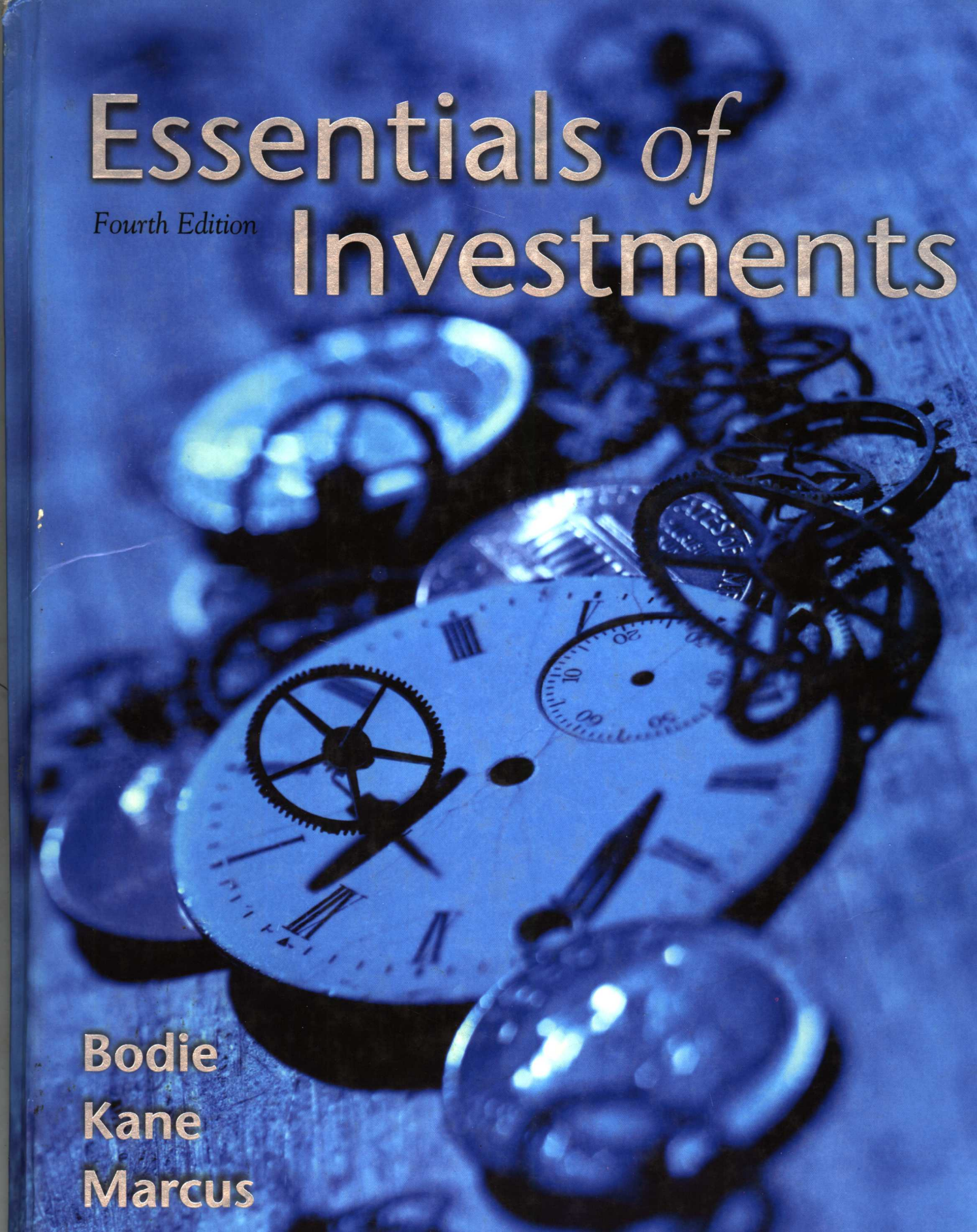
Essentials of Investments

Fourth Edition



Bodie
Kane
Marcus

Essentials of Investments

Fourth Edition

ZVI BODIE
Boston University

ALEX KANE
University of California, San Diego

ALAN J. MARCUS
Boston College

McGraw-Hill Irwin

Boston Burr Ridge, IL Dubuque, IA Madison, WI New York San Francisco St. Louis
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Publisher: *John Biernat*
Senior development editor: *Michele Janicek*
Executive marketing manager: *Rhonda Seelinger*
Senior project manager: *Jean Lou Hess*
Production supervisor: *Debra Sylvester*
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Senior supplement coordinator: *Cathy L. Tepper*
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A Note from the **Authors . . .**

We wrote the first edition of this textbook 10 years ago. It has been a decade of rapid and profound change in the investments industry. Among the notable developments in financial markets in this decade are:

- The coming of age of on-line and Internet trading, as well as the more recent advent of trading via electronic communication networks
- The rapid and ongoing growth of derivative markets
- The increasing globalization of security markets

Of necessity, our text has evolved along with the financial markets. In this edition, we address many of the changes in the investment environment.

At the same time, many basic *principles* remain important. We continue to organize our book around one basic theme—that *security markets are nearly efficient,* meaning that most securities are usually priced appropriately given their risk and return attributes. There are few free lunches found in markets as competitive as the financial market. This simple observation is, nevertheless, remarkably powerful in its implications for the design of investment strategies, and our discussions of strategy are always guided by the implications of the efficient markets hypothesis. While the degree of market efficiency is, and will always be, a matter of debate, we hope our discussions throughout the book convey a good dose of healthy criticism concerning much conventional wisdom.

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

Our book also focuses on investment analysis, which allows us to present the practical applications of investment theory, and to convey insights of practical value. In this edition of the text, we have introduced a systematic collection of Excel spreadsheets that give students tools to explore concepts more deeply than was previously possible. These spreadsheets are available through the World Wide Web, and provide a taste of the sophisticated analytic tools available to professional investors.

In our efforts to link theory to practice, we also have attempted to make our approach consistent with that of the Institute of Chartered Financial Analysts (ICFA). The ICFA administers an education and certification program to candidates for the title of Chartered Financial Analyst (CFA). The CFA curriculum represents the consensus of a committee of distinguished scholars and practitioners regarding the core of knowledge required by the investment professional.

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

Zvi Bodie
Alex Kane
Alan J. Marcus

Organization of the Fourth Edition

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

This part lays out the general framework for the investment process in a non-technical manner, modeled after the approach presented in CFA study materials. We discuss the major players in the financial markets, and provide an overview of security types and trading mechanisms. The organization of these chapters makes it possible for instructors to assign term projects analyzing securities early in the course.

PART ONE
Elements of Investments 1

1 Investments: Background and Issues 2
2 Financial Markets and Instruments 24
3 How Securities Are Traded 61
4 Mutual Funds and Other Investment Companies 98
5 Investors and the Investment Process 124

This edition introduces coverage of the euro.

Thoroughly updated to reflect changes in financial markets such as electronic communication networks (ECNs), on-line and Internet trading, and Internet IPOs—the most current textbook available!

Includes excerpts from the "Code of Ethics and Standards of Professional Conduct" of the ICFA

Modeled after the ICFA outline, this chapter also includes guidelines on "How to Become a Chartered Financial Analyst"

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

PART TWO
Portfolio Theory 151

6 Risk and Return: Past and Prologue 152
7 Efficient Diversification 185
8 Capital Asset Pricing and Arbitrage Pricing Theory 227
9 The Efficient Market Hypothesis 268

All data is updated in this edition

This edition introduces simple in-chapter spreadsheets that can be used to compute covariance matrixes, investment opportunity sets, and the index model. The spreadsheet material is modular; it can be integrated with class material, but also may be skipped without problem.

We introduce a new section showing the links among the determination of optimal portfolios, security analysis, investors' buy/sell decisions, and equilibrium prices and expected rates of return.

Discusses the rationales of the EMH, as well as evidence for and against it.

First of three parts on security valuation

PART THREE
Fixed-Income Securities 297

10 Bond Prices and Yields 298
11 Managing Fixed-Income Investments 337

New material showing graphical interpretations of duration

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

Current coverage of how international political developments had major impacts on economic prospects.

New material on comparative valuation ratios such as price to sales or price to cash flow.

These markets have become crucial and integral to the financial universe and are major sources of innovation.

Put-call parity discussion has been removed from this chapter and added to Chapter 17 because it is more naturally related to option pricing.

In-chapter spreadsheet material on the Black-Scholes model and estimation of implied volatility.

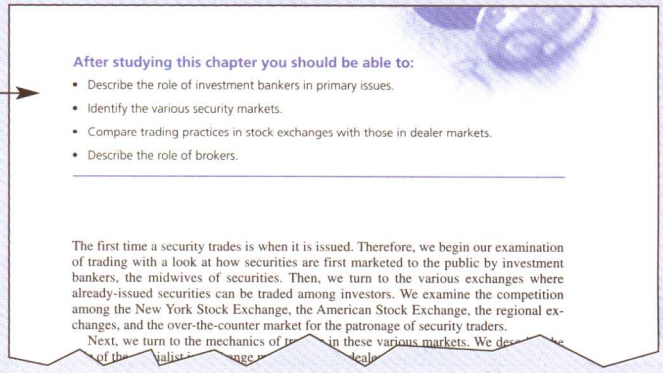
This part has been streamlined by combining two chapters into Chapter 19, thereby reducing redundancies and making it easier for instructors to cover in a one-semester course.

New material on the "Modigliani-square" measure of portfolio performance, and its relationship to Sharpe's measure.

Pedagogical **Features**

Chapter Objectives

Each chapter begins with a summary of the objectives of the chapter and describes the material to be covered, providing students with an overview of the concepts they should understand after reading the chapter.



After studying this chapter you should be able to:

- Describe the role of investment bankers in primary issues.
- Identify the various security markets.
- Compare trading practices in stock exchanges with those in dealer markets.
- Describe the role of brokers.

The first time a security trades is when it is issued. Therefore, we begin our examination of trading with a look at how securities are first marketed to the public by investment bankers, the midwives of securities. Then, we turn to the various exchanges where already-issued securities can be traded among investors. We examine the competition among the New York Stock Exchange, the American Stock Exchange, the regional exchanges, and the over-the-counter market for the patronage of security traders.

Next, we turn to the mechanics of trading in these various markets. We describe the

Boxed Readings

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

Flotation Therapy

Nothing gets online traders clicking their "buy" icons so fast as a hot IPO. Recently, demand from small investors using the Internet has led to huge price increases in shares of newly floated companies after their initial public offerings. How frustrating, then, that these online traders can rarely buy IPO shares when they are handed out. They have to wait until they are traded in the market, usually at well above the offer price.

Now, help may be at hand from a new breed of Internet-based investment banks, such as E*Offering, Wit Capital and W. R. Hambrecht, which has just completed its first online IPO. Wit, a 16-month-old veteran, was formed by Andrew Klein, who in 1995 completed

bank, Wall Street only lets them in on a deal when it is "hard to move".

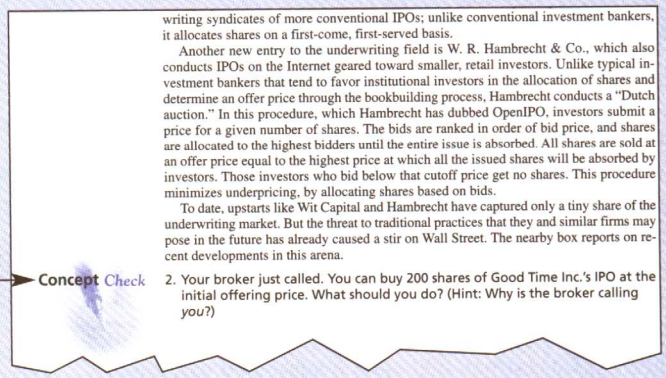
The new Internet investment banks aim to change this by becoming part of the syndicates that manage share-offerings. This means persuading company bosses to let them help take their firms public. They have been hiring mainstream investment bankers to establish credibility, in the hope, ultimately, of winning a leading role in a syndicate. This would win them real influence over who gets shares. (So far, Wit has been a co-manager in only four deals.)

Established Wall Street houses will do all they can to stop this. But their claim that online

less loyal

Concept Checks

These self-test questions and problems in the body of the chapter enable the student to determine whether he or she has understood the preceding material and to reinforce that understanding before reading further. Detailed solutions to these questions are found at the end of each chapter.



writing syndicates of more conventional IPOs; unlike conventional investment bankers, it allocates shares on a first-come, first-served basis.

Another new entry to the underwriting field is W. R. Hambrecht & Co., which also conducts IPOs on the Internet geared toward smaller, retail investors. Unlike typical investment bankers that tend to favor institutional investors in the allocation of shares and determine an offer price through the bookbuilding process, Hambrecht conducts a "Dutch auction." In this procedure, which Hambrecht has dubbed OpenIPO, investors submit a price for a given number of shares. The bids are ranked in order of bid price, and shares are allocated to the highest bidders until the entire issue is absorbed. All shares are sold at an offer price equal to the highest price at which all the issued shares will be absorbed by investors. Those investors who bid below that cutoff price get no shares. This procedure minimizes underpricing, by allocating shares based on bids.

To date, upstarts like Wit Capital and Hambrecht have captured only a tiny share of the underwriting market. But the threat to traditional practices that they and similar firms may pose in the future has already caused a stir on Wall Street. The nearby box reports on recent developments in this arena.

Concept *Check*

2. Your broker just called. You can buy 200 shares of Good Time Inc.'s IPO at the initial offering price. What should you do? (Hint: Why is the broker calling *you*?)

Key Terms

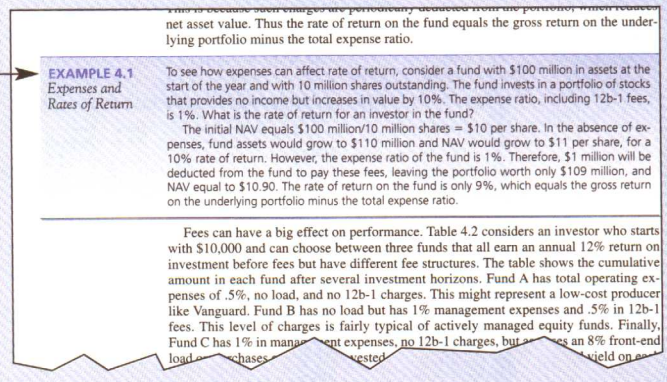
Key terms are indicated in boldface and defined in the margin the first time the term is used. The terms are also listed at the end of the chapter with page references for easy review.

Numbered Equations

Key equations are called out in the text and identified by equation numbers. Equations that are frequently used are also featured on the text's back end sheets for convenient reference.

Numbered Examples

Separate numbered and titled examples are integrated in the chapters and indicated by a colored sidebar. Using the worked-out solutions to these examples as models, students can learn how to solve specific problems in a step-by-step manner as well as gain insight into general principles by seeing how they are applied to answer concrete questions.



net asset value. Thus the rate of return on the fund equals the gross return on the underlying portfolio minus the total expense ratio.

EXAMPLE 4.1 *Expenses and Rates of Return*

To see how expenses can affect rate of return, consider a fund with $100 million in assets at the start of the year and with 10 million shares outstanding. The fund invests in a portfolio of stocks that provides no income but increases in value by 10%. The expense ratio, including 12b-1 fees, is 1%. What is the rate of return for an investor in the fund?

The initial NAV equals $100 million/10 million shares = $10 per share. In the absence of expenses, fund assets would grow to $110 million and NAV would grow to $11 per share, for a 10% rate of return. However, the expense ratio of the fund is 1%. Therefore, $1 million will be deducted from the fund to pay these fees, leaving the portfolio worth only $109 million, and NAV equal to $10.90. The rate of return on the fund is only 9%, which equals the gross return on the underlying portfolio minus the total expense ratio.

Fees can have a big effect on performance. Table 4.2 considers an investor who starts with $10,000 and can choose between three funds that all earn an annual 12% return on investment before fees but have different fee structures. The table shows the cumulative amount in each fund after several investment horizons. Fund A has total operating expenses of .5%, no load, and no 12b-1 charges. This might represent a low-cost producer like Vanguard. Fund B has no load but has 1% management expenses and .5% in 12b-1 fees. This level of charges is fairly typical of actively managed equity funds. Finally, Fund C has 1% in manag[illegible]ent expenses, no 12b-1 charges, but [illegible]es an 8% front-end load [illegible]chases [illegible]vested [illegible]yield on e[illegible]

Excel Applications

New to this edition! Since many courses now require students to perform analyses in spreadsheet format, Excel has been integrated throughout the book. It is used in examples as well as in this new chapter feature which shows students how to create and manipulate spreadsheets to solve specific problems. This feature starts with an example presented in the chapter, briefly discusses how a spreadsheet can be valuable for investigating the topic, shows a sample spreadsheet, and then asks questions that can be answered using that spreadsheet. The student can obtain the actual spreadsheet from the book's web site (www.mhhe.com/bkm). At this site, there is a more detailed discussion on how the spreadsheet is built, and how it can be used to solve problems. As extra guidance, the spreadsheets include a comment feature that documents both inputs and outputs. Solutions for these exercises are located on the password-protected instructor site only, so instructors can assign these exercises either for homework or just for practice.

Spreadsheets available:

Chapter 3: Margined Positions, Short Sales

Chapter 7: Two Security Porftolio, Multisecurity Efficient Frontiers

Chapter 8: The Index Model

Chapter 11: Bond Pricing and Duration, Immunization

Chapter 13: Equity Valuation: Two-Stage Growth Model

Chapter 16: Option Strategies

Chapter 17: The Black-Scholes Model

Chapter 19: Portfolio Performance Evaluation

Chapter 20: International Portfolios: With and Without Currency Returns

Excel **Applications**

www.mhhe.com/bkm

Long Margins and Short Sales

You can find spreadsheets to calculate returns on both margined and short sale positions at our website (www.mhhe.com/bkm). The spreadsheet for margins is based on the example in Section 3.6, and that for short sales is based on the example in Section 3.7.

Both spreadsheets allow you to input initial investment, initial stock price, estimated dividends. They calculate return on investment as a function of ending stock price as well as the stock price at which a margin call will occur.

	A	B	C	D	E	F	G	H
1								
2	**Buying on Margin**			**Ending St Price**	**Return on Investment**		**Ending St Price**	**Return with No Margin**
3								
4	Initial Equity Investment	10,000.00			-42.00%			0.00%
5	Amount Borrowed	10,000.00		20	-122.00%		20	-59.00%
6	Initial Stock Price	50.00		25	-102.00%		25	-49.00%
7	Shares Purchased	400		30	-82.00%		30	-39.00%
8	Ending Stock Price	40.00		35	-62.00%		35	-29.00%
9	Cash Dividends During Hold Per	0.50		40	-42.00%		40	-19.00%
10	Initial Margin Percentage	50.00%		45	-22.00%		45	-9.00%
11	Maintenance Margin Percentage	30.00%		50	-2.00%		50	1.00%
12				55	18.00%		55	11.00%
13	Rate on Margin Loan	8.00%		60	38.00%		60	21.00%
14	Holding Period in Months	6		65	58.00%		65	31.00%
15				70	78.00%		70	41.00%
16	**Return on Investment**			75	98.00%		75	51.00%
17	Capital Gain on Stock	-4000.00		80	118.00%		80	61.00%
18	Dividends	200.00						
19	Interest on Margin Loan	400.00						
20	Net Income	-4200.00						
21	Initial Investment	10000.00						
22	Return on Investment	-42.00%						
23								

Questions

A. Long Margin

You have $20,000 to invest in the shares of Omega Incorporated. The stock is currently selling at a price of $80 per share. You estimate that the stock will be selling at a price of [illegible] year. Since Omega is a growth stock, no cash dividends are expected over the next year. The rate on margin loans is currently 7%.

1. What would be the expected return on the investment assuming that you used the maximum allowable margin of 50%?
2. At what price would you get a margin call assuming the maintenance margin was 30%?
3. Construct two data tables that compare the return on investment for a margin trade and a trade with no margin for ending stock prices that range from $20 to $140 in increments of $10.
4. What would be the expected return on investment if you were to use an initial margin of 80% rather than the maximum allowable margin of 50%?
5. How far could the stock price fall with an initial margin of 80% assuming the maintenance margin remains at 30%?
6. Construct two data tables that compare the return on investment for a margin trade and a trade with no margin for ending stock prices that range from $20 to $140 in increments of $10. Compare the results to the ranges for question 3.

B. Short Sale

You have $24,000 to commit to a short sale. You observe that shares of Omicron Technology are selling at a price of $120 per share. Your research indicates that the shares are overvalued and should be selling for a price to closer to $85 per share. Assuming that the maintenance margin is 25% and the initial margin is 50%, use the spreadsheet as a template to answer the following questions.

1. What is the expected return on investment if you are correct and the shares sell for an ending price of $85 per share?
2. What would be the margin based on ending price if your prediction is correct?
3. How far can the price of Omicron rise before you get a call for additional margin?
4. Analyze return on investment for the range of possible ending stock prices from a high of $170 per share to a low of $70 per share in increments of $10. Use the data table function to

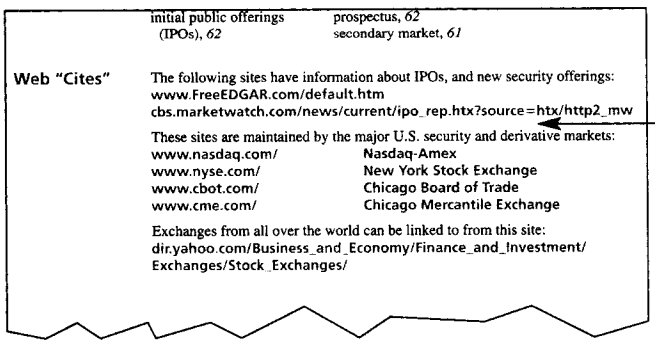
End-of-Chapter Features

Summary

This bulleted feature helps the student review key points and provides closure to the chapter.

List of Key Terms

The list of key terms includes page references, facilitating student review of the chapter's key concepts.



initial public offerings (IPOs), *62*
prospectus, *62*
secondary market, *61*

Web "Cites"

The following sites have information about IPOs, and new security offerings:
www.FreeEDGAR.com/default.htm
cbs.marketwatch.com/news/current/ipo_rep.htx?source=htx/http2_mw

These sites are maintained by the major U.S. security and derivative markets:

www.nasdaq.com/	Nasdaq-Amex
www.nyse.com/	New York Stock Exchange
www.cbot.com/	Chicago Board of Trade
www.cme.com/	Chicago Mercantile Exchange

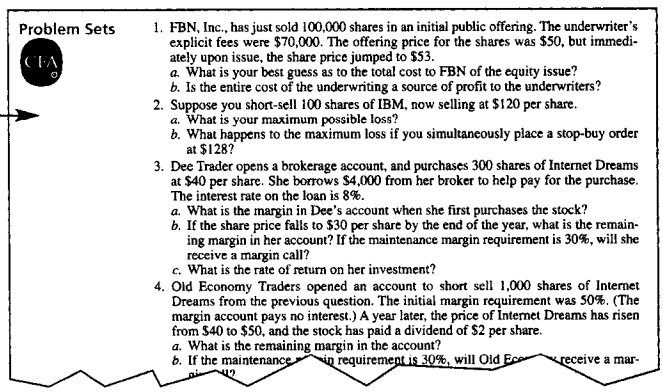
Exchanges from all over the world can be linked to from this site:
dir.yahoo.com/Business_and_Economy/Finance_and_Investment/Exchanges/Stock_Exchanges/

Web "Cites"

This section lists key web sites with a brief annotation on their relevance to the specific chapter.

Problem Sets

The end-of-chapter problems progress from the simple to the complex. We strongly believe that practice in solving problems is a critical part of learning investments, so we provide a good variety of problems. Many of the problems are new or revised from the previous edition.



Problem Sets

1. FBN, Inc., has just sold 100,000 shares in an initial public offering. The underwriter's explicit fees were $70,000. The offering price for the shares was $50, but immediately upon issue, the share price jumped to $53.
   a. What is your best guess as to the total cost to FBN of the equity issue?
   b. Is the entire cost of the underwriting a source of profit to the underwriters?
2. Suppose you short-sell 100 shares of IBM, now selling at $120 per share.
   a. What is your maximum possible loss?
   b. What happens to the maximum loss if you simultaneously place a stop-buy order at $128?
3. Dee Trader opens a brokerage account, and purchases 300 shares of Internet Dreams at $40 per share. She borrows $4,000 from her broker to help pay for the purchase. The interest rate on the loan is 8%.
   a. What is the margin in Dee's account when she first purchases the stock?
   b. If the share price falls to $30 per share by the end of the year, what is the remaining margin in her account? If the maintenance margin requirement is 30%, will she receive a margin call?
   c. What is the rate of return on her investment?
4. Old Economy Traders opened an account to short sell 1,000 shares of Internet Dreams from the previous question. The initial margin requirement was 50%. (The margin account pays no interest.) A year later, the price of Internet Dreams has risen from $40 to $50, and the stock has paid a dividend of $2 per share.
   a. What is the remaining margin in the account?
   b. If the maintenance [illegible] requirement is 30%, will Old Eco[illegible] receive a mar-

CFA Questions

We provide several questions from recent CFA exams in applicable chapters. These questions represent the kinds of questions that professionals in the field believe are relevant to the practicing money manager. These problems are identified by an icon in the text margin. Appendix B lists each CFA question and the level and year of the CFA Exam it was included in, for easy reference when studying for the exam.

For the Instructor

Instructor's Resource Manual 0-07-231861-9

Prepared by Richard D. Johnson, Colorado State University, this instructional tool provides an integrated learning approach revised for this edition. Each chapter includes a Chapter Overview, Learning Objectives, and Presentation of Chapter Material, which outlines the material and organizes it around the Transparency Masters/PowerPoint Presentation Software. Transparency Masters are located at the end of each chapter.

PowerPoint Presentation Software 0-07-231864-3

These presentation slides, also developed by Richard D. Johnson, provide the instructor with an electronic format of the Transparency Masters. These slides, revised for this edition, follow the order of the chapters, but if you have PowerPoint software, you may customize the program to fit your lecture presentation.

Test Bank 0-07-231863-5

Prepared by Douglas Kahl, University of Akron, the Test Bank has again been expanded to more than 1,200 questions. Each question is ranked by level of difficulty (easy, medium, hard), which allows greater flexibility in creating a test. The Test Bank is also available in a computerized format for Windows.

The Wall Street Journal Edition 0-07-231860-0

Available through a unique arrangement with Dow Jones & Company, *The Wall Street Journal* edition of *Essentials of Investments* includes a free 10-week subscription to *The Wall Street Journal* included in the price of the book. Instructors should contact their sales representative about ordering this special edition.

For the Student

Solutions Manual 0-07-231867-8

The Solutions Manual, prepared by the authors, provides detailed solutions to the end-of-chapter problems. The authors' involvement in the Solutions Manual ensures consistency between the solution approaches in the examples in the text and those presented in the manual.

Ready Notes 0-07-231869-4

This note-taking supplement contains a reduced copy of every image from the Transparency Masters/ PowerPoint Presentation Software package. There is room to take notes next to each image, allowing students a more complete and organized method for recording lecture notes.

On-line Support

BKM *Essentials* Website

Find a wealth of information on-line! At www.mhhe.com/bkm, instructors will have access to teaching support such as electronic files for the ancillary material and students will have access to study materials created specifically for this text. The Excel Applications spreadsheets are located at this site. Also available is additional information on the text and authors; a link to FRAN—the finance supersite which contains many helpful teaching tips and materials for your investments course; and introductions to other McGraw-Hill on-line products.

eLearning Sessions

Another original and exclusive McGraw-Hill/Irwin digital solution! eLearning sessions offer a new study solution for students wanting to use our online content. With eLearning sessions you gain access to all of our rich digital content *in context.* This interactive study experience is like none other you've experienced on-line. Our sessions are like guided tours of the most critical concepts in your course. Check it out at www.mhhe.com/bkm!

Acknowledgments

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

Bala Arshanapalli
Indiana University Northwest

Randall S. Billingsley
Virginia Polytechnic Institute and State University

Howard Bohnen
St. Cloud State University

Paul Bolster
Northeastern University

Lyle Bowlin
University of Northern Iowa

Alyce R. Campbell
University of Oregon

Greg Chaudoin
Loyola University

Ji Chen
University of Colorado, Denver

Mustafa Chowdhury
Louisiana State University

Diane Del Guercio
University of Oregon

David C. Distad
University of California at Berkeley

Gary R. Dokes
University of San Diego

Peter D. Ekman
Kansas State University

James F. Feller
Middle Tennessee State University

Ken Froewiss
New York University

Deborah Gunthorpe
University of Tennessee

Thomas Hamilton
St. Mary's University

Gay Hatfield
University of Mississippi

Larry C. Holland
Oklahoma State University

Ron E. Hutchins
Eastern Michigan University

Richard Johnson
Colorado State University

Douglas Kahl
University of Akron

Donald Kummer
University of Missouri, St. Louis

Angeline Lavin
University of South Dakota

John Loughlin
St. Louis University

David Louton
Bryant College

David Loy
Illinois State University

Laurian Casson Lytle
University of Wisconsin, Whitewater

Leo Mahoney
Bryant College

Steven V. Mann
University of South Carolina

Jeffrey A. Manzi
Ohio University

James Marchand
Westminster College

Robert J. Martel
Bentley College

Linda J. Martin
Arizona State University

Edward Miller
University of New Orleans

Majed Muhtaseb
California State Polytechnic University

Mike Murray
Winona State University

C. R. Narayanaswamy
Georgia Institute of Technology

Raj Padmaraj
Bowling Green University

John C. Park
Frostburg State University

Rose Prasad
Central Michigan University

Elias A. Raad
Ithaca College

Craig Ruff
Georgia State University

David Schirm
John Carroll University

Edwin Stuart
Southeastern Oklahoma State University

George S. Swales
Southwest Missouri State University

Paul Swanson
University of Cincinnati

Bruce Swensen
Adelphi University

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North Central College

Howard Whitney
Franklin University

Michael E. Williams
University of Texas at Austin

Tony Wingler
University of North Carolina

Annie Wong
Western Connecticut State University

Richard H. Yanow
North Adams State College

Zhong-guo Zhou
California State University–Northridge

Thomas J. Zwirlein
University of Colorado, Colorado Springs

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