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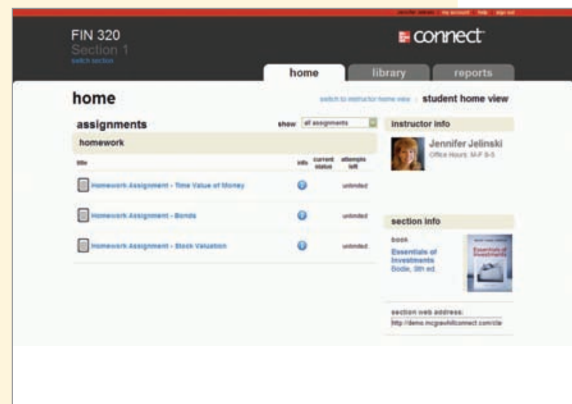

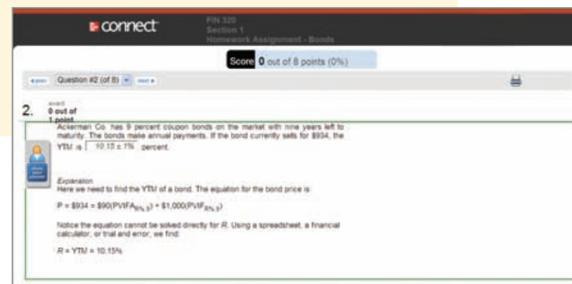

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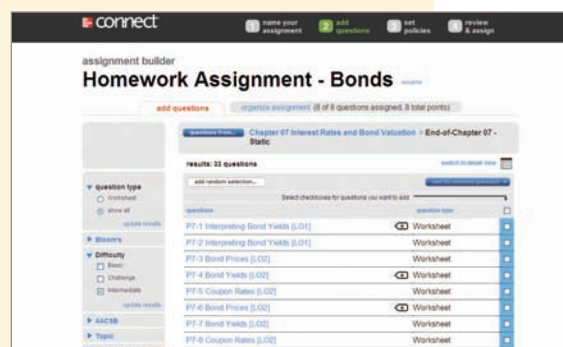

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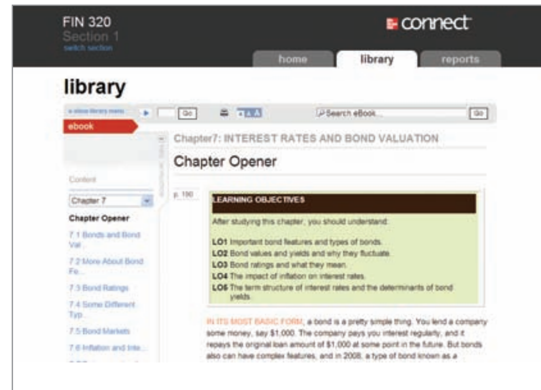

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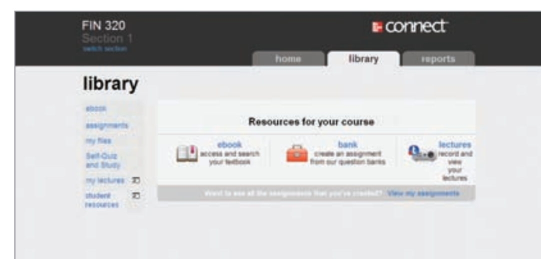

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Published by McGraw-Hill/Irwin, a business unit of The McGraw-Hill Companies, Inc., 1221 Avenue of the Americas, New York, NY, 10020.
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This book is printed on acid-free paper.

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

ISBN 978-0-07-803469-5
MHID 0-07-803469-8

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Cover Image: © *Gregor Schuster/Getty Images*
Lead Media Project Manager: *Daryl Horrocks*
Media Project Manager: *Joyce J. Chappetto*
Typeface: *10/12 Adobe Caslon Pro*
Compositor: *Laserwords Private Limited*
Printer: *R. R. Donnelley*

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Library of Congress Cataloging-in-Publication Data

Bodie, Zvi.
Essentials of investments / Zvi Bodie, Alex Kane, Alan J. Marcus.—9th ed.
p. cm.
Includes index.
ISBN 978-0-07-803469-5 (alk. paper)
ISBN 0-07-803469-8 (alk. paper)
1. Investments. I. Kane, Alex. II. Marcus, Alan J. III. Title.
HG4521.B563 2013
332.6—dc23

2012020874

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

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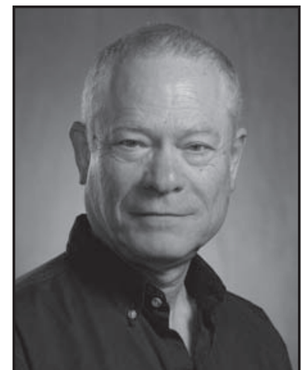

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Index I

A Note From the Authors . . .

The year 2012 capped three decades of rapid and profound change in the investment industry as well as a financial crisis of historic magnitude. The vast expansion of financial markets over recent decades was due in part to innovations in securitization and credit enhancement that gave birth to new trading strategies. These strategies were in turn made feasible by developments in communication and information technology, as well as by advancements in the theory of investments.

Yet the crisis was rooted in the cracks of these developments. Many of the innovations in security design facilitated high leverage and an exaggerated notion of the efficacy of risk transfer strategies. This engendered complacency about risk that was coupled with relaxation of regulation as well as reduced transparency that masked the precarious condition of many big players in the system.

Of necessity, our text has evolved along with financial markets. We devote increased attention in this edition to recent breathtaking changes in market structure and trading technology. At the same time, however, many basic *principles* of investments remain important. We continue to organize the book around one basic theme—that security markets are nearly efficient, meaning that you should expect to find few obvious bargains in these markets. Given what we know about securities, their prices usually appropriately reflect their risk and return attributes; free lunches are few and far apart in markets as competitive as these. This starting point remains a powerful approach to security valuation. While the degree of market efficiency is and will always be a matter of debate, this first principle of valuation, specifically that in the absence of private information prices are the best guide to value, is still valid. Greater emphasis on risk analysis is the lesson we have weaved into the text.

This text also continues to emphasize *asset allocation* more than most other books. We prefer this emphasis for two important reasons. First, it corresponds to the procedure that most individuals actually follow when building an investment portfolio. Typically, you start with all of your money in a bank account, only then considering how much to invest in something riskier that might offer a higher expected return. The logical step at this point is to consider other risky asset classes, such as stock, bonds, or real estate. This is an asset allocation decision. Second, in most cases the asset allocation choice is far more important than specific security-selection decisions in determining overall investment performance. Asset allocation is the primary determinant of the risk-return profile of the investment portfolio, and so it deserves primary attention in a study of investment policy.

Our book also focuses on investment analysis, which allows us to present the practical applications of investment theory and to convey insights of practical value. In this edition of the text, we have continued to expand a systematic collection of Excel spreadsheets that give you tools to explore concepts more deeply than was previously possible. These spreadsheets are available on the text's website (**www.mhhe.com/bkm**) and provide a taste of the sophisticated analytic tools available to professional investors.

In our efforts to link theory to practice, we also have attempted to make our approach consistent with that of the CFA Institute. The Institute administers an education and certification program to candidates seeking designation as a Chartered Financial Analyst (CFA). The CFA curriculum represents the consensus of a committee of distinguished scholars and practitioners regarding the core of knowledge required by the investment professional. We continue to include questions from previous CFA exams in our end-of-chapter problems and have added to this edition new CFA-style questions derived from the Kaplan-Schweser CFA preparation courses.

This text will introduce you to the major issues of concern to all investors. It can give you the skills to conduct a sophisticated assessment of current issues and debates covered by both the popular media and more specialized finance journals. Whether you plan to become an investment professional or simply a sophisticated individual investor, you will find these skills essential.

Zvi Bodie
Alex Kane
Alan J. Marcus

Organization of the Ninth Edition

Essentials of Investments, Ninth Edition, is intended as a textbook on investment analysis most applicable for a student's first course in investments. The chapters are written in a modular format to give instructors the flexibility to either omit certain chapters or rearrange their order. The highlights in the margins describe updates for this edition.

This part lays out the general framework for the investment process in a nontechnical manner. We discuss the major players in the financial markets and provide an overview of security types and trading mechanisms. These chapters make it possible for instructors to assign term projects analyzing securities early in the course.

Updated with major new sections on securitization, the roots of the financial crisis, and the fallout from the crisis.

Extensive new sections that detail the rise of electronic markets, algorithmic and high-speed trading, and changes in market structure.

Greater coverage of innovations in exchange-traded funds.

This part contains the core of modern portfolio theory. For courses emphasizing security analysis, this part may be skipped without loss of continuity.

All data are updated and available on the web through our Online Learning Center at **www.mhhe.com/bkm.** The data are used in new treatments of risk management and tail risk.

Introduces simple in-chapter spreadsheets that can be used to compute investment opportunity sets and the index model.

Includes more coverage of alpha and multifactor models.

Updated with more coverage of expert networks, private information, and insider trading issues.

Contains extensive treatment of behavioral finance and provides an introduction to technical analysis.

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DEBT SECURITIES 291

This is the first of three parts on security valuation.

10 Bond Prices and Yields 292

New material on sovereign credit default swaps.

11 Managing Bond Portfolios 337

Contains spreadsheet material on duration and convexity.

Part FOUR
SECURITY ANALYSIS 371

This part is presented in a "top-down" manner, starting with the broad macroeconomic environment before moving to more specific analysis.

12 Macroeconomic and Industry Analysis 372

Discusses how international political developments such as the euro crisis can have major impacts on economic prospects.

13 Equity Valuation 405

Contains free cash flow equity valuation models as well as a new discussion of the pitfalls of discounted cash flow models.

14 Financial Statement Analysis 446

Includes all-new motivation and rationale for how ratio analysis can be organized to guide one's analysis of firm performance.

Part FIVE
DERIVATIVE MARKETS 485

This part highlights how these markets have become crucial and integral to the financial universe and are major sources of innovation.

15 Options Markets 486

Offers thorough introduction to option payoffs, strategies, and securities with embedded options.

16 Option Valuation 522

Considerable new material on risk-neutral valuation methods and their implementation in the binomial option-pricing model.

17 Futures Markets and Risk Management 561

Part SIX
ACTIVE INVESTMENT MANAGEMENT 595

This part unifies material on active management and is ideal for a closing-semester unit on applying theory to actual portfolio management.

18 Portfolio Performance Evaluation 596

Fully revised development of performance evaluation methods.

19 Globalization and International Investing 630

Provides evidence on international correlation and the benefits of diversification.

20 Hedge Funds 666

Updated assessment of hedge fund performance and the exposure of hedge funds to "black swans."

21 Taxes, Inflation, and Investment Strategy 689

Employs extensive spreadsheet analysis of the interaction of taxes and inflation on long-term financial strategies.

22 Investors and the Investment Process 714

Modeled after the CFA Institute curriculum, also includes guidelines on "How to Become a Chartered Financial Analyst."

Pedagogical Features

Learning Objectives

Each chapter begins with a summary of the chapter learning objectives, providing students with an overview of the concepts they should understand after reading the chapter. The end-of-chapter problems and CFA questions are tagged with the corresponding learning objective.

Learning Objectives:

L01-1 Define an investment.

L01-2 Distinguish between real assets and financial assets.

L01-3 Explain the economic functions of financial markets and how various securities are related to the governance of the corporation.

L01-4 Describe the major steps in the construction of an investment portfolio.

L01-5 Identify different types of financial markets and the major participants in each of those markets.

Chapter Overview

Each chapter begins with a brief narrative to explain the concepts that will be covered in more depth. Relevant websites related to chapter material can be found on the book's website at **www.mhhe.com/bkm.** These sites make it easy for students to research topics further and retrieve financial data and information.

You learned in Chapter 1 that the process of building an investment portfolio usually begins by deciding how much money to allocate to broad classes of assets, such as safe money market securities or bank accounts, longer-term bonds, stocks, or even asset classes such as real estate or precious metals. This process is called *asset allocation.* Within each class the investor then selects specific assets from a more detailed menu. This is called *security selection.* marketable, liquid, low-risk debt securities. Money market instruments sometimes are called *cash equivalents,* or just *cash* for short. Capital markets, in contrast, include longer-term and riskier securities. Securities in the capital market are much more diverse than those found within the money market. For this reason, we will subdivide the capital market into three segments: longer-term debt markets, equity markets, and derivative markets in which options and futures trade.

Key Terms in the Margin

Key terms are indicated in color and defined in the margin the first time the term is used. A full list of key terms is included in the end-of-chapter materials.

commercial paper
Short-term unsecured debt issued by large corporations.

Commercial Paper

The typical corporation is a net borrower of both long-term funds (for capital investments) and short-term funds (for working capital). Large, well-known companies often issue their own short-term unsecured debt notes directly to the public, rather than borrowing from banks. These notes are called **commercial paper** (CP). Sometimes, CP is backed by a bank line of credit, which gives the borrower access to cash that can be used if needed to pay off the paper at maturity.

CP maturities range up to 270 days; longer maturities require registration with the Securities and Exchange Commission and so are almost never issued. CP most commonly is issued with maturities of less than one or two months in denominations of multiples of $100,000. Therefore, small investors can invest in commercial paper only indirectly, through money market mutual funds.

Numbered Equations

Key equations are called out in the text and identified by equation numbers. These key formulas are listed at the end of each chapter. Equations that are frequently used are also featured on the text's end sheets for convenient reference.

One way of comparing bonds is to determine the interest rate on taxable bonds that would be necessary to provide an after-tax return equal to that of municipals. To derive this value, we set after-tax yields equal and solve for the *equivalent taxable yield* of the tax-exempt bond. This is the rate a taxable bond would need to offer in order to match the after-tax yield on the tax-free municipal.

$$r(1 - t) = r_m \quad \textbf{(2.1)}$$

or

$$r = \frac{r_m}{1 - t} \quad \textbf{(2.2)}$$

Thus, the equivalent taxable yield is simply the tax-free rate divided by $1 - t$. Table 2.2 presents equivalent taxable yields for several municipal yields and tax rates.

On the **MARKET FRONT**

MONEY MARKET FUNDS AND THE FINANCIAL CRISIS OF 2008

Money market funds are mutual funds that invest in the short-term debt instruments that comprise the money market. In 2008, these funds had investments totaling about $3.4 trillion. They are required to hold only short-maturity debt of the highest quality: The average maturity of their holdings must be maintained at less than three months. Their biggest investments tend to be in commercial paper, but they also hold sizable fractions of their portfolios in certificates of deposit, repurchase agreements, and Treasury securities. Because of this very conservative investment profile, money market funds typically experience extremely low price risk. Investors for their part usually acquire check-writing privileges with their funds and often use them as a close substitute for a bank account. This is feasible because the funds almost always maintain share value at $1 and pass along all investment earnings to their investors as interest.

Until 2008, only one fund had "broken the buck," that is, suffered losses large enough to force value per share below $1. But when Lehman Brothers filed for bankruptcy protection on September 15, 2008, several funds that had invested heavily in its commercial paper suffered large losses. The next day, Reserve Primary Fund, the oldest money market fund, broke the buck when its value per share fell to only $.97.

The realization that money market funds were at risk in the credit crisis led to a wave of investor redemptions similar to a run on a bank. Only three days after the Lehman bankruptcy, Putman's Prime Money Market Fund announced that it was liquidating due to heavy redemptions. Fearing further outflows, the U.S. Treasury announced that it would make federal insurance available to money market funds willing to pay an insurance fee. This program would thus be similar to FDIC bank insurance. With the federal insurance in place, the outflows were quelled.

However, the turmoil in Wall Street's money market funds had already spilled over into "Main Street." Fearing further investor redemptions, money market funds had become afraid to commit funds even over short periods, and their demand for commercial paper had effectively dried up. Firms that had been able to borrow at 2% interest rates in previous weeks now had to pay up to 8%, and the commercial paper market was on the edge of freezing up altogether. Firms throughout the economy had come to depend on those markets as a major source of short-term finance to fund expenditures ranging from salaries to inventories. Further breakdown in the money markets would have had an immediate crippling effect on the broad economy. Within days, the Federal government put forth its first plan to spend $700 billion to stabilize the credit markets.

On the Market Front Boxes

Current articles from financial publications such as *The Wall Street Journal* are featured as boxed readings. Each box is referred to within the narrative of the text, and its real-world relevance to the chapter material is clearly defined.

CONCEPT *check* **2.5**

Reconsider companies XYZ and ABC from Concept Check Question 2.4. Calculate the percentage change in the market value–weighted index. Compare that to the rate of return of a portfolio that holds $500 of ABC stock for every $100 of XYZ stock (i.e., an index portfolio).

Concept Checks

These self-test questions in the body of the chapter enable students to determine whether the preceding material has been understood and then reinforce understanding before students read further. Detailed Solutions to the Concept Checks are found at the end of each chapter.

EXAMPLE 2.4

Value-Weighted Indexes

To illustrate how value-weighted indexes are computed, look again at Table 2.3. The final value of all outstanding stock in our two-stock universe is $690 million. The initial value was $600 million. Therefore, if the initial level of a market value–weighted index of stocks ABC and XYZ were set equal to an arbitrarily chosen starting value such as 100, the index value at year-end would be 100 × (690/600) = 115. The increase in the index would reflect the 15% return earned on a portfolio consisting of those two stocks held in proportion to outstanding market values.

Unlike the price-weighted index, the value-weighted index gives more weight to ABC. Whereas the price-weighted index fell because it was dominated by higher-price XYZ, the value-weighted index rose because it gave more weight to ABC, the stock with the higher total market value.

Note also from Tables 2.3 and 2.4 that market value–weighted indexes are unaffected by stock splits. The total market value of the outstanding XYZ stock increases from $100 million to $110 million regardless of the stock split, thereby rendering the split irrelevant to the performance of the index.

Numbered Examples

Numbered and titled examples are integrated in each chapter. Using the worked-out solutions to these examples as models, students can learn how to solve specific problems step-by-step as well as gain insight into general principles by seeing how they are applied to answer concrete questions.

Excel Integration

Excel Applications

Since many courses now require students to perform analyses in spreadsheet format, Excel has been integrated throughout the book. It is used in examples as well as in this chapter feature which shows students how to create and manipulate spreadsheets to solve specific problems. This feature starts with an example presented in the chapter, briefly discusses how a spreadsheet can be valuable for investigating the topic, shows a sample spreadsheet, and asks students to apply the data to answer questions. These applications also direct the student to the web to work with an interactive version of the spreadsheet. The student can obtain the actual spreadsheet from the book's website (**www.mhhe.com/bkm**); available spreadsheets are denoted by an icon. As extra guidance, the spreadsheets include a comment feature that documents both inputs and outputs. Solutions for these exercises are located on the password-protected instructor site only, so instructors can assign these exercises either for homework or just for practice.

Excel application spreadsheets are available for the following:

Chapter 3: Buying on Margin; Short Sales
Chapter 7: Estimating the Index Model
Chapter 11: Immunization; Convexity
Chapter 15: Options, Stock, and Lending; Straddles and Spreads
Chapter 17: Parity and Spreads
Chapter 18: Performance Measures; Performance Attribution
Chapter 19: International Portfolios

Spreadsheet exhibit templates are also available for the following:

Chapter 5: Spreadsheet 5.1
Chapter 6: Spreadsheets 6.1–6.6
Chapter 10: Spreadsheets 10.1 & 10.2
Chapter 11: Spreadsheets 11.1 & 11.2
Chapter 13: Spreadsheets 13.1 & 13.2
Chapter 16: Spreadsheet 16.1
Chapter 21: Spreadsheets 21.1–21.10

EXCEL APPLICATIONS

Buying on Margin

eXcel
Please visit us at www.mhhe.com/bkm

The Excel spreadsheet model below makes it easy to analyze the impacts of different margin levels and the volatility of stock prices. It also allows you to compare return on investment for a margin trade with a trade using no borrowed funds.

	A	B	C	D	E	F	G	H
1								
2			**Action or Formula**	**Ending**	**Return on**		**Ending**	**Return with**
3			**for Column B**	**St Price**	**Investment**		**St Price**	**No Margin**
4	Initial Equity Investment	$10,000.00	Enter data		−42.00%			−19.00%
5	Amount Borrowed	$10,000.00	(B4/B10)−B4	$20.00	−122.00%		$20.00	−59.00%
6	Initial Stock Price	$50.00	Enter data	25.00	−102.00%		25.00	−49.00%
7	Shares Purchased	400	(B4/B10)/B6	30.00	−82.00%		30.00	−39.00%
8	Ending Stock Price	$40.00	Enter data	35.00	−62.00%		35.00	−29.00%
9	Cash Dividends During Hold Per.	$0.50	Enter data	40.00	−42.00%		40.00	−19.00%
10	Initial Margin Percentage	50.00%	Enter data	45.00	−22.00%		45.00	−9.00%
11	Maintenance Margin Percentage	30.00%	Enter data	50.00	−2.00%		50.00	1.00%
12				55.00	18.00%		55.00	11.00%
13	Rate on Margin Loan	8.00%	Enter data	60.00	38.00%		60.00	21.00%
14	Holding Period in Months	6	Enter data	65.00	58.00%		65.00	31.00%
15				70.00	78.00%		70.00	41.00%
16	**Return on Investment**			75.00	98.00%		75.00	51.00%
17	Capital Gain on Stock	−$4,000.00	B7*(B8−B6)	80.00	118.00%		80.00	61.00%
18	Dividends	$200.00	B7*B9					
19	Interest on Margin Loan	$400.00	B5*(B14/12)*B13					
20	Net Income	−$4,200.00	B17+B18−B19			**LEGEND:**		
21	Initial Investment	$10,000.00	B4			**Enter data**		
22	Return on Investment	−42.00%	B20/B21			**Value calculated**		

Excel Questions

1. Suppose you buy 100 shares of stock initially selling for $50, borrowing 25% of the necessary funds from your broker; that is, the initial margin on your purchase is 25%. You pay an interest rate of 8% on margin loans.
   a. How much of your own money do you invest? How much do you borrow from your broker?
   b. What will be your rate of return for the following stock prices at the end of a one-year holding period? (i) $40, (ii) $50, (iii) $60.

End-of-Chapter Features

PROBLEM SETS connect — Select problems are available in McGraw-Hill's *Connect Finance.* Please see the Supplements section of the book's frontmatter for more information.

Basic

1. Define the following types of bonds: *(LO 10-1)*
   a. Catastrophe bond.
   b. Eurobond.

Problem Sets

We strongly believe that practice in solving problems is a critical part of learning investments, so we provide a good variety. We have separated questions by level of difficulty: Basic, Intermediate, and Challenge.

c. What is the Treynor measure for the Miranda Fund and the S&P 500?
d. What is the Jensen measure for the Miranda Fund?

17. Go to **www.mhhe.com/bkm** and link to the material for Chapter 18, where you will find five years of monthly returns for two mutual funds, Vanguard's U.S. Growth Fund and U.S. Value Fund, as well as corresponding returns for the S&P 500 and the Treasury-bill rate. *(LO 18-2)*
    a. Set up a spreadsheet to calculate each fund's excess rate of return over T-bills in each month.
    b. Calculate the standard deviation of each fund over the five-year period.
    c. What was the beta of each fund over the five-year period? (You may wish to review the spreadsheets from Chapters 5 and 6 on the Index model.)
    d. What were the Sharpe, Jensen, and Treynor measures for each fund?

eXcel
Please visit us at www.mhhe.com/bkm

Excel Problems

Select end-of-chapter questions require the use of Excel. These problems are denoted with an icon. A template is available at the book's website, **www.mhhe.com/bkm.**

14. If Primo decides to use return-based style analysis, will the R^2 of the regression equation of a passively managed fund be higher or lower than that of an actively managed fund? *(LO 18-3)*
15. Which of the following statements about Primo's global fund is most correct? Primo appears to have a positive currency allocation effect as well as: *(LO 18-4)*
    a. A negative market allocation effect and a positive security allocation effect.
    b. A negative market allocation effect and a negative security allocation effect.
    c. A positive market allocation effect and a negative security allocation effect.
16. Kelli Blakely is a portfolio manager for the Miranda Fund (Miranda), a core large-cap equity fund. The market proxy and benchmark for performance measurement purposes is the S&P 500. Although the Miranda portfolio generally mirrors the asset class and sector weightings of the S&P, Blakely is allowed a significant amount of leeway in man-

KAPLAN SCHWESER
KAPLAN SCHWESER
KAPLAN SCHWESER

Kaplan-Schweser Problems

Each chapter contains select CFA-style questions derived from the Kaplan-Schweser CFA preparation courses. These questions are tagged with an icon for easy reference.

CFA Problems

CFA® PROBLEMS

1. The following multiple-choice problems are based on questions that appeared in past CFA examinations.
   a. A bond with a call feature: *(LO 10-4)*
      (1) Is attractive because the immediate receipt of principal plus premium produces a high return.
      (2) Is more apt to be called when interest rates are high because the interest saving will be greater.
      (3) Will usually have a higher yield to maturity than a similar noncallable bond.
      (4) None of the above.
   b. In which *one* of the following cases is the bond selling at a discount? *(LO 10-2)*
      (1) Coupon rate is greater than current yield, which is greater than yield to maturity.
      (2) Coupon rate, current yield, and yield to maturity are all the same.
      (3) Coupon rate is less than current yield, which is less than yield to maturity.
      (4) Coupon rate is less than current yield, which is greater than yield to maturity.
   c. Consider a five-year bond with a 10% coupon selling at a yield to maturity of 8%. If interest rates remain constant, one year from now the price of this bond will be: *(LO 10-3)*

CFA Problems

We provide several questions from past CFA exams in applicable chapters. These questions represent the kinds of questions that professionals in the field believe are relevant to the practicing money manager. Appendix B, at the back of the book, lists each CFA question and the level and year of the CFA Exam it was included in, for easy reference when studying for the exam.

WEB *master*

1. Go to the website of Standard & Poor's at **www.standardandpoors.com.** Look for *Rating Services (Find a Rating).* Find the ratings on bonds of at least 10 companies. Try to choose a sample with a wide range of ratings. Then go to a website such as **money.msn.com** or **finance.yahoo.com** and obtain, for each firm, as many of the financial ratios tabulated in Table 10.3 as you can find. What is the relationship between bond rating and these ratios? Can you tell from your sample which of these ratios are the more important determinants of bond rating?
2. The FINRA operates the TRACE (Trade Reporting and Compliance Engine) system, which reports over-the-counter secondary market trades of fixed-income securities. Go to the FINRA home page at **www.finra.org** and click on the link for *Industry Professionals.* Search (located at the top right) for the "TRACE Fact Book" and click the first link that appears. Find the detailed data tables and locate the table with information on issues, excluding convertible bonds (typically Table 1). For each of the last three years, calculate

Web Master Exercises

These exercises are a great way to allow students to test their skills on the Internet. Each exercise consists of an activity related to practical problems and real-world scenarios.

Supplements

ONLINE SUPPORT

Online Learning Center

www.mhhe.com/bkm

Find a wealth of information online! At this book's website instructors have access to teaching supports such as electronic files of the ancillary materials. Students have access to study materials created specifically for this text, and much more. All Excel spreadsheets, denoted by an icon in the text, are located at this site. Links to the following support material, as described below, are also included.

FOR THE INSTRUCTOR

Instructor's Manual

Revised by Catherine Teutsch, University of Denver, this instructional tool provides an integrated learning approach revised for this edition. Each chapter includes a Chapter Overview, Learning Objectives, and Presentation of Material that outlines and organizes the material around the PowerPoint Presentation.

Test Bank

Prepared by Maryellen Epplin, University of Central Oklahoma, the Test Bank contains more than 1,200 questions and includes over 300 new questions. Each question is ranked by level of difficulty (easy, medium, hard) and tagged with the learning objective, the topic, AACSB, and Bloom's Taxonomy, which allows greater flexibility in creating a test.

Computerized Test Bank

A comprehensive bank of test questions is provided within a computerized test bank powered by McGraw-Hill's flexible electronic testing program, EZ Test Online (**www.eztestonline.com**). You can select questions from multiple McGraw-Hill test banks or write your own and then either print the test for paper distribution or give it online. This user-friendly program allows you to sort questions by format, edit existing questions or add new ones, and scramble questions for multiple versions of the same test. You can export your tests for use in WebCT, Blackboard, PageOut, and Apple's iQuiz. Sharing tests with colleagues, adjuncts, and TAs is easy! Instant scoring and feedback are provided, and EZ Test's grade book is designed to easily export to your grade book.

PowerPoint Presentation

These presentation slides, developed by Catherine Teutsch, contain figures and tables from the text, key points, and summaries in a visually stimulating collection of slides. These slides follow the order of the chapters, but if you have PowerPoint software, you may customize the program to fit your lecture.

Solutions Manual

Fiona Chou, University of California–San Diego, prepared detailed solutions to the end-of-chapter problems. Students can purchase the Solutions Manual, with instructor approval, using the ISBN-13: 9780077502249; ISBN-10: 0077502248. This supplement can also be packaged with the text. Please contact your McGraw-Hill/Irwin representative for additional information.

FOR THE STUDENT

Related Websites

A list of suggested websites is provided for each chapter. To keep them up to date, the suggested sites as well as their links are now provided online. Each chapter contains specific sites of particular use.

Excel Templates

There are templates for selected spreadsheets featured within the text, as well as the ones featured among the Excel Applications boxes. Select end-of-chapter problems have also been designated as Excel problems, in which there is a template available for students to solve the problem and gain experience using spreadsheets. Each template can also be found at the book's website and is denoted by an icon.

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Many educational institutions today are focused on the notion of *assurance of learning,* an important element of many accreditation standards. *Essentials of Investments,* Ninth Edition, is designed specifically to support your assurance-of-learning initiatives with a simple, yet powerful, solution.

Each chapter in the book begins with a list of numbered learning objectives, which also appear in the end-of-chapter problems. Every Test Bank question for *Essentials of Investments* maps to a specific chapter learning objective

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Acknowledgments

We received help from many people as we prepared this book. An insightful group of reviewers commented on this and previous editions of this text. Their comments and suggestions improved the exposition of the material considerably. These reviewers all deserve special thanks for their contributions.

Anna Agapova *Florida Atlantic University, Boca Raton*
Sandro C. Andrade *University of Miami*
Bala Arshanapalli *Indiana University Northwest*
Rasha Ashraf *Georgia State University*
Anand Bhattacharya *Arizona State University, Tempe*
Randall S. Billingsley *Virginia Polytechnic Institute and State University*
Howard Bohnen *St. Cloud State University*
Paul Bolster *Northeastern University*
Lyle Bowlin *University of Northern Iowa*
Brian Boyer *Brigham Young University*
Nicole Boyson *Northeastern University*
Ben Branch *University of Massachussets, Amherst*
Thor W. Bruce *University of Miami*
Timothy Burch *University of Miama, Coral Gables*
Alyce R. Campbell *University of Oregon*
Mark Castelino *Rutgers University*
Greg Chaudoin *Loyola University*
Ji Chen *University of Colorado, Denver*
Joseph Chen *University of California, Davis*
Mustafa Chowdhury *Louisiana State University*
Ron Christner *Loyola University, New Orleans*
Shane Corwin *University of Notre Dame*
Brent Dalrymple *University of Central Florida*
Praveen Das *University of Louisiana, Lafayette*
Diane Del Guercio *University of Oregon*
David C. Distad *University of California at Berkeley*
Gary R. Dokes *University of San Diego*
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John Earl *University of Richmond*
Jeff Edwards *Portland Community College*
Peter D. Ekman *Kansas State University*
John Elder *Colorado State University*
Richard Elliott *University of Utah, Salt Lake City*
James Falter *Franklin University*
Philip Fanara *Howard University*
Joseph Farinella *University of North Carolina, Wilmington*
Greg Feigel *University of Texas, Arlington*
James F. Feller *Middle Tennessee State University*
James Forjan *York College*
Beverly Frickel *University of Nebraska, Kearney*
Ken Froewiss *New York University*
Phillip Ghazanfari *California State University, Pomona*
Eric Girard *Siena College*
Richard A. Grayson *University of Georgia*
Richard D. Gritta *University of Portland*
Deborah Gunthorpe *University of Tennessee*
Weiyu Guo *University of Nebraska, Omaha*
Pamela Hall *Western Washington University*
Thomas Hamilton *St. Mary's University*
Bing Han *University of Texas, Austin*
Yvette Harman *Miami University of Ohio*
Gay Hatfield *University of Mississippi*
Larry C. Holland *Oklahoma State University*
Harris Hordon *New Jersey City University*
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Tom Krueger *University of Wisconsin, La Crosse*
Donald Kummer *University of Missouri, St. Louis*

Merouane Lakehal-Ayat *St. John Fisher College*
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Angeline Lavin *University of South Dakota*
Hongbok Lee *Western Illinois University*
Kartono Liano *Mississippi State University*
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Leo Mahoney *Bryant College*
Herman Manakyan *Salisbury State University*
Steven V. Mann *University of South Carolina*
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James Marchand *Westminster College*
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Walter Morales *Louisiana State University*
Mbodja Mougoue *Wayne State University*
Shabnam Mousavi *Georgia State University*
Majed Muhtaseb *California State Polytechnic University*
Deborah Murphy *University of Tennessee, Knoxville*
Mike Murray *Winona State University*
C. R. Narayanaswamy *Georgia Institute of Technology*
Walt Nelson *Missouri State University*
Karyn Neuhauser *SUNY, Plattsburgh*
Mike Nugent *SUNY Stonybrook*
Raj Padmaraj *Bowling Green University*
Elisabeta Pana *Illinois Wesleyan University*
John C. Park *Frostburg State University*
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Michael Willoughby *University of California, San Diego*
Tony Wingler *University of North Carolina*
Annie Wong *Western Connecticut State University*
David Wright *University of Wisconsin, Parkside*
Richard H. Yanow *North Adams State College*
Tarek Zaher *Indiana State University*
Allan Zebedee *San Diego State University*
Zhong-guo Zhou *California State University, Northridge*
Thomas J. Zwirlein *University of Colorado, Colorado Springs*

For granting us permission to include many of their examination questions in the text, we are grateful to the CFA Institute.

Much credit is also due to the development and production team of McGraw-Hill/Irwin: Michele Janicek, Executive Brand Manager; Noelle Bathurst, Development Editor; Dana Pauley, Senior Project Manager; Melissa Caughlin, Senior Marketing Manager; Jennifer Jelinski, Marketing Specialist; Michael McCormick, Lead Production Supervisor; Laurie Entringer, Designer; and Daryl Horrocks, Lead Media Project Manager.

Finally, once again, our most important debts are to Judy, Hava, and Sheryl for their unflagging support.

Zvi Bodie
Alex Kane
Alan J. Marcus

Elements of Investments

PART

1

Even a cursory glance at *The Wall Street Journal* reveals a bewildering collection of securities, markets, and financial institutions. But although it may appear so, the financial environment is not chaotic: There is rhyme and reason behind the vast array of financial instruments and the markets in which they trade.

These introductory chapters provide a bird's-eye view of the investing environment. We will give you a tour of the major types of markets in which securities trade, the trading process, and the major players in these arenas. You will see that both markets and securities have evolved to meet the changing and complex needs of different participants in the financial system.

Markets innovate and compete with each other for traders' business just as vigorously as competitors in other industries. The competition between NASDAQ, the New York Stock Exchange (NYSE), and several other electronic and non-U.S. exchanges is fierce and public.

Trading practices can mean big money to investors. The explosive growth of online electronic trading has saved them many millions of dollars in trading costs. On the other hand, some worry that lightning-fast electronic trading has put the stability of security markets at risk. All agree, however, that these advances will change the face of the investments industry, and Wall Street firms are scrambling to formulate strategies that respond to these changes.

These chapters will give you a good foundation with which to understand the basic types of securities and financial markets as well as how trading in those markets is conducted.

Chapters in This Part:

1 Investments: Background and Issues

2 Asset Classes and Financial Instruments

3 Securities Markets

4 Mutual Funds and Other Investment Companies

Chapter 1

Investments: Background and Issues

Learning Objectives:

LO1-1 Define an investment.

LO1-2 Distinguish between real assets and financial assets.

LO1-3 Explain the economic functions of financial markets and how various securities are related to the governance of the corporation.

LO1-4 Describe the major steps in the construction of an investment portfolio.

LO1-5 Identify different types of financial markets and the major participants in each of those markets.

LO1-6 Explain the causes and consequences of the financial crisis of 2008.

investment

Commitment of current resources in the expectation of deriving greater resources in the future.

An **investment** is the *current* commitment of money or other resources in the expectation of reaping *future* benefits. For example, an individual might purchase shares of stock anticipating that the future proceeds from the shares will justify both the time that her money is tied up as well as the risk of the investment. The time you will spend studying this text (not to mention its cost) also is an investment. You are forgoing either current leisure or the income you could be earning at a job in the expectation that your future career will be sufficiently enhanced to justify this commitment of time and effort. While these two investments differ in many ways, they share one key attribute that is central to all investments: You sacrifice something of value now, expecting to benefit from that sacrifice later.

This text can help you become an informed practitioner of investments. We will focus on investments in securities such as stocks, bonds, or options and futures contracts, but much of what we discuss will be useful in the analysis of any type of investment. The text will provide you with background in the organization of various securities markets, will survey the valuation and

risk management principles useful in particular markets, such as those for bonds or stocks, and will introduce you to the principles of portfolio construction.

Broadly speaking, this chapter addresses three topics that will provide a useful perspective for the material that is to come later. First, before delving into the topic of "investments," we consider the role of financial assets in the economy. We discuss the relationship between securities and the "real" assets that actually produce goods and services for consumers, and we consider why financial assets are important to the functioning of a developed economy. Given this background, we then take a first look at the types of decisions that confront investors as they assemble a portfolio of assets. These investment decisions are made in an environment where higher returns usually can be obtained only at the price of greater risk and in which it is rare to find assets that are so mispriced as to be obvious bargains. These themes—the risk-return trade-off and the efficient pricing of financial assets—are central to the investment process, so it is worth pausing for a brief discussion of their implications as we begin the text. These implications will be fleshed out in much greater detail in later chapters.

We provide an overview of the organization of security markets as well as the various players that participate in those markets. Together, these introductions should give you a feel for who the major participants are in the securities markets as well as the setting in which they act. Finally, we discuss the financial crisis that began playing out in 2007 and peaked in 2008. The crisis dramatically illustrated the connections between the financial system and the "real" side of the economy. We look at the origins of the crisis and the lessons that may be drawn about systemic risk. We close the chapter with an overview of the remainder of the text.

Related websites for this chapter are available at www.mhhe.com/bkm.

1.1 REAL ASSETS VERSUS FINANCIAL ASSETS

The material wealth of a society is ultimately determined by the productive capacity of its economy, that is, the goods and services its members can create. This capacity is a function of the **real assets** of the economy: the land, buildings, equipment, and knowledge that can be used to produce goods and services.

real assets

Assets used to produce goods and services.

In contrast to such real assets are **financial assets** such as stocks and bonds. Such securities are no more than sheets of paper or, more likely, computer entries and do not directly contribute to the productive capacity of the economy. Instead, these assets are the means by which individuals in well-developed economies hold their claims on real assets. Financial assets are claims to the income generated by real assets (or claims on income from the government). If we cannot own our own auto plant (a real asset), we can still buy shares in Honda or Toyota (financial assets) and, thereby, share in the income derived from the production of automobiles.

financial assets

Claims on real assets or the income generated by them.

While real assets generate net income to the economy, financial assets simply define the allocation of income or wealth among investors. Individuals can choose between consuming their wealth today or investing for the future. If they choose to invest, they may place their wealth in financial assets by purchasing various securities. When investors buy these securities from companies, the firms use the money so raised to pay for real assets, such as plant, equipment, technology, or inventory. So investors' returns on securities ultimately come from the income produced by the real assets that were financed by the issuance of those securities.

The distinction between real and financial assets is apparent when we compare the balance sheet of U.S. households, shown in Table 1.1, with the composition of national wealth in the United States, shown in Table 1.2. Household wealth includes financial assets such as bank accounts, corporate stock, or bonds. However, these securities, which are financial assets of households, are *liabilities* of the issuers of the securities. For example, a bond that you treat as

TABLE 1.1 Balance sheet of U.S. households, 2011

Assets	$ Billion	% Total	Liabilities and Net Worth	$ Billion	% Total
Real assets					
Real estate	$18,117	25.2%	Mortgages	$10,215	14.2%
Consumer durables	4,665	6.5	Consumer credit	2,404	3.3
Other	303	0.4	Bank and other loans	384	0.5
Total real assets	$23,085	32.1%	Security credit	316	0.4
			Other	556	0.8
			Total liabilities	$13,875	19.3%
Financial assets					
Deposits	$ 8,038	11.2%			
Life insurance reserves	1,298	1.8			
Pension reserves	13,419	18.7			
Corporate equity	8,792	12.2			
Equity in noncorp. business	6,585	9.2			
Mutual fund shares	5,050	7.0			
Debt securities	4,129	5.7			
Other	1,536	2.1			
Total financial assets	48,847	67.9	*Net worth*	58,058	80.7
Total	$71,932	100.0%		$71,932	100.0%

Note: Column sums may differ from total because of rounding error.

Source: *Flow of Funds Accounts of the United States,* Board of Governors of the Federal Reserve System, June 2011.

TABLE 1.2 Domestic net worth

Assets	$ Billion
Commercial real estate	$14,248
Residential real estate	18,117
Equipment & software	4,413
Inventories	1,974
Consumer durables	4,665
Total	$43,417

Note: Column sums may differ from total because of rounding error.

Source: *Flow of Funds Accounts of the United States,* Board of Governors of the Federal Reserve System, June 2011.

an asset because it gives you a claim on interest income and repayment of principal from Toyota is a liability of Toyota, which is obligated to make these payments to you. Your asset is Toyota's liability. Therefore, when we aggregate over all balance sheets, these claims cancel out, leaving only real assets as the net wealth of the economy. National wealth consists of structures, equipment, inventories of goods, and land.[1]

[1]You might wonder why real assets held by households in Table 1.1 amount to $23,085 billion, while total real assets in the domestic economy (Table 1.2) are far larger, at $43,417 billion. One major reason is that real assets held by firms, for example, property, plant, and equipment, are included as *financial* assets of the household sector, specifically through the value of corporate equity and other stock market investments. Another reason is that equity and stock investments in Table 1.1 are measured by market value, whereas plant and equipment in Table 1.2 are valued at replacement cost.

We will focus almost exclusively on financial assets. But you shouldn't lose sight of the fact that the successes or failures of the financial assets we choose to purchase ultimately depend on the performance of the underlying real assets.

CONCEPT check 1.1

Are the following assets real or financial?
a. Patents *b.* Lease obligations *c.* Customer goodwill
d. A college education *e.* A $5 bill

1.2 FINANCIAL ASSETS

It is common to distinguish among three broad types of financial assets: debt, equity, and derivatives. **Fixed-income** or **debt securities** promise either a fixed stream of income or a stream of income that is determined according to a specified formula. For example, a corporate bond typically would promise that the bondholder will receive a fixed amount of interest each year. Other so-called floating-rate bonds promise payments that depend on current interest rates. For example, a bond may pay an interest rate that is fixed at two percentage points above the rate paid on U.S. Treasury bills. Unless the borrower is declared bankrupt, the payments on these securities are either fixed or determined by formula. For this reason, the investment performance of debt securities typically is least closely tied to the financial condition of the issuer.

fixed-income (debt) securities
Pay a specified cash flow over a specific period.

Nevertheless, debt securities come in a tremendous variety of maturities and payment provisions. At one extreme, the *money market* refers to fixed-income securities that are short term, highly marketable, and generally of very low risk. Examples of money market securities are U.S. Treasury bills or bank certificates of deposit (CDs). In contrast, the fixed-income *capital market* includes long-term securities such as Treasury bonds, as well as bonds issued by federal agencies, state and local municipalities, and corporations. These bonds range from very safe in terms of default risk (for example, Treasury securities) to relatively risky (for example, high-yield or "junk" bonds). They also are designed with extremely diverse provisions regarding payments provided to the investor and protection against the bankruptcy of the issuer. We will take a first look at these securities in Chapter 2 and undertake a more detailed analysis of the fixed-income market in Part Three.

Unlike debt securities, common stock, or **equity,** in a firm represents an ownership share in the corporation. Equityholders are not promised any particular payment. They receive any dividends the firm may pay and have prorated ownership in the real assets of the firm. If the firm is successful, the value of equity will increase; if not, it will decrease. The performance of equity investments, therefore, is tied directly to the success of the firm and its real assets. For this reason, equity investments tend to be riskier than investments in debt securities. Equity markets and equity valuation are the topics of Part Four.

equity
An ownership share in a corporation.

Finally, **derivative securities** such as options and futures contracts provide payoffs that are determined by the prices of *other* assets such as bond or stock prices. For example, a call option on a share of Intel stock might turn out to be worthless if Intel's share price remains below a threshold or "exercise" price such as $20 a share, but it can be quite valuable if the stock price rises above that level.[2] Derivative securities are so named because their values derive from the prices of other assets. For example, the value of the call option will depend on the price of Intel stock. Other important derivative securities are futures and swap contracts. We will treat these in Part Five.

derivative securities
Securities providing payoffs that depend on the values of other assets.

Derivatives have become an integral part of the investment environment. One use of derivatives, perhaps the primary use, is to hedge risks or transfer them to other parties. This is

[2]A call option is the right to buy a share of stock at a given exercise price on or before the option's expiration date. If the market price of Intel remains below $20 a share, the right to buy for $20 will turn out to be valueless. If the share price rises above $20 before the option expires, however, the option can be exercised to obtain the share for only $20.

done successfully every day, and the use of these securities for risk management is so commonplace that the multitrillion-dollar market in derivative assets is routinely taken for granted. Derivatives also can be used to take highly speculative positions, however. Every so often, one of these positions blows up, resulting in well-publicized losses of hundreds of millions of dollars. While these losses attract considerable attention, they do not negate the potential use of such securities as risk management tools. Derivatives will continue to play an important role in portfolio construction and the financial system. We will return to this topic later in the text.

Investors and corporations regularly encounter other financial markets as well. Firms engaged in international trade regularly transfer money back and forth between dollars and other currencies. Well more than a trillion dollars of currency is traded each day in the market for foreign exchange, primarily through a network of the largest international banks.

Investors also might invest directly in some real assets. For example, dozens of commodities are traded on exchanges such as the New York Mercantile Exchange or the Chicago Board of Trade. You can buy or sell corn, wheat, natural gas, gold, silver, and so on.

Commodity and derivative markets allow firms to adjust their exposure to various business risks. For example, a construction firm may lock in the price of copper by buying copper futures contracts, thus eliminating the risk of a sudden jump in the price of its raw materials. Wherever there is uncertainty, investors may be interested in trading, either to speculate or to lay off their risks, and a market may arise to meet that demand.

1.3 FINANCIAL MARKETS AND THE ECONOMY

We stated earlier that real assets determine the wealth of an economy, while financial assets merely represent claims on real assets. Nevertheless, financial assets and the markets in which they trade play several crucial roles in developed economies. Financial assets allow us to make the most of the economy's real assets.

The Informational Role of Financial Markets

Stock prices reflect investors' collective assessment of a firm's current performance and future prospects. When the market is more optimistic about the firm, its share price will rise. At that higher price, fewer shares must be issued to raise the funds necessary to finance a prospective project, for example, a research and development effort or an expansion of operations. And when fewer shares are issued, a smaller proportion of profits are absorbed by the new shareholders, leaving more for the existing shareholders and making the potential investment more attractive. The firm therefore is more inclined to pursue the opportunity. In this manner, stock prices play a major role in the allocation of capital in market economies, directing capital to the firms and applications with the greatest perceived potential.

Do capital markets actually channel resources to the most efficient use? At times, they appear to fail miserably. Companies or whole industries can be "hot" for a period of time (think about the dot-com bubble that peaked in 2000), attract a large flow of investor capital, and then fail after only a few years. The process seems highly wasteful.

But we need to be careful about our standard of efficiency. No one knows with certainty which ventures will succeed and which will fail. It is therefore unreasonable to expect that markets will never make mistakes. The stock market encourages allocation of capital to those firms that appear *at the time* to have the best prospects. Many smart, well-trained, and well-paid professionals analyze the prospects of firms whose shares trade on the stock market. Stock prices reflect their collective judgment.

You may well be skeptical about resource allocation through markets. But if you are, then take a moment to think about the alternatives. Would a central planner make fewer mistakes? Would you prefer that Congress make these decisions? To paraphrase Winston Churchill's comment about democracy, markets may be the worst way to allocate capital except for all the others that have been tried.

Consumption Timing

Some individuals in an economy are earning more than they currently wish to spend. Others, for example, retirees, spend more than they currently earn. How can you shift your purchasing power from high-earnings periods to low-earnings periods of life? One way is to "store" your wealth in financial assets. In high-earnings periods, you can invest your savings in financial assets such as stocks and bonds. In low-earnings periods, you can sell these assets to provide funds for your consumption needs. By so doing, you can "shift" your consumption over the course of your lifetime, thereby allocating your consumption to periods that provide the greatest satisfaction. Thus, financial markets allow individuals to separate decisions concerning current consumption from constraints that otherwise would be imposed by current earnings.

Allocation of Risk

Virtually all real assets involve some risk. When Toyota builds its auto plants, for example, it cannot know for sure what cash flows those plants will generate. Financial markets and the diverse financial instruments traded in those markets allow investors with the greatest taste for risk to bear that risk, while other, less risk-tolerant individuals can, to a greater extent, stay on the sidelines. For example, if Toyota raises the funds to build its auto plant by selling both stocks and bonds to the public, the more optimistic or risk-tolerant investors can buy shares of stock in Toyota, while the more conservative ones can buy Toyota bonds. Because the bonds promise to provide a fixed payment, the stockholders bear most of the business risk but reap potentially higher rewards. Thus, capital markets allow the risk that is inherent to all investments to be borne by the investors most willing to bear that risk.

This allocation of risk also benefits the firms that need to raise capital to finance their investments. When investors are able to select security types with the risk-return characteristics that best suit their preferences, each security can be sold for the best possible price. This facilitates the process of building the economy's stock of real assets.

Separation of Ownership and Management

Many businesses are owned and managed by the same individual. This simple organization is well suited to small businesses and, in fact, was the most common form of business organization before the Industrial Revolution. Today, however, with global markets and large-scale production, the size and capital requirements of firms have skyrocketed. For example, in 2010 General Electric listed on its balance sheet about $103 billion of property, plant, and equipment, and total assets in excess of $750 billion. Corporations of such size simply cannot exist as owner-operated firms. GE actually has over 600,000 stockholders with an ownership stake in the firm proportional to their holdings of shares.

Such a large group of individuals obviously cannot actively participate in the day-to-day management of the firm. Instead, they elect a board of directors that in turn hires and supervises the management of the firm. This structure means that the owners and managers of the firm are different parties. This gives the firm a stability that the owner-managed firm cannot achieve. For example, if some stockholders decide they no longer wish to hold shares in the firm, they can sell their shares to other investors, with no impact on the management of the firm. Thus, financial assets and the ability to buy and sell those assets in the financial markets allow for easy separation of ownership and management.

How can all of the disparate owners of the firm, ranging from large pension funds holding hundreds of thousands of shares to small investors who may hold only a single share, agree on the objectives of the firm? Again, the financial markets provide some guidance. All may agree that the firm's management should pursue strategies that enhance the value of their shares. Such policies will make all shareholders wealthier and allow them all to better pursue their personal goals, whatever those goals might be.

Do managers really attempt to maximize firm value? It is easy to see how they might be tempted to engage in activities not in the best interest of shareholders. For example, they

might engage in empire building or avoid risky projects to protect their own jobs or overconsume luxuries such as corporate jets, reasoning that the cost of such perquisites is largely borne by the shareholders. These potential conflicts of interest are called **agency problems** because managers, who are hired as agents of the shareholders, may pursue their own interests instead.

agency problems

Conflicts of interest between managers and stockholders.

Several mechanisms have evolved to mitigate potential agency problems. First, compensation plans tie the income of managers to the success of the firm. A major part of the total compensation of top executives is typically in the form of stock options, which means that the managers will not do well unless the stock price increases, benefiting shareholders. (Of course, we've learned more recently that overuse of options can create its own agency problem. Options can create an incentive for managers to manipulate information to prop up a stock price temporarily, giving them a chance to cash out before the price returns to a level reflective of the firm's true prospects. More on this shortly.) Second, while boards of directors have sometimes been portrayed as defenders of top management, they can, and in recent years increasingly have, forced out management teams that are underperforming. Third, outsiders such as security analysts and large institutional investors such as pension funds monitor the firm closely and make the life of poor performers at the least uncomfortable.

Finally, bad performers are subject to the threat of takeover. If the board of directors is lax in monitoring management, unhappy shareholders in principle can elect a different board. They can do this by launching a *proxy contest* in which they seek to obtain enough proxies (i.e., rights to vote the shares of other shareholders) to take control of the firm and vote in another board. However, this threat is usually minimal. Shareholders who attempt such a fight have to use their own funds, while management can defend itself using corporate coffers. Most proxy fights fail. The real takeover threat is from other firms. If one firm observes another underperforming, it can acquire the underperforming business and replace management with its own team. The stock price should rise to reflect the prospects of improved performance, which provides incentive for firms to engage in such takeover activity.

EXAMPLE 1.1

Carl Icahn's Proxy Fight with Yahoo!

In February 2008, Microsoft offered to buy Yahoo! by paying its current shareholders $31 for each of their shares, a considerable premium to its closing price of $19.18 on the day before the offer. Yahoo!'s management rejected that offer and a better one at $33 a share; Yahoo!'s CEO Jerry Yang held out for $37 per share, a price that Yahoo! had not reached in over two years. Billionaire investor Carl Icahn was outraged, arguing that management was protecting its own position at the expense of shareholder value. Icahn notified Yahoo! that he had been asked to "lead a proxy fight to attempt to remove the current board and to establish a new board which would attempt to negotiate a successful merger with Microsoft."[3] To that end, he had purchased approximately 59 million shares of Yahoo! and formed a 10-person slate to stand for election against the current board. Despite this challenge, Yahoo!'s management held firm in its refusal of Microsoft's offer, and with the support of the board, Yang managed to fend off both Microsoft and Icahn. In July, Icahn agreed to end the proxy fight in return for three seats on the board to be held by his allies. But the 11-person board was still dominated by current Yahoo! management. Yahoo!'s share price, which had risen to $29 a share during the Microsoft negotiations, fell back to around $21 a share. Given the difficulty that a well-known billionaire faced in defeating a determined management, it is no wonder that proxy contests are rare. Historically, about three of four proxy fights go down to defeat.

Corporate Governance and Corporate Ethics

We've argued that securities markets can play an important role in facilitating the deployment of capital resources to their most productive uses. But market signals will help to allocate capital efficiently only if investors are acting on accurate information. We say that markets need to be *transparent* for investors to make informed decisions. If firms can mislead the public about their prospects, then much can go wrong.

[3]Open letter from Carl Icahn to Board of Directors of Yahoo!, May 15, 2008, published in press release from ICAHN CAPITAL LP.

Despite the many mechanisms to align incentives of shareholders and managers, the three years between 2000 and 2002 were filled with a seemingly unending series of scandals that collectively signaled a crisis in corporate governance and ethics. For example, the telecom firm WorldCom overstated its profits by at least $3.8 billion by improperly classifying expenses as investments. When the true picture emerged, it resulted in the largest bankruptcy in U.S. history, at least until Lehman Brothers smashed that record in 2008. The next-largest U.S. bankruptcy was Enron, which used its now notorious "special purpose entities" to move debt off its own books and similarly present a misleading picture of its financial status. Unfortunately, these firms had plenty of company. Other firms such as Rite Aid, HealthSouth, Global Crossing, and Qwest Communications also manipulated and misstated their accounts to the tune of billions of dollars. And the scandals were hardly limited to the U.S. Parmalat, the Italian dairy firm, claimed to have a $4.8 billion bank account that turned out not to exist. These episodes suggest that agency and incentive problems are far from solved.

Other scandals of that period included systematically misleading and overly optimistic research reports put out by stock market analysts (their favorable analysis was traded for the promise of future investment banking business, and analysts were commonly compensated not for their accuracy or insight but for their role in garnering investment banking business for their firms) and allocations of initial public offerings to corporate executives as a quid pro quo for personal favors or the promise to direct future business back to the manager of the IPO.

What about the auditors who were supposed to be the watchdogs of the firms? Here too, incentives were skewed. Recent changes in business practice made the consulting businesses of these firms more lucrative than the auditing function. For example, Enron's (now defunct) auditor Arthur Andersen earned more money consulting for Enron than auditing it; given its incentive to protect its consulting profits, it should not be surprising that it, and other auditors, were overly lenient in their auditing work.

In 2002, in response to the spate of ethics scandals, Congress passed the Sarbanes-Oxley Act to tighten the rules of corporate governance. For example, the act requires corporations to have more independent directors, that is, more directors who are not themselves managers (or affiliated with managers). The act also requires each CFO to personally vouch for the corporation's accounting statements, creates a new oversight board to oversee the auditing of public companies, and prohibits auditors from providing various other services to clients.

Wall Street and its regulators have learned (admittedly belatedly) that markets require trust to function. In the wake of the scandals, the value of reputation and straightforward incentive structures has increased. As one Wall Street insider put it, "This is an industry of trust; it's one of its key assets. . . . [Wall Street] is going to have to invest in getting [that trust] back . . . without that trust, there's nothing."[4] Ultimately, a firm's reputation for integrity is key to building long-term relationships with its customers and is therefore one of its most valuable assets. Indeed, the motto of the London Stock Exchange is "My word is my bond." Every so often firms forget this lesson, but in the end, investments in reputation are in fact good business practice.

1.4 THE INVESTMENT PROCESS

An investor's *portfolio* is simply his collection of investment assets. Once the portfolio is established, it is updated or "rebalanced" by selling existing securities and using the proceeds to buy new securities, by investing additional funds to increase the overall size of the portfolio, or by selling securities to decrease the size of the portfolio.

Investment assets can be categorized into broad asset classes, such as stocks, bonds, real estate, commodities, and so on. Investors make two types of decisions in constructing their portfolios. The **asset allocation** decision is the choice among these broad asset classes, while the **security selection** decision is the choice of which particular securities to hold *within* each asset class.

asset allocation
Allocation of an investment portfolio across broad asset classes.

security selection
Choice of specific securities within each asset class.

[4] *BusinessWeek,* "How Corrupt Is Wall Street?" May 13, 2002.

"Top-down" portfolio construction starts with asset allocation. For example, an individual who currently holds all of his money in a bank account would first decide what proportion of the overall portfolio ought to be moved into stocks, bonds, and so on. In this way, the broad features of the portfolio are established. For example, while the average annual return on the common stock of large firms since 1926 has been about 12% per year, the average return on U.S. Treasury bills has been less than 4%. On the other hand, stocks are far riskier, with annual returns (as measured by the Standard & Poor's 500 Index) that have ranged as low as −46% and as high as 55%. In contrast, T-bill returns are effectively risk-free: You know what interest rate you will earn when you buy the bills. Therefore, the decision to allocate your investments to the stock market or to the money market where Treasury bills are traded will have great ramifications for both the risk and the return of your portfolio. A top-down investor first makes this and other crucial asset allocation decisions before turning to the decision of the particular securities to be held in each asset class.

security analysis

Analysis of the value of securities.

Security analysis involves the valuation of particular securities that might be included in the portfolio. For example, an investor might ask whether Merck or Pfizer is more attractively priced. Both bonds and stocks must be evaluated for investment attractiveness, but valuation is far more difficult for stocks because a stock's performance usually is far more sensitive to the condition of the issuing firm.

In contrast to top-down portfolio management is the "bottom-up" strategy. In this process, the portfolio is constructed from the securities that seem attractively priced without as much concern for the resultant asset allocation. Such a technique can result in unintended bets on one or another sector of the economy. For example, it might turn out that the portfolio ends up with a very heavy representation of firms in one industry, from one part of the country, or with exposure to one source of uncertainty. However, a bottom-up strategy does focus the portfolio on the assets that seem to offer the most attractive investment opportunities.

1.5 MARKETS ARE COMPETITIVE

Financial markets are highly competitive. Thousands of well-backed analysts constantly scour securities markets searching for the best buys. This competition means that we should expect to find few, if any, "free lunches," securities that are so underpriced that they represent obvious bargains. There are several implications of this no-free-lunch proposition. Let's examine two.

The Risk-Return Trade-Off

Investors invest for anticipated future returns, but those returns rarely can be predicted precisely. There will almost always be risk associated with investments. Actual or realized returns will almost always deviate from the expected return anticipated at the start of the investment period. For example, in 1931 (the worst calendar year for the market since 1926), the stock market lost 46% of its value. In 1933 (the best year), the stock market gained 55%. You can be sure that investors did not anticipate such extreme performance at the start of either of these years.

Naturally, if all else could be held equal, investors would prefer investments with the highest expected return.[5] However, the no-free-lunch rule tells us that all else cannot be held equal. If you want higher expected returns, you will have to pay a price in terms of accepting higher investment risk. If higher expected return can be achieved without bearing extra risk, there will be a rush to buy the high-return assets, with the result that their prices will be driven up. Individuals considering investing in the asset at the now-higher price will find the investment less attractive: If you buy at a higher price, your expected rate of return (that is, profit per dollar invested) is lower. The asset will be considered attractive and its price will continue to rise until its expected return is no more than commensurate with risk. At this point, investors can anticipate a "fair" return relative

[5] The "expected" return is not the return investors believe they necessarily will earn, or even their most likely return. It is instead the result of averaging across all possible outcomes, recognizing that some outcomes are more likely than others. It is the average rate of return across possible economic scenarios.

to the asset's risk, but no more. Similarly, if returns were independent of risk, there would be a rush to sell high-risk assets. Their prices would fall (and their expected future rates of return rise) until they eventually were attractive enough to be included again in investor portfolios. We conclude that there should be a **risk-return trade-off** in the securities markets, with higher-risk assets priced to offer higher expected returns than lower-risk assets.

risk-return trade-off

Assets with higher expected returns entail greater risk.

Of course, this discussion leaves several important questions unanswered. How should one measure the risk of an asset? What should be the quantitative trade-off between risk (properly measured) and expected return? One would think that risk would have something to do with the volatility of an asset's returns, but this guess turns out to be only partly correct. When we mix assets into diversified portfolios, we need to consider the interplay among assets and the effect of diversification on the risk of the entire portfolio. *Diversification* means that many assets are held in the portfolio so that the exposure to any particular asset is limited. The effect of diversification on portfolio risk, the implications for the proper measurement of risk, and the risk-return relationship are the topics of Part Two. These topics are the subject of what has come to be known as *modern portfolio theory.* The development of this theory brought two of its pioneers, Harry Markowitz and William Sharpe, Nobel Prizes.

Efficient Markets

Another implication of the no-free-lunch proposition is that we should rarely expect to find bargains in the security markets. We will spend all of Chapter 8 examining the theory and evidence concerning the hypothesis that financial markets process all available information about securities quickly and efficiently, that is, that the security price usually reflects all the information available to investors concerning the value of the security. According to this hypothesis, as new information about a security becomes available, the price of the security quickly adjusts so that at any time, the security price equals the market consensus estimate of the value of the security. If this were so, there would be neither underpriced nor overpriced securities.

One interesting implication of this "efficient market hypothesis" concerns the choice between active and passive investment-management strategies. **Passive management** calls for holding highly diversified portfolios without spending effort or other resources attempting to improve investment performance through security analysis. **Active management** is the attempt to improve performance either by identifying mispriced securities or by timing the performance of broad asset classes—for example, increasing one's commitment to stocks when one is bullish on the stock market. If markets are efficient and prices reflect all relevant information, perhaps it is better to follow passive strategies instead of spending resources in a futile attempt to outguess your competitors in the financial markets.

passive management

Buying and holding a diversified portfolio without attempting to identify mispriced securities.

active management

Attempting to identify mispriced securities or to forecast broad market trends.

If the efficient market hypothesis were taken to the extreme, there would be no point in active security analysis; only fools would commit resources to actively analyze securities. Without ongoing security analysis, however, prices eventually would depart from "correct" values, creating new incentives for experts to move in. Therefore, in Chapter 9, we examine challenges to the efficient market hypothesis. Even in environments as competitive as the financial markets, we may observe only *near*-efficiency, and profit opportunities may exist for especially insightful and creative investors. This motivates our discussion of active portfolio management in Part Six. More importantly, our discussions of security analysis and portfolio construction generally must account for the likelihood of nearly efficient markets.

1.6 THE PLAYERS

From a bird's-eye view, there would appear to be three major players in the financial markets:

1. Firms are net demanders of capital. They raise capital now to pay for investments in plant and equipment. The income generated by those real assets provides the returns to investors who purchase the securities issued by the firm.
2. Households typically are suppliers of capital. They purchase the securities issued by firms that need to raise funds.

3. Governments can be borrowers or lenders, depending on the relationship between tax revenue and government expenditures. Since World War II, the U.S. government typically has run budget deficits, meaning that its tax receipts have been less than its expenditures. The government, therefore, has had to borrow funds to cover its budget deficit. Issuance of Treasury bills, notes, and bonds is the major way that the government borrows funds from the public. In contrast, in the latter part of the 1990s, the government enjoyed a budget surplus and was able to retire some outstanding debt.

Corporations and governments do not sell all or even most of their securities directly to individuals. For example, about half of all stock is held by large financial institutions such as pension funds, mutual funds, insurance companies, and banks. These financial institutions stand between the security issuer (the firm) and the ultimate owner of the security (the individual investor). For this reason, they are called *financial intermediaries.* Similarly, corporations do not directly market their securities to the public. Instead, they hire agents, called investment bankers, to represent them to the investing public. Let's examine the roles of these intermediaries.

Financial Intermediaries

Households want desirable investments for their savings, yet the small (financial) size of most households makes direct investment difficult. A small investor seeking to lend money to businesses that need to finance investments doesn't advertise in the local newspaper to find a willing and desirable borrower. Moreover, an individual lender would not be able to diversify across borrowers to reduce risk. Finally, an individual lender is not equipped to assess and monitor the credit risk of borrowers.

financial intermediaries

Institutions that "connect" borrowers and lenders by accepting funds from lenders and loaning funds to borrowers.

For these reasons, **financial intermediaries** have evolved to bring together the suppliers of capital (investors) with the demanders of capital (primarily corporations). These financial intermediaries include banks, investment companies, insurance companies, and credit unions. Financial intermediaries issue their own securities to raise funds to purchase the securities of other corporations.

For example, a bank raises funds by borrowing (taking deposits) and lending that money to other borrowers. The spread between the interest rates paid to depositors and the rates charged to borrowers is the source of the bank's profit. In this way, lenders and borrowers do not need to contact each other directly. Instead, each goes to the bank, which acts as an intermediary between the two. The problem of matching lenders with borrowers is solved when each comes independently to the common intermediary.

Financial intermediaries are distinguished from other businesses in that both their assets and their liabilities are overwhelmingly financial. Table 1.3 presents the aggregated balance sheet of commercial banks, one of the largest sectors of financial intermediaries. Notice that the balance sheet includes only very small amounts of real assets. Compare Table 1.3 to the aggregated balance sheet of the nonfinancial corporate sector in Table 1.4 for which real assets are about half of all assets. The contrast arises because intermediaries simply move funds from one sector to another. In fact, the primary social function of such intermediaries is to channel household savings to the business sector.

Other examples of financial intermediaries are investment companies, insurance companies, and credit unions. All these firms offer similar advantages in their intermediary role. First, by pooling the resources of many small investors, they are able to lend considerable sums to large borrowers. Second, by lending to many borrowers, intermediaries achieve significant diversification, so they can accept loans that individually might be too risky. Third, intermediaries build expertise through the volume of business they do and can use economies of scale and scope to assess and monitor risk.

investment companies

Firms managing funds for investors. An investment company may manage several mutual funds.

Investment companies, which pool and manage the money of many investors, also arise out of economies of scale. Here, the problem is that most household portfolios are not large enough to be spread among a wide variety of securities. It is very expensive in terms of brokerage fees and research costs to purchase one or two shares of many different firms. Mutual

TABLE 1.3 Balance sheet of commercial banks, 2011

Assets	$ Billion	% Total	Liabilities and Net Worth	$ Billion	% Total
Real assets			Liabilities		
Equipment and premises	$ 110.4	0.9%	Deposits	$ 8,674.6	71.4%
Other real estate	46.6	0.4	Debt and other borrowed funds	1,291.8	10.6
Total real assets	$ 157.0	1.3%	Federal funds and repurchase agreements	499.1	4.1
			Other	308.4	2.5
			Total liabilities	$10,773.9	88.6%
Financial assets					
Cash	$ 1,066.3	8.8%			
Investment securities	2,406.1	19.8			
Loans and leases	6,279.1	51.6			
Other financial assets	1,153.9	9.5			
Total financial assets	$10,905.4	89.7%			
Other assets					
Intangible assets	$ 373.9	3.1%			
Other	721.0	5.9			
Total other assets	1,094.9	9.0	*Net worth*	1,383.4	11.4
Total	$12,157.3	100.0%		$12,157.3	100.0%

Note: Column sums may differ from total because of rounding error.
Source: Federal Deposit Insurance Corporation, **www.fdic.gov,** July 2011.

TABLE 1.4 Balance sheet of U.S. nonfinancial corporations, 2011

Assets	$ Billion	% Total	Liabilities and Net Worth	$ Billion	% Total
Real assets			Liabilities		
Equipment and software	$ 4,109	14.6%	Bonds and mortgages	$ 5,321	18.9%
Real estate	7,676	27.2	Bank loans	538	1.9
Inventories	1,876	6.7	Other loans	1,227	4.4
Total real assets	$13,661	48.5%	Trade debt	1,863	6.6
			Other	4,559	16.2
			Total liabilities	$13,509	47.9%
Financial assets					
Deposits and cash	$ 1,009	3.6%			
Marketable securities	899	3.2			
Trade and consumer credit	2,388	8.5			
Other	10,239	36.3			
Total financial assets	14,535	51.5			
Total	$28,196	100.0%	*Net worth*	14,687	52.1
				$28,196	100.0%

Note: Column sums may differ from total because of rounding error.
Source: *Flow of Funds Accounts of the United States,* Board of Governors of the Federal Reserve System, June 2011.

funds have the advantage of large-scale trading and portfolio management, while participating investors are assigned a prorated share of the total funds according to the size of their investment. This system gives small investors advantages they are willing to pay for via a management fee to the mutual fund operator.

On the MARKET FRONT

THE END OF THE STAND-ALONE INVESTMENT BANKING INDUSTRY

Until 1999, the Glass-Steagall Act had prohibited banks from both accepting deposits and underwriting securities. In other words, it forced a separation of the investment and commercial banking industries. But when Glass-Steagall was repealed, many large commercial banks began to transform themselves into "universal banks" that could offer a full range of commercial and investment banking services. In some cases, commercial banks started their own investment banking divisions from scratch, but more commonly they expanded through merger. For example, Chase Manhattan acquired J. P. Morgan to form JPMorgan Chase. Similarly, Citigroup acquired Salomon Smith Barney to offer wealth management, brokerage, investment banking, and asset management services to its clients. Most of Europe had never forced the separation of commercial and investment banking, so their giant banks such as Credit Suisse, Deutsche Bank, HSBC, and UBS had long been universal banks. Until 2008, however, the stand-alone investment banking sector in the U.S. remained large and apparently vibrant, including such storied names as Goldman Sachs, Morgan Stanley, Merrill Lynch, and Lehman Brothers.

But the industry was shaken to its core in 2008, when several investment banks were beset by enormous losses on their holdings of mortgage-backed securities. In March, on the verge of insolvency, Bear Stearns was merged into JPMorgan Chase. On September 14, Merrill Lynch, also suffering steep mortgage-related losses, negotiated an agreement to be acquired by Bank of America. The next day, Lehman Brothers entered into the largest bankruptcy in U.S. history, having failed to find an acquirer who was able and willing to rescue it from its steep losses. The next week, the only two remaining major independent investment banks, Goldman Sachs and Morgan Stanley, decided to convert from investment banks to traditional bank holding companies. In so doing, they became subject to the supervision of national bank regulators such as the Federal Reserve and the far tighter rules for capital adequacy that govern commercial banks.[6] The firms decided that the greater stability they would enjoy as commercial banks, particularly the ability to fund their operations through bank deposits and access to emergency borrowing from the Fed, justified the conversion. These mergers and conversions marked the effective end of the independent investment banking industry—but not of investment banking. Those services now will be supplied by the large universal banks.

Investment companies also can design portfolios specifically for large investors with particular goals. In contrast, mutual funds are sold in the retail market, and their investment philosophies are differentiated mainly by strategies that are likely to attract a large number of clients.

Like mutual funds, *hedge funds* also pool and invest the money of many clients. But they are open only to institutional investors such as pension funds, endowment funds, or wealthy individuals. They are more likely to pursue complex and higher-risk strategies. They typically keep a portion of trading profits as part of their fees, whereas mutual funds charge a fixed percentage of assets under management.

Economies of scale also explain the proliferation of analytic services available to investors. Newsletters, databases, and brokerage house research services all engage in research to be sold to a large client base. This setup arises naturally. Investors clearly want information, but with small portfolios to manage, they do not find it economical to personally gather all of it. Hence, a profit opportunity emerges: A firm can perform this service for many clients and charge for it.

Investment Bankers

investment bankers

Firms specializing in the sale of new securities to the public, typically by underwriting the issue.

Just as economies of scale and specialization create profit opportunities for financial intermediaries, so too do these economies create niches for firms that perform specialized services for businesses. Firms raise much of their capital by selling securities such as stocks and bonds to the public. Because these firms do not do so frequently, however, **investment bankers** that specialize in such activities can offer their services at a cost below that of maintaining an in-house security issuance division.

[6]For example, a typical leverage ratio (total assets divided by bank capital) at commercial banks in 2008 was about 10 to 1. In contrast, leverage at investment banks reached 30 to 1. Such leverage increased profits when times were good but provided an inadequate buffer againts losses and left the banks exposed to failure when their investment portfolios were shaken by large losses.

Investment bankers advise an issuing corporation on the prices it can charge for the securities issued, appropriate interest rates, and so forth. Ultimately, the investment banking firm handles the marketing of the security in the **primary market,** where new issues of securities are offered to the public. In this role, the banks are called *underwriters.* Later, investors can trade previously issued securities among themselves in the so-called **secondary market.**

primary market

A market in which new issues of securities are offered to the public.

secondary market

Previously issued securities are traded among investors.

For most of the last century, investment banks and commercial banks in the U.S. were separated by law. While those regulations were effectively eliminated in 1999, until 2008 the industry known as "Wall Street" still comprised large, independent investment banks such as Goldman Sachs, Merrill Lynch, or Lehman Brothers. But that stand-alone model came to an abrupt end in September 2008, when all the remaining major U.S. investment banks were absorbed into commercial banks, declared bankruptcy, or reorganized as commercial banks. The nearby box presents a brief introduction to these events.

Venture Capital and Private Equity

While large firms can raise funds directly from the stock and bond markets with help from their investment bankers, smaller and younger firms that have not yet issued securities to the public do not have that option. Start-up companies rely instead on bank loans and investors who are willing to invest in them in return for an ownership stake in the firm. The equity investment in these young companies is called **venture capital (VC).** Sources of venture capital are dedicated venture capital funds, wealthy individuals known as *angel investors,* and institutions such as pension funds.

venture capital (VC)

Money invested to finance a new firm.

Most venture capital funds are set up as limited partnerships. A management company starts with its own money and raises additional capital from limited partners such as pension funds. That capital may then be invested in a variety of start-up companies. The management company usually sits on the start-up company's board of directors, helps recruit senior managers, and provides business advice. It charges a fee to the VC fund for overseeing the investments. After some period of time, for example, 10 years, the fund is liquidated and proceeds are distributed to the investors.

Venture capital investors commonly take an active role in the management of a start-up firm. Other active investors may engage in similar hands-on management but focus instead on firms that are in distress or firms that may be bought up, "improved," and sold for a profit. Collectively, these investments in firms that do not trade on public stock exchanges are known as **private equity** investments.

private equity

Investments in companies that are not traded on a stock exchange.

1.7 THE FINANCIAL CRISIS OF 2008

This chapter has laid out the broad outlines of the financial system, as well as some of the links between the financial side of the economy and the "real" side, in which goods and services are produced. The financial crisis of 2008 illustrated in a painful way the intimate ties between these two sectors. We present in this section a capsule summary of the crisis, attempting to draw some lessons about the role of the financial system as well as the causes and consequences of what has become known as *systemic risk.* Some of these issues are complicated; we consider them briefly here but will return to them in greater detail later in the text once we have more context for analysis.

Antecedents of the Crisis

In early 2007, most observers thought it inconceivable that within two years the world financial system would be facing its worse crisis since the Great Depression. At the time, the economy seemed to be marching from strength to strength. The last significant macroeconomic threat had been from the collapse of the high-tech bubble in 2000–2002. But the Federal Reserve responded to an emerging recession by aggressively reducing interest rates.

FIGURE 1.1

Short-term LIBOR and Treasury-bill rates and the TED spread

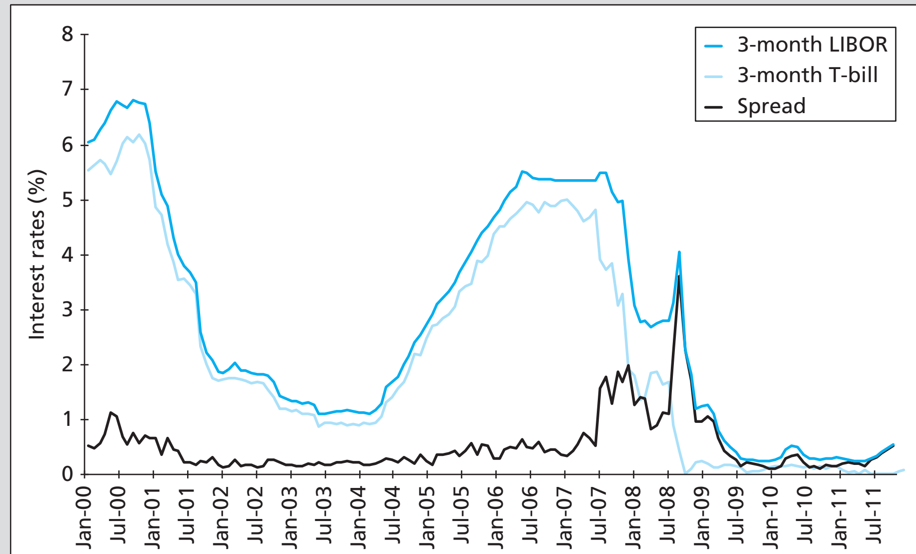


FIGURE 1.2

Cumulative returns on a $1 investment in the S&P 500 Index

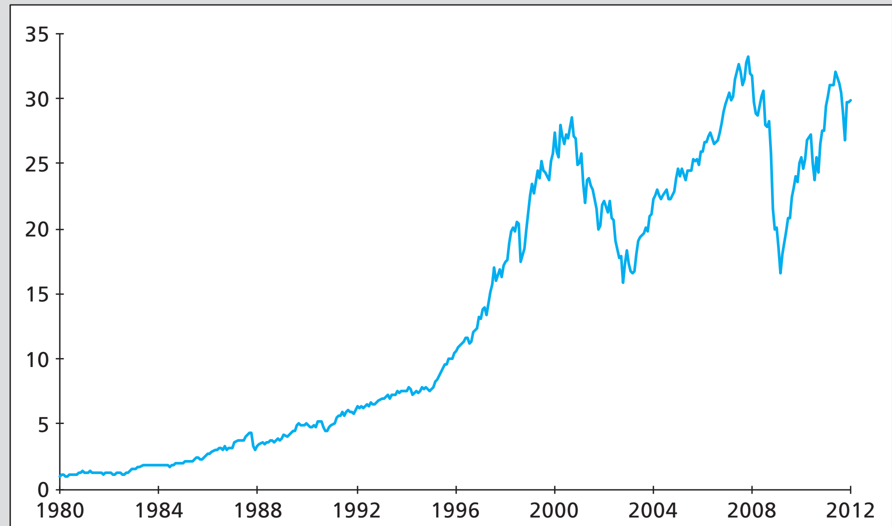


Figure 1.1 shows that Treasury bill rates dropped drastically between 2001 and 2004, and the LIBOR rate, which is the interest rate at which major money-center banks lend to each other, fell in tandem.[7] These actions appeared to have been successful, and the recession was short-lived and mild.

By mid-decade the economy was once again apparently healthy. While the stock market had declined substantially between 2001 and 2002, Figure 1.2 shows that it reversed direction just as dramatically beginning in 2003, fully recovering all of its post-tech-meltdown losses within a few years. Of equal importance, the banking sector seemed healthy. The spread

[7]*LIBOR* stands for "London Interbank Offer Rate." It is a rate charged on dollar-denominated loans in an interbank lending market outside the U.S. (largely centered in London). The rate is typically quoted for three-month loans.

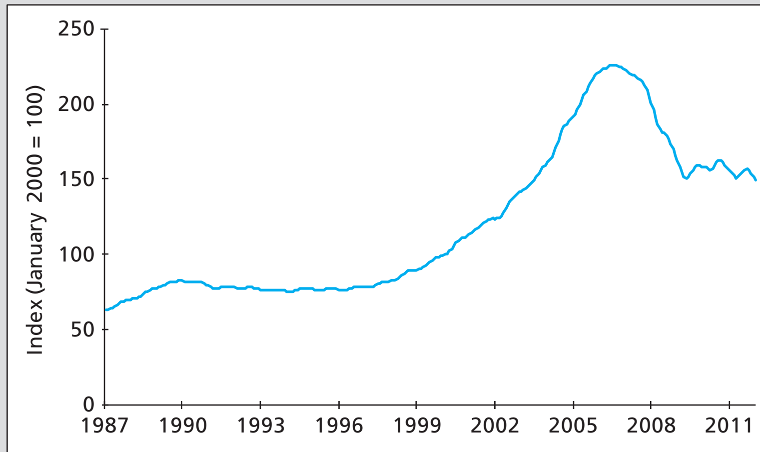


FIGURE 1.3

The Case-Shiller index of U.S. housing prices

between the LIBOR rate (at which banks borrow from each other) and the Treasury-bill rate (at which the U.S. government borrows), a common measure of credit risk in the banking sector (often referred to as the *TED spread*[8]), was only around .25% in early 2007 (see the bottom line in Figure 1.1), suggesting that fears of default or "counterparty" risk in the banking sector were extremely low.

The combination of dramatically reduced interest rates and an apparently stable economy fed a historic boom in the housing market. Figure 1.3 shows that U.S. housing prices began rising noticeably in the late 1990s and accelerated dramatically after 2001 as interest rates plummeted. In the 10 years beginning 1997, average prices in the U.S. approximately tripled.

But confidence in the power of macroeconomic policy to reduce risk, the impressive recovery of the economy from the high-tech implosion, and particularly the housing price boom following the aggressive reduction in interest rates may have sown the seeds for the debacle that played out in 2008. On the one hand, the Fed's policy of reducing interest rates had resulted in low yields on a wide variety of investments, and investors were hungry for higher-yielding alternatives. On the other hand, low volatility and growing complacency about risk encouraged greater tolerance for risk in the search for these higher-yielding investments. Nowhere was this more evident than in the exploding market for securitized mortgages. The U.S. housing and mortgage finance markets were at the center of a gathering storm.

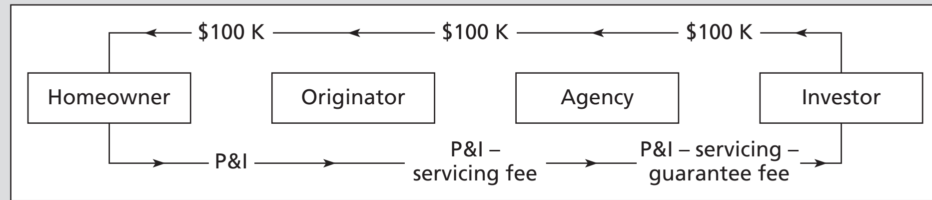
Changes in Housing Finance

Prior to 1970, most mortgage loans would come from a local lender such as a neighborhood savings bank or credit union. A homeowner would borrow funds for a home purchase and repay it over a long period, commonly 30 years. A typical thrift institution would have as its major asset a portfolio of these long-term home loans, while its major liability would be the accounts of its depositors. This landscape began to change in the 1970s when Fannie Mae (FNMA, or Federal National Mortgage Association) and Freddie Mac (FHLMC, or Federal Home Loan Mortgage Corporation) began buying large quantities of mortgage loans from originators and bundling them into pools that could be traded like any other financial asset. These pools, which were essentially claims on the underlying mortgages, were soon dubbed "mortgage-backed securities," and the process

[8] *TED* stands for "Treasury-Eurodollar spread." The Eurodollar rate in this spread is in fact LIBOR.

FIGURE 1.4

Cash flows in a mortgage pass-through security



securitization

Pooling loans into standardized securities backed by those loans, which can then be traded like any other security.

was called **securitization.** Fannie and Freddie quickly became the behemoths of the mortgage market, between them buying more than half of all mortgages originated by the private sector.

Figure 1.4 illustrates how cash flows passed from the original borrower to the ultimate investor in a mortgage-backed security. The loan originator, for example, the savings and loan, might make a $100,000 loan to a homeowner. The homeowner would repay principal and interest (P&I) on the loan over 30 years. But then the originator would sell the mortgage to Freddie Mac or Fannie Mae and recover the cost of the loan. The originator could continue to service the loan (e.g., collect monthly payments from the homeowner) for a small servicing fee, but the loan payments net of that fee would be passed along to the agency. In turn, Freddie or Fannie would pool the loans into mortgage-backed securities and sell the securities to investors such as pension funds or mutual funds. The agency (Fannie or Freddie) typically would guarantee the credit or default risk of the loans included in each pool, for which it would retain a guarantee fee before passing along the rest of the cash flow to the ultimate investor. Because the mortgage cash flows were passed along from the homeowner to the lender, to Fannie or Freddie, and finally to the investor, the mortgage-backed securities were also called *pass-throughs.*

Until the last decade, the vast majority of the mortgages that had been securitized into pass-throughs were held or guaranteed by Freddie Mac or Fannie Mae. These were low-risk *conforming* mortgages, meaning that eligible loans for agency securitization couldn't be too big and homeowners had to meet underwriting criteria establishing their ability to repay the loan. For example, the ratio of loan amount to house value could be no more than 80%.

While conforming loans were pooled almost entirely through Freddie Mac and Fannie Mae, once the securitization model took hold, it created an opening for a new product: securitization by private firms of *nonconforming* "subprime" loans with higher default risk. One important difference between the government-agency pass-throughs and these so-called private-label pass-throughs was that the investor in the private-label pool would bear the risk that homeowners might default on their loans. Thus, originating mortgage brokers had little incentive to perform due diligence on the loan *as long as the loans could be sold to an investor.* These investors, of course, had no direct contact with the borrowers and could not perform detailed underwriting concerning loan quality. Instead, they relied on borrowers' credit scores, which steadily came to replace conventional underwriting.

A strong trend toward low-documentation and then no-documentation loans entailing little verification of a borrower's ability to carry a loan soon emerged. Other subprime underwriting standards also quickly deteriorated. For example, allowed leverage on home loans (as measured by the loan-to-value ratio) rose dramatically. By 2006, the majority of subprime borrowers purchased houses by borrowing the *entire* purchase price! When housing prices began falling, these highly leveraged loans were quickly "underwater," meaning that the house was worth less than the loan balance, and many homeowners decided to "walk away" or abandon their homes—and their loans.

Adjustable rate mortgages (ARMs) also grew in popularity, quickly becoming the standard in the subprime market. These loans offered borrowers low initial or "teaser" interest rates, but these rates eventually would reset to current market interest yields, for example, the Treasury-bill rate plus 3%. While many of these borrowers had "maxed out" their borrowing capacity at

the teaser rate, as soon as the loan rate was reset, their monthly payments would soar, especially if market interest rates had increased.

Despite these obvious risks, the ongoing increase in housing prices over the last decade seemed to have lulled many investors into complacency, with a widespread belief that continually rising home prices would bail out poorly performing loans. But starting in 2004, the ability of refinancing to save a loan began to diminish. First, higher interest rates put payment pressure on homeowners who had taken out adjustable rate mortgages. Second, as Figure 1.3 shows, housing prices peaked by 2006, so homeowners' ability to refinance a loan using built-up equity in the house declined. Housing default rates began to surge in 2007, as did losses on mortgage-backed securities. The crisis was ready to shift into high gear.

Mortgage Derivatives

One might ask: Who was willing to buy all of these risky subprime mortgages? Securitization, restructuring, and credit enhancement provide a big part of the answer. New risk-shifting tools enabled investment banks to carve out AAA-rated securities from original-issue "junk" loans. Collateralized debt obligations, or CDOs, were among the most important and eventually damaging of these innovations.

CDOs were designed to concentrate the credit (i.e., default) risk of a bundle of loans on one class of investors, leaving the other investors in the pool relatively protected from that risk. The idea was to prioritize claims on loan repayments by dividing the pool into senior versus junior slices called *tranches.* The senior tranches had first claim on repayments from the entire pool. Junior tranches would be paid only after the senior ones had received their cut. For example, if a pool were divided into two tranches, with 70% of the pool allocated to the senior tranche and 30% allocated to the junior one, the senior investors would be repaid in full as long as 70% or more of the loans in the pool performed, i.e., as long as the default rate on the pool remained below 30%. Even with pools comprised of risky subprime loans, default rates above 30% seemed extremely unlikely, and thus senior tranches were commonly granted the highest (i.e., AAA) rating by the major credit rating agencies, Moody's, Standard & Poor's, and Fitch. Large amounts of AAA-rated securities were thus carved out of pools of low-rated mortgages. (We will describe CDOs in more detail in Chapter 10.)

Of course, we know now that these ratings were wrong. The senior-subordinated structure of CDOs provided far less protection to senior tranches than investors anticipated. When housing prices across the entire country began to fall in unison, defaults in all regions increased and the hoped-for benefits from diversifying loans geographically never materialized.

Why had the rating agencies so dramatically underestimated credit risk in these subprime securities? First, default probabilities had been estimated using historical data from an unrepresentative period characterized by a housing boom and an uncommonly prosperous economy. Moreover, the ratings analysts had extrapolated historical default experience to a new sort of borrower pool—one without down payments, with exploding payment loans, and with low- or no-documentation loans (often called *liar loans*). Past default experience was largely irrelevant given these profound changes in the market. Moreover, there was excessive optimism about the power of cross-regional diversification to minimize risk.

Finally, there were apparent agency problems. The ratings agencies were paid to provide ratings by the issuers of the securities—not the purchasers. They faced pressure from the issuers, who could shop around for the most favorable treatment, to provide generous ratings.

CONCEPT check 1.2

When Freddie Mac and Fannie Mae pooled conforming mortgages into securities, they guaranteed the underlying mortgage loans against homeowner defaults. In contrast, there were no guarantees on the mortgages pooled into subprime mortgage–backed securities, so investors would bear credit risk. Were either of these arrangements necessarily a better way to manage and allocate default risk?

Credit Default Swaps

In parallel to the CDO market, the market in *credit default swaps* also exploded in this period. A credit default swap, or CDS, is in essence an insurance contract against the default of one or more borrowers. (We will describe these in more detail in Chapter 10.) The purchaser of the swap pays an annual premium (like an insurance premium) for the protection from credit risk. Credit default swaps became an alternative method of credit enhancement, seemingly allowing investors to buy subprime loans and insure their safety. But, in practice, some swap issuers ramped up their exposure to credit risk to unsupportable levels, without sufficient capital to back those obligations. For example, the large insurance company AIG alone sold more than $400 billion of CDS contracts on subprime mortgages.

The Rise of Systemic Risk

By 2007, the financial system displayed several troubling features. Many large banks and related financial institutions had adopted an apparently profitable financing scheme: borrowing short term at low interest rates to finance holdings in higher-yielding, long-term, illiquid[9] assets and treating the interest rate differential between their assets and liabilities as economic profit. But this business model was precarious: By relying primarily on short-term loans for their funding, these firms needed to constantly refinance their positions (i.e., borrow additional funds as the loans matured), or else face the necessity of quickly selling off their less liquid asset portfolios, which would be difficult in times of financial stress. Moreover, these institutions were highly leveraged and had little capital as a buffer against losses. Large investment banks on Wall Street in particular had sharply increased leverage, which added to an underappreciated vulnerability to refunding requirements—especially if the value of their asset portfolios came into question. Even small portfolio losses could drive their net worth negative, at which point no one would be willing to extend them loans.

Another source of fragility was widespread investor reliance on credit protection through products like CDOs. Many of the assets underlying these pools were illiquid, hard to value, and highly dependent on forecasts of future performance of other loans. In a widespread downturn, with rating downgrades, these assets would prove difficult to sell.

The steady displacement of formal exchange trading by informal "over-the-counter" markets created other problems. In formal exchanges such as futures or options markets, participants must put up collateral called *margin* to guarantee their ability to make good on their obligations. Prices are computed each day, and gains or losses are continually added to or subtracted from each trader's margin account. If a margin account runs low after a series of losses, the investor can be required to either contribute more collateral or close out the position before actual insolvency ensues. Positions, and thus exposures to losses, are transparent to other traders. In contrast, the over-the-counter markets where CDS contracts trade are effectively private contracts between two parties with less public disclosure of positions and less opportunity to recognize either cumulative gains or losses over time or the resultant credit exposure of each trading partner.

systemic risk

Risk of breakdown in the financial system, particularly due to spillover effects from one market into others.

This new financial model was brimming with **systemic risk,** a potential breakdown of the financial system when problems in one market spill over and disrupt others. When lenders such as banks have limited capital, and are afraid of further losses, they may rationally choose to hoard their capital instead of lending it out to customers such as small firms, thereby exacerbating funding problems for their customary borrowers.

The Shoe Drops

By fall of 2007, housing prices were in decline (Figure 1.3), mortgage delinquencies increased, and the stock market entered its own free fall (Figure 1.2). Many investment banks, which had large investments in mortgages, also began to totter.

[9] *Liquidity* refers to the speed and the ease with which investors can realize the cash value of an investment. Illiquid assets, for example, real estate, can be hard to sell quickly, and a quick sale may require a substantial discount from the price at which the asset could be sold in an unrushed situation.

The crisis peaked in September 2008. On September 7, the giant federal mortgage agencies Fannie Mae and Freddie Mac, both of which had taken large positions in subprime mortgage–backed securities, were put into conservatorship. (We will have more to say on their travails in Chapter 2.) The failure of these two mainstays of the U.S. housing and mortgage finance industries threw financial markets into a panic. By the second week of September, it was clear that both Lehman Brothers and Merrill Lynch were on the verge of bankruptcy. On September 14, Merrill Lynch was sold to Bank of America. The next day, Lehman Brothers, which was denied equivalent treatment, filed for bankruptcy protection. Two days later, on September 17, the government reluctantly lent $85 billion to AIG, reasoning that its failure would have been highly destabilizing to the banking industry, which was holding massive amounts of its credit guarantees (i.e., CDS contacts). The next day, the Treasury unveiled its first proposal to spend $700 billion to purchase "toxic" mortgage-backed securities.

A particularly devastating fallout of the Lehman bankruptcy was on the "money market" for short-term lending. Lehman had borrowed considerable funds by issuing very short-term unsecured debt called *commercial paper.* Among the major customers in the commercial paper were money market mutual funds, which invest in short-term, high-quality debt of commercial borrowers. When Lehman faltered, fear spread that these funds were exposed to losses on their large investments in commercial paper, and money market fund customers across the country rushed to withdraw their funds. In turn, the funds rushed out of commercial paper into safer and more liquid Treasury bills, essentially shutting down short-term financing markets.

The freezing up of credit markets was the end of any dwindling possibility that the financial crisis could be contained to Wall Street. Larger companies that had relied on the commercial paper market were now unable to raise short-term funds. Banks similarly found it difficult to raise funds. (Look back to Figure 1.1, where you will see that the TED spread, a measure of bank insolvency fears, skyrocketed in 2008.) With banks unwilling or unable to extend credit to their customers, thousands of small businesses that relied on bank lines of credit also became unable to finance their normal business operations. Capital-starved companies were forced to scale back their own operations precipitously. The unemployment rate rose rapidly, and the economy was in its worst recession in decades. The turmoil in the financial markets had spilled over into the real economy, and Main Street had joined Wall Street in a bout of protracted misery.

The Dodd-Frank Reform Act

The crisis engendered many calls for reform of Wall Street. These eventually led to the passage in 2010 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which proposes several mechanisms to mitigate systemic risk.

The act calls for stricter rules for bank capital, liquidity, and risk management practices, especially as banks become larger and their potential failure would be more threatening to other institutions. With more capital supporting banks, the potential for one insolvency to trigger another could be contained. In addition, when banks have more capital, they have less incentive to ramp up risk, as potential losses will come at their own expense and not the FDIC's.

Dodd-Frank also mandates increased transparency, especially in derivative markets. For example, one suggestion is to standardize CDS contracts so they can trade in centralized exchanges where prices can be determined in a deep market and gains or losses can be settled on a daily basis. Margin requirements, enforced daily, would prevent CDS participants from taking on greater positions than they can handle, and exchange trading would facilitate analysis of the exposure of firms to losses in these markets.

The act also attempts to limit the risky activities in which banks can engage. The so-called Volcker Rule, named after former chairman of the Federal Reserve Paul Volcker, limits a bank's ability to trade for its own account and to own or invest in a hedge fund or private equity fund.

The law also addresses shortcomings of the regulatory system that became apparent in 2008. The U.S. has several financial regulators with overlapping responsibility, and some institutions were accused of "regulator shopping," seeking to be supervised by the most lenient regulator. Dodd-Frank seeks to unify and clarify lines of regulatory authority and responsibility in one or a smaller number of government agencies.

The act addresses incentive issues. Among these are proposals to force employee compensation to reflect longer-term performance. The act requires public companies to set "clawback provisions" to take back executive compensation if it was based on inaccurate financial statements. The motivation is to discourage excessive risk taking by large financial institutions in which big bets can be wagered with the attitude that a successful outcome will result in a big bonus while a bad outcome will be borne by the company, or worse, the taxpayer.

The incentives of the bond rating agencies are also a sore point. Few are happy with a system that has the ratings agencies paid by the firms they rate. The act creates an Office of Credit Ratings within the Securities and Exchange Commission to oversee the credit rating agencies.

It is still too early to know which, if any, of these reforms will stick. The implementation of Dodd-Frank is still subject to considerable interpretation by regulators, and the act is still under attack by some members of Congress. But the crisis surely has made clear the essential role of the financial system in the functioning of the real economy.

1.8 OUTLINE OF THE TEXT

The text has six parts, which are fairly independent and may be studied in a variety of sequences. Part One is an introduction to financial markets, instruments, and trading of securities. This part also describes the mutual fund industry.

Part Two is a fairly detailed presentation of "modern portfolio theory." This part of the text treats the effect of diversification on portfolio risk, the efficient diversification of investor portfolios, the choice of portfolios that strike an attractive balance between risk and return, and the trade-off between risk and expected return. This part also treats the efficient market hypothesis as well as behavioral critiques of theories based on investor rationality.

Parts Three through Five cover security analysis and valuation. Part Three is devoted to debt markets and Part Four to equity markets. Part Five covers derivative assets, such as options and futures contracts.

Part Six is an introduction to active investment management. It shows how different investors' objectives and constraints can lead to a variety of investment policies. This part discusses the role of active management in nearly efficient markets, considers how one should evaluate the performance of managers who pursue active strategies, and takes a close look at hedge funds. It also shows how the principles of portfolio construction can be extended to the international setting.

SUMMARY

- Real assets create wealth. Financial assets represent claims to parts or all of that wealth. Financial assets determine how the ownership of real assets is distributed among investors.
- Financial assets can be categorized as fixed-income (debt), equity, or derivative instruments. Top-down portfolio construction techniques start with the asset allocation decision—the allocation of funds across broad asset classes—and then progress to more specific security-selection decisions.
- Competition in financial markets leads to a risk-return trade-off, in which securities that offer higher expected rates of return also impose greater risks on investors. The presence of risk, however, implies that actual returns can differ considerably from expected returns at the beginning of the investment period. Competition among security analysts also results in financial markets that are nearly informationally efficient, meaning that prices reflect all available information concerning the value of the security. Passive investment strategies may make sense in nearly efficient markets.

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- Financial intermediaries pool investor funds and invest them. Their services are in demand because small investors cannot efficiently gather information, diversify, and monitor portfolios. The financial intermediary, in contrast, is a large investor that can take advantage of scale economies.
- Investment banking brings efficiency to corporate fund raising. Investment bankers develop expertise in pricing new issues and in marketing them to investors. By the end of 2008, all the major stand-alone U.S. investment banks had been absorbed into commercial banks or had reorganized themselves into bank holding companies. In Europe, where universal banking had never been prohibited, large banks had long maintained both commercial and investment banking divisions.
- The financial crisis of 2008 showed the importance of systemic risk. Systemic risk can be limited by transparency that allows traders and investors to assess the risk of their counterparties, capital requirements to prevent trading participants from being brought down by potential losses, frequent settlement of gains or losses to prevent losses from accumulating beyond an institution's ability to bear them, incentives to discourage excessive risk taking, and accurate and unbiased analysis by those charged with evaluating security risk.

KEY TERMS

active management, 11
agency problems, 8
asset allocation, 9
derivative securities, 5
equity, 5
financial assets, 3
financial intermediaries, 12
fixed-income (debt) securities, 5
investment, 2
investment bankers, 14
investment companies, 12
passive management, 11
primary market, 15
private equity, 15
real assets, 3
risk-return trade-off, 11
secondary market, 15
securitization, 18
security analysis, 10
security selection, 9
systemic risk, 20
venture capital (VC), 15

PROBLEM SETS

Select problems are available in McGraw-Hill's *Connect Finance.* Please see the Supplements section of the book's frontmatter for more information.

Basic

1. What are the differences between equity and fixed-income securities? *(LO 1-5)*
2. What is the difference between a primary asset and a derivative asset? *(LO 1-1)*
3. What is the difference between asset allocation and security selection? *(LO 1-4)*
4. What are agency problems? What are some approaches to solving them? *(LO 1-3)*
5. What are the differences between real and financial assets? *(LO 1-2)*
6. How does investment banking differ from commercial banking? *(LO 1-5)*

Intermediate

7. For each transaction, identify the real and/or financial assets that trade hands. Are any financial assets created or destroyed in the transaction? *(LO 1-2)*
   a. Toyota takes out a bank loan to finance the construction of a new factory.
   b. Toyota pays off its loan.
   c. Toyota uses $10 million of cash on hand to purchase additional inventory of spare auto parts.
8. Suppose that in a wave of pessimism, housing prices fall by 10% across the entire economy. *(LO 1-2)*
   a. Has the stock of real assets of the economy changed?
   b. Are individuals less wealthy?
   c. Can you reconcile your answers to (*a*) and (*b*)?

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9. Lanni Products is a start-up computer software development firm. It currently owns computer equipment worth $30,000 and has cash on hand of $20,000 contributed by Lanni's owners. For each of the following transactions, identify the real and/or financial assets that trade hands. Are any financial assets created or destroyed in the transaction? *(LO 1-2)*
   a. Lanni takes out a bank loan. It receives $50,000 in cash and signs a note promising to pay back the loan over three years.
   b. Lanni uses the cash from the bank plus $20,000 of its own funds to finance the development of new financial planning software.
   c. Lanni sells the software product to Microsoft, which will market it to the public under the Microsoft name. Lanni accepts payment in the form of 5,000 shares of Microsoft stock.
   d. Lanni sells the shares of stock for $25 per share and uses part of the proceeds to pay off the bank loan.
10. Reconsider Lanni Products from the previous problem. *(LO 1-2)*
   a. Prepare its balance sheet just after it gets the bank loan. What is the ratio of real assets to total assets?
   b. Prepare the balance sheet after Lanni spends the $70,000 to develop its software product. What is the ratio of real assets to total assets?
   c. Prepare the balance sheet after Lanni accepts the payment of shares from Microsoft. What is the ratio of real assets to total assets?
11. What reforms to the financial system might reduce its exposure to systemic risk? *(LO 1-6)*
12. Examine the balance sheet of commercial banks in Table 1.3. What is the ratio of real assets to total assets? What is that ratio for nonfinancial firms (Table 1.4)? Why should this difference be expected? *(LO 1-2)*
13. Why do financial assets show up as a component of household wealth, but not of national wealth? Why do financial assets still matter for the material well-being of an economy? *(LO 1-2)*
14. Discuss the advantages and disadvantages of the following forms of managerial compensation in terms of mitigating agency problems, that is, potential conflicts of interest between managers and shareholders. *(LO 1-3)*
   a. A fixed salary.
   b. Stock in the firm that must be held for five years.
   c. A salary linked to the firm's profits.
15. We noted that oversight by large institutional investors or creditors is one mechanism to reduce agency problems. Why don't individual investors in the firm have the same incentive to keep an eye on management? *(LO 1-3)*
16. Wall Street firms have traditionally compensated their traders with a share of the trading profits that they generated. How might this practice have affected traders' willingness to assume risk? What is the agency problem this practice engendered? *(LO 1-3)*
17. Why would you expect securitization to take place only in highly developed capital markets? *(LO 1-6)*
18. What would you expect to be the relationship between securitization and the role of financial intermediaries in the economy? For example, what happens to the role of local banks in providing capital for mortgage loans when national markets in mortgage-backed securities become highly developed? *(LO 1-6)*
19. Give an example of three financial intermediaries, and explain how they act as a bridge between small investors and large capital markets or corporations. *(LO 1-5)*
20. Firms raise capital from investors by issuing shares in the primary markets. Does this imply that corporate financial managers can ignore trading of previously issued shares in the secondary market? *(LO 1-4)*

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21. The average rate of return on investments in large stocks has outpaced that on investments in Treasury bills by about 7% since 1926. Why, then, does anyone invest in Treasury bills? *(LO 1-1)*
22. You see an advertisement for a book that claims to show how you can make $1 million with no risk and with no money down. Will you buy the book? *(LO 1-1)*

WEB *master*

1. Log on to **finance.yahoo.com** and enter the ticker symbol "RRD" in the *Get Quotes* box to find information about R.R. Donnelley & Sons.
   a. Click on company *Profile.* What is Donnelly's main line of business?
   b. Now go to *Key Statistics.* How many shares of the company's stock are outstanding? What is the total market value of the firm? What were its profits in the most recent fiscal year?
   c. Look up *Major Holders* of the company's stock. What fraction of total shares is held by insiders?
   d. Now go to *Analyst Opinion.* What is the average price target (i.e., the predicted stock price of the Donnelly shares) of the analysts covering this firm? How does that compare to the price at which the stock is currently trading?
   e. Look at the company's *Balance Sheet.* What were its total assets at the end of the most recent fiscal year?
2. Visit the website of the Securities and Exchange Commission, **www.sec.gov.** What is the mission of the SEC? What information and advice does the SEC offer to beginning investors?
3. Now visit the website of the NASD, **www.finra.org.** What is its mission? What information and advice does it offer to beginners?
4. Now visit the website of the IOSCO, **www.iosco.org.** What is its mission? What information and advice does it offer to beginners?

SOLUTIONS TO CONCEPT *checks*

1.1 *a.* Real
b. Financial
c. Real
d. Real
e. Financial

1.2 The central issue is the incentive to monitor the quality of loans both when originated and over time. Freddie and Fannie clearly had incentive to monitor the quality of conforming loans that they had guaranteed, and their ongoing relationships with mortgage originators gave them opportunities to evaluate track records over extended periods of time. In the subprime mortgage market, the ultimate investors in the securities (or the CDOs backed by those securities), who were bearing the credit risk, should not have been willing to invest in loans with a disproportional likelihood of default. If they properly understood their exposure to default risk, then the (correspondingly low) prices they would have been willing to pay for these securities would have imposed discipline on the mortgage originators and servicers. The fact that they were willing to hold such large positions in these risky securities suggests that they did not appreciate the extent of their exposure. Maybe they were led astray by overly optimistic projections for housing prices or by biased assessments from the credit reporting agencies. While in principle either arrangement for default risk could have provided the appropriate discipline on the mortgage originators, in practice the informational advantages of Freddie and Fannie probably made them the better "recipients" of default risk. The lesson is that information and transparency are some of the preconditions for well-functioning markets.

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Asset Classes and Financial Instruments

Chapter

2

Learning Objectives:

LO2-1 Distinguish among the major assets that trade in money markets and in capital markets.

LO2-2 Describe the construction of stock market indexes.

LO2-3 Calculate the profit or loss on investments in options and futures contracts.

You learned in Chapter 1 that the process of building an investment portfolio usually begins by deciding how much money to allocate to broad classes of assets, such as safe money market securities or bank accounts, longer-term bonds, stocks, or even asset classes such as real estate or precious metals. This process is called *asset allocation.* Within each class the investor then selects specific assets from a more detailed menu. This is called *security selection.*

Each broad asset class contains many specific security types, and the many variations on a theme can be overwhelming. Our goal in this chapter is to introduce you to the important features of broad classes of securities. Toward this end, we organize our tour of financial instruments according to asset class.

Financial markets are traditionally segmented into money markets and capital markets. Money market instruments include short-term, marketable, liquid, low-risk debt securities. Money market instruments sometimes are called *cash equivalents,* or just *cash* for short. Capital markets, in contrast, include longer-term and riskier securities. Securities in the capital market are much more diverse than those found within the money market. For this reason, we will subdivide the capital market into three segments: longer-term debt markets, equity markets, and derivative markets in which options and futures trade.

We first describe money market instruments. We then move on to debt and equity securities. We explain the structure of various stock market indexes in this chapter because market benchmark portfolios play an important role in portfolio construction and evaluation. Finally, we survey the derivative security markets for options and futures contracts. A selection of the markets, instruments, and indexes covered in this chapter appears in Table 2.1.

Related websites for this chapter are available at www.mhhe.com/bkm.

2.1 THE MONEY MARKET

The **money market** is a subsector of the debt market. It consists of very short-term debt securities that are highly marketable. Many of these securities trade in large denominations and so are out of the reach of individual investors. Money market mutual funds, however, are easily accessible to small investors. These mutual funds pool the resources of many investors and purchase a wide variety of money market securities on their behalf.

money markets
Include short-term, highly liquid, and relatively low-risk debt instruments.

Treasury Bills

U.S. **Treasury bills** (T-bills, or just bills, for short) are the most marketable of all money market instruments. T-bills represent the simplest form of borrowing. The government raises money by selling bills to the public. Investors buy the bills at a discount from the stated maturity value. At the bill's maturity, the holder receives from the government a payment equal to the face value of the bill. The difference between the purchase price and the ultimate maturity value represents the investor's earnings.

Treasury bills
Short-term government securities issued at a discount from face value and returning the face amount at maturity.

T-bills are issued with initial maturities of 4, 13, 26, or 52 weeks. Individuals can purchase T-bills directly from the Treasury or on the secondary market from a government securities dealer. T-bills are highly liquid; that is, they are easily converted to cash and sold at low transaction cost and with little price risk. Unlike most other money market instruments, which sell in minimum denominations of $100,000, T-bills sell in minimum denominations of only $100, although $10,000 denominations are far more common. While the income earned on T-bills is taxable at the federal level, it is exempt from all state and local taxes, another characteristic distinguishing T-bills from other money market instruments.

Figure 2.1 is a partial listing of T-bills from *The Wall Street Journal Online* (look for the *Markets* tab, and then for the *Market Data* tab). Rather than providing prices of each bill, the financial press reports yields based on those prices. You will see yields corresponding to both bid and asked prices. The *asked price* is the price you would have to pay to buy a T-bill from a securities dealer. The *bid price* is the slightly lower price you would receive if you wanted to sell a bill to a dealer. The *bid–asked spread* is the difference in these prices, which is the dealer's source of profit.

The first two yields in Figure 2.1 are reported using the *bank-discount method*. This means that the bill's discount from its maturity, or face, value is "annualized" based on a 360-day year and then reported as a percentage of face value. For example, for the highlighted bill maturing on March 8, 2012, days to maturity are 245 and the yield under the column labeled "ASKED" is given as .07%. This means that a dealer was willing to sell the bill at a discount from face value of $.07\% \times (245/360) = .0476\%$. So a bill with $10,000 face value could be purchased for $\$10{,}000 \times (1 - .000476) = \$9{,}995.236$. Similarly, on the basis of the bid yield of .085%, a dealer would

TABLE 2.1 Financial markets and indexes

The money market	**The bond market**
Treasury bills	Treasury bonds and notes
Certificates of deposit	Federal agency debt
Commercial paper	Municipal bonds
Bankers' acceptances	Corporate bonds
Eurodollars	Mortgage-backed securities
Repos and reverses	**Equity markets**
Federal funds	Common stocks
Brokers' calls	Preferred stocks
Indexes	**Derivative markets**
Dow Jones averages	Options
Standard & Poor's indexes	Futures and forwards
Bond market indicators	Swaps
International indexes	

FIGURE 2.1

Treasury bill listings

Source: *The Wall Street Journal Online,* July 7, 2011. Reprinted by permission of *The Wall Street Journal,* Copyright © 2011 Dow Jones & Company, Inc. All Rights Reserved Worldwide.

Treasury Bills

MATURITY	DAYS TO MAT	BID	ASKED	CHG	ASK YLD
Sep 01 11	56	0.045	0.015	0.030	0.005
Oct 06 11	91	0.025	0.015	0.005	0.015
Nov 03 11	119	0.040	0.020	0.015	0.020
Jan 05 12	182	0.070	0.060	0.070	0.061
Mar 08 12	245	0.085	0.070	0.005	0.071
Jun 28 12	357	0.185	0.180	0.015	0.183

be willing to purchase the bill for $\$10,000 \times (1 - .00085 \times 245/360) = \$9,994.215$. Notice that prices and yields are inversely related, so the higher bid *yield* reported in Figure 2.1 implies a lower bid *price*.

The bank discount method for computing yields has a long tradition, but it is flawed for at least two reasons. First, it assumes that the year has only 360 days. Second, it computes the yield as a fraction of face value rather than of the price the investor paid to acquire the bill.[1] An investor who buys the bill for the asked price and holds it until maturity will see her investment grow over 245 days by a multiple of $\$10,000/\$9,995.236 = 1.000477$, for a gain of .0477%. Annualizing this gain using a 365-day year results in a yield of $.0477\% \times 365/245 = .071\%$, which is the value reported in the last column, under "asked yield." This last value is called the Treasury bill's *bond-equivalent yield.*

Certificates of Deposit

certificate of deposit

A bank time deposit.

A **certificate of deposit** (CD) is a time deposit with a bank. Time deposits may not be withdrawn on demand. The bank pays interest and principal to the depositor only at the end of the fixed term of the CD. CDs issued in denominations larger than $100,000 are usually negotiable, however; that is, they can be sold to another investor if the owner needs to cash in the certificate before its maturity date. Short-term CDs are highly marketable, although the market significantly thins out for maturities of three months or more. CDs are treated as bank deposits by the Federal Deposit Insurance Corporation, so they are insured for up to $250,000 in the event of a bank insolvency.

Commercial Paper

commercial paper

Short-term unsecured debt issued by large corporations.

The typical corporation is a net borrower of both long-term funds (for capital investments) and short-term funds (for working capital). Large, well-known companies often issue their own short-term unsecured debt notes directly to the public, rather than borrowing from banks. These notes are called **commercial paper** (CP). Sometimes, CP is backed by a bank line of credit, which gives the borrower access to cash that can be used if needed to pay off the paper at maturity.

CP maturities range up to 270 days; longer maturities require registration with the Securities and Exchange Commission and so are almost never issued. CP most commonly is issued with maturities of less than one or two months in denominations of multiples of $100,000. Therefore, small investors can invest in commercial paper only indirectly, through money market mutual funds.

CP is considered to be a fairly safe asset, given that a firm's condition presumably can be monitored and predicted over a term as short as one month. CP trades in secondary markets and so is quite liquid. Most issues are rated by at least one agency such as Standard & Poor's. The yield on CP depends on its time to maturity and credit rating.

While most CP historically was issued by nonfinancial firms, in recent years there was a sharp increase in so-called *asset-backed commercial paper* issued by financial firms such as banks. This short-term CP typically was used to raise funds for the institution to invest in other assets, most notoriously, subprime mortgages. These assets in turn were used as

[1]Both of these "errors" were dictated by computational simplicity in the days before computers. It is easier to compute percentage discounts from a round number such as face value than from purchase price. It is also easier to annualize using a 360-day year, since 360 is an even multiple of so many numbers.

collateral for the CP—hence the label "asset-backed." This practice led to many difficulties starting in the summer of 2007 when those subprime mortgages began defaulting. The banks found themselves unable to issue new CP to refinance their positions as the old paper matured.

Bankers' Acceptances

A **bankers' acceptance** starts as an order to a bank by a bank's customer to pay a sum of money at a future date, typically within six months. At this stage, it is like a postdated check. When the bank endorses the order for payment as "accepted," it assumes responsibility for ultimate payment to the holder of the acceptance. At this point, the acceptance may be traded in secondary markets much like any other claim on the bank. Bankers' acceptances are considered very safe assets, as they allow traders to substitute the bank's credit standing for their own. They are used widely in foreign trade where the creditworthiness of one trader is unknown to the trading partner. Acceptances sell at a discount from the face value of the payment order, just as T-bills sell at a discount from par value.

bankers' acceptance

An order to a bank by a customer to pay a sum of money at a future date.

Eurodollars

Eurodollars are dollar-denominated deposits at foreign banks or foreign branches of American banks. By locating outside the United States, these banks escape regulation by the Federal Reserve Board. Despite the tag "Euro," these accounts need not be in European banks, although that is where the practice of accepting dollar-denominated deposits outside the United States began.

Most Eurodollar deposits are for large sums, and most are time deposits of less than six months' maturity. A variation on the Eurodollar time deposit is the Eurodollar certificate of deposit. A Eurodollar CD resembles a domestic bank CD except it is the liability of a non-U.S. branch of a bank, typically a London branch. The advantage of Eurodollar CDs over Eurodollar time deposits is that the holder can sell the asset to realize its cash value before maturity. Eurodollar CDs are considered less liquid and riskier than domestic CDs, however, and so offer higher yields. Firms also issue Eurodollar bonds, that is, dollar-denominated bonds outside the U.S., although such bonds are not a money market investment by virtue of their long maturities.

Eurodollars

Dollar-denominated deposits at foreign banks or foreign branches of American banks.

Repos and Reverses

Dealers in government securities use **repurchase agreements,** also called repos, or RPs, as a form of short-term, usually overnight, borrowing. The dealer sells securities to an investor on an overnight basis, with an agreement to buy back those securities the next day at a slightly higher price. The increase in the price is the overnight interest. The dealer thus takes out a one-day loan from the investor. The securities serve as collateral for the loan.

A *term repo* is essentially an identical transaction, except the term of the implicit loan can be 30 days or more. Repos are considered very safe in terms of credit risk because the loans are collateralized by the securities. A *reverse repo* is the mirror image of a repo. Here, the dealer finds an investor holding government securities and buys them with an agreement to resell them at a specified higher price on a future date.

repurchase agreements (repos)

Short-term sales of government securities with an agreement to repurchase the securities at a higher price.

Brokers' Calls

Individuals who buy stocks on margin borrow part of the funds to pay for the stocks from their broker. The broker in turn may borrow the funds from a bank, agreeing to repay the bank immediately (on call) if the bank requests it. The rate paid on such loans is usually about one percentage point higher than the rate on short-term T-bills.

Federal Funds

Federal funds

Funds in the accounts of commercial banks at the Federal Reserve Bank.

Just as most of us maintain deposits at banks, banks maintain deposits of their own at the Federal Reserve Bank, or the Fed. Each member bank of the Federal Reserve System is required to maintain a minimum balance in a reserve account with the Fed. The required balance depends on the total deposits of the bank's customers. Funds in the bank's reserve account are called **Federal funds** or *Fed funds.* At any time, some banks have more funds than required at the Fed. Other banks, primarily big New York and other financial center banks, tend to have a shortage of Federal funds. In the Federal funds market, banks with excess funds lend to those with a shortage. These loans, which are usually overnight transactions, are arranged at a rate of interest called the *Federal funds rate.*

Although the Fed funds market arose primarily as a way for banks to transfer balances to meet reserve requirements, today the market has evolved to the point that many large banks use Federal funds in a straightforward way as one component of their total sources of funding. Therefore, the Fed funds rate is simply the rate of interest on very short-term loans among financial institutions. While most investors cannot participate in this market, the Fed funds rate commands great interest as a key barometer of monetary policy.

The LIBOR Market

LIBOR

Lending rate among banks in the London market.

The **London Interbank Offer Rate (LIBOR)** is the rate at which large banks in London are willing to lend money among themselves. This rate has become the premier short-term interest rate quoted in the European money market and serves as a reference rate for a wide range of transactions. A corporation might borrow at a rate equal to LIBOR plus two percentage points, for example. Like the Fed funds rate, LIBOR is a statistic widely followed by investors.

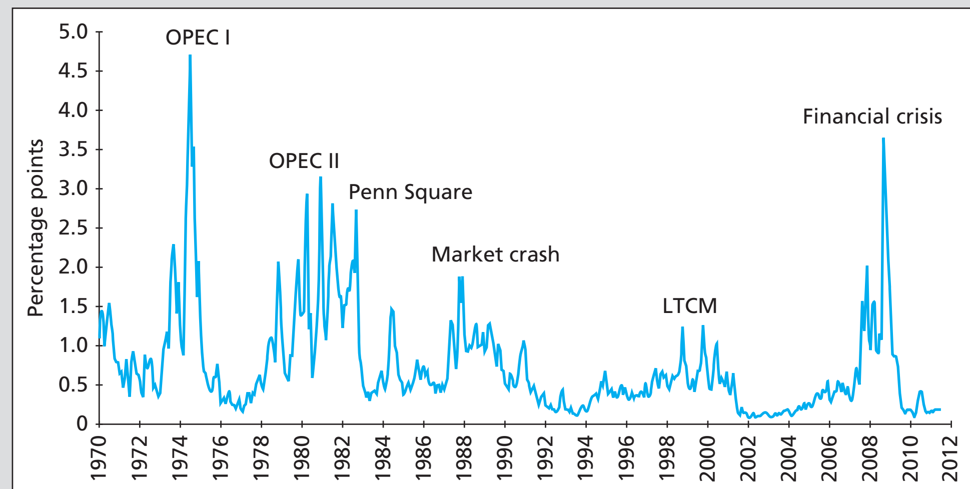
LIBOR interest rates may be tied to currencies other than the U.S. dollar. For example, LIBOR rates are widely quoted for transactions denominated in British pounds, yen, euros, and so on. There is also a similar rate called EURIBOR (European Interbank Offer Rate) at which banks in the euro zone are willing to lend euros among themselves.

Yields on Money Market Instruments

Although most money market securities are of low risk, they are not risk-free. The securities of the money market promise yields greater than those on default-free T-bills, at least in part because of their greater relative risk. Investors who require more liquidity also will accept lower yields on securities, such as T-bills, that can be more quickly and cheaply sold for cash. Figure 2.2 shows that bank CDs, for example, consistently have paid a risk premium over T-bills. Moreover, as Figure 2.2 shows, that premium increases with economic crises such as

FIGURE 2.2

Spread between three-month CD and T-bill rates



On the MARKET FRONT

MONEY MARKET FUNDS AND THE FINANCIAL CRISIS OF 2008

Money market funds are mutual funds that invest in the short-term debt instruments that comprise the money market. In 2008, these funds had investments totaling about $3.4 trillion. They are required to hold only short-maturity debt of the highest quality: The average maturity of their holdings must be maintained at less than three months. Their biggest investments tend to be in commercial paper, but they also hold sizable fractions of their portfolios in certificates of deposit, repurchase agreements, and Treasury securities. Because of this very conservative investment profile, money market funds typically experience extremely low price risk. Investors for their part usually acquire check-writing privileges with their funds and often use them as a close substitute for a bank account. This is feasible because the funds almost always maintain share value at $1 and pass along all investment earnings to their investors as interest.

Until 2008, only one fund had "broken the buck," that is, suffered losses large enough to force value per share below $1. But when Lehman Brothers filed for bankruptcy protection on September 15, 2008, several funds that had invested heavily in its commercial paper suffered large losses. The next day, Reserve Primary Fund, the oldest money market fund, broke the buck when its value per share fell to only $.97.

The realization that money market funds were at risk in the credit crisis led to a wave of investor redemptions similar to a run on a bank. Only three days after the Lehman bankruptcy, Putman's Prime Money Market Fund announced that it was liquidating due to heavy redemptions. Fearing further outflows, the U.S. Treasury announced that it would make federal insurance available to money market funds willing to pay an insurance fee. This program would thus be similar to FDIC bank insurance. With the federal insurance in place, the outflows were quelled.

However, the turmoil in Wall Street's money market funds had already spilled over into "Main Street." Fearing further investor redemptions, money market funds had become afraid to commit funds even over short periods, and their demand for commercial paper had effectively dried up. Firms that had been able to borrow at 2% interest rates in previous weeks now had to pay up to 8%, and the commercial paper market was on the edge of freezing up altogether. Firms throughout the economy had come to depend on those markets as a major source of short-term finance to fund expenditures ranging from salaries to inventories. Further breakdown in the money markets would have had an immediate crippling effect on the broad economy. Within days, the Federal government put forth its first plan to spend $700 billion to stabilize the credit markets.

the energy price shocks associated with the Organization of Petroleum Exporting Countries (OPEC) disturbances, the failure of Penn Square Bank, the stock market crash in 1987, the collapse of Long Term Capital Management in 1998, and the financial crisis resulting from the breakdown of the subprime mortgage market beginning in 2007. If you look back to Figure 1.1 in Chapter 1, you'll see that the TED spread, the difference between the LIBOR rate and the Treasury-bill rate, also peaked during the financial crisis.

Money market funds are mutual funds that invest in money market instruments and have become major sources of funding to that sector. The nearby box discusses the fallout of the financial crisis of 2008 on those funds.

2.2 THE BOND MARKET

The bond market is composed of longer-term borrowing or debt instruments than those that trade in the money market. This market includes Treasury notes and bonds, corporate bonds, municipal bonds, mortgage securities, and federal agency debt.

These instruments are sometimes said to comprise the *fixed-income capital market,* because most of them promise either a fixed stream of income or stream of income that is determined according to a specified formula. In practice, these formulas can result in a flow of income that is far from fixed. Therefore, the term "fixed income" is probably not fully appropriate. It is simpler and more straightforward to call these securities either debt instruments or bonds.

Treasury Notes and Bonds

The U.S. government borrows funds in large part by selling **Treasury notes** and **bonds.** T-notes are issued with original maturities ranging up to 10 years, while T-bonds are issued with maturities ranging from 10 to 30 years. Both bonds and notes may be issued in increments of $100 but far more commonly trade in denominations of $1,000. Both bonds and notes make semiannual interest payments called *coupon payments,* so named because in

Treasury notes or bonds

Debt obligations of the federal government with original maturities of one year or more.