

ELEVENTH EDITION

# Investments

## AN INTRODUCTION

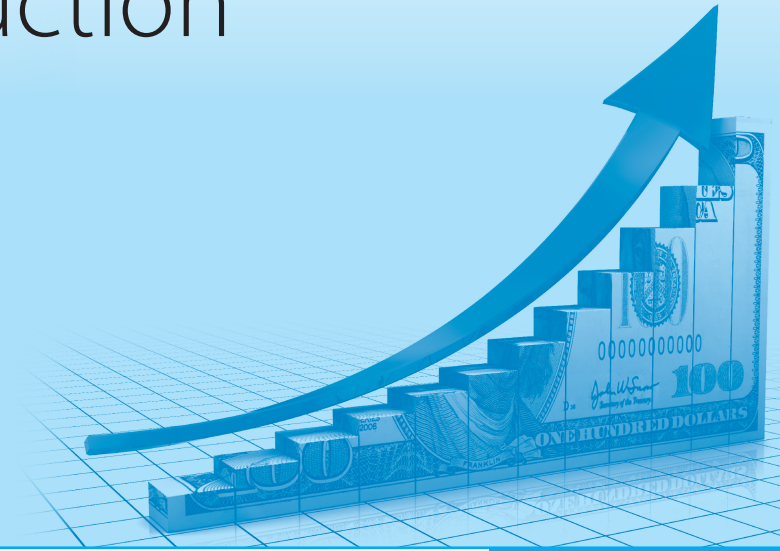
Herbert B. Mayo





# Investments

## An Introduction

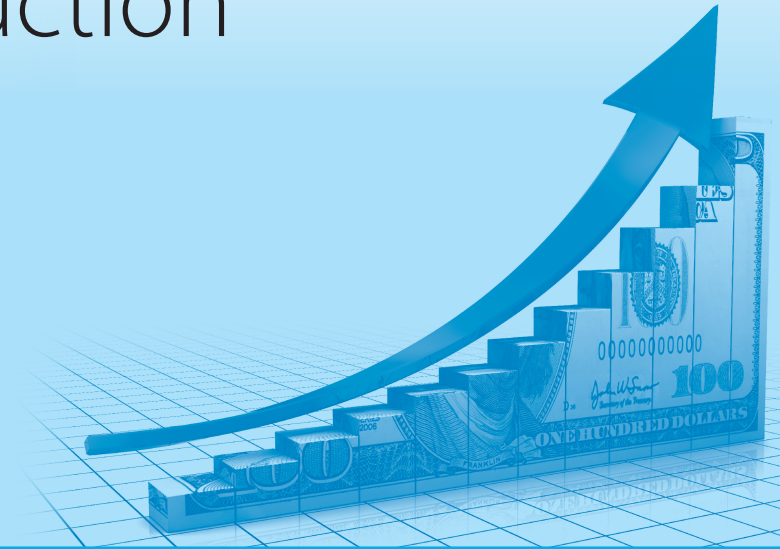


11e

This is an electronic version of the print textbook. Due to electronic rights restrictions, some third party content may be suppressed. Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. The publisher reserves the right to remove content from this title at any time if subsequent rights restrictions require it. For valuable information on pricing, previous editions, changes to current editions, and alternate formats, please visit [www.cengage.com/highered](http://www.cengage.com/highered) to search by ISBN#, author, title, or keyword for materials in your areas of interest.

# Investments

## An Introduction



11e

**Herbert B. Mayo**

The College of New Jersey



Australia • Brazil • Japan • Korea • Mexico • Singapore • Spain • United Kingdom • United States

**Investments: An Introduction,  
Eleventh Edition**  
**Herbert B. Mayo**

Senior Vice President, LRS/Acquisitions &  
Solutions Planning: Jack W. Calhoun

Editorial Director, Business & Economics:  
Erin Joyner

Editor-in-Chief: Joe Sabatino

Executive Editor: Mike Reynolds

Developmental Editor: Adele Scholtz

Senior Brand Manager: Robin LeFevre

Marketing Coordinator: Christopher Walz

Art and Cover Direction, Production  
Management, and Composition:  
PreMediaGlobal

Managing Media Editor: Scott Fidler

Rights Acquisition Director: Audrey  
Pettengill

Rights Acquisition Specialist, Text and  
Image: Anne Sheroff

Manufacturing Planner: Kevin Kluck

Cover Image(s): ©mmaxer/Shutterstock

© 2014, 2011 South-Western, Cengage Learning

ALL RIGHTS RESERVED. No part of this work covered by the copyright herein may be reproduced, transmitted, stored, or used in any form or by any means graphic, electronic, or mechanical, including but not limited to photocopying, recording, scanning, digitizing, taping, web distribution, information networks, or information storage and retrieval systems, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without the prior written permission of the publisher.

For product information and technology assistance, contact us at  
**Cengage Learning Customer & Sales Support, 1-800-354-9706**

For permission to use material from this text or product,  
submit all requests online at **www.cengage.com/permissions**

Further permissions questions can be emailed to  
**permissionrequest@cengage.com**

**ExamView®** is a registered trademark of eInstruction Corp. Windows is a registered trademark of the Microsoft Corporation used herein under license. Macintosh and Power Macintosh are registered trademarks of Apple Computer, Inc. used herein under license.

© 2008 Cengage Learning. All Rights Reserved.

Cengage Learning WebTutor™ is a trademark of Cengage Learning.

Library of Congress Control Number: 2012951959

ISBN-13: 978-1-133-93652-7

ISBN-10: 1-133-93652-0

**South-Western**

5191 Natorp Boulevard  
Mason, OH 45040  
USA

Cengage Learning is a leading provider of customized learning solutions with office locations around the globe, including Singapore, the United Kingdom, Australia, Mexico, Brazil, and Japan. Locate your local office at:  
**www.cengage.com/global**

Cengage Learning products are represented in Canada by  
Nelson Education, Ltd.

For your course and learning solutions, visit **www.cengage.com**

Purchase any of our products at your local college store or at our  
preferred online store **www.cengagebrain.com**

Printed in the United States of America  
1 2 3 4 5 6 7 16 15 14 13 12

## *Dedication*

In memory of a best friend and  
companion . . . Tinker







# Brief Contents

|               |  |            |
|---------------|--|------------|
| <b>PART 1</b> | <b>The Investment Process and Financial Concepts</b>   | <b>1</b>   |
| CHAPTER 1     | An Introduction to Investments   | 3          |
| CHAPTER 2     | Securities Markets   | 17         |
| CHAPTER 3     | The Time Value of Money  | 58         |
| CHAPTER 4     | Financial Planning, Taxation, and the Efficiency of Financial Markets                                    | 94         |
| CHAPTER 5     | Risk and Portfolio Management  | 128        |
| <b>PART 2</b> | <b>Investment Companies</b>  | <b>193</b> |
| CHAPTER 6     | Investment Companies: Mutual Funds   | 195        |
| CHAPTER 7     | Closed-end Investment Companies, Real Estate Investment Trusts (REITs), and Exchange-Traded Funds (ETFs) | 234        |
| <b>PART 3</b> | <b>Investing in Common Stock</b>   | <b>263</b> |
| CHAPTER 8     | Stock  | 265        |
| CHAPTER 9     | The Valuation of Common Stock  | 315        |
| CHAPTER 10    | Investment Returns and Aggregate Measures of Stock Markets   | 355        |
| CHAPTER 11    | The Macroeconomic Environment for Investment Decisions   | 391        |
| CHAPTER 12    | Behavioral Finance and Technical Analysis  | 411        |
| <b>PART 4</b> | <b>Investing in Fixed-Income Securities</b>  | <b>435</b> |
| CHAPTER 13    | The Bond Market  | 437        |
| CHAPTER 14    | The Valuation of Fixed-Income Securities   | 472        |
| CHAPTER 15    | Government Securities  | 525        |
| CHAPTER 16    | Convertible Bonds and Convertible Preferred Stock  | 571        |
| <b>PART 5</b> | <b>Derivatives</b>   | <b>607</b> |
| CHAPTER 17    | An Introduction to Options   | 609        |
| CHAPTER 18    | Option Valuation and Strategies  | 653        |
| CHAPTER 19    | Commodity and Financial Futures  | 701        |
| <b>PART 6</b> | <b>An Overview</b>   | <b>743</b> |
| CHAPTER 20    | Financial Planning and Investing in an Efficient Market Context  | 745        |



# Contents

Preface xv

## **PART 1** The Investment Process and Financial Concepts 1

|                  |  |           |
|------------------|--|-----------|
| <b>CHAPTER 1</b> | <b>An Introduction to Investments</b>                | <b>3</b>  |
|                  | Portfolio Construction and Planning                  | 4         |
|                  | Preliminary Definitions                              | 6         |
|                  | Diversification and Asset Allocation                 | 8         |
|                  | Efficient and Competitive Markets                    | 9         |
|                  | Portfolio Assessment                                 | 10        |
|                  | Professional Designations and Certifications         | 11        |
|                  | The Internet   | 11        |
|                  | The Author's Perspective and Investment Philosophy   | 12        |
|                  | The Plan and Purpose of This Text                    | 14        |
| <b>CHAPTER 2</b> | <b>Securities Markets</b>                            | <b>17</b> |
|                  | Secondary Markets and the Role of Market Makers      | 18        |
|                  | The Mechanics of Investing in Securities             | 22        |
|                  | The Short Sale                                       | 31        |
|                  | Foreign Securities                                   | 36        |
|                  | Regulation   | 36        |
|                  | Securities Investor Protection Corporation           | 41        |
|                  | Initial Public Offerings                             | 42        |
| <b>CHAPTER 3</b> | <b>The Time Value of Money</b>                       | <b>58</b> |
|                  | The Future Value of \$1                              | 59        |
|                  | The Present Value of \$1                             | 62        |
|                  | The Future Sum of an Annuity                         | 64        |
|                  | The Present Value of an Annuity                      | 68        |
|                  | Illustrations of Compounding and Discounting         | 72        |
|                  | Equations for the Interest Factors                   | 76        |
|                  | Nonannual Compounding                                | 78        |
|                  | Uneven Cash Flows                                    | 79        |
|                  | Appendix 3: Using Excel to Solve Time Value Problems | 88        |

|                  |  |            |
|------------------|--|------------|
| <b>CHAPTER 4</b> | <b>Financial Planning, Taxation, and the Efficiency of Financial Markets</b> | <b>94</b>  |
|                  | The Process of Financial Planning  | 95         |
|                  | Asset Allocation   | 99         |
|                  | Taxation   | 100        |
|                  | Pension Plans  | 104        |
|                  | The Efficient Market Hypothesis  | 108        |
|                  | Appendix 4: The Deductible versus the Nondeductible IRA                      | 124        |
| <b>CHAPTER 5</b> | <b>Risk and Portfolio Management</b>   | <b>128</b> |
|                  | Return   | 129        |
|                  | Sources of Risk  | 132        |
|                  | Total (Portfolio) Risk   | 136        |
|                  | The Measurement of Risk  | 139        |
|                  | Risk Reduction Through Diversification: An Illustration                      | 148        |
|                  | Portfolio Theory   | 151        |
|                  | The Capital Asset Pricing Model  | 155        |
|                  | Beta Coefficients  | 158        |
|                  | Arbitrage Pricing Theory   | 166        |
|                  | Appendix 5: Statistical Tools  | 179        |

## **PART 2** Investment Companies

193

|                  |   |            |
|------------------|---|------------|
| <b>CHAPTER 6</b> | <b>Investment Companies: Mutual Funds</b>   | <b>195</b> |
|                  | Investment Companies: Origins and Terminology   | 196        |
|                  | Mutual Funds  | 197        |
|                  | The Portfolios of Mutual Funds  | 199        |
|                  | Money Market Mutual Funds   | 203        |
|                  | Selecting Mutual Funds  | 205        |
|                  | Taxation  | 212        |
|                  | Redeeming Mutual Fund Shares  | 218        |
|                  | Measures of Risk-Adjusted Performance   | 219        |
| <b>CHAPTER 7</b> | <b>Closed-end Investment Companies, Real Estate Investment Trusts (REITs), and Exchange-Traded Funds (ETFs)</b> | <b>234</b> |
|                  | Closed-end Investment Companies   | 235        |
|                  | Real Estate Investment Trusts (REITs)   | 240        |
|                  | Exchange-Traded Funds (ETFs)  | 244        |
|                  | Hedge Funds and Private Equity Firms  | 248        |
|                  | Investment Companies and Foreign Investments  | 251        |

**CHAPTER 8 Stock 265**

|  |     |
|--|-----|
| The Corporate Form of Business and the Rights of Common Stockholders     | 266 |
| Cash Dividends   | 269 |
| Stock Dividends  | 274 |
| The Stock Split  | 276 |
| Stock Repurchases and Liquidations                                       | 278 |
| Preferred Stock  | 280 |
| Analysis of Financial Statements   | 282 |
| Liquidity Ratios   | 284 |
| Activity Ratios  | 287 |
| Profitability Ratios   | 290 |
| Leverage (Capitalization) Ratios   | 293 |
| Coverage Ratios  | 295 |
| Analysis of Financial Statements, Securities Selection, and the Internet | 297 |
| Analysis of Cash Flow  | 298 |

**CHAPTER 9 The Valuation of Common Stock 315**

|   |     |
|---|-----|
| The Logical Process of Securities Valuation                           | 316 |
| The Investor's Expected Return  | 317 |
| Stock Valuation: The Present Value of Dividends                       | 318 |
| Risk-adjusted Required Return and Stock Valuation                     | 324 |
| Stock Valuation: Discounted Earnings or Cash Flow                     | 326 |
| Stock Valuation: Analysis of Financial Statements and Price Multiples | 328 |
| Valuation and the Efficient Market Hypothesis                         | 336 |
| Appendix 9: Testing the Efficient Market Hypothesis: The Event Study  | 350 |

**CHAPTER 10 Investment Returns and Aggregate Measures of Stock Markets 355**

|  |     |
|--|-----|
| Measures of Stock Performance: Averages and Indexes  | 356 |
| The Dow Jones Industrial Average                     | 359 |
| Other Indexes of Aggregate Stock Prices              | 363 |
| Rates of Return on Investments in Common Stock       | 370 |
| Studies of Investment Returns                        | 375 |
| Reducing the Impact of Price Fluctuations: Averaging | 379 |

**CHAPTER 11 The Macroeconomic Environment for Investment Decisions 391**

- The Economic Environment 392
- Measures of Economic Activity 393
- The Consumer Price Index 396
- The Federal Reserve 398
- Fiscal Policy 405
- The 2008–2012 Economic Environment 406

**CHAPTER 12 Behavioral Finance and Technical Analysis 411**

- Behavioral Finance 412
- Technical Analysis 417
- Market Indicators 419
- Specific Stock Indicators 421
- Technical Analysis in an Efficient Market Context 428
- The Dogs of the Dow 431

**PART 4 Investing in Fixed-Income Securities 435****CHAPTER 13 The Bond Market 437**

- General Features of Bonds 438
- Risk 444
- The Mechanics of Purchasing Bonds 448
- Variety of Corporate Bonds 450
- High-Yield Securities 455
- Accrued Interest, Zero Coupon Bonds, Original-issue Discount Bonds, and Income Taxation 459
- Retiring Debt 460
- Appendix 13: The Term Structure of Interest Rates 470

**CHAPTER 14 The Valuation of Fixed-Income Securities 472**

- Perpetual Securities 473
- Bonds with Maturity Dates 475
- Fluctuations in Bond Prices 479
- The Valuation of Preferred Stock 482
- Yields 483
- Risk and Fluctuations in Yields 488
- Realized Returns and the Reinvestment Assumption 490
- Duration 493
- Bond Price Convexity and Duration 499
- Management of Bond Portfolios 501

Appendix 14A: Bond Discounts/Premiums and Duration Compared 519

Appendix 14B: Using the Structure of Yields to Price a Bond 523

## **CHAPTER 15** Government Securities 525

The Variety of Federal Government Debt 526

Strips 533

Federal Agencies' Debt 535

State and Local Government Debt 543

Authority Bonds and Build America Bonds 551

Foreign Government Debt Securities 552

Government Securities and Investment Companies 552

Appendix 15: Using Yield Curves 564

Yield Curves and Active Bond Strategies 564

Riding the Yield Curve to Enhance Short-term Yields 567

## **CHAPTER 16** Convertible Bonds and Convertible Preferred Stock 571

Features of Convertible Bonds 572

The Valuation of Convertible Bonds 573

Premiums Paid for Convertible Debt 579

Convertible Preferred Stock 583

Selecting Convertibles 586

The History of Selected Convertible Bonds 588

Calling Convertibles 590

Contingent Convertible Bonds 590

Put Bonds 591

Bonds with Put and Call Features Compared 593

Investment Companies and Convertible Securities 594

## **PART 5** Derivatives

607

## **CHAPTER 17** An Introduction to Options 609

Call Options 610

Leverage 614

Writing Calls 619

Puts 623

LEAPS 632

Price Performance of Puts and Calls 632

The Chicago Board Options Exchange 634

Stock Index Options 636  
 Currency and Interest Rate Options 637  
 Warrants 638

|                   |   |            |
|-------------------|---|------------|
| <b>CHAPTER 18</b> | <b>Option Valuation and Strategies</b>  | <b>653</b> |
|                   | Black–Scholes Option Valuation  | 654        |
|                   | Expensing Employee Stock Options and<br>Option Valuation  | 662        |
|                   | Put–Call Parity   | 663        |
|                   | The Hedge Ratio   | 666        |
|                   | Additional Option Strategies  | 670        |
|                   | Buying the Call and a Treasury Bill versus Buying the<br>Stock—An Alternative to the Protective Put | 682        |
|                   | Appendix 18: Binomial Option Pricing  | 697        |

|                   |  |            |
|-------------------|--|------------|
| <b>CHAPTER 19</b> | <b>Commodity and Financial Futures</b>       | <b>701</b> |
|                   | Investing in Commodity Futures               | 702        |
|                   | Leverage                                     | 708        |
|                   | Hedging                                      | 711        |
|                   | The Selection of Commodity Futures Contracts | 713        |
|                   | The Pricing of Futures                       | 715        |
|                   | Financial Futures and Currency Futures       | 717        |
|                   | Futures for Debt Instruments                 | 725        |
|                   | Currency Futures                             | 726        |
|                   | Swaps  | 729        |

## **PART 6** An Overview

743

|                   |  |            |
|-------------------|--|------------|
| <b>CHAPTER 20</b> | <b>Financial Planning and Investing in an Efficient<br/>Market Context</b> | <b>745</b> |
|                   | Portfolio Planning, Construction, and Risk<br>Management                   | 745        |
|                   | Choice and Its Impact on Security Selection and Risk                       | 747        |
|                   | The Importance of Market Efficiency  | 748        |
|                   | Appendix A   | 757        |
|                   | Appendix B   | 763        |
|                   | Glossary   | 773        |
|                   | Index  | 781        |



# Preface

Many individuals find investments to be fascinating because they can actively participate in the decision-making process and see the results of their choices. Of course, not all investments will be profitable because you will not always make correct investment decisions. In addition, there is the thrill from a major success, along with the agony associated with the stock that dramatically rose after you sold or did not buy. Both the big fish you catch and the big fish that got away can make wonderful stories.

Investing, of course, is not a game, but a serious subject that can have a major impact on your future well-being. Virtually everyone makes investments. Even if the individual does not select specific assets such as the stock of AT&T or federal government bonds, investments are still made through participation in pension plans and employee savings programs or through the purchase of whole-life insurance or a home. Each of these investments has common characteristics, such as the potential return and the risk you must bear. The future is uncertain, and you must determine how much risk you are willing to bear, since a higher return is associated with accepting more risk.

You may find investing daunting because of specialized jargon or having to work with sophisticated professionals. A primary aim of this textbook is to make investing less difficult by explaining the terms, by elucidating the possible alternatives, and by discussing many of the techniques professionals use to value assets and to construct portfolios. Although this textbook cannot show you a shortcut to financial wealth, it can reduce your chances of making uninformed investment decisions.

This textbook uses a substantial number of examples and illustrations employing data that are generally available to the investing public. This information is believed to be accurate; however, you should not assume that mention of a specific firm and its securities is a recommendation to buy or sell those securities. The examples have been chosen to illustrate specific points, not to pass judgment on individual investments.

Many textbooks on investments are written for students with considerable background in accounting, finance, and economics. Not every student who takes a course in investments has such a background. These students cannot cope with (or be expected to cope with) the material in advanced textbooks on investments. *Investments: An Introduction* is directed at these students and covers investments from descriptive material to the theory of portfolio construction and efficient markets. Some of the concepts (for example, portfolio theory) and some of the investment alternatives (for example, derivatives) are difficult to understand. There is no shortcut to learning this material, but this text does assume that you have a desire to tackle a fascinating subject and to devote real energy to the learning process.

## THE STRUCTURE OF *INVESTMENTS: AN INTRODUCTION*

---

The previous edition of *Investments: An Introduction* was a major effort to make the book more concise. More concise implies that specific topics were cut or shortened. This edition clarifies the previous edition and in a few cases restores material that had been deleted. The basic structure of the text, however, remains the same.

Part 1, Chapters 1 through 5, is devoted to the investment process and fundamental financial concepts such as the time value of money and the measurement of risk. Part 2, Chapters 6 and 7, covers investment companies. References to investment companies such as exchange-traded funds occur throughout the text. Part 3, Chapters 8 through 12, is devoted to investing in stock while Part 4, Chapters 13 through 16, is devoted to fixed-income securities. Chapters 17 through 19 (Part 5) cover those fascinating speculative and financial assets referred to as derivatives. The text ends with one chapter (Part 6) that serves as a summing up of the process of financial planning, the management of risk, and the role of the individual's belief in the efficiency of financial markets.

## CHANGES FROM THE PREVIOUS EDITION

---

Since the previous edition was a major restructuring, this edition primarily refines the changes and updates much of the material. Sections of several chapters such as the valuation of stock using discounted cash flow and the final chapter on financial planning were rewritten. Selected new problems have been added and the wording of some existing problems has been improved. Since my students were honest and admitted that they did not read the “Point of Interest” features, most of them have either been omitted or integrated into the text. The same applies to the footnotes. Except for the footnotes that provide citations, virtually all footnotes have been incorporated into the text material.

Reviewers virtually always want more problems and self-help projects. This edition has two new features designed to meet both requests. The first feature is “Relationships,” which asks the student to determine the relationship between two things. For example, an increase in interest rates \_\_\_\_\_ the price of a bond and \_\_\_\_\_ the face value (principal) of the bond. The answers are “decreases” and “does not affect” (i.e., no change). Realizing that no relationship may exist is important, so there are examples in which there is no effect.

The second new feature is “Fundamental Worked Problems.” These are illustrations of basic problems covered in the chapter. For example, if a \$1,000 bond has a 7 percent coupon and matures after ten years, what is the current price of the bond if the interest rate on comparable bonds is 5 percent? Answers are provided for both Relationships and Fundamental Worked Problems. In addition, the steps necessary to solve the problems are provided. For the above bond problem, the solution is shown using interest tables and financial calculators.

## PEDAGOGICAL FEATURES

---

In addition to the “relationships” and “fundamental worked problems,” this textbook has a variety of features designed to assist the individual in the learning process. Chapters begin with a set of learning objectives that emphasize topics to be covered as the chapter

develops. Terms to remember are defined in the marginal glossary entry that appears as each term is introduced. Chapters also include questions and, where appropriate, problems. The questions and problems are straightforward and designed to review and apply the material in the chapter. Answers to selected problems are provided in Appendix B.

Most of the chapters have short cases. These are not cases in the general usage of the term, in which a situation is presented and the student is required to determine the appropriate questions and formulate an answer or strategy. Instead, the cases are essentially problems that are cast in real-world situations. Their primary purpose is to illustrate how the material may apply in the context of real investment decisions.

Many instructors have students construct a paper portfolio. A project, referred to as “Investment Assignment,” is included. It is essentially a buy-and-hold strategy, and as the semester proceeds more parts are added to the assignment.

## POSSIBLE ORGANIZATIONS OF INVESTMENT COURSES

---

This textbook has 20 chapters, but few instructors are able to complete the entire book in a semester course. Many of the chapters are self-contained units, so individual chapters may be omitted (or transposed) without loss of continuity. There are, however, exceptions. For example, the pricing of bonds uses the material on the time value of money. The valuation of common stock employs statistical concepts covered in the chapter on risk.

Individual course coverage also depends on the background of the students or how much they have retained from prior courses. Time value of money (Chapter 3), measurement of risk (Chapter 5), and the analysis of financial statements in Chapter 8 may have been covered in other finance or accounting courses. These chapters may be quickly reviewed or omitted. Other chapters are not easily omitted. Securities markets (Chapter 2), the analysis, valuation, and selection of common stock (Part 3), and fixed-income securities (Chapters 13 and 14) are the backbone of investments and need to be covered. Since investment companies (Part 2) have become such a large part of savings programs such as retirement plans, they should also be included in an introduction to investments.

The remaining chapters offer individual instructors considerable choice. My preference is to include an introduction to options (Chapter 17), which many students find both difficult and exciting. I also have a personal bias toward the material on financial planning and taxation, since I believe they play an important role in portfolio construction and asset selection.

## SUPPLEMENTARY MATERIALS

---

A number of supplements are included in the Investments package and are available to instructors and students using the textbook.

### **Instructor’s Manual and Test Bank (found on the IRCD-ROM and on the Instructor’s companion website)**

The Instructor’s Manual includes points to consider when answering the questions as well as complete solutions to the problems. In addition, suggestions are given for using the Investment Assignment feature in the classroom; teaching notes are provided for the

cases; and instructions are provided for the Investment Analysis Calculator, which can be found on the book's website. The Test Bank section of the manual includes approximately 1,000 true/false and multiple-choice questions. It is available on the text website in Word format for simple word-processing purposes. The Test Bank can also be found in ExamView. This edition's Test Bank answers include tagging with AACSB Standards.

## ExamView

This computerized testing software contains all of the questions in the printed Test Bank. ExamView is easy-to-use test creation software that is compatible with both Microsoft Windows and Macintosh. Instructors can add or edit questions, instructions, and answers and select questions by previewing them on the screen, selecting them randomly, or selecting them by number.

## PowerPoint™ Slides

These are available on the website and on the Instructor's Resource CD-ROM for use by instructors for enhancing their lectures. These slides bring out the most important points in the chapter. They also include important charts and graphs from the text, which will aid students in the comprehension of significant concepts. This edition's slide package has been revised by Anne Piotrowski.

## Instructor's Resource CD-ROM

Get quick access to all instructor ancillaries from your desktop. This easy-to-use CD-ROM lets you review, edit, and copy exactly what you need in the format you want. The Instructor's Resource CD-ROM contains electronic versions of the Instructor's Manual, the Test Bank, the resource PowerPoint presentation, and the ExamView files.

## Website

The support website for *Investments: An Introduction*, Eleventh Edition ([www.cengage.com](http://www.cengage.com)) includes the following features:

- About the Product
- Instructor's Manual
- Test Bank
- Powerpoint Slides

## ACKNOWLEDGMENTS

---

A textbook requires the input and assistance of many individuals. Over the years, my publisher has provided a variety of reviews from individuals who sincerely offered suggestions. Unfortunately, suggestions from different reviewers are sometimes contradictory. Since I cannot please all the reviewers at the same time, I trust that individuals whose advice was not or could not be taken will not be offended.

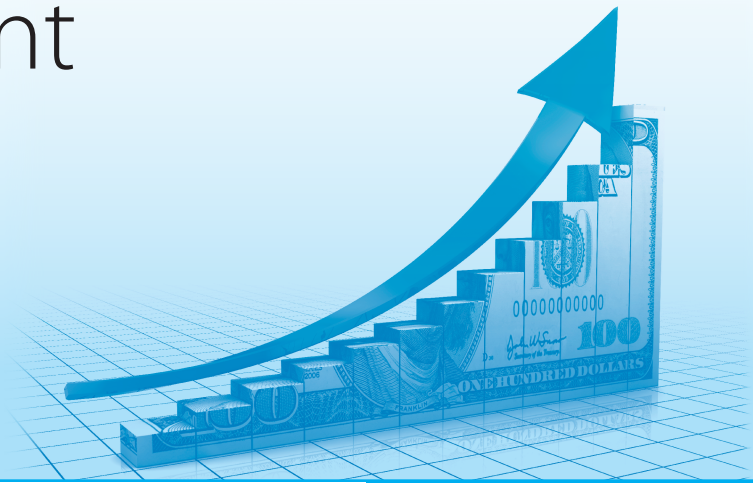
Anne Piotrowski created the PowerPoint slides. Her willingness to work through various styles and possible presentations greatly enhanced the final product. Suzanne Davidson and Margaret Trejo served as copy editor and proofreader. Anne, Suzanne, and Margaret deserve a special “thank you” for their efforts.

At this point, it is traditional for the author to thank members of the editorial and production staff for their help in bringing the book to fruition. I wish to thank Mike Reynolds, my editor; Adele Scholtz, the developmental editor, and Joseph Malcolm, Senior Project Manager.

These individuals deserve warm thanks for their efforts toward facilitating the completion of this text.



# The Investment Process and Financial Concepts



## PART 1

Investing is a process by which individuals construct a portfolio of assets designed to meet specified financial goals. These goals range from financing retirement or paying for a child's education to starting a business and having funds to meet financial emergencies. The specification of financial goals is important, for they help determine the appropriateness of the assets acquired for the portfolio.

Part 1 of this text covers the mechanics of buying and selling financial assets, the legal and tax environment in which investment decisions are made, and crucial financial concepts that apply to asset allocation and portfolio management. Chapter 1 introduces important definitions and concepts that appear throughout the text. Chapter 2 is devoted to the mechanics of investing. These include the process by which securities are issued and subsequently bought and sold. Next follows one of the most important concepts in finance, the time value of money (Chapter 3). All investments are made in the present but returns occur in the future. Linking the future and the present is the essence of the time value of money.

Chapter 4 combines several disparate topics. It begins with financial planning and the importance of asset allocation. However, you execute your financial plan in a world of taxation and efficient financial

markets. Tax rates differ on long-term and short-term capital gains; some investments defer tax obligations and others avoid taxation. These differences in taxation affect the amount of your return that you *get to keep*. In addition, some facet of the tax law changes each year, complicating investment decision making and affecting investment strategy.

Since the future is not known, all investments involve risk. Chapter 5 is devoted to sources of risk, how risk may be measured, and how it may be managed. The allocation of your assets and the construction of a diversified portfolio may be the most important financial concept you must face. Failure to diversify subjects the investor to additional risk without generating additional return. Your objective should be to construct a portfolio that maximizes your return for a given level of risk. Of course, this requires that you determine how much risk you are willing to bear. Individuals with different financial resources and disparate financial goals may be willing to accept different levels of risk, but in each case the goal is to maximize the return for the amount of risk the investor bears.

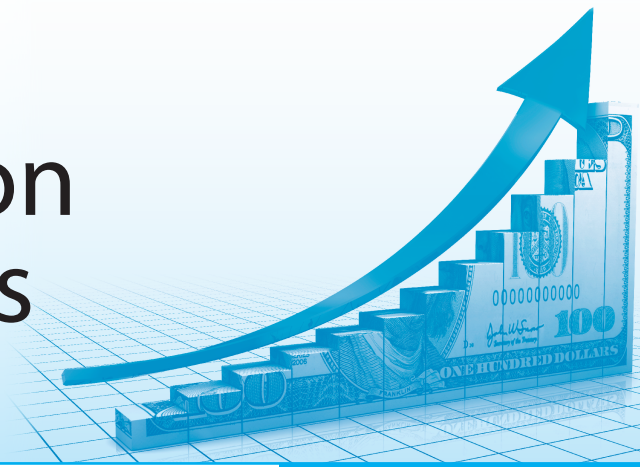
One final caveat before you start Part 1. Chapter 4 introduces the concept that investments are made in exceedingly competitive markets. Rapid dissemination of information and stiff competition among investors

produce efficient markets. Efficient markets imply that you cannot expect to earn abnormally high returns over an extended period of time. Although you may outperform the market, such performance on a consistent basis is rare. Perhaps you will do exceptionally well, but then there is also the chance of doing

exceptionally poorly. The emphasis in this text will be not how to outperform but how to use financial assets to meet financial goals. That is, you should emphasize constructing a diversified portfolio that meets your financial objectives and earns a return that compensates you for the risk you take.



# An Introduction to Investments



## CHAPTER 1

### LEARNING OBJECTIVES

After completing this chapter you should be able to:

1. Explain why individuals should specify investment goals.
2. Distinguish between primary and secondary markets, risk and speculation, liquidity and marketability.
3. Identify the sources of risk and the sources of return.
4. Differentiate between efficient and inefficient markets.

In 1986, Microsoft first sold its stock to the general public. Within ten years, the stock's value had increased by over 5,000 percent. A \$10,000 investment was worth over \$500,000. In the same year, Worlds of Wonder also sold its stock to the public. Ten years later, the company was defunct. A \$10,000 investment was worth nothing. These are two examples of emerging firms that could do well or could fail. Would investing in large, well-established companies generate more consistent returns? The answer depends, of course, on which stocks were purchased and when. In 1972, Xerox stock reached a high of \$171.87 a share. The price subsequently declined and did not exceed the old high for the next 26 years. Now it languishes way below that historic high.

Today the investment environment is even more dynamic. World events can rapidly alter the values of specific assets. There are so many assets from which to choose. The amount of information available to investors is staggering and grows continually. The accessibility of personal computers and the dissemination of information on the Internet increase an individual's ability to track investments and to perform investment analysis. Furthermore, the recessions of 1990–1991 and 2008–2009, the large decline in stock prices during 2007–2009, the historic decline in interest rates during 2001–2003 and 2008–2009, and the frequent changes in the tax laws have increased

investor awareness of the importance of financial planning, asset selection and allocation, and portfolio construction.

This text will describe and explain many investment alternatives and strategies. But a textbook cannot make investment decisions for you; it can only provide information about your choices. This text explains techniques for analyzing and valuing financial assets, their sources of risk, and how these risks may be managed, if not eliminated. It is your obligation to learn the material, determine which parts are most relevant, and then apply them to your financial situation.

## PORTFOLIO CONSTRUCTION AND PLANNING

Investment decisions are about making choices: Will income be spent or saved? If you choose to save, you face a second decision: What should be done with the savings? Each saver must decide where to invest this command over resources (goods and services) that is currently not being used. This is an important decision because these assets are the means by which investors transfer today's purchasing power to the future. In effect, you must decide on a **portfolio** of assets to own. (Terms will be in boldface and defined in the margin.) A portfolio is a combination of assets designed to serve as a store of value. Poor management of these assets may destroy the portfolio's value, and you will then not achieve your financial goals.

### portfolio

An accumulation of assets owned by the investor and designed to transfer purchasing power to the future.

There are many assets (e.g., stocks, bonds, derivatives) that you may include in the portfolio. This textbook will discuss many of them, but the stress will be on long-term financial assets. While you may hold a portion of the portfolio in short-term assets, such as savings accounts, these assets do not present the problem of valuation and choice that accompanies the decision to purchase a stock or a bond. Understanding how long-term securities are bought and sold, how they are valued, and how they may be used in portfolio construction is the primary focus of this text.

Several factors affect the construction of a portfolio. These include the goals of the investor, the risks involved, the taxes that will be imposed on any gain, and a knowledge of investment alternatives. This text describes these alternative investments, their use in a portfolio, the risks associated with owning them, and their valuation.

The investor's goals should largely determine the construction and management of the portfolio. Investing must have a purpose, for without a goal a portfolio is like a boat without a rudder. Some objective must guide the composition of the portfolio.

There are many reasons for saving and accumulating assets. Individuals may postpone current consumption to accumulate funds to make the down payment on a house, finance a child's education, start a business, meet financial emergencies, finance retirement, leave a sizable estate, or even accumulate for the sake of accumulating. For any or all of these reasons, people construct portfolios rather than spend all their current income.

The motives for saving should dictate, or at least affect, the composition of the portfolio. Not all assets are appropriate to meet specific financial goals. For example, savings that are held to meet emergencies, such as an extended illness or unemployment, should not be invested in assets whose return and safety of principal are uncertain. Instead, emphasis should be placed on safety of principal and assets that may be

readily converted into cash, such as savings accounts or shares in money market mutual funds. The emphasis should not be on growth and high returns. However, the funds should not sit idle but should be invested in safe assets that offer a modest return.

Other goals, such as financing retirement or a child's education, have a longer and more certain time horizon. The investor knows approximately when the funds will be needed and so can construct a portfolio with a long-term horizon. Bonds that mature when the funds will be needed or common stocks that offer the potential for growth would be more appropriate than savings accounts or certificates of deposit with a bank. The longer time period suggests the individual can acquire long-term assets that may offer a higher yield.

Most investors have several financial goals that must be met simultaneously. Thus, it is not surprising to learn that their portfolios contain a variety of assets. Of course, priorities and needs differ. The individual who is employed in a cyclical industry and may be laid off during a recession may place more stress on funds to cover unemployment than would the tenured professor. An individual with a poor medical history may seek to have more short-term investments than the person with good health. Medical coverage or disability insurance will also affect the individual's need for funds to cover a short-term emergency. If the investor has this coverage, more of the portfolio may be directed toward other financial goals.

In addition to the individual's goals, willingness to bear risk plays an important role in constructing the portfolio. Some individuals are more able to bear (that is, assume) risk. For example, if the saver wants to build a retirement fund, he or she can choose from a variety of possible investments. However, not all investments are equal with regard to risk and potential return. Those investors who are more willing to accept risk may construct portfolios with assets involving greater risk that may earn higher returns.

Taxes also affect the composition of an individual's portfolio. Income such as interest and realized capital gains are taxed. When a person dies, the federal government taxes the value of the estate, and many states levy a tax on an individual's inheritance. Such taxes and the desire to reduce them affect the composition of each investor's portfolio.

Portfolio decisions are obviously important. They set a general framework for the asset allocation of the portfolio among various types of investments. Individuals, however, rarely construct a portfolio all at once but acquire assets one at a time. The decision revolves around which specific asset to purchase: Which mutual fund? Which bond? or Which stock? Security analysis considers the merits of the individual asset. Portfolio management determines the impact that the specific asset has on the portfolio.

A large portion of this text is devoted to descriptions and analysis of individual securities, because it is impossible to know an asset's effect on the portfolio without first knowing its characteristics. Stocks and bonds differ with regard to risk, potential return, and valuation. Even within a type of asset such as bonds there can be considerable variation. For example, a corporate bond is different from a municipal bond, and a convertible bond differs from a straight bond that lacks the conversion feature. You need to know and to understand these differences as well as the relative merits and risks associated with each of the assets. After understanding how individual assets are valued, you may then construct a portfolio that will aid in the realization of your financial goals.

## PRELIMINARY DEFINITIONS

I went to the doctor and he said, “You have a contusion.” I asked, “What is a contusion?” and he said, “A bruise.” I thought: “A bruise by another name is still a bruise” and immediately wanted to ask (but did not), “Why not call it a bruise?”

Every discipline or profession has its own terminology. The field of investments is no different. Some of the jargon is colorful (e.g., *bull* and *bear*); some is descriptive (e.g., *primary* and *secondary markets*); and some, like *contusion*, seems to confuse or muddy the waters (e.g., *purchasing power risk*, which is the risk associated with loss from inflation). In order to proceed, it is desirable to know some initial definitions concerning investments, and the best time to learn them and to start using them is now.

The term **investment** can have more than one meaning. In economics, it refers to the purchase of a physical asset, such as a firm’s acquisition of a plant, equipment, or inventory or an individual’s purchase of a new home. To the layperson the word denotes buying stocks or bonds (or maybe even a house), but it probably does not mean purchasing a plant, equipment, or inventory.

In either case, the firm or the individual wants a productive asset. The difference in definition rests upon the aggregate change in productive assets that results from the investment. When firms invest in plant and equipment, there is a net increase in productive assets. This increase generally does not occur when individuals purchase stocks and bonds. Instead, for every investment by the buyer there is an equal *disinvestment* by the seller. These buyers and sellers are trading one asset for another: The seller trades the security for cash, and the buyer trades cash for the security. These transactions occur in secondhand markets, and for that reason securities markets are often referred to as **secondary markets**. Only when the securities are initially issued and sold in the **primary market** is there an investment in an economic sense. Then and only then does the firm receive the money that it, in turn, may use to purchase a plant, equipment, or inventory.

In this text, the word *investment* is used in the layperson’s sense. Purchase of an asset for the purpose of storing value (and, it is hoped, increasing that value over time) will be called an investment, even if in the aggregate there is only a transfer of ownership from a seller to a buyer. The purchases of stocks, bonds, options, commodity contracts, and even antiques, stamps, and real estate are all considered to be investments if the individual’s intent is to transfer purchasing power to the future. If these assets are acting as stores of value, they are investments for that individual.

Assets have **value** because of the future benefits they offer. The process of determining what an asset is worth today is called **valuation**. An investor appraises the asset and assigns a current value to it based on the belief that the asset will generate cash flows (e.g., interest) or will appreciate in price. After computing this value, the individual compares it with the current market price to determine if the asset is currently overpriced or underpriced.

In some cases this valuation is relatively easy. For example, the bonds of the federal government pay a fixed amount of interest each year and mature at a specified date. Thus, the future cash flows are known. However, the future cash flows of other assets are not so readily identified. For example, although you may anticipate future dividends, neither their payment nor their amount can be known with certainty. Forecasting future benefits is difficult but crucial to the *process of valuation*. Without forecasts

### investment (in economics)

The purchase of plant, equipment, or inventory.

### investment (in lay terms)

Acquisition of an asset such as a stock or a bond.

### secondary market

A market for buying and selling previously issued securities.

### primary market

The initial sale of securities.

### value

What something is worth; the present value of future benefits.

### valuation

The process of determining the current worth of an asset.

and an evaluation of the asset, you cannot know if the asset should be purchased or sold.

Because the valuation of some assets is complicated and the future is uncertain, people may have different estimates of the future cash flows. It is therefore easy to understand why two individuals may have completely divergent views on the worth of a particular asset. One person may believe that an asset is overvalued and hence seek to sell it, while another may seek to buy it in the belief that it is undervalued. Valuation may be subjective, which leads to one person's buying while the other is selling. That does not mean that one person is necessarily irrational or incompetent. People's perceptions or estimates of an asset's potential may change, affecting their valuation of the specific asset.

#### return

The sum of income plus capital gains earned on an investment in an asset.

#### income

The flow of money or its equivalent produced by an asset; dividends and interest.

#### capital gain

An increase in the value of a capital asset, such as a stock.

#### rate of return

The annual percentage return realized on an investment.

#### risk

The possibility of loss; the uncertainty of future returns.

#### speculation

An investment that offers a potentially large return but is also very risky; a reasonable probability that the investment will produce a loss.

An investment is made because the investor anticipates a **return**. The total return on an investment is what the investor earns. This may be in the form of **income**, such as dividends and interest, or in the form of **capital gains**, or appreciation if the asset's price rises. Not all assets offer both income and capital appreciation. Some stocks pay no current dividends but may appreciate in value. Other assets, including savings accounts, do not appreciate in value. The return is solely the interest income.

Return is frequently expressed in percentages, such as the **rate of return**, which is the annualized return that is earned by the investment relative to its cost. Before purchasing an asset, the investor anticipates that the return will be greater than that of other assets of similar risk. Without this anticipation, the purchase would not be made. The *realized* return may, of course, be quite different from the *anticipated* rate of return. That is the element of risk.

**Risk** is the uncertainty that the anticipated return will be achieved. As Chapter 5 discusses, there are many sources of risk. The investor must be willing to bear these risks to achieve the expected return. Even relatively safe investments involve some risk; there is no completely safe investment. For example, savings accounts that are insured still involve some element of risk of loss. If the rate of inflation exceeds the rate of interest that is earned on these insured accounts, the investor suffers a loss of purchasing power.

While the term *risk* has a negative connotation, uncertainty works both ways. For example, events may occur that cause the value of an asset to rise more than anticipated. Certainly the stockholders of Rubbermaid reaped larger-than-anticipated returns when it was announced the firm would merge with Newell. The price paid for the stock was considerably higher than the price the security commanded before the announcement of the merger.

A term that is frequently used in conjunction with risk is **speculation**. Many years ago virtually all investments were called "speculations." Today the word implies a high degree of risk. However, risk is not synonymous with speculation. Speculation has the connotation of gambling, in which the odds are against the player. Many securities are risky, but over a period of years the investor should earn a positive return. The odds are not really against the investor, and such investments are not speculations.

The term *speculation* is rarely used in this text, and when it is employed, the implication is that the individual runs a good chance of losing the funds invested in the speculative asset. Although a particular speculation may pay off handsomely, the investor should not expect that many such gambles will reap large returns. After the investor adjusts for

the larger amount of risk that must be borne to own such speculative investments, the anticipated return may not justify the risk involved.

Besides involving risk and offering an expected return, stores of value have marketability or liquidity. These terms are sometimes used interchangeably, but they may also have different definitions. **Marketability** implies that the asset can be bought and sold. Many financial assets, such as the stock of AT&T, are readily marketable.

#### marketability

The ease with which an asset may be bought and sold.

#### liquidity

Moneyness; the ease with which assets can be converted into cash.

The ease with which an asset may be converted into money is its **liquidity**. Unfortunately, the word *liquidity* is ambiguous. In academic writings on investments liquidity usually means ease of converting an asset into cash *without loss*. A savings account with a commercial bank is liquid, but shares of IBM would not be liquid, since you could sustain a loss. In professional writings, liquidity usually means ability to sell an asset without affecting its price. In that context, liquidity refers to the *depth* of the market for the asset. You may be able to buy or sell 1,000 shares of IBM stock without affecting its price, in which case the stock is liquid. The context in which the word is used often indicates the specific meaning.

All assets that serve as stores of value possess some combination of marketability, liquidity, and the potential to generate future cash flow or appreciate in price. These features, along with the risk associated with each asset, should be considered when including the asset in an individual's portfolio. Since assets differ with regard to their features, you need to know the characteristics of each asset. Much of the balance of this text describes each asset's features as well as its sources of risk and return and how it may be used in a well-diversified portfolio.

## DIVERSIFICATION AND ASSET ALLOCATION

Chapter 5 indicates that the impact of asset-specific risk may be diversified away. As that chapter explains in detail, to achieve diversification the returns on your investments must not be highly correlated. Factors that negatively affect one security must have a positive impact on others. For example, higher oil prices may be good for ExxonMobil but bad for Delta Air Lines. By combining a variety of disparate assets, you achieve diversification and reduce risk.

Asset allocation refers to acquiring a wide spectrum of assets. Individuals use their finite resources to acquire various types of assets that include stocks, bonds, precious metals, collectibles, and real estate. Even within a class such as stocks, the portfolio is allocated to different sectors or geographic regions. For example, you may own domestic stocks and stocks of companies in emerging nations. It would appear that "asset allocation" and "diversification" are synonymous, and to some extent they are. By allocating your assets over different types of assets you contribute to the diversification of the portfolio. But asset allocation and diversification are often used in different contexts. For example, you may tilt your allocation toward energy stocks and away from airlines if you anticipate high gas prices. Your allocation between stocks, bonds, and other assets remains the same, but the allocation between two sectors is altered.

The words *diversification* and *asset allocation* are often used in this text. Diversification is important because it reduces your risk exposure. Asset allocation is important because it has a major impact on the return your portfolio earns. Whenever you make

an investment decision, you need to consider its impact on the diversification of your portfolio and the allocation of your assets. Both are crucial components of portfolio management.

## EFFICIENT AND COMPETITIVE MARKETS

---

Have you ever been fishing? (If not, substitute playing golf or some similar activity.) Did you catch any fish? Which fish did you talk about? The answer to that question is probably the “big one” or the “big one that got away.” What is more important, of course, is the size of the average fish (or average golf score). If you go fishing several times, you will not catch a “big one” every time or even frequently. The average size of the fish you catch becomes the norm. And other individuals who fish in the same waters will have comparable results. Unless they have special skills or knowledge, most individuals’ catch should be similar to and approach the average size of fish that is caught.

In many ways, the fishing analogy applies to investing in stock. Individuals tend to talk about the big return (“I bought X and it doubled within a week”) or the lost opportunity (“I bought Plain and Fancy Doughnuts of America. It rose 80 percent within an hour and I did not sell”). But what matters is the return you earn after making many investments over an extended period of time. Unless you have special skills or knowledge, that return should tend to be comparable to the return earned by other investors in comparable investments.

Why is this so? The answer lies in the reality that investors participate in efficient and competitive financial markets. Economics teaches that markets with many participants (i.e., buyers and sellers) who may enter and exit freely will be competitive. That certainly describes financial markets. Investors may participate freely in the purchase and sale of stocks and bonds. Virtually anyone, from a child to a grandmother, may own a financial asset, even if it is just a savings account. Many firms, including banks, insurance companies, and mutual funds, compete for the funds of investors. The financial markets are among the most (and perhaps *the* most) competitive of all markets.

Financial markets tend to be efficient. As is explained throughout this text, securities prices depend on future cash flows, such as interest or dividend payments. If new information suggests that these flows will be altered, the market rapidly adjusts the asset’s price. Thus, an efficient financial market implies that a security’s current price embodies all the known information concerning the potential return and risk associated with the particular asset. If an asset, such as a stock, were undervalued and offered an excessive return, investors would seek to buy it, which would drive the price up and reduce the return that subsequent investors would earn. Conversely, if the asset were overvalued and offered an inferior return, investors would seek to sell it, which would drive down its price and increase the return to subsequent investors. The fact that there are sufficient informed investors means that a security’s price will reflect the investment community’s consensus regarding the asset’s true value and also that the expected return will be consistent with the amount of risk the investor must bear to earn the return.

The concept of an efficient financial market has an important and sobering corollary. Efficient markets imply that investors (or at least the vast majority of investors) cannot expect on average to beat the market *consistently*. Of course, that does not mean