’s think about some numbers that typified “the good old days” before the housing bubble. Down payments of about 20 percent were typical. So a $200,000 house was normally bought with about $40,000 in cash and a mortgage of $160,000. The down payment served as a cushion. Since the original mortgage debt amounted to only 80 percent of the value of the house, even a 10 to 15 percent drop in price, which was a very rare event, would leave the property worth more than the mortgage. If the mortgage interest rate was, say, 7.5 percent per annum, the monthly payment would be about $1,120. By traditional banking rules of thumb, a household should have income of three to four times that amount to qualify for such a mortgage—say, $40,000 to $55,000 a year.

But mortgage lending standards dropped like a stone during the housing boom, in three main ways. The reason in each case was the same: As the bubble inflated, both borrowers and lenders came to believe that house prices would continue to rise indefinitely.

First, the rule of thumb just mentioned came to be viewed as hopelessly out of date. Housing was now such a fine investment, it was thought, that families could safely afford to devote more than 25 or 33 percent of their incomes to mortgage payments. Second, banks and other lenders started to grant loans with small or even zero down payments. Both of these changes enabled households to purchase even more expensive homes—homes that ultimately proved to be beyond their means.

Third, banks and other lenders started offering more and more mortgages to families with less-than-stellar credit ratings—the notorious subprime mortgages—often in amounts that borrowers could not afford. Under normal market conditions, such loans would have been considered too risky by borrowers and lenders alike. As the bubble continued to grow, though, lenders reasoned (incorrectly, as it turned out) that ever-rising house prices would make their loans secure even if borrowers defaulted because the value of the collateral (the house) would keep rising. The corresponding delusion for households went something like this: “I know I shouldn’t borrow $200,000 to buy a $200,000 house that I can’t afford on my $25,000 annual income. But if I can muddle through for just two or three years, the house will be worth $300,000. Then I can pay off my old $200,000 loan, replacing it with a much safer $240,000 mortgage with $60,000 down (20 percent of $300,000)—leaving $40,000 in cash in my pocket.”

That all sounded good—until it didn’t. When house prices stopped rising, subprime mortgages began to default in large numbers. The house of cards was beginning to crumble.

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Footnote:

6 Here is the arithmetic: If Bank Two will lend $240,000 against the $300,000 house—a safe loan with a 20 percent down payment, the homeowner can take $200,000 of the newly-borrowed $240,000 and pay off his original loan from Bank One, keeping $40,000 for himself.
Loans are securitized—that is, transformed into marketable securities—when they are packaged together into a bondlike instrument that can be sold to investors, potentially all over the world.

A mortgage-backed security is a bondlike security whose interest payments and principal repayments derive from the monthly mortgage payments of many households.

**FROM THE HOUSING BUBBLE TO THE FINANCIAL CRISIS**

At first, most observers thought the damage from the impending subprime mortgage debacle would be too small to cause a recession. There were two main errors in this reasoning. The first mistake was simple: Most people underestimated the scale of the subprime mortgage market, which had soared in volume during the late stages of the bubble. The second mistake is harder to explain. Doing so requires a detour through a once-arcane aspect of finance called securitization. A simple example will illustrate how securitization works.

Consider Risky Bank Corporation (RBC), which has made 1,000 subprime mortgage loans averaging $200,000—all, let us say, in the Las Vegas area. RBC’s highly concentrated loan portfolio of $200 million is, well, risky. Should an economic downturn or natural disaster hit its local market, many of these loans would likely default, potentially driving RBC into bankruptcy.

Enter Friendly Investment Bank (FIB), a securitizer. FIB offers the bank an attractive deal. “Sell us your $200 million in subprime mortgages. We will pay you cash immediately, which you can use to make loans to other borrowers. We’ll then take your mortgages, combine them with others from banks around the country, and package them all into more diversified mortgage-backed securities (MBS). These securities will be less risky than the underlying mortgages because they will be backed by payments emanating from several different geographical areas. Then we will spread the risk further by selling pieces of the MBS to investors all over the world.” FIB, of course, would earn fees for all of its services.

On the surface, this little bit of “financial engineering,” as it is called, seems to make good sense. RBC is relieved of a substantial risk that could threaten its very existence. FIB’s securitization of all those mortgages reduces risk in the two ways claimed. The first is geographical diversification. Even though Las Vegas real estate prices might fall, it is unlikely that real estate prices would drop simultaneously in Los Angeles, Chicago, Orlando, etc. Second, the risks that remain in the (diversified) MBS are then parceled out to hundreds or even thousands of investors all over the world, rather than being held in just a few banks. Thus no one bank is left “holding the bag” if mortgage defaults rise unexpectedly.

That was the theory, but it didn’t always work smoothly in practice. Why not? The preceding paragraph contains the first two clues.

First, when the national housing bubble burst, home prices did indeed fall almost everywhere—an “impossible” event that had not occurred since the Great Depression of the 1930s. For decades, Americans had witnessed periodic house-price bubbles in particular areas of the country. But when prices fell in, say, Boston they kept rising in, say, Los Angeles—and vice versa. The period after 2006–2007 was different, however. With house prices falling all over the map, the expected gains from geographical diversification disappeared just when they were most needed. For this reason alone, the values of the MBS declined—it turned out they were riskier than investors thought. Remember, more perceived risk induces lenders to demand higher interest rates to compensate them for the higher risk. And higher interest rates mean lower bond prices.

Second, we learned that the securities were not as widely distributed as had been thought. On the contrary, many of the world’s leading financial institutions apparently found MBS and other mortgage-related assets so attractive during the boom that they were left holding very large concentrations of such assets when the markets collapsed. The failures and near failures of such venerable firms as Bear Stearns, Lehman Brothers, Merrill Lynch, Wachovia, Citigroup, Bank of America, and others were all traceable, directly or indirectly, to excessive concentrations of mortgage-related risks. As one institution after another tried to unload their now-unwanted securities in a market with many sellers and few buyers, prices plummeted further.7

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7 **EXERCISE:** Draw a supply-and-demand diagram for mortgage-backed securities. Show what happens when the demand curve shifts in and the supply curve shifts out.
There is more to the story. We have already mentioned that excessive leverage is dangerous, and that mortgages with less collateral (less valuable houses) behind them command lower prices in the marketplace because they are riskier. But there was another, very important, factor: Many of the MBS and related assets were far more complex than our simple example suggests. Let us explain.

During the boom, Wall Street created and sold a dizzying array of financial securities that, in effect, offered investors complex combinations of shares of mortgage loans—securities so complex that few investors understood what they really owned. As more and more of the underlying mortgages started to look like they might default, the values of all mortgage-backed securities naturally plummeted. In the cases of the most complex and opaque securities, this fear was exacerbated by the fact that nobody knew what they were really worth, which is a surefire cause for panic once the seeds of doubt are sown. This panic simmered for a while and then burst into the open in the summer of 2007. The financial crisis had begun in earnest.

The creaky system began to crack in July 2007, when Bear Stearns—a large investment bank that would become infamous later—told investors that there was “effectively no value left” in one of its mortgage funds. Not exactly encouraging. Soon a variety of financial markets were acting extremely nervous. The big bang came on August 9, 2007, when BNP Paribas, a huge French bank, halted withdrawals on three of its subprime mortgage funds—citing as its reason the inability to put values on the securities the funds owned. Those acquainted with American history were reminded of the periodic banking panics of the 19th century, which often were set off when some bank “suspended specie payments”—that is, refused to exchange its bank notes for gold or silver. Whether French or American, the signal to panic was clear, which is precisely what markets did, all over the world.

At first, the Federal Reserve and the European Central Bank (ECB) tried to hold the system together by acting as “lenders of last resort”, as described in Chapter 30 (pages 653–654), which is what central banks have done since the 17th century. They lent astonishing sums of money to commercial banks within a matter of days. Although that improved markets, the “cure” didn’t last long. By March 2008, Bear Stearns was suffering from the modern-day equivalent of a run on the bank. When it became clear that Bear had only days to live, the Federal Reserve stepped in to help J.P. Morgan Chase, a giant commercial bank, purchase Bear Stearns at a bargain-basement price. Most surprisingly, the Federal Reserve put some of its own money at risk when, in order to seal the deal, it agreed to buy some of the Bear Stearns assets that J.P. Morgan Chase did not want. These actions, which remain controversial to this day, were unprecedented. As the Federal Reserve vice chairman, Donald Kohn, put it at the time, alluding to Julius Caesar’s risky approach to Rome, the Federal Reserve “crossed the Rubicon” with the Bear Stearns deal. Even as of this writing in March 2010, the Federal Reserve has been unable to recross the Rubicon and head back in the other direction.

Not all of the anti-recessionary policies were financial. Conventional fiscal policy, as described in Chapter 28, was also employed to fight the recession. This process started in early 2008, when Congress enacted a one-time “tax rebate” to put more disposable income into the hands of consumers, just as it had done in 1975 and 2001. As the economy worsened, it became clear that the modestly sized fiscal stimulus (roughly 1 percent of GDP) was far too small, given the deteriorating economy. In addition, many economists argued (as in the text on pages 547–548) that temporary tax cuts have smaller effects on consumer spending than permanent cuts. So the first major action of the new Obama administration in 2009 was to recommend far more fiscal stimulus (more on this follows).

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8 These two episodes were analyzed in Chapter 25, pages 538 and 547–548.
9 The calculations behind such conclusions are more elaborate versions of the multiplier analysis presented in Chapters 26 and 28.
A financial crisis does remain purely financial for long. Soon, the real economy gets dragged down. As we have learned in this book, all economies depend on credit. Borrowed funds are used to finance not only home purchases but also several types of consumer expenditures, $C$, such as automobile purchases, and virtually all forms of business investment, $I$. Credit is also vital to exporting and importing, $X - IM$, and to financing substantial chunks of government spending, $G$. That list takes in every component of $C + I + G + (X - IM)$. So when credit contracts, so does aggregate demand. And as we have learned, declining aggregate demand is the most common cause of recessions.

Furthermore, banks are central to the credit system. If banks feel imperiled and become cautious about lending, businesses may find themselves starved for credit to finance inventories, households may be unable to obtain mortgages or auto loans, and even local governments may find it hard to float their bonds. In worst-case scenarios—which briefly became a reality in the fall of 2008—firms may not even be able to obtain the short-term credit they need to make payrolls. Such a situation is what Federal Reserve Chairman Ben Bernanke feared when he spoke of a "global financial meltdown."

The Fed’s job was not just to stop the financial bleeding, which was hard enough. It also had to find ways to repair the broken financial system and to get credit flowing again. In addition, it had to offset the drag on aggregate demand caused by the credit-market disruptions. The first two tasks were virtually unprecedented and required the Fed to improvise; the last one was familiar. Central banks know how to stimulate (or contract) aggregate demand.

We learned in Chapter 30 that monetary policymakers normally boost demand by cutting interest rates. In the case of the Federal Reserve, that meant lowering the federal funds rate (see Chapter 30, pages 649–651), which stood at 5.25 percent when the crisis began. The Fed began cutting the funds rate in September 2007, cautiously at first. However, it soon realized that timidity would not do, and accelerated its rate cutting enormously during the first quarter of 2008—including a dramatic cut of 0.75 percent right after the Bear Stearns deal. By the end of April 2008, the federal funds rate stood at just 2 percent, where the Fed decided to leave it. Or so it thought.

Then the demise of Lehman Brothers happened in September 2008. The Lehman bankruptcy changed everything by triggering the biggest financial panic yet. Within days, other large financial firms were collapsing or teetering on the brink. Investors seemed unwilling to bear any risk at all; everyone, it seemed, wanted to stash their funds either in safe Treasury securities or FDIC-insured bank deposits. So, as we mentioned earlier, the interest rates on Treasury securities fell even though most other rates were rising. Banks, in turn, started hoarding excess reserves rather than lending them out. It is no exaggeration to say that most of the economy’s credit-granting mechanisms froze. It seemed that no one wanted to lend money to anyone. Within weeks, the real economy, starved of credit, looked like it was falling off a cliff. (See the box, “The Collapse of Lehman Brothers.”)

These developments posed a huge new problem for the Fed. We learned in Chapters 29 and 30 that an injection of new bank reserves normally sets in motion a multiple expansion of the money supply and bank lending, which is how the Fed pushes the economy forward. In late 2008, the need for expansionary monetary policy was clear. But, as you will recall, the main reason why the multiple expansion process works is that banks do not want to hold excess reserves, which earn them nothing. Instead, they lend the funds out. Or at least that is what they do in normal times. However, when banks fear a “run” by their depositors and/or worry that loans will not be repaid, it becomes rational for them to hang onto excess reserves.10 Idle balances at the Federal Reserve may pay

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10 We discussed this possibility in Chapter 29, page 643.
The Collapse of Lehman Brothers: The Turning Point

The collapse of Lehman Brothers, a venerable Wall Street “brand name” that had survived the Great Depression, marked a turning point in the crisis—and not just financially. The real economy also took a sharp turn for the worse immediately after Lehman filed for bankruptcy on September 15, 2008. Virtually all indicators of the health of the macroeconomy plunged downwards. Two of them are depicted here.

The right-hand panel shows the growth rate of real GDP, quarterly, from the fourth quarter of 2007 (the official start of the recession) through the first quarter of 2009, when the nosedive ended. Notice that GDP actually grew slightly over the first three quarters shown in the graph, but then began plummeting just when Lehman fell. The left-hand panel depicts, in this case month by month, the rate of job loss over approximately the same time period. Once again, we see only modest monthly job losses through August, and then stunningly large ones in the months after Lehman’s collapse.

It’s no wonder that the fall of Lehman Brothers is considered a milestone—and not a happy one—in the history of the financial and economic crisis of 2007–2009.

nothing, but at least they are safe from loss. However, idle cash balances at the Fed do not increase aggregate demand. Thus, conventional monetary policy becomes, in a sense, powerless.

The Fed, the Treasury, the FDIC, and others reacted to this frightening state of affairs in multiple ways. First, the Fed resumed cutting interest rates, bringing the federal funds rate down to virtually zero by December 2008. But, for the reasons just mentioned, it is not clear that this additional dose of expansionary monetary policy did much good.

Second, the Fed and the Treasury together mounted a rapid-fire series of dramatic rescue operations to prevent what was threatening to become “a global financial meltdown.” They encouraged several gigantic mergers via which “strong” companies acquired “weak” ones. The Fed threw a big lifeline to AIG, a giant insurance company (not a bank) that was closely linked to Wall Street firms and banks, by lending it an enormous amount of money. In the process, the Fed effectively “nationalized” AIG without ever using the word—and without

a vote in Congress. This operation eventually proved to be the most controversial of them all. As this is written, the Fed is still being accused of making serious errors in the AIG case.

The Fed also declared the two surviving Wall Street giants, Goldman Sachs and Morgan Stanley, to be “banks” so that it could lend them money as necessary. The Treasury, which had previously said it had no funds to commit to rescue operations (and hence left that to the Fed), suddenly discovered a large pot of money that it used to stop runs on money market mutual funds. The FDIC, which had long guaranteed bank deposits, extended its guarantee and also invented a new program to guarantee some of the bonds that banks wanted to issue. These examples are only a few of the attempted rescue operations. No living person had ever seen anything like it.

Despite all these prodigious and unprecedented efforts, the financial markets remained in a state of panic and the economy teetered on the brink of disaster. Against that background, Federal Reserve Chairman Bernanke and then-Secretary of the Treasury Henry Paulson locked arms (pretty much literally) and persuaded Congress to pass the Trouble Assets Relief Program (TARP) on October 3, 2008 (on the second try)—just four weeks before the 2008 election. The central idea behind TARP, for which Congress appropriated the astonishing sum of $700 billion, was that MBS and other, more complicated, securities based on mortgages were clogging up the financial system. Without buyers, the markets for these assets had pretty much shut down; there were hardly any transactions. Although most financial institutions owned mortgage-related securities, and some owned huge amounts, no one knew what they were worth. In a nervous environment, investors tended to assume the worse, which led to fears that most of the large financial institutions were concealing large losses; not many lenders want to extend credit to potentially insolvent institutions.

The original idea was that the Treasury Department would use TARP money to buy up some of the unwanted securities, hold them until the storm passed, and then sell them back into the market, hopefully at a profit. But that did not happen. Instead, Secretary Paulson utilized a catchall provision in the bill to divert TARP money to an entirely different purpose: to recapitalize the banks. What does that mean?

Look back at the simplified balance sheet of the nearly-insolvent bank we considered in Table 4. This bank is barely alive; the slightest further loss on its holdings of loans and securities will render it insolvent. But now suppose the bank receives $1 million in cash from the government, which purchases $1 million worth of bank stock. The bank’s new balance sheet is shown in Table 5. The bank now has plenty of capital and plenty of capacity to lend. It’s just that most of the new capital is owned by the government. Part of the idea, of course, is that the government will sell its shares later.

A bank is said to be recapitalized when some investor, private or government, provides new equity capital in return for partial ownership.

<table>
<thead>
<tr>
<th>TABLE 5</th>
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**Balance Sheet after Recapitalization**

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities and Net Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td><strong>Liabilities</strong></td>
</tr>
<tr>
<td>Reserves</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Loans and securities</td>
<td>$4,050,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$6,050,000</strong></td>
</tr>
</tbody>
</table>

11 Money market mutual fund deposits are very much like bank accounts; depositors can even write checks on them. Although not insured by the FDIC, millions of Americans considered the money in these funds to be totally safe—until one large money fund, which had invested in Lehman’s debt instruments, suffered losses. That stunning event precipitated a run on money market funds in general.

12 To put that number into perspective, the entire federal budget deficit for fiscal year 2008, which ended three days before the TARP legislation passed, was $469 billion.

13 This catchall provision authorizes the secretary of the Treasury to purchase any asset he decides “is necessary to promote financial market stability.”
What Secretary Paulson actually did was a good deal more complicated than this simple example. But the balance sheets in Tables 4 and 5 give you the basic idea: The recapitalizations saved the banks by making the government a part owner. Many financial experts applauded the secretary’s actions; others did not. However, the public at large felt it was fundamentally unfair to funnel all that money to the very banks that had caused the problems, while so many families and other businesses were struggling. The recapitalization of the banks, and the TARP itself, became wildly unpopular—hated by Republicans and Democrats alike. That attitude prevails to this day, even though the banks have repaid the TARP funds with a profit to the government. Indeed, saying that some idea is “like the TARP” is a good way to kill it politically.

Politics aside, the recapitalizations did save the banks. It proved to be the first step on the long, bumpy road to recovery.

Unfortunately, as we traveled along this road, the economy was tanking. Look back at the boxed insert, “The Collapse of Lehman Brothers: The Turning Point.” The right-hand diagram shows that real GDP declined at an annualized rate of about 6 percent during the last quarter of 2008 and the first quarter of 2009, which were two of the worst quarters in the history of the U.S. economy since the 1930s. Commensurately, the unemployment rate rose from 4.8 percent in February 2008 to 6.1 percent at the time Lehman failed to 8.5 percent by March 2009—and rose further as 2009 progressed.14

As we know, governments normally fight rising unemployment with expansionary monetary and fiscal policies. But the Fed was more or less “out of ammunition” after December 2008, when it had lowered the federal funds rate to virtually zero. Policymakers worried: What if all that expansionary monetary policy was not enough? When President Barack Obama took office in January 2009, his first major policy initiative was a massive fiscal stimulus bill, including both tax cuts and increases in government spending. The overall magnitude of the February 2009 fiscal package was announced as $787 billion, or about 5.5 percent of GDP, although it was spread out over several years. The idea, of course, was to close the sizable recessionary gap between potential and actual GDP—precisely as explained in Chapter 28.

HITTING BOTTOM AND RECOVERING

Most financial markets appear to have hit bottom around March 2009. The low point of the stock market came in March, and the subsequent recovery was spectacular: Stock prices rose more than 60 percent from March to November. The interest rate spreads we discussed earlier also seem to have peaked in March, and they narrowed sharply thereafter. Perhaps not coincidentally, real GDP began to grow again in the third quarter of 2009—only modestly at first, but then rapidly in the fourth quarter. However, job growth did not resume until 2010.

As 2010 started, the economy appeared to be on the mend, the recession behind us. But many economists wondered how lasting and strong the recovery would be, and jobs were still disappearing, albeit at a much slower pace. The Obama administration was looking for further ways to jump-start hiring and to get credit flowing again to small businesses. The Fed, for its part, was beginning to think about its “exit strategy” from the many emergency policies it had put into place. Normalcy seemed to be returning—though not quite there yet.

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14 As mentioned at the start of this chapter, the unemployment rate finally peaked at 10.1 percent in October 2009.
LESSONS FROM THE FINANCIAL CRISIS

It is far too early to have the proper historical perspective on the incredible events of 2007–2009, but we know a few things already. First, most observers think financial regulation was too “light” prior to the crisis; that is, that regulators did not properly perform the functions discussed in Chapter 29.

Second, these regulatory failures extended well beyond poor job performance by regulatory personnel; myriad weaknesses in the regulatory structure became painfully clear during the crisis. Consequently, Congress is now working on rewriting many of the laws that govern financial regulation in the United States, as are the governments of other countries.

Third, virtually everyone agrees that we allowed the financial system to operate with far too much leverage, a point we have discussed extensively in this chapter. In part, excessive leverage can be traced to lax regulation. But a great deal of it reflects poor business (and household) judgments. Alas, we humans—even when armed with powerful computers—are a highly fallible lot, prone to wishful thinking.

Fourth, and closely related, we learned that excessive complexity and opacity can make a financial system fragile, and therefore dangerous. When investors don’t quite understand what they are buying, they are prone to panic at bad news.

Fifth, we were rudely reminded that the business cycle is by no means dead. Each time our economy enjoys a lengthy period without serious recessions—such as during the long booms of the 1960s, the 1980s, and the 1990s—some analysts start waxing poetic about the death of the business cycle. But to paraphrase Mark Twain, the reports of its death have been greatly exaggerated. That means, among other things, that the lessons you learned about macroeconomics in Parts 6 and 7 are not historical relics. They are still tremendously useful in understanding the world in which you live.

Sixth, what had become almost a consensus view—that the job of stabilizing aggregate demand should be assigned to monetary policy, not to fiscal policy—is no longer the consensus. With its weapons for reviving the moribund economy badly depleted in 2008...
and 2009, the Fed found that it needed help from the president and Congress. And the fiscal authorities delivered on a timely basis. Although still controversial (as noted in this chapter), it looks as if expansionary fiscal policy really worked in 2008 and 2009, thereby shortening and moderating the Great Recession.

Seventh, we learned that expansionary monetary policy is not necessarily finished once the Fed reduces the federal funds rate to zero. The central bank under Chairman Ben Bernanke invented a number of unorthodox ways to lend to banks and nonbanks, to guarantee lending by others and, when necessary, to buy unwanted assets itself.

That’s a long list of lessons, but a few years from now, the list will probably be longer still.

| SUMMARY |

1. An asset-price **bubble** occurs when the prices of some assets rise far above their fundamental values. Most observers believe that a large house-price bubble ended in the United States in 2006–2007, helping to bring on both the financial crisis and the worst recession since the 1930s.

2. A second major cause of the financial crisis was that **interest rate spreads**, which had narrowed to unsustainably low levels in the years 2004–2006, widened dramatically in 2007–2008, driving down the corresponding bond prices. One prominent example was **mortgage-backed securities (MBS)**, which tumbled in value.

3. As house prices fell, the **collateral** behind many mortgages automatically declined in value, making these mortgages (and hence the securities based on them) riskier and therefore less valuable in the market.

4. A third major cause of the crisis was the large volume of **subprime mortgages** that were granted during the housing boom, often to borrowers who were not creditworthy. The explosion of subprime mortgages was enabled by both poor banking practices and lax regulation.

5. Perhaps the biggest and broadest cause of the financial crisis was the excessive amounts of **leverage** that developed all over the financial system. Since leverage magnifies both gains and losses, it boosted profits during the boom but inflicted tremendous damage when asset prices started falling.

6. The financial crisis began in earnest in the summer of 2007 when several funds based on complex mortgage-related securities lost most of their value. That development, in turn, led investors to question the values of similar securities.

7. The crisis entered a whole new stage in March 2008, when the Federal Reserve arranged, and helped finance, an emergency merger so that Bear Stearns, a large investment bank, would not fail. Six months later, Lehman Brothers, a much larger investment bank, did fail; and for the next several weeks there was utter panic in financial markets around the world.

8. The collapse of the housing bubble and the severe damage to the financial system brought on a serious recession for three main reasons: a great deal of wealth was destroyed, spending on new houses collapsed, and businesses and households found it difficult to borrow.

9. The U.S. government fought the recession with a tax rebate in 2008 and a vastly larger fiscal stimulus in 2009. Congress also appropriated $700 billion for the controversial Troubled Assets Relief Program (TARP) in October 2008. Much of the TARP money was used to **recapitalize** banks.

10. At first, the Federal Reserve fought the recession in the usual way: by cutting interest rates. Eventually, the federal funds rate was reduced to nearly zero. After that, the Fed had to resort to a variety of unconventional rescue policies.

11. The U.S. economy hit bottom in the second quarter of 2009; after that, real GDP growth resumed. But jobs did not start growing again until months later. Many, but not all, observers credit the wide-ranging fiscal and monetary policy actions with bringing the recession to a more rapid conclusion.

| KEY TERMS |

- bubble 780
- collateral 781
- foreclosure 785
- insolvent 783
- interest rate spread (risk premium) 780
- leverage 782
- mortgage 781
- mortgage-backed securities (MBS) 786
- recapitalization 790
- recapturization 790
- subprime mortgage 781
- Troubled Assets Relief Program (TARP) 790

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| TEST YOURSELF |

1. If the expected default rate on a particular mortgage-backed security is 4 percent per year, and the corresponding Treasury security carries a 3 percent annual interest rate, what should be the interest rate on the mortgage-backed security? What happens if the expected default rate rises to 8 percent?
2. Create your own numerical example to illustrate how leverage magnifies returns both on the upside and on the downside.
3. Why do we say that deposits are “liabilities” of banks?
4. During the financial crisis and recovery, stock market prices first fell by about 55 percent and then rose by about 65 percent. Did investors therefore come out ahead? Explain why not.

| DISCUSSION QUESTIONS |

1. If you were watching house prices rise during the years 2000–2006, how might you have decided whether or not you were witnessing a “bubble”?
2. What factors do you think bankers normally use to distinguish “prime” borrowers from “subprime” borrowers?
3. Explain why a mortgage-backed security becomes riskier when the values of the underlying houses decline. What, as a result, happens to the price of the mortgage-backed security?
4. Explain how a collapse in house prices might lead to a recession.
5. Explain how a collapse of the economy’s credit-granting mechanisms might lead to a recession.
6. Explain the basic idea behind the TARP legislation. Was that idea carried out in practice?
7. (More difficult) In March 2008, the Fed helped prevent the bankruptcy of Bear Stearns. However, in September 2008, the Fed and the Treasury let Lehman Brothers go bankrupt. What accounts for the different decisions? (Note: You may want to discuss this question with your instructor and/or do some Internet or library research. The answer is not straightforward.)