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FUNDAMENTALS OF
CORPORATE FINANCE

SECOND EDITION

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CORPORATE
FINANCE

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Dedication

ROBERT PARRINO

To my parents, whose life-long support and commitment to education inspired me to become an educator and to my wife, Emily, for her unending support.

DAVID KIDWELL

To my parents, Dr. William and Margaret Kidwell for their endless support of my endeavors, to my son, David Jr., of whom I am very proud, and to my wife Jillinda who is the joy of my life.

THOMAS BATES

To my wife, Emi, and our daughters Abigail and Lillian. Your support, patience, fun, and friendship make me a better educator, scholar, and person.
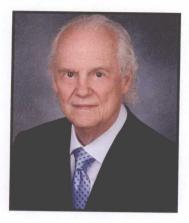
ROBERT PARRINO

Lamar Savings Centennial Professor of Finance
McCombs School of Business, University of Texas at Austin

A member of the faculty at University of Texas since 1992, Dr. Parrino teaches courses in regular degree and executive education programs at the University of Texas, as well as in customized executive education courses for industrial, financial, and professional firms. He has also taught at the University of Chicago, University of Rochester, and IMADEC University in Vienna. Dr. Parrino has received numerous awards for teaching excellence at University of Texas from students, faculty, and the Texas Ex's (alumni association).

Dr. Parrino has been involved in advancing financial education outside of the classroom in a variety of ways. As a Chartered Financial Analyst (CFA) charterholder he has been very active with the CFA Institute, having been a member of the candidate curriculum committee, served as a regular speaker at the annual Financial Analysts Seminar, spoken at over 20 Financial Analyst Society meetings, and as a past member of the planning committee for the CFA Institute's Annual Meeting. In addition, Dr. Parrino is the founding director of the Hicks, Muse, Tate & Furst Center for Private Equity Finance at the University of Texas. Dr. Parrino was Vice President for Financial Education of the Financial Management Association (FMA) from 2008 to 2010 and has been elected to serve as an academic director of the FMA from 2011 to 2013.

Dr. Parrino is also co-founder of the Financial Research Association and is Associate Editor of the *Journal of Corporate Finance* and the *Journal of Financial Research*. Dr. Parrino's research includes work on corporate governance, financial policies, restructuring, and mergers and acquisitions, as well as research on private equity markets. He has published his research in a number of journals, including the *Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, Journal of Law and Economics, Journal of Portfolio Management,* and *Financial Management.* Dr. Parrino has won a number of awards for his research.

Dr. Parrino has experience in the application of corporate finance concepts in a variety of business situations. Since entering the academic profession he has been retained as an advisor on valuation issues concerning businesses with enterprise values ranging to more than $1 billion and has consulted in areas such as corporate financing, compensation, and corporate governance. Dr. Parrino is currently on the advisory council of Virgo capital, a private equity firm, and was previously President of Sprigg Lane Financial, Inc., a financial consulting firm with offices in Charlottesville, Virginia and New York City. While at Sprigg Lane, he was on the executive, banking, and portfolio committees of the holding company that owns Sprigg Lane. Before joining Sprigg Lane, Dr. Parrino was on the Corporate Business Planning and Development staff at Marriott Corporation. At Marriott, he conducted fundamental business analyses and preliminary financial valuations of new business development opportunities and potential acquisitions. Dr. Parrino holds a B.S. in chemical engineering from Lehigh University, an MBA degree from The College of William and Mary, and M.S. and Ph.D. degrees in applied economics and finance, respectively, from University of Rochester.

DAVID S. KIDWELL

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Dr. Kidwell has over 30 years experience in financial education, as a teacher, researcher, and administrator. He has served as Dean of the Carlson School at the University of Minnesota and of the School of Business Administration at the University of Connecticut. Prior to joining the University of Connecticut, Dr. Kidwell held endowed chairs in banking and finance at Tulane University, the University of Tennessee, and Texas Tech University. He was also on the faculty at the Krannert Graduate School of Management, Purdue University where he was twice voted the outstanding undergraduate teacher of the year.

An expert on the U.S. financial system, Dr. Kidwell is the author of more than 80 articles dealing with the U.S. financial system and capital markets. He has published his research in the leading journals, including *Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, Financial Management,* and *Journal of Money, Credit, and Banking.* Dr. Kidwell has also participated in a number of research grants funded by the National Science Foundation to study the efficiency of U.S. capital markets, and to study the impact of government regulations upon the delivery of consumer financial services.

Dr. Kidwell has been a management consultant for Coopers & Lybrand and a sales engineer for Bethlehem Steel Corporation. He currently serves on the Board of Directors and is the Chairman of the Audit and Risk Committee of the Schwan Food Company. Dr. Kidwell is the past Secretary-Treasurer of the Board of Directors of AACSB, the International Association for Management Education and is a past member of the Boards of the Minnesota Council for Quality, the Stonier Graduate School of Banking, and Minnesota Center for Corporate Responsibility. Dr. Kidwell has also served as an Examiner for the 1995 Malcolm Baldrige National Quality Award, on the Board of Directors of the Juran Center for Leadership in Quality, and on the Board of the Minnesota Life Insurance Company.

Dr. Kidwell holds an undergraduate degree in mechanical engineering from California State University at San Diego, an MBA with a concentration in finance from California State University at San Francisco, and a Ph.D. in finance from the University of Oregon.

THOMAS W. BATES

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Dr. Bates is the Chair of the Department of Finance and Dean's Council of 100 Distinguished Scholar at the W. P. Carey School of Business, Arizona State University. He has also taught courses in finance at the University of Delaware, the Ivey School of Business at the University of Western Ontario, and the University of Arizona where he received the Scrivner teaching award. During his career as an educator, Professor Bates has taught corporate finance to students in undergraduate, MBA, executive MBA, and Ph.D. programs, as well as in custom corporate educational courses.

Professor Bates is a regular contributor to the academic finance literature in such journals as *The Journal of Finance, Journal of Financial Economics,* and *Financial Management.* His research addresses a variety of issues in corporate finance including the contracting environment in mergers and acquisitions, corporate liquidity decisions and cash holdings, and the governance of corporations. In practice, Dr. Bates has worked with companies and legal firms as an advisor on issues related to the valuation of companies and corporate governance. Dr. Bates received a B.A. in Economics from Guilford College and his doctorate in finance from the University of Pittsburgh.

Preface

We have written *Fundamentals of Corporate Finance* for use in an introductory course in corporate finance at the undergraduate level. It is also suitable for advanced undergraduate, executive development, and traditional or executive MBA courses when supplemented with cases and outside readings. The main chapters in the book assume that students are well-versed in algebra and that they have taken courses in principles of economics and financial accounting. Optional chapters covering important economic and financial accounting concepts are included for students and instructors seeking such coverage.

Balance Between Conceptual Understanding and Computational Skills

We wrote this corporate finance text for one very important reason. We want to provide students and instructors with a book that strikes the best possible balance between helping students develop an intuitive understanding of key financial concepts and providing them with problem-solving and decision-making skills. In our experience, teaching students at all levels and across a range of business schools, we have found that students who understand the intuition underlying the basic concepts of finance are better able to develop the critical judgment necessary to apply financial tools to a broad range of real-world situations. An introductory corporate finance course should provide students with a strong understanding of both the concepts and tools that will help them in their subsequent business studies and their personal and professional lives.

Market research supports our view. Many faculty members who teach the introductory corporate finance course to undergraduates express a desire for a book that bridges the gap between conceptually-focused and computationally-focused books. This text is designed to bridge this gap. Specifically, the text develops the fundamental concepts underlying corporate finance in an intuitive manner while maintaining a strong emphasis on developing computational skills. It also takes the students one step further by emphasizing the use of intuition and analytical skills in decision making.

Our ultimate goal has been to write a book and develop associated learning tools that help our colleagues succeed in the classroom—materials that are genuinely helpful in the learning process. Our book offers a level of rigor that is appropriate for finance majors and yet presents the content in a manner that both finance and non-finance students find accessible and want to read. Writing a book that is both *rigorous* and *accessible* has been one of our key objectives, and both faculty and student reviews of the first edition, as well as pre-publication chapters from this second edition, suggest that we have achieved this objective.

We have also tried to provide solutions to many of the challenges facing finance faculty in the current environment, who are asked to teach ever-increasing numbers of students with limited resources. Faculty members need a book and associated learning tools that help them effectively leverage their time. The organization of this book and the supplemental materials, along with the innovative *WileyPLUS* Web-based interface, which offers extensive problem solving opportunities and other resources for students, provide such leverage to an extent not found with other textbooks.

A Focus on Value Creation

This book is more than a collection of ideas, equations, and chapters. It has an important integrating theme—that of value creation. This theme, which is carried throughout the book, provides a framework that helps students understand the relations between the various concepts covered in the book and makes it easier for them to learn these concepts.

The concept of value creation is the most fundamental notion in corporate finance. It is in stockholders' best interests for value maximization to be at the heart of the financial decisions made within the firm. Thus, it is critical that students be able to analyze and make business decisions with a focus on value creation. The concept of value creation is introduced in the first chapter of the book and is further developed and applied throughout the remaining chapters.

The theme of value creation is operationalized through the net present value (NPV) concept. Once students grasp the fundamental idea that financial decision makers should only choose courses of action whose benefits exceed their costs, analysis and decision making using the NPV concept becomes second nature. By helping students better understand the economic rationale for a decision from the outset, rather than initially focusing on computational skills, our text keeps students focused on the true purpose of the calculations and the decision at hand.

Integrated Approach: Intuition, Analysis, and Decision Making

To support the focus on value creation, we have emphasized three things: (1) providing an intuitive framework for understanding fundamental finance concepts, (2) teaching students how to analyze and solve finance problems, and (3) helping students develop the ability to use the results from their analyses to make good financial decisions.

1. **An Intuitive Approach:** We believe that explaining finance concepts in an intuitive context helps students develop a richer understanding of those concepts and gain better insights into how finance problems can be approached. It is our experience that students who have a strong conceptual understanding of financial theory better understand how things really work and are better problem solvers and decision makers than students who focus primarily on computational skills.

2. **Analysis and Problem Solving:** With a strong understanding of the basic principles of finance, students are equipped to tackle a wide range of financial problems. In addition to the many numerical examples that are solved in the text of each chapter, this book has almost 1,200 end-of-chapter homework and review problems that have been written with Bloom's Taxonomy in mind. Solutions for these problems are provided in the Instructor's Manual. We strive to help students acquire the ability to analyze and solve finance problems.

3. **Decision Making:** In the end, we want to prepare students to make sound financial decisions. To help students develop these skills, throughout the text we illustrate how the results from financial analyses are used in decision making.

Organization and Coverage

In order to help students develop the skills necessary to tackle investment and financing decisions, we have arranged the book's 21 chapters into five major building blocks, that collectively comprise the seven parts of the book, as illustrated in the accompanying exhibit and described below.
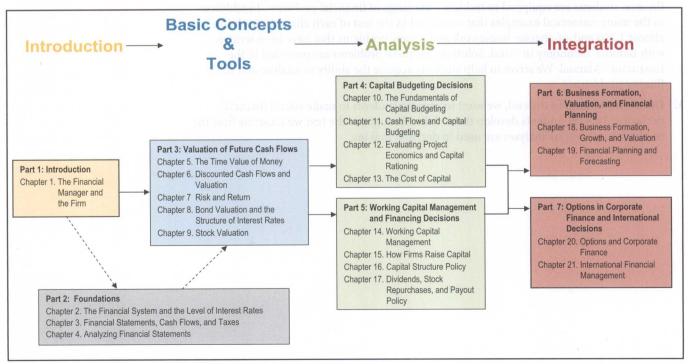
Introduction

Part 1, which consists of Chapter 1, provides an introduction to corporate finance. It describes the role of the financial manager, the types of fundamental decisions that financial mangers make, alternative forms of business organization, the goal of the firm, agency conflicts and how they arise, and the importance of ethics in financial decision-making. These discussions set the stage and provide a framework that students can use to think about key concepts as the course progresses.

Foundations

Part 2 of the text consists of Chapters 2 through 4. These chapters present the basic institutional, economic, and accounting knowledge and tools that students should understand before they begin the study of financial concepts. Most of the material in these chapters is typically taught in other courses. Since students come to the corporate finance course with varying academic backgrounds, and because the time that has elapsed since students have taken particular prerequisite courses also varies, the chapters in Part 2 can help the instructor ensure that all students have the same base level of knowledge early in the course. Depending on the educational background of the students, the instructor might not find it necessary to cover all or any of the material in these chapters. Some or all of these chapters might, instead, be assigned as supplemental readings.

Chapter 2 describes the services financial institutions provide to businesses, how domestic and international financial markets work, the concept of market efficiency, how firms use financial markets, and how interest rates are determined in the economy. Chapter 3 describes the key financial statements and how they are related, as well as how these statements are related to cash flows to investors. Chapter 4 discusses ratio analysis

Introduction → **Basic Concepts & Tools** → **Analysis** → **Integration**

Part 1: Introduction
Chapter 1. The Financial Manager and the Firm

Part 2: Foundations
Chapter 2. The Financial System and the Level of Interest Rates
Chapter 3. Financial Statements, Cash Flows, and Taxes
Chapter 4. Analyzing Financial Statements

Part 3: Valuation of Future Cash Flows
Chapter 5. The Time Value of Money
Chapter 6. Discounted Cash Flows and Valuation
Chapter 7. Risk and Return
Chapter 8. Bond Valuation and the Structure of Interest Rates
Chapter 9. Stock Valuation

Part 4: Capital Budgeting Decisions
Chapter 10. The Fundamentals of Capital Budgeting
Chapter 11. Cash Flows and Capital Budgeting
Chapter 12. Evaluating Project Economics and Capital Rationing
Chapter 13. The Cost of Capital

Part 5: Working Capital Management and Financing Decisions
Chapter 14. Working Capital Management
Chapter 15. How Firms Raise Capital
Chapter 16. Capital Structure Policy
Chapter 17. Dividends, Stock Repurchases, and Payout Policy

Part 6: Business Formation, Valuation, and Financial Planning
Chapter 18. Business Formation, Growth, and Valuation
Chapter 19. Financial Planning and Forecasting

Part 7: Options in Corporate Finance and International Decisions
Chapter 20. Options and Corporate Finance
Chapter 21. International Financial Management

and other tools used to evaluate financial statements. Throughout Part 2, we emphasize the importance of cash flows to get students thinking about cash flows as a critical component of all valuation calculations and financial decisions.

Basic Concepts and Tools

Part 3 presents basic financial concepts and tools and illustrates their application. This part of the text, which consists of Chapters 5 through 9, introduces time value of money and risk and return concepts and then applies present value concepts to bond and stock valuation. These chapters provide students with basic financial intuitions and computational tools that will serve as the building blocks for analyzing investment and financing decisions in subsequent chapters.

Analysis

Parts 4 and 5 of the text focus on investment and financing decisions. Part 4 covers capital budgeting. Chapter 10 introduces the concept of net present value and illustrates its application as the principle tool for evaluating capital projects. It also discusses alternative capital budgeting decision rules, such as internal rate of return, payback period, and accounting rate of return, and compares them with the net present value criterion. This discussion provides a framework that will help students in the rest of Part 4 as they learn the nuances of capital budgeting analysis in realistic settings.

Chapters 11 and 12 follow with in-depth discussions of how cash flows are calculated and forecast. The cash flow calculations are presented in Chapter 11 using a valuation framework that will help students think about valuation concepts in an intuitive way and will prepare them for the extension of these concepts to business valuation in Chapter 18. Chapter 12 covers analytical tools—such as breakeven, sensitivity, scenario, and simulation analysis—that will give students a better appreciation for how they can deal with the uncertainties associated with cash flow forecasts. Capital rationing is also covered in Chapter 12.

Chapter 13 explains how the discount rates used in capital budgeting are estimated. This chapter uses an innovative concept—that of the finance balance sheet—to help students develop an intuitive understanding of the relations between the costs of the individual components of capital and the firm's overall weighted average cost of capital. It also provides a detailed discussion of methods used to estimate the costs of the individual components of capital that are used to finance a firm's investments and how these estimates are used in capital budgeting.

Part 5 covers working capital management and financing decisions. It begins, in Chapter 14, with an introduction to how firms manage their working capital and the implications of working capital management decisions for financing decisions and firm value. This material is followed, in Chapters 15 and 16, with discussions of how firms raise capital to fund their real activities and the factors that affect how firms choose among the various sources of capital available to them. Chapter 16 also includes an extensive appendix on leasing concepts and buy vs. lease analysis. Chapter 17 rounds out the discussion of financing

decisions with an introduction to dividends, stock repurchases, stock dividends and splits, and payout policy.

Integration

Part 6, which consists of Chapters 18 and 19, brings together many of the key concepts introduced in the earlier parts of the text. Chapter 18 covers financial aspects of business formation and growth and introduces students to business valuation concepts for both private and public firms. The discussions in this chapter integrate the investment and financing concepts discussed in Parts 4 and 5 to provide students with a more complete picture of how all the financial concepts fit together. Chapter 19 covers concepts related to financial planning and forecasting.

Part 7 introduces students to some important issues that managers must deal with in applying the concepts covered in the text to real-world problems. Chapter 20 introduces call and put options and discusses how they relate to investment and financing decisions. It describes options that are embedded in the securities that firms issue. It also explains, at an accessible level, the idea behind real options and why traditional NPV analysis does not take such options into account. In addition, the chapter discusses agency costs of debt and equity and the implications of these costs for investment and financing decisions. Finally, Chapter 20 illustrates the use of options in risk management. Instructors can cover the topics in Chapter 20 near the end of the course or insert them at the appropriate points in Parts 4 and 5. Chapter 21 examines how international considerations affect the application of concepts covered in the book.

Unique Chapters

Chapter on Business Formation, Growth, and Valuation

We wrote Chapter 18 in response to students' heightened interest in new business formation (entrepreneurship) and in order to draw together, in a comprehensive way, the key concepts from capital budgeting, working capital management, and financial policy. This capstone chapter provides an overview of practical finance issues associated with forecasting cash flows and capital requirements for a new business, preparing a business plan, and business valuation. The discussion of business valuation extends far beyond that found in other introductory corporate finance textbooks.

Chapter on Options and Corporate Finance

Many other corporate finance textbooks have a chapter that introduces students to financial options and how they are valued. This chapter goes further. It provides a focused discussion of the different types of financial and non-financial options that are of concern to financial managers, including options embedded in debt and equity securities, real options and their effect on project analysis, how option-like payoff functions faced by stockholders, bondholders, and managers affect agency relationships, and the use of options in risk management.

Proven Pedagogical Framework

We have developed several distinctive features throughout the book to aid student learning. The pedagogical features included in our text are as follows:

CHAPTER OPENER VIGNETTES

Each chapter begins with a vignette that describes a real company or personal application. The vignettes illustrate concepts that will be presented in the chapter and are meant to heighten student interest, motivate learning, and demonstrate the real-life relevance of the material in the chapter.

LEARNING OBJECTIVES

The opening vignette is accompanied by learning objectives that identify the most important material for students to understand while reading the chapter. At the end of the chapter, the Summary of Learning Objectives summarizes the chapter content in the context of the learning objectives.

CHAPTER SEVEN

Learning Objectives

1. Explain the relation between risk and return.
2. Describe the two components of a total holding period return, and calculate this return for an asset.
3. Explain what an expected return is and calculate the expected return for an asset.
4. Explain what the standard deviation of returns is and why it is very useful in finance, and calculate it for an asset.
5. Explain the concept of diversification.
6. Discuss which type of risk matters to investors and why.
7. Describe what the Capital Asset Pricing Model (CAPM) tells us and how to use it to evaluate whether the expected return of an asset is sufficient to compensate an investor for the risks associated with that asset.

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When Blockbuster Inc. filed for bankruptcy protection on Thursday, September 23, 2010, its days as the dominant video rental firm were long gone. Netflix had become the most successful competitor in the video rental market through its strategy of renting videos exclusively online and avoiding the high costs associated with operating video rental stores.

The bankruptcy filing passed control of Blockbuster to a group of bondholders, including the famous billionaire investor Carl Icahn, and the shares owned by the old stockholders became virtually worthless. The bondholders planned to reorganize the company and restructure its financing so that it had a chance of competing more effectively with Netflix in the future.

Over the previous five years, Blockbuster stockholders had watched the value of their shares steadily decline as, year after year, the company failed to respond effectively to the threat posed by Netflix. From September 23, 2005 to September 23, 2010, the price of Blockbuster shares fell from $4.50 to $0.04. In contrast, the price of Netflix shares rose from $24.17 to $160.47 over the same period. While the Blockbuster stockholders were losing almost 100 percent of their investments, Netflix stockholders were earning an average return of 46 percent per year!

This chapter discusses risk, return, and the relation between them. The difference in the returns earned by Blockbuster and Netflix stockholders from 2005 to 2010 illustrates a challenge faced by all investors. The shares of both of these companies were viewed as risky investments in 2005, and yet an investor who put all of his or her money in Blockbuster lost virtually everything, while an investor who put all of his or her money in Netflix earned a very high return. How should have investors viewed the risks of investing in these companys' shares in
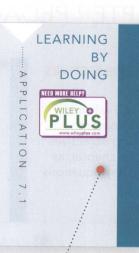
Calculating the Return on an Investment

PROBLEM: You purchased a beat-up 1974 Datsun 240Z sports car a year ago for $1,500. Datsun is what Nissan, the Japanese car company, was called in the 1970s. The 240Z was the first in a series of cars that led to the Nissan 370Z that is being sold today. Recognizing that a mint-condition 240Z is a much sought-after car, you invested $7,000 and a lot of your time fixing up the car. Last week, you sold it to a collector for $18,000. Not counting the value of the time you spent restoring the car, what is the total return you earned on this investment over the one-year holding period?

APPROACH: Use Equation 7.1 to calculate the total holding period return. To calculate R_T using Equation 7.1, you must know P_0, P_1, and CF_1. In this problem, you can assume that the $7,000 was spent at the time you bought the car to purchase parts and materials. Therefore, your initial investment, P_0, was $1,500 + $7,000 = $8,500. Since there were no other cash inflows or outflows between the time that you bought the car and the time that you sold it, CF_1 equals $0.

SOLUTION: The total holding period return is:

$$R_T = R_{CA} + R_I = \frac{P_1 - P_0 + CF_1}{P_0} = \frac{\$18,000 - \$8,500 + \$0}{\$8,500} = 1.118, \text{ or } 111.8\%$$

LEARNING BY DOING APPLICATION

Along with a generous number of in-text examples, most chapters include several Learning by Doing Applications. These applications contain quantitative problems with step-by-step solutions to help students better understand how to apply their intuition and analytical skills to solve important problems. By including these exercises, we provide students with additional practice in the application of the concepts, tools, and methods that are discussed in the text.

BUILDING INTUITION

MORE RISK MEANS A HIGHER EXPECTED RETURN

The greater the risk associated with an investment, the greater the return investors expect from it. A corollary to this idea is that investors want the highest return for a given level of risk or the lowest risk for a given level of return. When choosing between two investments that have the same level of risk, investors prefer the investment with the higher return. Alternatively, if two investments have the same expected return, investors prefer the less risky alternative.
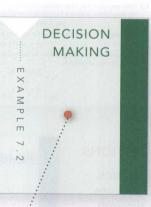
Students must have an intuitive understanding of a number of important principles and concepts to successfully master the finance curriculum. Throughout the book, we emphasize these important concepts by presenting them in Building Intuition boxes. These boxes provide a statement of an important finance concept, such as the relation between risk and expected return, along with an intuitive example or explanation to help the student "get" the concept. These boxes help the students develop finance intuition. Collectively the Building Intuition boxes cover the most important concepts in corporate finance.

Choosing between Two Investments

SITUATION: You are trying to decide whether to invest in one or both of two different stocks. Stock 1 has a beta of 0.8 and an expected return of 7.0 percent. Stock 2 has a beta of 1.2 and an expected return of 9.5 percent. You remember learning about the CAPM in school and believe that it does a good job of telling you what the appropriate expected return should be for a given level of risk. Since the risk-free rate is 4 percent and the market risk premium is 6 percent, the CAPM tells you that the appropriate expected rate of return for an asset with a beta of 0.8 is 8.8 percent. The corresponding value for an asset with a beta of 1.2 is 11.2 percent. Should you invest in either or both of these stocks?

DECISION: You should not invest in either stock. The expected returns for both of them are below the values predicted by the CAPM for investments with the same level of risk. In other words, both would plot below the line in Exhibit 7.11. This implies that they are both overpriced.

DECISION-MAKING EXAMPLES

Throughout the book, we emphasize the role of the financial manager as a decision maker. To that end, twenty chapters include Decision-Making Examples. These examples, which emphasize the decision-making process rather than computation, provide students with experience in financial decision making. Each Decision-Making Example outlines a scenario and asks the student to make a decision based on the information presented.

END OF CHAPTER PEDAGOGY

SUMMARY OF LEARNING OBJECTIVES AND KEY EQUATIONS

At the end of the chapter, you will find a summary of the key chapter content related to each of the learning objectives listed at the beginning of the chapter, as well as an exhibit listing the key equations in the chapter.

SUMMARY OF Learning Objectives

1 Explain the relation between risk and return.

Investors require greater returns for taking greater risk. They prefer the investment with the highest possible return for a given level of risk or the investment with the lowest risk for a given level of return.

2 Describe the two components of a total holding period return, and calculate this return for an asset.

The total holding period return on an investment consists of a capital appreciation component and an income component. This return is calculated using Equation 7.1. It is important to recognize that investors do not care whether they receive a dollar of return through capital appreciation or as a cash dividend. Investors value both sources of return equally.

3 Explain what an expected return is and calculate the expected return for an asset.

5 Explain the concept of diversification.

Diversification is reducing risk by investing in two or more assets whose values do not always move in the same direction at the same time. Investing in a portfolio containing assets whose prices do not always move together reduces risk because some of the changes in the prices of individual assets offset each other. This can cause the overall volatility in the value of an investor's portfolio to be lower than if it consisted of only a single asset.

6 Discuss which type of risk matters to investors and why.

Investors care about only systematic risk. This is because they can eliminate unsystematic risk by holding a diversified portfolio. Diversified investors will bid up prices for assets to the point at which they are just being compensated for the systematic risks they must bear.

7 Describe what the Capital Asset Pricing Model (CAPM) tells us and how to use it to evaluate whether the expected ... asset is sufficient to compensate an ...

SUMMARY OF Key Equations

Equation	Description	Formula
7.1	Total holding period return	$R_T = R_{CA} + R_I = \dfrac{P_1 - P_0}{P_0} + \dfrac{CF_1}{P_0} = \dfrac{\Delta P + CF_1}{P_0}$
7.2	Expected return on an asset	$E(R_{Asset}) = \sum\limits_{i=1}^{n} (p_i \times R_i)$

Self-Study Problems

7.1 Kaaran made a friendly wager with a colleague that involves the result from flipping a coin. If heads comes up, Kaaran must pay her colleague $15; otherwise, her colleague will pay Kaaran $15. What is Kaaran's expected cash flow, and what is the variance of that cash flow if the coin has an equal probability of coming up heads or tails? Suppose Kaaran's colleague is willing to handicap the bet by paying her $20 if the coin toss results in tails. If everything else remains the same, what are Kaaran's expected cash flow and the variance of that cash flow?

7.2 You know that the price of CFI, Inc., stock will be $12 exactly one year from today. Today the price of the stock is $11. Describe what must happen to the price of CFI, Inc., today in order for an investor to generate a 20 percent return over the next year. Assume that CFI does not pay dividends.

7.3 The expected value of a normal distribution of prices for a stock is $50. If you are 90 percent sure that the price of the stock will be between $40 and $60, then what is the variance of the stock price?

7.4 You must choose between investing in stock A or stock B. You have already used CAPM to calculate the rate of return you should expect to receive for each stock given their systematic risk and decided that the expected ret... ... applicable CAPM ... words, both are equal... in school and do not ... cided to invest in the...

SELF-STUDY PROBLEMS WITH SOLUTIONS

Five problems similar to the in-text Learning by Doing Applications follow the summary and provide additional examples with step-by-step solutions to help students further develop their problem-solving and computational skills.

Solutions to Self-Study Problems

7.1 Part 1: $E(\text{cash flow}) = (0.5 \times -\$15) + (0.5 \times \$15) = 0$
$$\sigma^2_{\text{Cash flow}} = [0.5 \times (-\$15 - \$0)^2] + [0.5 \times (\$15 - \$0)^2] = \$225$$
Part 2: $E(\text{cash flow}) = (0.5 \times -\$15) + (0.5 \times \$20) = \$2.50$
$$\sigma^2_{\text{Cash flow}} = [0.5 \times (-\$15 - \$2.50)^2] + [0.5 \times (\$20 - \$2.50)^2] = \$306.25$$

7.2 The expected return for CFI based on today's stock price is $(\$12 - \$11)/\$11 = 9.09$ percent, which is lower than 20 percent. Since the stock price one year from today is fixed, the only way that you will generate a 20 percent return is if the price of the stock drops today. Consequently, the price of the stock today must drop to $10. It is found by solving the following: $0.2 = (\$12 - x)/x$, or $x = \$10$.

7.3 Since you know that 1.645 standard deviations around the expected return captures 90 percent of the distribution, you can set up either of the following equations:
$$\$40 = \$50 - 1.645\sigma \text{ or } \$60 = \$50 + 1.645\sigma$$
and solve for σ. Doing this with either equation yields:
$$\sigma = \$6.079 \text{ and } \sigma^2 = 36.954$$

7.4 A comparison of the Sharpe Ratios for the two stocks will tell you which has the highest expected return per unit of total risk.
$$S_A = \frac{E(R_A) - R_{rf}}{\sigma_{R_A}} = \frac{0.10 - 0.05}{0.25} = 0.20$$
$$S_B = \frac{E(R_B) - R_{rf}}{\sigma_{R_B}} = \frac{0.15 - 0.05}{0.40} = 0.25$$

CRITICAL THINKING QUESTIONS

At least ten qualitative questions, called Critical Thinking Questions, require students to think through their understanding of key concepts and apply those concepts to a problem.

Critical Thinking Questions

7.1 Given that you know the risk as well as the expected return for two stocks, discuss what process you might utilize to determine which of the two stocks is a better buy. You may assume that the two stocks will be the only assets held in your portfolio.

7.2 What is the difference between the expected rate of return and the required rate of return? What does it mean if they are different for a particular asset at a particular point in time?

7.3 Suppose that the standard deviation of the returns on the shares of stock at two different companies is exactly the same. Does this mean that the required rate of return will be the same for these two stocks? How might the required rate of return on the stock of a third company be greater than the required rates of return on the stocks of the first two companies even if the standard deviation of the returns of the third company's stock is lower?

7.4 The correlation between stocks A and B is 0.50, while the correlation between stocks A and C is −0.5. You already own stock A and are thinking of buying either stock B or stock C. If you want your portfolio to have the lowest possible risk, would you buy stock B or stock C? Would you expect the stock you choose to affect the return that you earn on your portfolio?

QUESTIONS AND PROBLEMS

The Questions and Problems, numbering 26 to 44 per chapter, are primarily quantitative and are classified as Basic, Intermediate, or Advanced.
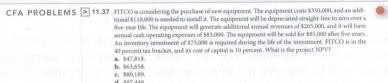
7.1 Returns: Describe the difference between a total holding period return and an expected return.   < BASIC

7.2 Expected returns: John is watching an old game show rerun on television called *Let's Make a Deal* in which the contestant chooses a prize behind one of two curtains. Behind one of the curtains is a gag prize worth $150, and behind the other is a round-the-world trip worth $7,200. The game show has placed a subliminal message on the curtain containing the gag prize, which makes the probability of choosing the gag prize equal to 75 percent. What is the expected value of the selection, and what is the standard deviation of that selection?

7.3 Expected returns: You have chosen biology as your college major because you would like to be a medical doctor. However, you find that the probability of being accepted to medical school is about 10 percent. If you are accepted to medical school, then your starting salary when you graduate will be

7.13 Expected returns: Jose is thinking about purchasing a soft drink machine and placing it in a business office. He knows that there is a 5 percent probability that someone who walks by the machine will make a purchase from the machine, and he knows that the profit on each soft drink sold is $0.10. If Jose expects a thousand people per day to pass by the machine and requires a complete return of his investment in one year, then what is the maximum price that he should be willing to pay for the soft drink machine? Assume 250 working days in a year and ignore taxes and the time value of money.   < INTERMEDIATE

7.14 Interpreting the variance and standard deviation: The distribution of grades in an introductory finance class is normally distributed, with an expected grade of 75. If the standard

ADVANCED > **7.27** David is going to purchase two stocks to form the initial holdings in his portfolio. Iron stock has an expected return of 15 percent, while Copper stock has an expected return of 20 percent. If David plans to invest 30 percent of his funds in Iron and the remainder in Copper, what will be the expected return from his portfolio? What if David invests 70 percent of his funds in Iron stock?

CFA PROBLEMS > **11.37** FITCO is considering the purchase of new equipment. The equipment costs $350,000, and an additional $110,000 is needed to install it. The equipment will be depreciated straight-line to zero over a five-year life. The equipment will generate additional annual revenues of $265,000, and it will have annual cash operating expenses of $83,000. The equipment will be sold for $85,000 after five years. An inventory investment of $73,000 is required during the life of the investment. FITCO is in the 40 percent tax bracket, and its cost of capital is 10 percent. What is the project NPV?
   a. $47,818.
   b. $63,658.
   c. $80,189.
   d. $97,449.

CFA PROBLEMS

Problems from CFA readings are included in the Question and Problem section in appropriate chapters.

EXCEL PROBLEMS

Nearly all problems can be solved using Excel templates at the student Web site within *WileyPLUS*.

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5.35 Sam Bradford, a number 1 draft pick of the St. Louis Rams, and his agent are evaluating three contract options. Each option offers a signing bonus and a series of payments over the life of the contract. Bradford uses a 10.25 percent rate of return to evaluate the contracts. Given the cash flows for each option, which one should he choose?

Year	Cash Flow Type	Option A	Option B	Option C
0	Signing Bonus	$3,100,000	$4,000,000	$4,250,000
1	Annual Salary	$ 650,000	$ 825,000	$ 550,000
2	Annual Salary	$ 715,000	$ 850,000	$ 625,000
3	Annual Salary	$ 822,250	$ 925,000	$ 800,000

SAMPLE TEST PROBLEMS

Finally, five Sample Test Problems call for straightforward applications of the chapter concepts. These problems are intended to be representative of the kind of problems that may be used in a test, and instructors can encourage students to solve them as if they were taking a quiz. Solutions are provided in the Instructor's Manual.

7.1 Friendly Airlines stock is selling at a current price of $37.50 per share. If the stock does not pay a dividend and has a 12 percent expected return, what is the expected price of the stock one year from today?

7.2 Stefan's parents are about to invest their nest egg in a stock that he has estimated to have an expected return of 9 percent over the next year. If the return on the stock is normally distributed with a 3 percent standard deviation, in what range will the stock return fall 95 percent of the time?

7.3 Elaine has narrowed her investment alternatives to two stocks (at this time she is not worried about diversifying): Stock M, which has a 23 percent expected return, and Stock Y, which has an 8 percent expected return. If Elaine requires a 16 percent return on her total investment, then what proportion of her portfolio will she invest in each stock?

7.4 You have just prepared a graph similar to Exhibit 7.9, comparing historical data for Pear Computer Corp. and the general market. When you plot the line of best fit for these data, you find that the slope of that line is 2.5. If you know that the market generated a return of 12 percent and that the risk-free rate is 5 percent, then what would your best estimate be for the return of Pear Computer during that same time period?

7.5 The CAPM predicts that the return of MoonBucks Tea Corp. is 23.6 percent. If the risk-free rate of return is 8 percent and the expected return on the market is 20 percent, then what is MoonBucks' beta?

● END OF PART ETHICS CASES

Ethics is an important topic in finance and this text addresses ethical issues in several ways. In Chapter 1, we introduce a framework for consideration of ethical issues in corporate finance. Many ethical issues can be analyzed in the context of informational asymmetry between parties to a transaction, conflicts of interest, breaches of confidentiality, and breaches of fiduciary duty (principal-agent relationships); we highlight examples of such analysis throughout the text. In addition, seven ethics cases are included throughout this book in order to help students better understand how to analyze ethical dilemmas in the context of the framework. Real company examples are presented, including timeless cases about Arthur Anderson and Martha Stewart's scandal involving ImClone, and more timely topics such as the subprime mortgage crisis and the advent of sustainable living plans by corporations. Each case includes questions for follow-up discussion in class or as an assignment.

New to This Edition

In revising Fundamentals of Corporate Finance we have improved the presentation and organization of key topics, added important new content, updated the text to reflect changes in market and business conditions since the first edition was written, improved key in-chapter pedagogical features, added to the number and quality of the end-of-chapter problem sets, and updated the ethics cases.

Improved Presentation and Organization

We have edited and extended discussions throughout the text in an effort to improve the pedagogical presentation of key topics. We also have rearranged the order of some material to improve the effectiveness of the presentation. For example, the discussion of the stock market (Section 2.4 in the first edition) has been incorporated into the section on the market for stocks in Chapter 9 and new content on international stock markets has been added to this discussion. This change improves the flow of the text and provides a more natural lead-in to the stock valuation concepts that are subsequently discussed in Chapter 9. Also, material on capital market efficiency (Section 8.1 in the first edition) has being moved to the initial discussion of financial markets in Chapter 2. This change introduces the student to the concept of market efficiency earlier in the book and improves the focus of Chapter 8, which discusses bond valuation and interest rates.

New Content

There have been numerous additions to the content of the book. Some of the most noteworthy include the following. A new section on cash flows to investors has been added to Chapter 3 immediately after the discussion of how the financial statements tie together (Section 3.6 in the first edition). This new section helps students develop an understanding of the sources and uses of investor cash flows in the context of the discussion of financial statements. It also enables them to develop an intuitive understanding of the importance of cash flows to investors prior to the chapters on the time value of money, risk and return, capital budgeting, and valuation.

A discussion of the Sharpe Ratio has been incorporated into Section 7.4, immediately after the existing material on the coefficient of variation. This discussion helps students develop a stronger intuition about the relation between risk and return earlier in the book.

An extensive discussion of leasing policy and analysis has been added as an appendix to the chapter on financial policy, Chapter 16. This section introduces students to leasing as an alternative means of financing the acquisition of an asset, outlines the conflicts that can arise in lease agreements and mechanisms for reducing the costs of these conflicts, discusses why certain types of assets are more or less likely to be leased, and summarizes how financial managers make buy vs. lease decisions. This material is presented within the same agency framework used in Chapter 16 and can be taught in conjunction with the rest of Chapter 16, or independently.

The discussion of options in Chapter 20 has been extended to include different types of options embedded in the debt and equity securities that firms issue.

This discussion provides students with a more complete picture of the range of financial and non-financial options that are of concern to financial managers.

Current Financial Market and Business Information

Throughout the text, all financial market and business information for which more current data are available have been updated. Not only have the exhibits been updated, but financial values such as interest rates, risk premia, and foreign currency exchange rates have been updated throughout the discussions in text, in-text examples, and end-of-chapter problems. In addition, 19 of the 21 chapter opener vignettes are completely new. Eighteen of these examples are from 2010, and one is from 2009. The remaining two opener vignettes have been edited to ensure that they remain current. All of the chapter openers provide timely examples of how the material covered in the chapter is relevant to financial decision-making.

In-Chapter Features

The **Learning Objectives** at the beginning of each chapter have been revised to more fully reflect the important content in the associated sections of the chapters.

New **Building Intuition Boxes** have been added where appropriate and existing Building Intuition Boxes have been edited to ensure clarity.

All **Learning by Doing Applications** have been reviewed and, where appropriate, updated or replaced.

All existing **Decision-Making Examples** have been reviewed and updated where necessary. In addition, six new Decision-Making Examples have been added to the text.

The **Summary of Learning Objectives** and **Key Equations** at the end of each chapter have been updated to reflect other changes in the chapter and to improve the pedagogical value of these features.

Refined and Extended Problem Sets

We have carefully edited the end-of-chapter questions and problems throughout the book to ensure that the examples are current and clearly presented. In addition, new questions and problems have been added to ensure appropriate coverage of key concepts at all levels of difficulty. A total of 96 new questions and problems have been added to the end-of-chapter problem sets, which brings the total number of end-of-chapter questions and problems, including self-study problems and self-test questions, for the entire text to 1,184.

Updated Ethics Cases and Their Organization

The Schwan Foods case has been replaced at the end of Chapter 11 with a new case concerning the Unilever global Sustainable Living Plan. This case challenges the student to think about how a sustainability plan can be consistent with stockholder value maximization. In addition, the case on affinity credit cards at the end of Chapter 6 has been updated to reflect the effects of the Credit Card Act of 2009 and new data on the use of these cards as of 2010. The case on the Subprime Mortgage Market Meltdown has been moved from the end of Chapter 18 to the end of Chapter 8 so that students can address the timely issues raised in this case earlier in the course.

Instructor and Student Resources

Fundamentals of Corporate Finance Second Edition features a full line of teaching and learning resources that were developed under the close review of the authors. Driven by the same basic beliefs as the textbook, these supplements provide a consistent and well-integrated learning system. This hands-on package guides *instructors* through the process of active learning and provides them with the tools to create an interactive learning environment. With its emphasis on activities, exercises, and the Internet, the package encourages *students* to take an active role in the course and prepares them for decision making in a real-world context.

WileyPLUS is a research-based, online environment for effective teaching and learning. *WileyPLUS* builds students' confidence because it takes the guesswork out of studying by providing students with a clear roadmap: what to do, how to do it, if they did it right. This interactive approach focuses on:

Design: Research-based design is based on proven instructional methods. Content is organized into small, more accessible amounts of information, helping students build better time management skills.

Engagement: Students can visually track their progress as they move through the material at a pace that is right for them. Engaging in individualized self-quizzes followed by immediate feedback helps to sustain their motivation to learn.

Outcomes: Self-assessment lets students know the exact outcome of their effort at any time. Advanced reporting allows instructors to easily spot trends in the usage and performance data of their class in order to make more informed decisions.

With *WileyPLUS*, students will always know:

- What to do: Features, such as the course calendar, help students stay on track and manage their time more effectively.
- How to do it: Instant feedback and personalized learning plans are available 24/7.
- If they're doing it right: Self-evaluation tools take the guesswork out of studying and help students focus on the right materials.

WileyPLUS for *Fundamentals of Corporate Finance, Second Edition* includes numerous valuable resources, among them:

- Animated Learning by Doing Applications
- Wiley Corporate Finance Video Collection
- Prerequisite Course Reviews
- Animated Tutorials
- Excel Templates and Spreadsheet Solutions
- Flashcards
- Crosswords
- Narrated PowerPoint Review
- Student Study Guide
- Hot Topics Modules
- Learning Styles Survey

Book Companion Site—For Instructors.

An extensive support package, including print and technology tools, helps you maximize your teaching effectiveness. We offer useful supplements for instructors with varying levels of experience and different instructional circumstances.

On this Web site instructors will find electronic versions of the Solutions Manual, Test Bank, Instructor's Manual, Computerized Test Bank, and other valuable resources: www.wiley.com/college/Parrino.

Instructor's Manual. Included for each chapter are lecture outlines, a summary of learning objectives and key equations, and alternative approaches to the material. The *Solutions Manual* includes detailed solutions to the Before You Go On questions, Self-Study problems, Critical Thinking Questions, and all of the Questions and Problems at the end of each chapter.

Test Bank. With over 2000 questions, the test bank allows instructors to tailor examinations according to study objectives and difficulty. Multiple-choice, true/false, and essay questions are included.

Computerized Test Bank. The computerized test bank allows instructors to create and print multiple versions of the