fundamentals of

INVESTMENTS

Valuation and Management

seventh edition

BRADFORD D. JORDAN | THOMAS W. MILLER JR. | STEVEN D. DOLVIN

Fundamentals of Investments

VALUATION AND MANAGEMENT

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First Edition

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Fundamentals of Investments

VALUATION AND MANAGEMENT

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To my late father, S. Kelly Jordan Sr.,
a great stock picker.

BDJ

To my parents, Tom and Kathy Miller,
my wife Carolyn, and #21 —Thomas W. Miller III.

TWM Jr.

To my wife, Kourtney, and the "three L's"—my greatest investment in this life.

SDD

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Preface

So why *did* we write this book?

As we toiled away, we asked ourselves this question many times, and the answer was always the same: *Our students made us.*

Traditionally, investments textbooks tend to fall into one of two camps. The first type has a greater focus on portfolio management and covers a significant amount of portfolio theory. The second type is more concerned with security analysis and generally contains fairly detailed coverage of fundamental analysis as a tool for equity valuation. Today, most texts try to cover all the bases by including some chapters drawn from one camp and some from another.

The result of trying to cover everything is either a very long book or one that forces the instructor to bounce back and forth between chapters. This frequently leads to a noticeable lack of consistency in treatment. Different chapters have completely different approaches: Some are computational, some are theoretical, and some are descriptive. Some do macroeconomic forecasting, some do mean-variance portfolio theory and beta estimation, and some do financial statements analysis. Options and futures are often essentially tacked on the back to round out this disconnected assortment.

The goal of these books is different from the goal of our students. Our students told us they come into an investments course wanting to learn how to make investment decisions. As time went by, we found ourselves supplying more and more supplemental materials to the texts we were using and constantly varying chapter sequences while chasing this elusive goal. We finally came to realize that the financial world had changed tremendously, and investments textbooks had fallen far behind in content and relevance.

What we really wanted, and what our students really needed, was a book that would do several key things:

- Focus on the students as investment managers by giving them information they can act on instead of concentrating on theories and research without the proper context.
- Offer strong, consistent pedagogy, including a balanced, unified treatment of the main types of financial investments as mirrored in the investment world.
- Organize topics in a way that would make them easy to apply—whether to a portfolio simulation or to real life—and support these topics with hands-on activities.

We made these three goals the guiding principles in writing this book. The next several sections explain our approach to each and why we think they are so important.

Who Is This Book For?

This book is aimed at introductory investments classes with students who have relatively little familiarity with investments. A typical student may have taken a principles of finance class and had some exposure to stocks and bonds, but not much beyond the basics. The introductory investments class is often a required course for finance majors, but students from other areas often take it as an elective. One fact of which we are acutely aware is that this may be the only investments class many students will ever take.

We intentionally wrote this book in a relaxed, informal style that engages the student and treats him or her as an active participant rather than a passive information absorber. We think the world of investments is exciting and fascinating, and we hope to share our considerable enthusiasm for investing with the student. We appeal to intuition and basic principles

whenever possible because we have found that this approach effectively promotes understanding. We also make extensive use of examples throughout, drawing on material from the world around us and using familiar companies wherever appropriate.

By design, the text is not encyclopedic. As the table of contents indicates, we have a total of 20 chapters. Chapter length is about 30 to 40 pages, so the text is aimed at a single-term course; most of the book can be covered in a typical quarter or semester.

Aiming the book at a one-semester course necessarily means some picking and choosing, with regard to both topics and depth of coverage. Throughout, we strike a balance by introducing and covering the essentials while leaving some of the details to follow-up courses in security analysis, portfolio management, and options and futures.

How Does the Seventh Edition of This Book Expand upon the Goals Described Above?

Based on user feedback, we have made numerous improvements and refinements in the seventh edition of *Fundamentals of Investments: Valuation and Management*. We updated an appendix containing useful formulas. We updated every chapter to reflect current market practices and conditions, and we significantly expanded and improved the end-of-chapter material. Also, our chapters devoted to market efficiency and to behavioral finance continue to rate highly among readers.

To give some examples of our additional new content:

- Chapter 1 contains updates on historical returns for small-company stocks, large-company stocks, long-term government bonds, Treasury bills, as well as U.S. inflation rates.
- Chapter 2 contains new material on AAII asset allocation models.
- Chapter 3 incorporates the new ticker symbols for exchange-traded options.
- Chapter 4 contains new material on the key difference between two popular S&P 500 ETFs.
- Chapter 5 contains new material on the Flash Crash of 2010 as well as updated material on circuit breakers.
- Chapter 6 contains a new section on enterprise value ratios. It also contains a detailed new example showing how to value Procter & Gamble Company using the models presented in the chapter.
- Chapter 8 contains new material on why investors find it difficult to sell losers. Students have an opportunity to take an online quiz about overconfidence.
- Chapter 11 contains new material on the fallacy of time diversification.
- Chapter 13 contains new material on the Sortino ratio.
- Chapter 15 contains new material on weekly options. The chapter also has updated material on credit default swaps (CDSs).
- Chapter 17 contains an updated valuation for Starbucks Corporation.
- Chapter 18 combines material on corporate, U.S. federal government, and municipal bonds previously contained in two separate chapters.
- Chapter 19 is a new chapter on global economic activity and industry analysis. This new chapter contains material relevant to investors striving to identify how best to allocate their portfolio weights.

In addition, we have updated learning objectives for each chapter. We have reworked our chapter summaries to reflect the chapter's learning objectives.

For the seventh edition, we significantly expanded and improved the end-of-chapter material. We added new problems throughout, and we have significantly increased the CFA™ content. We updated the questions that test understanding of concepts with no calculations involved. Additionally, our *What's on the Web?* questions give students assignments

to perform based on information they retrieve from various Web sites. Finally, in selected chapters, we have included spreadsheet assignments, which ask students to create certain types of spreadsheets to solve problems.

We continue to emphasize the use of the Web in investments analysis, and we integrate Web-based content in several ways. First, wherever appropriate, we provide a commented link in the margin. These links send readers to selected, particularly relevant Web sites. Second, our *Work the Web* feature, expanded and completely updated for this edition, appears in most chapters. These boxed readings use screen shots to show students how to access, use, and interpret various types of key financial and market data. Finally, as previously noted, new end-of-chapter problems rely on data retrieved from the Web.

We continue to provide *Spreadsheet Analysis* exhibits, which we have enhanced for this edition. These exhibits illustrate directly how to use spreadsheets to do certain types of important problems, including such computationally intensive tasks as calculating Macaulay duration, finding Black-Scholes option prices, and determining optimal portfolios based on Sharpe ratios. We also continue to provide, where relevant, readings from *The Wall Street Journal,* which have been thoroughly updated for this edition.

CFA™ Mapping

Consider this description provided by the CFA Institute: "First awarded in 1963, the Chartered Financial Analyst (CFA) charter has become known as the gold standard of professional credentials within the global investment community. Investors recognize the CFA designation as the definitive standard for measuring competence and integrity in the fields of portfolio management and investment analysis." The importance and growing significance of the CFA charter are compelling reasons to integrate CFA curriculum material into our seventh edition.

Among the requirements to earn the CFA charter, candidates must pass three sequential levels of comprehensive exams. Each exam asks questions on a wide array of subject areas concerning the investment process. To help candidates study for the exams, the exams at each level are divided into so-called study sessions. Each of these study sessions has a core set of readings designed to help prepare the candidate for the exams. We carefully examined the content of each reading (updated for the 2012 exams), as well as the stated learning outcomes, to determine which areas we covered in the sixth edition. Importantly, we also considered which areas might be added to the seventh edition.

As a result of this thorough process, in our seventh edition we expanded coverage on seven readings and added completely new coverage of three readings. In total, our textbook contains material that touches over 75 percent of the readings from Level 1 of the CFA exam. Topics that we do not address from Level 1, such as basic statistics, accounting, and economics, are likely addressed in prerequisite courses taken before the investments course. In addition, we present some higher-level material: We touch on about 35 percent of the readings from the Level 2 and 3 exams.

Of course, we make no claim that our textbook is a substitute for the CFA exam readings. Nonetheless, we believe that our seventh edition provides a terrific framework and introduction for students looking to pursue a career in investments—particularly for those interested in eventually holding the CFA charter. To provide a sense of studying for the CFA, the seventh edition continues to include an end-of-chapter case review. *Schweser,* a leading purveyor of CFA exam preparation packages, graciously provided extensive material from which we chose these case reviews.

We provide a mapping between the textbook and the CFA curriculum as follows: Each chapter opens with a CFA Exam box citing references to specific readings from the CFA curriculum that are covered within the chapter. The topic is identified and we indicate which level and study session the reading comes from. We label these topics CFA1, CFA2, CFA3, and so on, for easy reference. End-of-chapter problems in the book and in *Connect* are also labeled with these tags. Over 95 percent of our end-of-chapter material is related to the CFA exam. We believe that this integration adds tremendous value to the seventh edition.

Assurance-of-Learning Ready

Many educational institutions today are focused on the notion of assurance of learning, an important element of some accreditation standards. This edition is designed specifically to support your assurance-of-learning initiatives with a simple, yet powerful, solution. Listed below are the learning objectives for each chapter.

Each test bank question for this book maps to a specific chapter learning objective listed in the text. You can use the test bank software to easily query for learning outcomes and objectives that directly relate to the learning objectives for your course. You can then use the reporting features of the software to aggregate student results in similar fashion, making the collection and presentation of assurance-of-learning data simple and easy.

Chapter Learning Objectives

Chapter 1: A Brief History of Risk and Return

To become a wise investor (maybe even one with too much money), you need to know:

1. How to calculate the return on an investment using different methods.
2. The historical returns on various important types of investments.
3. The historical risks on various important types of investments.
4. The relationship between risk and return.

Chapter 2: The Investment Process

Don't sell yourself short. Instead, learn about these key investment subjects:

1. The importance of an investment policy statement.
2. The various types of securities brokers and brokerage accounts.
3. How to calculate initial and maintenance margin.
4. The workings of short sales.

Chapter 3: Overview of Security Types

Price quotes for all types of investments are easy to find, but what do they mean? Learn the answers for:

1. Various types of interest-bearing assets.
2. Equity securities.
3. Futures contracts.
4. Option contracts.

Chapter 4: Mutual Funds and Other Investment Companies

You're probably going to be a mutual fund investor very soon, so you should definitely know the following:

1. The different types of mutual funds.
2. How mutual funds operate.
3. How to find information about how mutual funds have performed.
4. The workings of exchange-traded funds (ETFs) and hedge funds.

Chapter 5: The Stock Market

Take stock in yourself. Make sure you have a good understanding of:

1. The differences between private and public equity and between primary and secondary stock markets.
2. The workings of the New York Stock Exchange.
3. How NASDAQ operates.
4. How to calculate index returns.

Chapter 6: Common Stock Valuation

Separate yourself from the commoners by having a good understanding of these security valuation methods:

1. The basic dividend discount model.
2. The two-stage dividend growth model.
3. The residual income and free cash flow models.
4. Price ratio analysis.

Chapter 7: Stock Price Behavior and Market Efficiency

You should strive to have your investment knowledge fully reflect:

1. The foundations of market efficiency.
2. The implications of the forms of market efficiency.
3. Market efficiency and the performance of professional money managers.
4. What stock market anomalies, bubbles, and crashes mean for market efficiency.

Chapter 8: Behavioral Finance and the Psychology of Investing

Psych yourself up and get a good understanding of:

1. Prospect theory.
2. The implications of investor overconfidence and misperceptions of randomness.
3. Sentiment-based risk and limits to arbitrage.
4. The wide array of technical analysis methods used by investors.

Chapter 9: Interest Rates

It will be worth your time to increase your rate of interest in these topics:

1. Money market prices and rates.
2. Rates and yields on fixed-income securities.
3. Treasury STRIPS and the term structure of interest rates.
4. Nominal versus real interest rates.

Chapter 10: Bond Prices and Yields

Bonds can be an important part of portfolios. You will learn:

1. How to calculate bond prices and yields.
2. The importance of yield to maturity.
3. Interest rate risk and Malkiel's theorems.
4. How to measure the impact of interest rate changes on bond prices.

Chapter 11: Diversification and Risky Asset Allocation

To get the most out of this chapter, diversify your study time across:

1. How to calculate expected returns and variances for a security.
2. How to calculate expected returns and variances for a portfolio.
3. The importance of portfolio diversification.
4. The efficient frontier and the importance of asset allocation.

Chapter 12: Return, Risk, and the Security Market Line

Studying some topics will yield an expected reward. For example, make sure you know:

1. The difference between expected and unexpected returns.
2. The difference between systematic risk and unsystematic risk.
3. The security market line and the capital asset pricing model.
4. The importance of beta.

Chapter 13: Performance Evaluation and Risk Management

To get a high evaluation of your investments' performance, make sure you know:

1. How to calculate the best-known portfolio evaluation measures.
2. The strengths and weaknesses of these portfolio evaluation measures.
3. How to calculate a Sharpe-optimal portfolio.
4. How to calculate and interpret Value-at-Risk.

Chapter 14: Futures Contracts

You will derive many future benefits if you have a good understanding of:

1. The basics of futures markets and how to obtain price quotes for futures contracts.
2. The risks involved in futures market speculation.
3. How cash prices and futures prices are linked.
4. How futures contracts can be used to transfer price risk.

Chapter 15: Stock Options

Give yourself some in-the-money academic and professional options by understanding:

1. The basics of option contracts and how to obtain price quotes.
2. The difference between option payoffs and option profits.
3. The workings of some basic option trading strategies.
4. The logic behind the put-call parity condition.

Chapter 16: Option Valuation

Make sure the price is right by making sure that you have a good understanding of:

1. How to price options using the one-period and two-period binomial models.
2. How to price options using the Black-Scholes model.
3. How to hedge a stock portfolio using options.
4. The workings of employee stock options.

Chapter 17: Projecting Cash Flow and Earnings

Help yourself grow as a stock analyst by knowing:

1. How to obtain financial information about companies.
2. How to read basic financial statements.
3. How to use performance and price ratios.
4. How to use the percentage of sales method in financial forecasting.

Chapter 18: Corporate and Government Bonds

Conform to your fixed-income knowledge covenants by learning:

1. The basic types of corporate bonds.
2. How callable and convertible bonds function.
3. The different types of government bonds.
4. The basics of bond ratings.

Chapter 19: Global Economic Activity and Industry Analysis

If you want the supply of your investment services to be in high demand, you should:

1. Understand the process of top-down analysis.
2. Be able to measure the level of economic activity globally and domestically.
3. Understand the relation of monetary and fiscal policies to economic activity.
4. Be able to identify industry sensitivity to business cycles.

Chapter 20 *(Web site only)*: Mortgage-Backed Securities

Before you mortgage your future, you should know:

1. The workings of a fixed-rate mortgage.
2. Government's role in the secondary market for home mortgages.
3. The impact of mortgage prepayments.
4. How collateralized mortgage obligations are created and divided.

How Is This Book Relevant to the Student?

Fundamental changes in the investments universe drive our attention to relevance. The first major change is that individuals are being asked to make investment decisions for their own portfolios more often than ever before. There is, thankfully, a growing recognition that traditional "savings account" approaches to investing are decidedly inferior. At the same time, the use of employer-sponsored "investment accounts" has expanded enormously. The second major change is that the investments universe has exploded with an ever-increasing number of investment vehicles available to individual investors. As a result, investors must choose from an array of products, many of which are very complex, and they must strive to choose wisely.

Beyond this, students are more interested in subjects that affect them directly (as are we all). By taking the point of view of the student as an investor, we are better able to illustrate and emphasize the relevance and importance of the material.

Our approach is evident in the table of contents. Our first chapter is motivational; we have found that this material effectively "hooks" students and even motivates a semester-long discourse on risk and return. Our second chapter answers the student's next natural question: "How do I get started investing and how do I buy and sell securities?" The third chapter surveys the different types of investments available. After only three chapters, very early in the term, students have learned something about the risks and rewards from investing, how to get started investing, and what investment choices are available.

We close the first part of the text with a detailed examination of mutual funds. Without a doubt, mutual funds have become the most popular investment vehicles for individual investors. There are now more mutual funds than there are stocks on the NYSE! Given the size and enormous growth in the mutual fund industry, this material is important for investors. Even so, investments texts typically cover mutual funds in a cursory way, often banishing the material to a back chapter under the obscure (and obsolete) heading of "investment companies." Our early placement lets students quickly explore a topic they have heard a lot about and are typically interested in learning more about.

How Does This Book Allow Students to Apply the Investments Knowledge They Learn?

After studying this text, students will have the basic knowledge needed to move forward and actually act on what they have learned. We have developed two features to encourage students in making decisions as an investment manager. Learning to make good investment decisions comes with experience, while experience (regrettably) comes from making bad investment decisions. As much as possible, we press our students to get those bad decisions out of their systems before they start managing real money!

Not surprisingly, most students don't know how to get started in buying and selling securities. We have learned that providing some structure, especially with a portfolio simulation, greatly enhances the experience. Therefore, we have a series of *Getting Down to Business* boxes. These boxes (at the end of each chapter) usually describe actual trades for students to explore. The intention is to show students how to gain real experience with the principles and instruments covered in the chapter. The second feature is a series of *Stock-Trak* exercises that take students through specific trading situations using *Stock-Trak Portfolio Simulations,* which can be found at the book's Web site, www.mhhe.com/jmd7e.

Because we feel that portfolio simulations are so valuable, we have taken steps to assist instructors who, like us, plan to integrate portfolio simulations into their courses. Beyond the

features mentioned above, we have organized the text so that the essential material needed before participating in a simulation is covered at the front of the book. Most notably, with every book, we have included a *free* subscription to *Stock-Trak Portfolio Simulations. Stock-Trak* is the leading provider of investment simulation services to the academic community; providing *Stock-Trak* free represents a significant cost savings to students. To our knowledge, ours is the first (and only) investments text to directly offer a full-featured online brokerage account simulation with the book at no incremental cost.

How Does This Book Maintain a Consistent, Unified Treatment?

In most investments texts, depth of treatment and presentation vary dramatically from instrument to instrument, which leaves the student without an overall framework for understanding the many types of investments. We stress early on that there are essentially only four basic types of financial investments—stocks, bonds, options, and futures. In Parts 2 through 6, our simple goal is to take a closer look at each of these instruments. We take a unified approach to each by answering these basic questions:

1. What are the essential features of the instrument?
2. What are the possible rewards?
3. What are the risks?
4. What are the basic determinants of investment value?
5. For whom is the investment appropriate and under what circumstances?
6. How is the instrument bought and sold, and how does the market for the instrument operate?

By covering investment instruments in this way, we teach the students what questions to ask when looking at any potential investment.

Unlike other introductory investments texts, we devote several chapters beyond the basics to the different types of fixed-income investments. Students are often surprised to learn that the fixed-income markets are so much bigger than the equity markets and that money management opportunities are much more common in the fixed-income arena. Possibly the best way to see this is to look at recent CFA exams and materials and note the extensive coverage of fixed-income topics. We have placed these chapters toward the back of the text because we recognize not everyone will want to cover all this material. We have also separated the subject into several shorter chapters to make it more digestible for students and to allow instructors more control over what is covered.

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Michael Milligan, California State University–Northridge
Michael Nugent, SUNY–Stony Brook
Mukesh Chaudhry, Indiana University of Pennsylvania
Naresh Bansal, Saint Louis University
Nolan Lickey, Utah Valley State College
Nozar Hashemzadeh, Radford University
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Richard Lee Kitchen, Tallahassee Community College
Richard Proctor, Siena College
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We are deeply grateful to the select group of professionals who served as our development team on this edition: Chuck Synovec, Executive Brand Manager; Jennifer Upton, Development Editor; Melissa Caughlin, Executive Marketing Manager; Matt Diamond, Designer; Debra Sylvester, Production Supervisor; and Brian Nacik, Content Project Manager.

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Coverage

This book was designed and developed explicitly for a first course in investments taken either by finance majors or non-finance majors. In terms of background or prerequisites, the book is nearly self-contained, but some familiarity with basic algebra and accounting is assumed. The organization of the text has been designed to give instructors the flexibility they need to teach a quarter-long or semester-long course.

To present an idea of the breadth of coverage in the seventh edition of *Fundamentals of Investments,* the following grid is presented chapter by chapter. This grid contains some of the most significant new features and a few selected chapter highlights. Of course, for each chapter, features like opening vignettes, Work the Web, Spreadsheet Analysis, Getting Down to Business, Investment Updates, tables, figures, examples, and end-of-chapter material has been thoroughly reviewed and updated.

Chapters	Selected Topics of Interest	Learning Outcome/Comment
PART ONE Introduction		
Chapter 1		
A Brief History of Risk and Return	Dollar returns and percentage returns.	Average returns differ by asset class.
	Return variability and calculating variance and standard deviation. *New material: The best and worst days for the DJIA.*	Return variability also differs by asset class.
	Arithmetic versus geometric returns.	Geometric average tells you what you actually earned per year, compounded annually. Arithmetic returns tell you what you earned in a typical year. Dollar-weighted average returns adjust for investment inflows and outflows.
	The risk-return trade-off. *Updated material: World stock market capitalization.*	Historically, higher returns are associated with higher risk. Estimates of future equity risk premiums involve assumptions about the risk environment and investor risk aversion.
Chapter 2		
The Investment Process	The investment policy statement (IPS).	By knowing their objectives and constraints, investors can capture risk and safety trade-offs in an investment policy statement (IPS).
	Investor objectives, constraints, and strategies.	Presentation of issues like risk and return, resource constraints, market timing, and asset allocation.
	Investment professionals and types of brokerage accounts.	Discussion of the different types of financial advisors and brokerage accounts available to an individual investor.
	Retirement accounts.	Readers will know the workings of company-sponsored plans, such as a 401(k), traditional individual retirement accounts (IRAs), and Roth IRAs.
	Short sales.	Description of the process of short selling stock and short-selling constraints imposed by regulations and market conditions.
	Forming an investment portfolio. *New material: AAII asset allocation models.*	An investment portfolio must account for an investor's risk tolerance, objectives, constraints, and strategies.

Chapters	Selected Topics of Interest	Learning Outcome/Comment
Chapter 3		
Overview of Security Types	Classifying securities.	Interest-bearing, equity, and derivative securities.
	NASD's new TRACE system and transparency in the corporate bond market.	Up-to-date discussion of new developments in fixed income with respect to price, volume, and transactions reporting.
	Equity securities.	Obtaining price quotes for equity securities.
	Derivative securities: Obtaining futures contract and option contract price quotes using the Internet.	Defining the types of derivative securities, interpreting their price quotes, and calculating gains and losses from these securities.
Chapter 4		
Mutual Funds and Other Investment Companies	Advantages and drawbacks of investing in mutual funds.	Advantages include diversification, professional management, and minimum initial investment. Drawbacks include risk, costs, and taxes.
	Investment companies and types of funds.	Covers concepts like open-end versus closed-end funds and net asset value.
	Mutual fund organization, creation, costs, and fees.	Presents types of expenses and fees like front-end loads, 12b-1 fees, management fees, and turnover.
	Short-term funds, long-term funds, and fund performance.	Discussion of money market mutual funds versus the variety of available stock and bond funds and how to find their performance.
	Special funds like closed-end funds, exchange-traded funds *(expanded material on S&P 500 ETFs),* and hedge funds.	The closed-end fund discount mystery and discussion of exchange-traded funds (ETFs), exchange-traded notes (ETNs), hedge fund investment styles, and the perils of leveraged ETFs.
PART TWO Stock Markets		
Chapter 5		
The Stock Market	The primary stock market.	The workings of an initial public offering (IPO), a seasoned equity offering (SEO), the role of investment bankers, and the role of the Securities and Exchange Commission (SEC).
	The secondary stock market. *New material: The Flash Crash of 2010. Updated material: Circuit breakers.*	The role of dealers and brokers, the workings of the New York Stock Exchange (NYSE), and NASDAQ market operations.
	Stock indexes, including the Dow Jones Industrial Average (DJIA) and the Standard and Poor's 500 Index (S&P 500).	The components of the DJIA and their dividend yields. The difference between price-weighted indexes and value-weighted indexes.
Chapter 6		
Common Stock Valuation	The basic dividend discount model (DDM) and several of its variants, like the two-stage dividend growth model.	Valuation using constant growth rates and nonconstant growth rates.
	The residual income model and the free cash flow model.	Valuation of non-dividend-paying stocks. Valuation of stocks with negative earnings.
	Price ratio analysis.	Valuation using price-earnings, price-cash flow, and price-sales.
	New section: enterprise value ratios.	Valuation of a firm using a ratio containing both debt and equity.
	New material: Valuing Procter & Gamble, a detailed example.	Using *Value Line* information to value a stock using methods presented earlier in the chapter.

Chapters	Selected Topics of Interest	Learning Outcome/Comment
Chapter 7		
Stock Price Behavior and Market Efficiency	Forms of market efficiency.	The effects of information on stock prices with respect to market efficiency.
	Event studies using actual events surrounding Advanced Medical Optics.	Explains how new information gets into stock prices and how researchers measure it.
	Informed traders, insider trading, and illegal insider trading.	Example: Martha Stewart and ImClone.
	Updated material: Market efficiency and the performance of professional money managers.	Discusses the performance of professional money managers versus static benchmarks.
	Updated material: Anomalies.	Presentation of the day-of-the-week effect, the amazing January effect, the turn-of-the-year effect, and the turn-of-the-month effect.
	Bubbles and crashes. *New material: Individual stock circuit breakers.*	Shows the extent of famous events like the Crash of 1929, the Crash of October 1987, the Asian market crash, the "dot-com" bubble, and the Crash of 2008.
Chapter 8		
Behavioral Finance and the Psychology of Investing	Introduction to behavioral finance.	The influence of reasoning errors on investor decisions.
	Prospect theory.	How investors tend to behave differently when faced with prospective gains and losses.
	Overconfidence, misperceiving randomness, and overreating to chance events.	Examines the consequences of these serious errors in judgment.
	More on behavioral finance. *New material: Letting go of losers.*	Heuristics, herding, and overcoming bias.
	Sentiment-based risk and limits to arbitrage.	3Com/Palm mispricing, the Royal Dutch/Shell price ratio.
	Technical analysis.	Advance/decline line indicators, market diary, relative strength charts, and technical analysis data for Microsoft Corp.
PART THREE Interest Rates and Bond Valuation		
Chapter 9		
Interest Rates	Interest rate history and a quick review of the time value of money.	A graphical presentation of the long-term history of interest rates.
	Money market rates and their prices.	Important money market concepts including pricing U.S. Treasury bills, bank discount yields versus bond equivalent yields, annual percentage rates, and effective annual returns.
	Rates and yields on fixed-income securities.	The Treasury yield curve, the term structure of interest rates, Treasury STRIPS, and inflation-indexed Treasury securities (TIPS).
	Nominal versus real interest rates.	The Fisher hypothesis.
	Determinants of nominal interest rates.	Modern term structure theory and problems with traditional term structure theories.
Chapter 10		
Bond Prices and Yields	Straight bond prices and yield to maturity (YTM).	Calculate straight bond prices; calculate yield to maturity.
	The concept of duration and bond risk measures based on duration.	Calculate and interpret a bond's duration. The dollar value of an "01," and the yield value of a 32nd.
	Dedicated portfolios and reinvestment risk.	Learn how to create a dedicated portfolio and show its exposure to reinvestment risk.
	Immunization.	Minimize the uncertainty concerning the value of a bond portfolio at its target date.

Chapters	Selected Topics of Interest	Learning Outcome/Comment
PART FOUR Portfolio Management		
Chapter 11		
Diversification and Risky Asset Allocation	Expected returns and variances.	Calculating expected returns and variances using equal and unequal probabilities.
	Portfolios and the effect of diversification on portfolio risk. *Updated section: The fallacy of time diversification.*	Compute portfolio weights, expected returns, variances, and why diversification works.
	The importance of asset allocation.	The effect of correlation on the risk-return trade-off.
	The Markowitz efficient frontier and illustrating the importance of asset allocation using three securities.	Compute risk-return combinations using various portfolio weights for three assets.
Chapter 12		
Return, Risk, and the Security Market Line	Diversification, systematic and unsystematic risk.	Total risk is comprised of unsystematic and systematic risk and only unsystematic risk can be reduced through diversification.
	The security market line and the reward-to-risk ratio.	The security market line describes how the market rewards risk. All assets will have the same reward-to-risk ratio in a competitive financial market.
	Measuring systematic risk with beta. Calculating beta using regression.	The average beta is 1.00. Assets with a beta greater than 1.00 have more than average systematic risk.
	The capital asset pricing model (CAPM).	Expected return depends on the amount and reward for bearing systematic risk as well as the pure time value of money.
	Extending CAPM.	One of the most important extensions of the CAPM is the Fama-French three-factor model.
Chapter 13		
Performance Evaluation and Risk Management	Performance evaluation measures. *New material: The Sortino ratio.*	Calculate and interpret the Sharpe ratio, the Sortino ratio, the Treynor ratio, and Jensen's alpha. Also, calculate alpha using regression, calculate an information ratio, and calculate a portfolio's *R*-squared.
	Sharpe-optimal portfolios.	The portfolio with the highest possible Sharpe ratio given the assets comprising the portfolio is Sharpe optimal.
	Value-at-Risk (VaR).	VaR is the evaluation of the probability of a significant loss.
	Example showing how to calculate a Sharpe-optimal portfolio.	Combines the concepts of a Sharpe ratio, a Sharpe-optimal portfolio, and VaR.
PART FIVE Futures and Options		
Chapter 14		
Futures Contracts	The basics of futures contracts and using them to hedge price risk. Detailed example: hedging an inventory using futures markets.	Futures quotes from the Internet and financial press, short and long hedging, futures accounts.
	Spot-futures parity.	Basis, cash markets, and cash-futures arbitrage.
	Stock index futures. *New example: Changing the beta of a stock portfolio to zero using stock index futures.*	Index arbitrage, speculating with stock index futures, and hedging stock market risk with stock index futures.
	Hedging interest rate risk with futures.	We show how to use portfolio duration when deciding how many futures contracts to use to hedge a bond portfolio.

Chapters	Selected Topics of Interest	Learning Outcome/Comment
Chapter 15		
Stock Options	Option basics and option price quotes. *New material: Weekly options.*	The difference between call and put options, European and American options, online option price quotes, and option chains.
	Option intrinsic value.	Know how to calculate this important aspect of option prices.
	Option payoffs and profits.	Diagram long and short option payoffs and profits for calls and puts.
	Using options to manage risk and option trading strategies. *Updated material: Credit default swaps (CDSs).*	Protective puts, covered calls, and straddles.
	Option pricing bounds and put-call parity.	Upper and lower pricing bounds for call and put options. Showing how a call option price equals a put option price, the price of an underlying share of stock, and appropriate borrowing.
PART SIX Topics in Investments		
Chapter 16		
Option Valuation	The one-period and two-period binomial option pricing model.	How to compute option prices using this option pricing model—by hand and by using an online option calculator.
	The Black-Scholes option pricing model.	How to compute option prices using this famous option pricing model—by hand and by using an online option calculator.
	Measuring the impact of changes in option inputs.	Computing call and put option deltas.
	Hedging stock with stock options.	Using option deltas to decide how many option contracts are needed to protect a stock's price from feared declines in value.
	Employee stock options (ESOs) and their valuation.	Features of ESOs, repricing ESOs, and ESO valuation.
Chapter 17		
Projecting Cash Flow and Earnings	The basics of financial statements.	Income statement, balance sheet, cash flow statement, performance, and price ratios.
	Financial statement forecasting using the percentage of sales approach.	Preparing pro forma income statements and balance sheets to examine the potential amount of external financing needed.
	Updated material: A detailed case study valuing Starbucks Corporation.	Using actual financial data to prepare pro forma income statements and balance sheets using different sales growth scenarios.
Chapter 18 *(new combination of chapters)*		
Corporate and Government Bonds	Corporate bond basics, types of corporate bonds, and corporate bond indentures.	Become familiar with the basics of the various types of corporate bonds and their obligations.
	Callable bonds, putable bonds, convertible bonds, and protective covenants.	Bond seniority provisions, call provisions, make-whole call provisions, put provisions, conversion provisions, and protective covenants.
	Government bonds basics emphasizing U.S. government debt, federal government agency securities, and municipal bonds.	Details of U.S. Treasury bills, notes, bonds, STRIPS, agency bonds, and features of various types of municipal bonds.
	Bond credit ratings and junk bonds.	Assessing the credit quality of a bond issue.

Chapters	Selected Topics of Interest	Learning Outcome/Comment
Chapter 19 *(new chapter)*		
Global Economic Activity and Industry Analysis	*New material: The process of top-down analysis.*	*Be able to funnel the choices of thousands of individual stocks through macroeconomic and industry filters.*
	New material: Measure the level of economic activity globally and domestically.	*Understand GDP, Real GDP, business cycles, economic indicators, and the effects of exchange rates on international investments.*
	New material: Understand the relation of monetary and fiscal policies to economic activity.	*The role of the Federal Reserve, money supply, and government policies on taxation.*
	New material: Identify industry sensitivity to business cycles.	*Identify the S&P sectors, compare companies within sectors, use Porter's five forces.*
Chapter 20 (online)		
Mortgage-Backed Securities	Fixed-rate mortgages and prepayment.	Presents home mortgage principal and interest calculations.
	Secondary mortgage markets and reverse mortgages.	The function of GNMA and its clones, and the PSA mortgage prepayment model.
	Collateralized mortgage obligations, CMOs.	Describes how cash flows from mortgage pools are carved up and distributed to investors.

Features

Pedagogical Features

From your feedback, we have included many pedagogical features in this text that will be valuable learning tools for your students. This walkthrough highlights some of the most important elements.

Chapter Openers

These one-paragraph introductions for each chapter present scenarios and common misconceptions that may surprise you. An explanation is more fully developed in the chapter.

Learning Objectives

Objectives next to the opener outline learning goals for the chapter.

CFA™ Exam Map

This feature maps topics within each chapter to readings from the CFA™ curriculum.

chapter 4

Mutual Funds and Other Investment Companies

"Take calculated risks. That is quite different from being rash."

–George S. Patton

Learning Objectives

You're probably going to be a mutual fund investor very soon, so you should definitely know the following:

1. The different types of mutual funds.
2. How mutual funds operate.
3. How to find information about how mutual funds have performed.
4. The workings of Exchange-Traded Funds (ETFs) and hedge funds.

With only $2,000 to invest, you can easily own shares in Microsoft, GM, McDonald's, IBM, Coke, and many more stocks through a mutual fund. Or, you can invest in a portfolio of government bonds or other investments. Indeed, many thousands of different mutual funds are available to investors. In fact, there are about as many mutual funds as there are different stocks traded on the NASDAQ and the New York Stock Exchange combined. There are funds for aggressive investors, conservative investors, short-term investors, and long-term investors. There are bond funds, stock funds, international funds, and you-name-it funds. Is there a right fund for you? This chapter will help you find out.

As we discussed in an earlier chapter, if you do not wish to actively buy and sell individual securities on your own, you can invest in stocks, bonds, or other financial assets through a *mutual fund.* Mutual funds are simply a means of combining or pooling the funds of a large group of investors. The buy and sell decisions for the resulting pool are then made by a fund manager, who is compensated for the service provided.

Because mutual funds provide indirect access to financial markets for individual investors, they are a form of financial intermediary. In fact, mutual funds are now the largest type of intermediary in the United States, followed by commercial banks and life insurance companies.

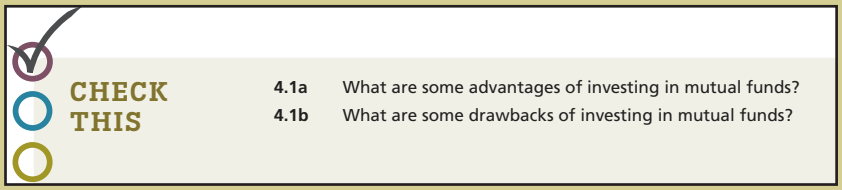
CFA™ Exam Topics in This Chapter:

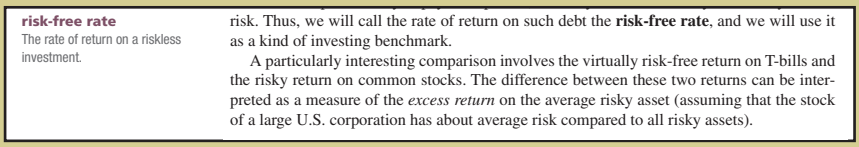
1 Discounted cash flow applications (L1, S2)
2 Alternative investments (L1, S18)
3 Soft dollar standards (L2, S1)
4 Alternative investments portfolio management (L3, S13)

Go to www.mhhe.com/jmd7e for a guide that aligns your textbook with CFA readings.

Check This

Every major section in each chapter ends with questions for review. This feature helps students test their understanding of the material before moving on to the next section.



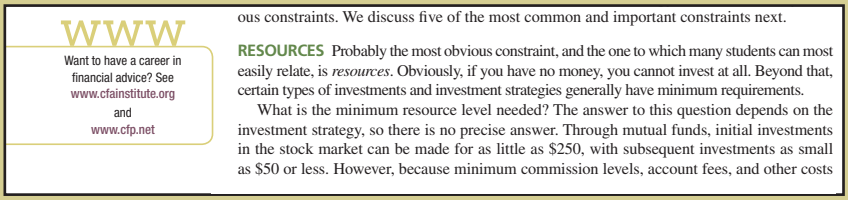


Key Terms

Key terms are indicated in bold and defined in the margin. The running glossary in the margin helps students quickly review the basic terminology for the chapter.

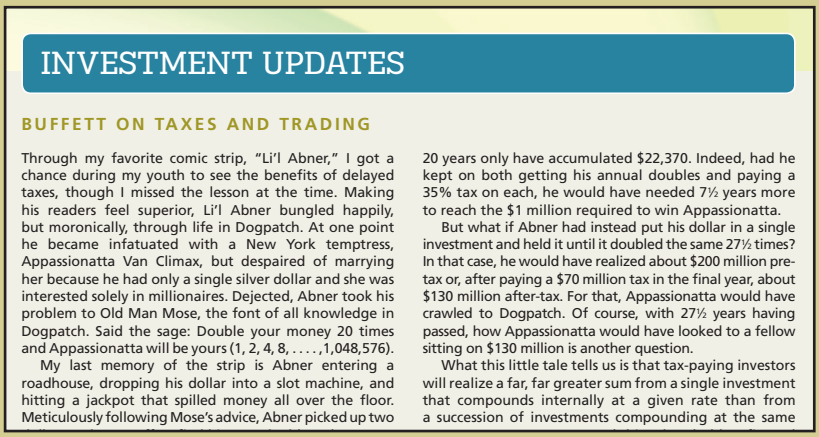
Web Addresses

Web sites are called out in the margin, along with a notation of how they relate to the chapter material.



Investment Updates

These boxed readings, reprinted from various business press sources, provide additional real-world events and examples to illustrate the material in the chapter. Some articles from the past two years highlight very recent events, and others present events of more historical significance.



Work the Web

Various screenshots appear throughout the text. These exercises illustrate how to access specific features of selected Web sites in order to expand students' knowledge of current investment topics.

WORK THE WEB

You can find the short interest for the current month in many financial publications. But what if you want a longer history of the shares sold short for a particular company? At www.nasdaq.com, you can find the short interest for companies listed on the NASDAQ for the previous 11 months. We went to the site and looked up Yahoo!, and here is what we found:

YAHOO! YHOO
Yahoo! Inc.NASDAQ-GS

Settlement Date	Short Interest	Avg Daily Share Volume	Days To Cover
4/13/2012	29,292,480	14,279,539	2.051360
3/30/2012	31,350,687	16,248,381	1.929465
3/15/2012	28,440,779	12,823,105	2.217932
2/29/2012	27,996,626	19,127,092	1.463716
2/15/2012	26,366,458	22,728,324	1.160070
1/31/2012	31,840,444	18,429,404	1.727698
1/13/2012	42,012,870	16,781,396	2.503538
12/30/2011	36,650,629	22,027,145	1.663885
12/15/2011	36,963,198	21,063,241	1.754868

As you can see, the short interest in Yahoo! fell from about 37 million shares in December 2011 to about 29 million shares in April 2012. Why would you want a history of short sales? Some investors use short sales as a technical indicator, which we discuss in a later chapter.

Here's a question for you: What do you think "Days to Cover" means? It is the ratio of short interest to average daily share volume. Thus, "Days to Cover" measures how many days of normal trading would be necessary to completely cover all outstanding short interest.

EXAMPLE 2.1 The Account Balance Sheet

You want to buy 1,000 shares of Pfizer (PFE) at a price of $24 per share. You put up $18,000 and borrow the rest. What does your account balance sheet look like? What is your margin?

The 1,000 shares of Pfizer cost $24,000. You supply $18,000, so you must borrow $6,000. The account balance sheet looks like this:

Assets		Liabilities and Account Equity	
1,000 shares of Pfizer	$24,000	Margin loan	$ 6,000
		Account equity	18,000
Total	$24,000	Total	$24,000

Your margin is the account equity divided by the value of the stock owned:

Margin = $18,000 / $24,000
= .75, or 75 percent

Numbered Examples

Example boxes are integrated throughout the chapters to reinforce the content and demonstrate to students how to apply what they've learned. Each example displays an intuitive or mathematical application in a step-by-step format. There is enough detail in the explanations so that the student doesn't have to look elsewhere for additional information.

Spreadsheet Analysis

Self-contained spreadsheet examples show students how to set up spreadsheets to solve problems—a vital part of every business student's education.

SPREADSHEET ANALYSIS

Using a Spreadsheet to Calculate Average Returns and Volatilities

Here is an Excel spreadsheet summarizing the formulas and analysis needed to calculate average returns and standard deviations using the 1990s as an example:

	A	B	C	D	E	F	G	H
1								
2	Using a spreadsheet to calculate average returns and standard deviations							
3								
4	Looking back in the chapter, the data suggest that the 1990s were one							
5	of the best decades for stock market investors. We will find out just how good by							
6	calculating the average returns and standard deviations for this period. Here are the							
7	year-by-year returns on the large-company stocks:							
8								
9		*Year*	Return (%)	*Year*	Return (%)			
10		1990	−3.10	1995	37.58			
11		1991	30.46	1996	22.96			
12		1992	7.62	1997	33.36			
13		1993	10.08	1998	28.58			
14		1994	1.32	1999	21.04			
15								
16		Average return (%):		18.99				
17		Standard deviation (%):		14.16				

Numbered Equations

Key equations are highlighted and numbered sequentially. For easy reference, an appendix at the end of the book lists these key equations by chapter.

In our example, the price at the beginning of the year was $50 per share and the dividend paid during the year on each share was $.40. If we divide the dividend by the beginning stock price, the result is the **dividend yield**:

$$\text{Dividend yield} = D_{t+1} / P_t = \$.40 / \$50 = .0080 = 0.80\% \quad (1.1)$$

This calculation says that for each dollar we invested we received 80 cents in dividends.

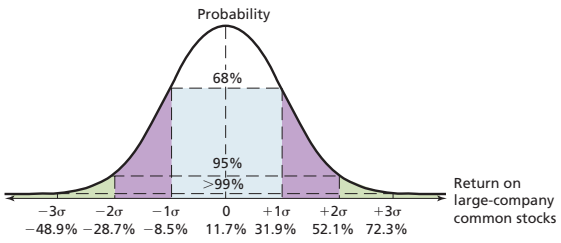
The second component of our percentage return is the **capital gains yield**. This yield is calculated as the change in the price during the year (the capital gain) divided by the beginning price. With the case 1 ending price, we get:

$$\text{Capital gains yield} = (P_{t+1} - P_t) / P_t = (\$55.60 - \$50.00) / \$50.00 = \$5.60 / \$50 = .1120 = 11.20\% \quad (1.2)$$

This 11.20 percent yield means that for each dollar invested we got about 11 cents in capital gains (HOG heaven).

Putting it all together, per dollar invested, we get 80 cents in dividends and $11.20 in capital gains for a total of $12.00. Our **total percent return** is 12 cents on the dollar, or 12.00 percent. When a return is expressed on a percentage basis, we often refer to it as the *rate of return,* or just "return," on the investment. Notice that if we combine the formulas for

FIGURE 1.10 The Normal Distribution: Illustrated Returns Based on the Historical Return and Standard Deviation for a Portfolio of Large-Company Common Stocks



Figures and Tables

This text makes extensive use of real data and presents them in various figures and tables. Explanations in the narrative, examples, and end-of-chapter problems refer to many of these exhibits.

Summary and Conclusions

Each chapter ends with a summary that highlights the important points of the chapter. This material provides a handy checklist for students when they review the chapter.

2.6 Summary and Conclusions

In this chapter, we cover many aspects of the investing process—which we summarize by the chapter's important concepts.

1. **The importance of an investment policy statement.**

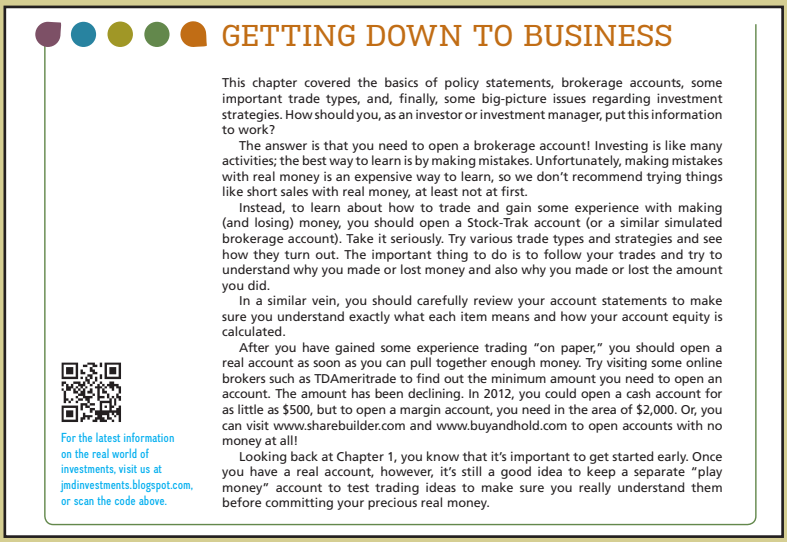
A. The investment policy statement (IPS) identifies the objectives (risk and return) of an investor, as well as the constraints the investor faces in achieving these objectives.
B. The IPS provides an investing "road map" and will influence the strategies, type of account, and holdings an investor chooses.

2. **The various types of securities brokers and brokerage accounts.**

A. Opening a brokerage account is straightforward and really much like opening a bank account. You supply information and sign agreements with your broker. Then you write a check and provide instructions on how you want your money invested.
B. Brokers are traditionally divided into three groups: full-service brokers, discount brokers, and deep-discount brokers. What distinguishes the three groups is the level of service they provide and the resulting commissions they charge. In recent years, the boundaries among the groups have blurred.
C. Your broker does not have a duty to provide you with guaranteed purchase and sale recommendations. However, your broker does have a duty to exercise reasonable care in formulating recommendations. Your broker has a legal duty to act in your best

Getting Down to Business

For instructors looking to give their students a taste of what it means to be an investment manager, this feature (at the end of each chapter) acts as a first step by explaining to students how to apply the material they just learned. The *Getting Down to Business* boxes encourage students—whether for practice in a trading simulation, or with real money—to make investment decisions, and they also give some helpful tips to keep in mind. These boxes include a QR code link to a handy Weblog written by the authors.



GETTING DOWN TO BUSINESS

This chapter covered the basics of policy statements, brokerage accounts, some important trade types, and, finally, some big-picture issues regarding investment strategies. How should you, as an investor or investment manager, put this information to work?

The answer is that you need to open a brokerage account! Investing is like many activities; the best way to learn is by making mistakes. Unfortunately, making mistakes with real money is an expensive way to learn, so we don't recommend trying things like short sales with real money, at least not at first.

Instead, to learn about how to trade and gain some experience with making (and losing) money, you should open a Stock-Trak account (or a similar simulated brokerage account). Take it seriously. Try various trade types and strategies and see how they turn out. The important thing to do is to follow your trades and try to understand why you made or lost money and also why you made or lost the amount you did.

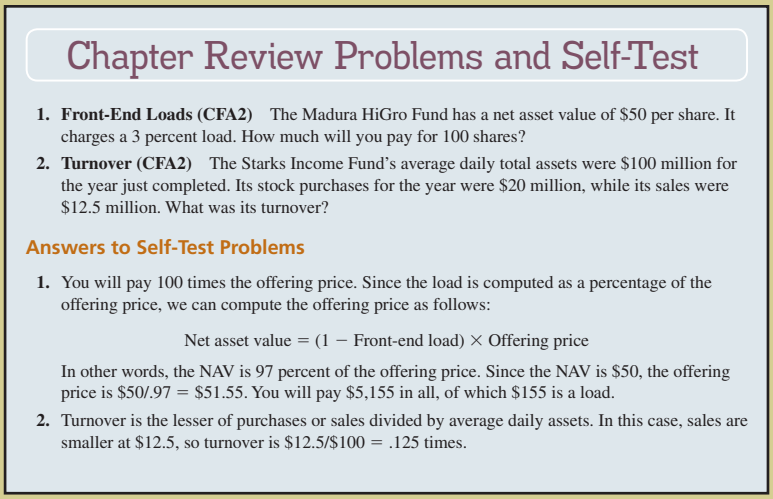
In a similar vein, you should carefully review your account statements to make sure you understand exactly what each item means and how your account equity is calculated.

After you have gained some experience trading "on paper," you should open a real account as soon as you can pull together enough money. Try visiting some online brokers such as TDAmeritrade to find out the minimum amount you need to open an account. The amount has been declining. In 2012, you could open a cash account for as little as $500, but to open a margin account, you need in the area of $2,000. Or, you can visit www.sharebuilder.com and www.buyandhold.com to open accounts with no money at all!

Looking back at Chapter 1, you know that it's important to get started early. Once you have a real account, however, it's still a good idea to keep a separate "play money" account to test trading ideas to make sure you really understand them before committing your precious real money.

For the latest information on the real world of investments, visit us at jmdinvestments.blogspot.com, or scan the code above.

Chapter Review Problems and Self-Test



Chapter Review Problems and Self-Test

1. **Front-End Loads (CFA2)** The Madura HiGro Fund has a net asset value of $50 per share. It charges a 3 percent load. How much will you pay for 100 shares?
2. **Turnover (CFA2)** The Starks Income Fund's average daily total assets were $100 million for the year just completed. Its stock purchases for the year were $20 million, while its sales were $12.5 million. What was its turnover?

Answers to Self-Test Problems

1. You will pay 100 times the offering price. Since the load is computed as a percentage of the offering price, we can compute the offering price as follows:

$$\text{Net asset value} = (1 - \text{Front-end load}) \times \text{Offering price}$$

In other words, the NAV is 97 percent of the offering price. Since the NAV is $50, the offering price is $50/.97 = $51.55. You will pay $5,155 in all, of which $155 is a load.

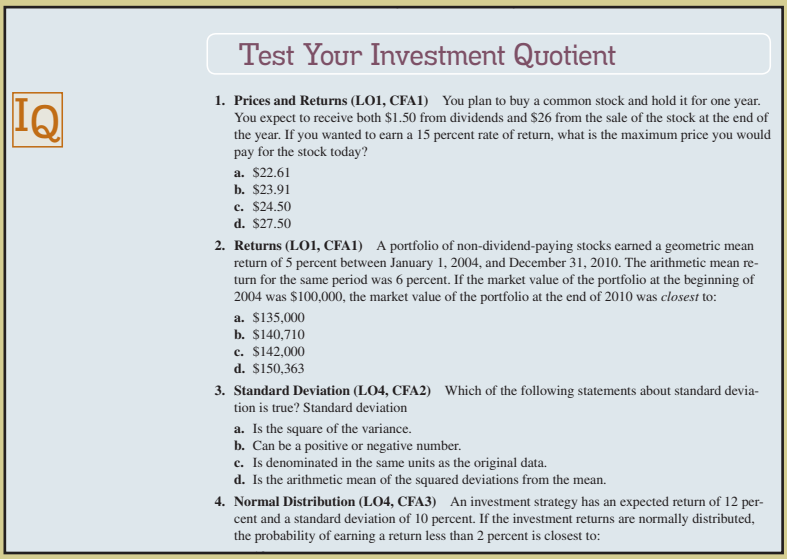
2. Turnover is the lesser of purchases or sales divided by average daily assets. In this case, sales are smaller at $12.5, so turnover is $12.5/$100 = .125 times.

Chapter Review Problems and Self-Test

Students are provided with one to three practice problems per chapter with worked-out solutions to test their abilities in solving key problems related to the content of the chapter.

Test Your Investment Quotient

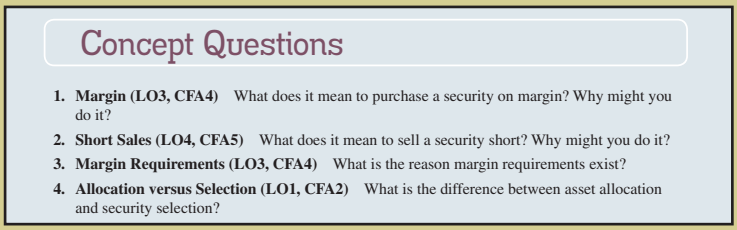
An average of 15 multiple-choice questions are included for each chapter, many of which are taken from past CFA exams. This text is unique in that it presents CFA questions in multiple-choice format—which is how they appear on the actual exam. Answers to these questions appear in Appendix A.



Test Your Investment Quotient

IQ

1. **Prices and Returns (LO1, CFA1)** You plan to buy a common stock and hold it for one year. You expect to receive both $1.50 from dividends and $26 from the sale of the stock at the end of the year. If you wanted to earn a 15 percent rate of return, what is the maximum price you would pay for the stock today?
   a. $22.61
   b. $23.91
   c. $24.50
   d. $27.50
2. **Returns (LO1, CFA1)** A portfolio of non-dividend-paying stocks earned a geometric mean return of 5 percent between January 1, 2004, and December 31, 2010. The arithmetic mean return for the same period was 6 percent. If the market value of the portfolio at the beginning of 2004 was $100,000, the market value of the portfolio at the end of 2010 was *closest* to:
   a. $135,000
   b. $140,710
   c. $142,000
   d. $150,363
3. **Standard Deviation (LO4, CFA2)** Which of the following statements about standard deviation is true? Standard deviation
   a. Is the square of the variance.
   b. Can be a positive or negative number.
   c. Is denominated in the same units as the original data.
   d. Is the arithmetic mean of the squared deviations from the mean.
4. **Normal Distribution (LO4, CFA3)** An investment strategy has an expected return of 12 percent and a standard deviation of 10 percent. If the investment returns are normally distributed, the probability of earning a return less than 2 percent is closest to:



Concept Questions

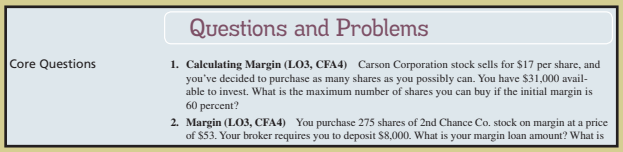
1. **Margin (LO3, CFA4)** What does it mean to purchase a security on margin? Why might you do it?
2. **Short Sales (LO4, CFA5)** What does it mean to sell a security short? Why might you do it?
3. **Margin Requirements (LO3, CFA4)** What is the reason margin requirements exist?
4. **Allocation versus Selection (LO1, CFA2)** What is the difference between asset allocation and security selection?

Concept Questions

At the end of every chapter are 10 to 15 concept questions that further reinforce key concepts found throughout the chapter.

Questions and Problems

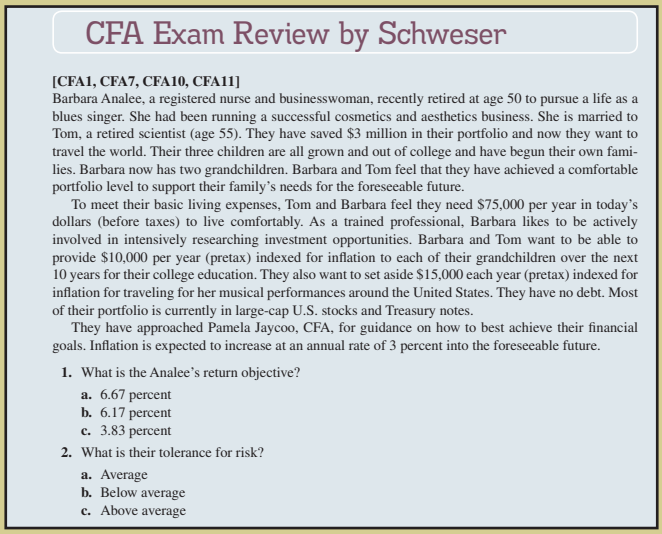
A variety of problems (average of 20 per chapter) are included in each chapter to test students' understanding of the conceptual and mathematical elements. Each problem is labeled with the subject and the level—core or intermediate. Selected answers appear in Appendix B, and complete solutions are included in the Instructor Web site.



Questions and Problems

Core Questions

1. **Calculating Margin (LO3, CFA4)** Carson Corporation stock sells for $17 per share, and you've decided to purchase as many shares as you possibly can. You have $31,000 available to invest. What is the maximum number of shares you can buy if the initial margin is 60 percent?
2. **Margin (LO3, CFA4)** You purchase 275 shares of 2nd Chance Co. stock on margin at a price of $53. Your broker requires you to deposit $8,000. What is your margin loan amount? What is



CFA Exam Review by Schweser

[CFA1, CFA7, CFA10, CFA11]
Barbara Analee, a registered nurse and businesswoman, recently retired at age 50 to pursue a life as a blues singer. She had been running a successful cosmetics and aesthetics business. She is married to Tom, a retired scientist (age 55). They have saved $3 million in their portfolio and now they want to travel the world. Their three children are all grown and out of college and have begun their own families. Barbara now has two grandchildren. Barbara and Tom feel that they have achieved a comfortable portfolio level to support their family's needs for the foreseeable future.

To meet their basic living expenses, Tom and Barbara feel they need $75,000 per year in today's dollars (before taxes) to live comfortably. As a trained professional, Barbara likes to be actively involved in intensively researching investment opportunities. Barbara and Tom want to be able to provide $10,000 per year (pretax) indexed for inflation to each of their grandchildren over the next 10 years for their college education. They also want to set aside $15,000 each year (pretax) indexed for inflation for traveling for her musical performances around the United States. They have no debt. Most of their portfolio is currently in large-cap U.S. stocks and Treasury notes.

They have approached Pamela Jaycoo, CFA, for guidance on how to best achieve their financial goals. Inflation is expected to increase at an annual rate of 3 percent into the foreseeable future.

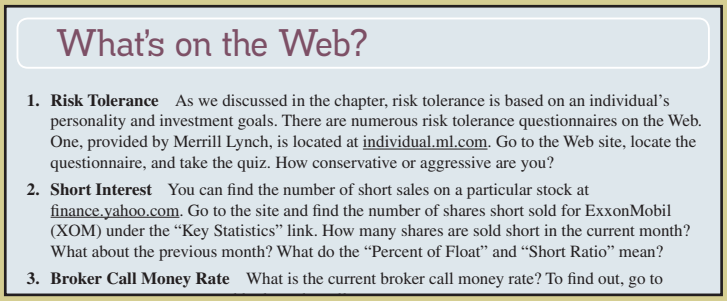
1. What is the Analee's return objective?
   a. 6.67 percent
   b. 6.17 percent
   c. 3.83 percent
2. What is their tolerance for risk?
   a. Average
   b. Below average
   c. Above average

CFA Exam Review by Schweser

Unique to this text! These reviews are excerpted from Schweser, a leader in CFA exam preparation. Each review addresses chapter content but in a way that is consistent with the format of the actual CFA exam.

What's on the Web?

These end-of-chapter activities show students how to use and learn from the vast amount of financial resources available on the Internet.



What's on the Web?

1. **Risk Tolerance** As we discussed in the chapter, risk tolerance is based on an individual's personality and investment goals. There are numerous risk tolerance questionnaires on the Web. One, provided by Merrill Lynch, is located at individual.ml.com. Go to the Web site, locate the questionnaire, and take the quiz. How conservative or aggressive are you?
2. **Short Interest** You can find the number of short sales on a particular stock at finance.yahoo.com. Go to the site and find the number of shares short sold for ExxonMobil (XOM) under the "Key Statistics" link. How many shares are sold short in the current month? What about the previous month? What do the "Percent of Float" and "Short Ratio" mean?
3. **Broker Call Money Rate** What is the current broker call money rate? To find out, go to

Stock-Trak Exercises

To access the Stock-Trak Exercise for this chapter, please visit the book Web site at www.mhhe.com/jmd7e and choose the corresponding chapter.

← Stock-Trak Exercises

Unique to this text! This text is the only book that incorporates Stock-Trak Portfolio Simulations® exercises. Stock-Trak is one of the most successful trading simulations with over 30,000 college students having trading accounts each semester (see Supplements for more information). Go to the next level in teaching your students about investments management by encouraging your students to use this product. Chapters with Stock-Trak Exercises have the logo and the URL for the book's Web site. The actual exercise and questions related to the chapter are presented in both the Student and Instructor portions of the Web site. Instructors and students must be registered for Stock-Trak in order to make trades (see the Supplement section of the Preface or the insert card for more information).

Resources

Teaching and Learning Supplements

We have developed a number of supplements for both teaching and learning to accompany this text. Each product has been significantly revised for the seventh edition.

Digital Solutions

Online Learning Center (OLC):

Online Support at www.mhhe.com/jmd7e

The Online Learning Center (OLC) contains access to additional Web-based study and teaching aids created for this text, such as:

Student Support

Student-Narrated PowerPoints *created by Lynn Kugele,* University of Mississippi

Students all learn differently and these chapter PowerPoints were created with that rationale in mind. The interactive presentations provide detailed examples demonstrating how to solve key problems from the text. The slides are accompanied by an audio narration. They can be purchased as part of the premium content package available for $10 and then viewed online.

Excel Templates

Corresponding to most end-of-chapter problems, each template allows the student to work through the problem using Excel, reinforcing each concept. Each end-of-chapter problem with a template is indicated by an Excel icon in the margin beside it.

Self-Study Chapter Quizzes

Quizzes consist of 10–15 multiple-choice questions on various chapter topics. They reveal a score instantly and provide feedback to help students study.

Other Features

Be sure to check out the other helpful features found on the OLC including key-term flashcards, helpful Web links, and more!

Instructor Support

The Instructor's Edition of the OLC contains the following assets:

PowerPoint Presentation, *prepared by Thomas W. Miller Jr.,* Mississippi State University

This product, created by one of the authors, contains over 300 slides with lecture outlines, examples, and images and tables from the text.

Instructor's Manual, *prepared by Steven D. Dolvin, CFA,* Butler University

Developed by one of the authors, the goals of this product are to outline chapter material clearly and provide extra teaching support. The first section of the Instructor's Manual includes an annotated outline of each chapter with suggested Web sites, references to PowerPoint slides, teaching tips, additional examples, and current events references.

Solutions Manual, *prepared by Steven D. Dolvin, CFA,* Butler University

The Solutions Manual contains the complete worked-out solutions for the end-of-chapter questions and problems.

Test Bank, *prepared by Lynn Kugele,* University of Mississippi

With almost 1,500 questions, this Test Bank, in Microsoft Word, provides a variety of question formats (true-false, multiple-choice, fill-in-the-blank, and problems) and levels of difficulty to meet any instructor's testing needs.

Computerized Test Bank (Windows)

This computerized version of the Test Bank utilizes McGraw-Hill's EZ Test testing software to quickly create customized exams. This user-friendly program allows instructors to sort questions by format; edit existing questions or add new ones; and scramble questions for multiple versions of the same test.

Additional Resources Packaged with Your New Text

Stock-Trak Portfolio Simulation

Give your students investment management experience! McGraw-Hill/Irwin has partnered with *Stock-Trak* and is providing a **free** subscription to the *Stock-Trak Portfolio Simulation* for one semester with the purchase of every new copy of *Fundamentals of Investments: Valuation and Management, Seventh Edition* by Jordan, Miller, and Dolvin. *Stock-Trak* gives students $1,000,000 and allows them to trade stocks, options, futures, bonds, mutual funds, and international stocks—no other simulation offers all these types of securities! More than 600 professors have used this service, and around 30,000 college students each semester participate. All trades are done on the Web at www.stocktrak.com. See this site for more information or use the Stock-Trak card bound into this text. Stock-Trak exercises are available on the book Web site, www.mhhe.com/jmd7e.

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

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

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

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

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

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- Provides instant practice material and study questions, easily accessible on the go.

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

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Brief Contents

Contents

APPENDIXES

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chapter 1

A Brief History of Risk and Return

"All I ask is for the chance to prove that money can't make me happy."

–Spike Milligan

Who wants to be a millionaire? Actually, anyone can retire as a millionaire. How? Consider this: Suppose you, on your 25th birthday, invest $3,000. You have the discipline to invest $3,000 on each of your next 39 birthdays until you retire on your 65th birthday. How much will you have? The answer might surprise you. If you earn 10 percent per year, you will have about $1.46 million. Are these numbers realistic? Based on the history of financial markets, the answer appears to be yes. For example, over the last 87 or so years, the widely followed Standard & Poor's Index of large-company common stocks has actually yielded about 12 percent per year.

The study of investments could begin in many places. After thinking it over, we decided that a brief history lesson is in order, so we start our discussion of risk and return by looking back at what has happened to investors in U.S. financial markets since 1925. In 1931, for example, the stock market lost 43 percent of its value. Just two years later, the market reversed itself and gained 54 percent. In more recent times, the stock market lost about 25 percent of

Learning Objectives

To become a wise investor (maybe even one with too much money), you need to know:

1. How to calculate the return on an investment using different methods.
2. The historical returns on various important types of investments.
3. The historical risks on various important types of investments.
4. The relationship between risk and return.

CFA™ Exam Topics in This Chapter:

1 Discounted cash flow applications (L1, S2)

2 Statistical concepts and market returns (L1, S2)

3 Common probability distributions (L1, S3)

4 Sampling and estimation (L1, S3)

5 Dividend and share repurchases: Analysis (L2, S8)

6 Evaluating portfolio performance (L3, S17)

Go to www.mhhe.com/jmd7e for a guide that aligns your textbook with CFA readings.

its value on October 19, 1987, alone, and it gained almost 40 percent in 1995. From 2003 through 2007, the market gained about 80 percent. In 2008, the market fell almost 40 percent. In 2009, the market reversed course again, returning almost 20 percent.

So what should you, as a stock market investor, expect when you invest your own money? In this chapter, we study more than eight decades of market history to find out.

In this chapter, we present the historical relation between risk and return. As you will see, this chapter has a lot of very practical information for anyone thinking of investing in financial assets such as stocks and bonds. For example, suppose you were to start investing in stocks today. Do you think your money would grow at an average rate of 5 percent per year? Or 10 percent? Or 20 percent? This chapter gives you an idea of what to expect (the answer may surprise you). The chapter also shows how risky certain investments can be, and it gives you the tools to think about risk in an objective way.

Our primary goal in this chapter is to see what financial market history can tell us about risk and return. Specifically, we want to give you a perspective on the numbers. What is a high return? What is a low return? More generally, what returns should we expect from financial assets such as stocks and bonds, and what are the risks from such investments? Beyond this, we hope that by studying what *did* happen in the past, we will at least gain some insight into what *can* happen in the future.

The history of risk and return is made day by day in global financial markets. The Internet is an excellent source of information on financial markets. Visit our Web site (at www.mhhe.com/jmd7e) for suggestions on where to find information on recent financial market events. We will suggest other sites later in the chapter.

Not everyone agrees on the value of studying history. On the one hand, there is philosopher George Santayana's famous comment, "Those who do not remember the past are condemned to repeat it." On the other hand, there is industrialist Henry Ford's equally famous comment, "History is more or less bunk." These extremes aside, perhaps everyone would agree with Mark Twain, who observed, with remarkable foresight (and poor grammar), that "October. This is one of the peculiarly dangerous months to speculate in stocks in. The others are July, January, September, April, November, May, March, June, December, August, and February."

Two key observations emerge from a study of financial market history. First, there is a reward for bearing risk, and, at least on average, that reward has been substantial. That's the good news. The bad news is that greater rewards are accompanied by greater risks. The fact that risk and return go together is probably the single most important fact to understand about investments, and it is a point to which we will return many times.

1.1 Returns

We wish to discuss historical returns on different types of financial assets. First, we need to know how to compute the return from an investment. We will consider buying shares of stock in this section, but the basic calculations are the same for any investment.

DOLLAR RETURNS

If you buy an asset of any type, your gain (or loss) from that investment is called the *return* on your investment. This return will usually have two components. First, you may receive some cash directly while you own the investment. Second, the value of the asset you purchase may change. In this case, you have a capital gain or capital loss on your investment.[1]

To illustrate, suppose you purchased 200 shares of stock in Harley-Davidson (ticker symbol: HOG) on January 1. At that time, Harley was selling for $50 per share, so your 200 shares cost you $10,000. At the end of the year, you want to see how you did with your investment.

[1] As a practical matter, what is and what is not a capital gain (or loss) is determined by the Internal Revenue Service. Even so, as is commonly done, we use these terms to refer to a change in value.

The first thing to consider is that over the year, a company may pay cash dividends to its shareholders. As a stockholder in Harley, you are a part owner of the company, and you are entitled to a portion of any money distributed. So if Harley chooses to pay a dividend, you will receive some cash for every share you own.

In addition to the dividend, the other part of your return is the capital gain or loss on the stock. This part arises from changes in the value of your investment. For example, consider these two cases:

WWW

Our favorite investments Web site is Yahoo! Finance at finance.yahoo.com Visit this site and look around!

	Case 1	Case 2
Ending Stock Price	$ 55.60	$ 39.80
January 1 value	$10,000	$10,000
December 31 value	$11,120	$ 7,960
Dividend income	$ 80	$ 80
Capital gain or loss	$ 1,120	−$ 2,040

At the beginning of the year, on January 1, the stock was selling for $50 per share. As we calculated above, your total outlay for 200 shares is $10,000. Over the year, Harley paid dividends of $.40 per share. By the end of the year, then, you received dividend income of

$$\text{Dividend income} = \$.40 \times 200 = \$80$$

In Case 1, suppose that as of December 31, a HOG share was selling for $55.60, meaning that the value of your stock increased by $5.60 per share. Your 200 shares would be worth $11,120, so you have a capital gain of

$$\text{Capital gain} = (\$55.60 - \$50) \times 200 = \$1,120$$

On the other hand, if the price had dropped to, say, $39.80 (Case 2), you would have a capital loss of

$$\text{Capital loss} = (\$39.80 - \$50) \times 200 = -\$2,040$$

Notice that a capital loss is the same thing as a negative capital gain.

total dollar return
The return on an investment measured in dollars that accounts for all cash flows and capital gains or losses.

The **total dollar return** on your investment is the sum of the dividend income and the capital gain (or loss):

$$\text{Total dollar return} = \text{Dividend income} + \text{Capital gain (or loss)}$$

In Case 1, the total dollar return is thus given by

$$\text{Total dollar return} = \$80 + \$1,120 = \$1,200$$

Overall, between the dividends you received and the increase in the price of the stock, the value of your investment increased from $10,000 to $10,000 + $1,200 = $11,200.

A common misconception often arises in this context. Suppose you hold on to your Harley-Davidson stock and don't sell it at the end of the year. Should you still consider the capital gain as part of your return? Isn't this only a "paper" gain and not really a cash gain if you don't sell it?

The answer to the first question is a strong yes, and the answer to the second is an equally strong no. The capital gain is every bit as much a part of your return as the dividend, and you should certainly count it as part of your return. The fact that you decide to keep the stock and don't sell (you don't "realize" the gain) is irrelevant because you could have converted it to cash if you had wanted to. Whether you choose to do so is up to you.

After all, if you insist on converting your gain to cash, you could always sell the stock and immediately reinvest by buying the stock back. There is no difference between doing this and just not selling (assuming, of course, that there are no transaction costs or tax consequences from selling the stock). Again, the point is that whether you actually cash out and buy pizzas (or whatever) or continue to hold the investment doesn't affect the return you actually earn.

PERCENTAGE RETURNS

It is usually more convenient to summarize information about returns in percentage terms than in dollar terms, because that way your return doesn't depend on how much you actually invested. With percentage returns the question we want to answer is: How much do we get *for each dollar* we invest?

To answer this question, let P_t be the price of the stock at the beginning of the year. Let D_{t+1} be the dividend paid on the stock during the year. The following cash flows are the same as those shown earlier, except that we have now expressed everything on a per-share basis:

	Case 1	Case 2
January 1 stock price, P_t	$50.00	$50.00
December 31 stock price, P_{t+1}	$55.60	$39.80
Dividend income, D_{t+1}	$ .40	$ .40
Capital gain or loss	$ 5.60	−$10.20

In our example, the price at the beginning of the year was $50 per share and the dividend paid during the year on each share was $.40. If we divide the dividend by the beginning stock price, the result is the **dividend yield**:

dividend yield
The annual stock dividend as a percentage of the initial stock price.

$$\begin{aligned}\text{Dividend yield} &= D_{t+1} / P_t \\ &= \$.40 / \$50 = .0080 = 0.80\% \end{aligned} \tag{1.1}$$

This calculation says that for each dollar we invested we received 0.80 cents in dividends.

The second component of our percentage return is the **capital gains yield**. This yield is calculated as the change in the price during the year (the capital gain) divided by the beginning price. With the Case 1 ending price, we get:

capital gains yield
The change in stock price as a percentage of the initial stock price.

$$\begin{aligned}\text{Capital gains yield} &= (P_{t+1} - P_t) / P_t \\ &= (\$55.60 - \$50.00) / \$50.00 \\ &= \$5.60 / \$50 = .1120 = 11.20\% \end{aligned} \tag{1.2}$$

This 11.20 percent yield means that for each dollar invested we got about 11 cents in capital gains (HOG heaven).

Putting it all together, per dollar invested, we get 0.80 cents in dividends and 11.20 cents in capital gains for a total of 12.00 cents. Our **total percent return** is 12 cents on the dollar, or 12.00 percent. When a return is expressed on a percentage basis, we often refer to it as the *rate of return,* or just "return," on the investment. Notice that if we combine the formulas for the dividend yield and capital gains yield, we get a single formula for the total percentage return:

total percent return
The return on an investment measured as a percentage that accounts for all cash flows and capital gains or losses.

$$\begin{aligned}\text{Percentage return} &= \text{Dividend yield} + \text{Capital gains yield} \\ &= D_{t+1} / P_t + (P_{t+1} - P_t) / P_t \\ &= (D_{t+1} + P_{t+1} - P_t) / P_t \end{aligned} \tag{1.3}$$

To check our calculations, notice that we invested $10,000 and ended up with $11,200. By what percentage did our $10,000 increase? As we saw, our gain was $11,200 − $10,000 = $1,200. This is an increase of $1,200 / $10,000, or 12.00 percent.

WORK THE WEB

To look up information on common stocks using the Web, you need to know the "ticker" symbol for the stocks in which you are interested. You can look up ticker symbols in many places, including one of our favorite sites, finance.yahoo.com. Here we have looked up (using the "Symbol Lookup" link) and entered ticker symbols for some well-known "tech" stocks: Dell, Cisco, Intel, and Microsoft.

Once we hit "Get Quotes," this is what we got:

SYMBOL	TIME & PRICE		CHG & % CHG		DAY'S LOW & HIGH		VOLUME	AVG VOL	MKT CAP
DELL	04:00pm EST	13.81	0.10	+0.73%	13.68	13.83	20,541,699	38,353,100	23.99B
CSCO	04:00pm EST	20.99	0.00	+0.00%	20.92	21.07	44,439,782	38,169,000	111.62B
INTC	04:00pm EST	21.115	-0.11	-0.54%	20.99	21.30	33,809,049	48,423,300	104.90B
MSFT	04:00pm EST	28.01	-0.03	-0.11%	27.88	28.16	49,651,288	51,124,300	234.62B

As you can see, we get the price for each stock, along with information about the change in price and volume (number of shares traded). You will find a lot of links to hit and learn more, so have at it!

EXAMPLE 1.1 **Calculating Percentage Returns**

Suppose you buy some stock in Concannon Plastics for $35 per share. After one year, the price is $49 per share. During the year, you received a $1.40 dividend per share. What is the dividend yield? The capital gains yield? The percentage return? If your total investment was $1,400, how much do you have at the end of the year?

Your $1.40 dividend per share works out to a dividend yield of

$$\begin{aligned}\text{Dividend yield} &= D_{t+1} / P_t \\ &= \$1.40 / \$35 \\ &= 4\%\end{aligned}$$

The per-share capital gain is $14, so the capital gains yield is

$$\begin{aligned}\text{Capital gains yield} &= (P_{t+1} - P_t) / P_t \\ &= (\$49 - \$35) / \$35 \\ &= \$14 / \$35 \\ &= 40\%\end{aligned}$$

The total percentage return is thus 4% + 40% = 44%.

If you had invested $1,400, you would have $2,016 at the end of the year. To check this, note that your $1,400 would have bought you $1,400 / $35 = 40 shares. Your 40 shares would then have paid you a total of 40 × $1.40 = $56 in cash dividends. Your $14 per share gain would give you a total capital gain of $14 × 40 = $560. Add these together and you get $616, which is a 44 percent total return on your $1,400 investment.

A NOTE ON ANNUALIZING RETURNS

So far, we have only considered annual returns. Of course, the actual length of time you own an investment will almost never be exactly a year. To compare investments, however, we will usually need to express returns on a per-year or "annualized" basis, so we need to do a little bit more work.

For example, suppose you bought 200 shares of Lowe's Companies, Inc. (LOW), at a price of $30 per share. In three months, you sell your stock for $31.50. You didn't receive any dividends. What is your return for the three months? What is your annualized return?

In this case, we say that your *holding period,* which is the length of time you own the stock, is three months. With a zero dividend, you know that the percentage return can be calculated as:

$$\text{Percentage return} = (P_{t+1} - P_t)/P_t = (\$31.50 - \$30)/\$30 = .0500 = 5.00\%$$

This 5.00 percent is your return for the three-month holding period, but what does this return amount to on a per-year basis? To find out, we need to convert this to an annualized return, meaning a return expressed on a per-year basis. Such a return is often called an **effective annual return**, or **EAR** for short. The general formula is this:

effective annual return (EAR)
The return on an investment expressed on a per-year, or "annualized," basis.

$$1 + EAR = (1 + \text{holding period percentage return})^m \quad (1.4)$$

where m is the number of holding periods in a year.

In our example, the holding period percentage return is 5.00 percent, or .0500. The holding period is three months, so there are four (12 months/3 months) periods in a year. We calculate the annualized return, or *EAR,* as follows:

$$\begin{aligned} 1 + EAR &= (1 + \text{holding period percentage return})^m \\ &= (1 + .0500)^4 \\ &= 1.2155 \end{aligned}$$

So, your annualized return is 21.55 percent.

EXAMPLE 1.2 A "QWEST" for Returns

Suppose you buy some stock in Qwest (no, that's not a typo, that's how the company spells it) at a price of $8 per share. Four months later, you sell for $8.40 per share. No dividend is paid. What is your annualized return on this investment?

For the four-month holding period, your return is:

$$\text{Percentage return} = (P_{t+1} - P_t) / P_t = (\$8.40 - \$8) / \$8 = .05 = 5\%$$

There are three four-month periods in a year, so the annualized return is:

$$1 + EAR = (1 + \text{holding period percentage return})^m = (1 + .05)^3 = 1.1576$$

Subtracting the one, we get an annualized return of .1576, or 15.76 percent.

EXAMPLE 1.3 More Annualized Returns

Suppose you buy some stock in Johnson & Johnson (JNJ) at a price of $60 per share. Three *years* later, you sell it for $64.50. No dividends were paid. What is your annualized return on this investment?

The situation here is a bit different because your holding period is now longer than a year, but the calculation is basically the same. For the three-year holding period, your return is:

$$\text{Percentage return} = (P_{t+1} - P_t) / P_t = (\$64.50 - \$60) / \$60 = .075 = 7.5\%$$

(continued)

How many three-year holding periods are there in a single year? The answer is one-third, so m in this case is 1/3. The annualized return is:

$$\begin{aligned} 1 + EAR &= (1 + \text{holding period percentage return})^m \\ &= (1 + .075)^{1/3} \\ &= 1.0244 \end{aligned}$$

Subtracting the one, we get an annualized return of .0244, or 2.44 percent.

Now that you know how to calculate returns on a hypothetical stock, you should calculate returns for real stocks. The nearby *Work the Web* box using finance.yahoo.com describes how to begin. Meanwhile, in the next several sections, we will take a look at the returns that some common types of investments have earned over the last 87 years.

CHECK THIS

1.1a What are the two parts of total return?

1.1b What is the difference between a dollar return and a percentage return? Why are percentage returns usually more convenient?

1.1c What is an effective annual return (EAR)?

1.2 The Historical Record

We now examine year-to-year historical rates of return on five important categories of financial investments. These returns can be interpreted as what you would have earned if you had invested in portfolios of the following asset categories:

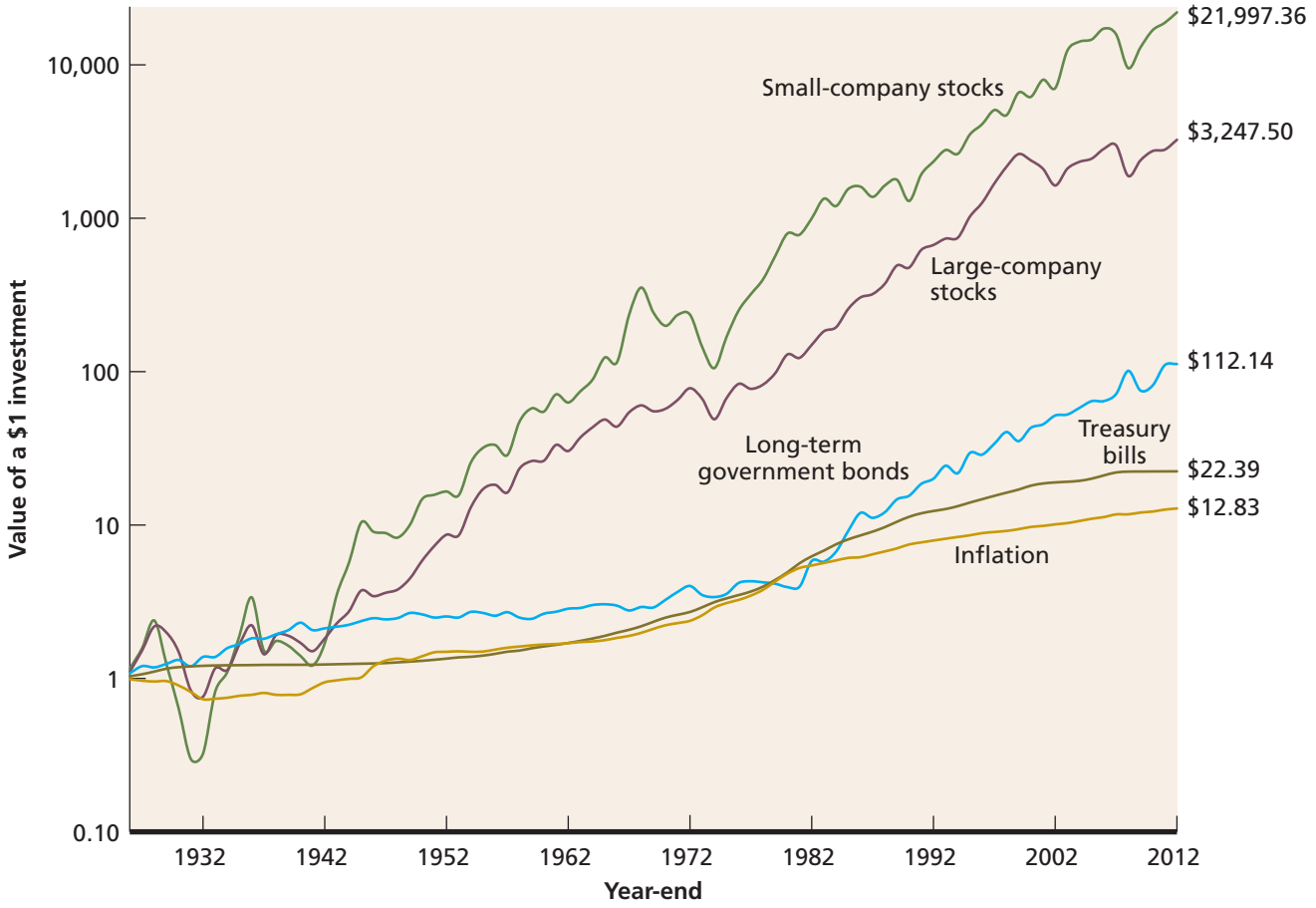
Annual historical financial market data can be downloaded (but not for free) at www.globalfinancialdata.com

1. Large-company stocks. The large-company stock portfolio is based on the Standard & Poor's (S&P's) 500 Index, which contains 500 of the largest companies (in terms of total market value of outstanding stock) in the United States.
2. Small-company stocks. This is a portfolio composed of stock of smaller companies, where "small" corresponds to the smallest 20 percent of the companies listed on the New York Stock Exchange, again as measured by market value of outstanding stock.
3. Long-term corporate bonds. This is a portfolio of high-quality bonds with 20 years to maturity.
4. Long-term U.S. government bonds. This is a portfolio of U.S. government bonds with 20 years to maturity.
5. U.S. Treasury bills. This is a portfolio of Treasury bills (T-bills for short) with a three-month maturity.

If you are not entirely certain what these investments are, don't be overly concerned. We will have much more to say about each in later chapters. For now, just accept that these are some important investment categories. In addition to the year-to-year returns on these financial instruments, the year-to-year percentage changes in the Consumer Price Index (CPI) are also computed. The CPI is a standard measure of consumer goods price inflation. We discuss the CPI in more detail in a later chapter.

Here is a bit of market jargon for you. A company's *total market capitalization* (or market "cap" for short) is equal to its stock price multiplied by the number of shares of stock. In other words, it's the total value of the company's stock. Large companies are often called "large-cap" stocks, and small companies are called "small-cap" stocks. We'll use these terms frequently.

FIGURE 1.1 A $1 Investment in Different Types of Portfolios: 1926–2012 (Year-end 1925 = $1)



Source: *Global Financial Data* (www.globalfinancialdata.com) and Professor Kenneth R. French, Dartmouth College.

A FIRST LOOK

Before examining the different portfolio returns, we first take a look at the "big picture." Figure 1.1 shows what happened to $1 invested in these different portfolios at the beginning of 1926 and held over the 87-year period ending in 2012 (for clarity, the long-term corporate bonds are omitted). To fit all the information on a single graph, some modification in scaling is used. As is commonly done with financial time series, the vertical axis is scaled so that equal distances measure equal percentage (as opposed to dollar) changes in value. Thus, the distance between $10 and $100 is the same as that between $100 and $1,000, since both distances represent the same 900 percent increases.

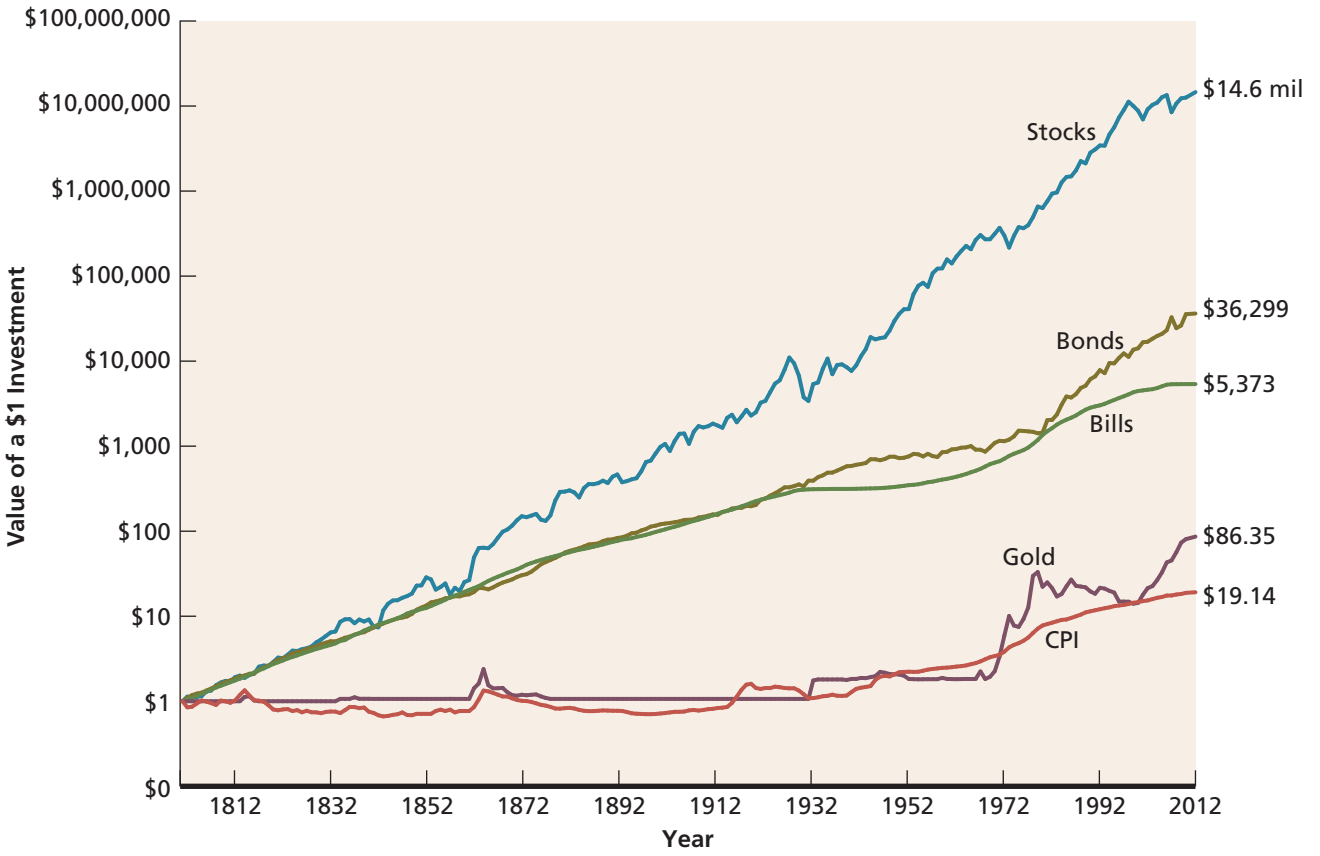
Looking at Figure 1.1, we see that the small-company investment did the best overall. Every dollar invested grew to a remarkable $21,997.36 over the 87 years. The larger common stock portfolio did less well; a dollar invested in it grew to $3,247.50.

At the other end, the T-bill portfolio grew to only $22.39. This is even less impressive when we consider the inflation over this period. As illustrated, the increase in the price level was such that $12.83 is needed just to replace the original $1.

Given the historical record, why would anybody buy anything other than small-company stocks? If you look closely at Figure 1.1, you will probably see the answer—risk. The T-bill portfolio and the long-term government bond portfolio grew more slowly than did the stock portfolios, but they also grew much more steadily. The small stocks ended up on top, but, as you can see, they grew quite erratically at times. For example, the small stocks were the

FIGURE 1.2 Financial Market History

Total return indexes (1801–2012)



Sources: Jeremy J. Siegel, *Stocks for the Long Run*, 3rd ed. (New York: McGraw-Hill, 2003); update through 2009 provided by Jeremy J. Siegel; update through 2012 from *Global Financial Data* (www.globalfinancialdata.com); and Professor Kenneth R. French, Dartmouth College.

worst performers for about the first 10 years and had a smaller return than long-term government bonds for almost 15 years.

A LONGER RANGE LOOK

The data available on the stock returns before 1925 are not comprehensive, but it is nonetheless possible to trace reasonably accurate returns in U.S. financial markets as far back as 1801. Figure 1.2 shows the values, in 2012, of $1 invested since 1801 in stocks, long-term bonds, short-term bills, and gold. The CPI is also included for reference.

Inspecting Figure 1.2, we see that $1 invested in stocks grew to an astounding $14.6 million over this 212-year period. During this time, the returns from investing in stocks dwarf those earned on other investments. Notice also in Figure 1.2 that, after 170 years, gold has managed to outpace inflation beginning in the 1970s.

What we see thus far is that there has been a powerful financial incentive for long-term investing. The real moral of the story is this: Get an early start!

A CLOSER LOOK

To illustrate the variability of the different investments and inflation, Figures 1.3 through 1.6 plot the year-to-year percentage returns in the form of vertical bars drawn from the horizontal axis. The height of a bar tells us the return for the particular year. For example, looking at the long-term government bonds (Figure 1.5), we see that the largest historical return (47.14 percent) occurred in 1982. This year was a good year for bonds. In comparing these charts, notice the differences in the vertical axis scales. With these differences in mind,