

## ESSENTIALS OF CORPORATE FINANCE

ROSS WESTERFIELD JORDAN

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## Stephen A. Ross, Yale University

Stephen A. Ross has held the position of Sterling Professor of Economics and Finance at Yale University since 1985. One of the most widely published authors in finance and economics, Professor Ross is recognized for his work in developing the Arbitrage Pricing Theory. He has also made substantial contributions to the discipline through his research in signalling, agency theory, options, and the theory of the term structure of interest rates. Previously the president of the American Finance Association, he serves as an associate editor of the Journal of Finance and the Journal of Economic Theory. He is cochairman of Roll and Ross Asset Management Corporation, a trustee of Cal Tech, a director of CREF, and a director of GenRe.

### Randolph W. Westerfield, University of Southern California

Randolph W. Westerfield is Dean of the University of Southern California School of Business Administration and holder of the Robert R. Dockson Dean's Chair of Business Administration. The USC School of Business Administration, founded in 1920, is the oldest business school in Southern California.

From 1988 to 1993 Professor Westerfield served as the chairman of the School's finance and business economics department and the Charles B. Thornton Professor of Finance. He came to USC from the Wharton School, University of Pennsylvania, where he was the chairman of the finance department and member of the finance faculty for 20 years. He was the senior research associate at the Rodney L. White Center for Financial Research at Wharton. His areas of expertise include corporate financial policy, investment management and analysis, mergers and acquisitions, and stock market price behavior.

Professor Westerfield has served as a member of the Continental Bank trust committee, supervising all activities of the trust department. He has been consultant to a number of corporations, including AT&T, Mobil Oil and Pacific Enterprises, as well as to the United Nations, the U.S. Department of Justice and Labor, and the State of California.

## Bradford D. Jordan, University of Missouri-Columbia

Bradford D. Jordan is Associate Professor of Finance at the University of Missouri. He has a longstanding interest in both applied and theoretical issues in corporate finance, and he has extensive experience teaching all levels of corporate finance and financial management policy. Professor Jordan has published numerous articles on issues such as cost of capital, capital structure, and the behavior of security prices.

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We wrote this book because so many of you told us of changes taking place in your introductory finance classes. What we have learned, both from comments and discussions we have had with you and from our own classes, is that this course is increasingly the only finance course a majority of students enrolled will ever take. In addition, a growing percentage of students in introductory finance classes do not have traditional pre-business backgrounds. Finally, time pressure during the term and the desire to integrate other materials increasingly mean that only a limited number of chapters can be covered.

So what did we do about it?

We have always maintained that the subject of corporate finance can be viewed as the working of a few very powerful intuitions. Based on the gratifying market feedback we have received over the last several years from our first text, Fundamentals of Corporate Finance, many of you agree. We therefore decided to try and distill the subject down to its bare essentials (hence, the name of this book), while retaining the same modern approach to finance. Our goal was to produce a text that conveys the most important concepts and principles at a level that is approachable for the widest possible audience in a package that realistically can be covered in a single term.

To accomplish our goal, we assembled a diverse panel of our colleagues currently teaching introductory finance courses. We asked them to tell us what should and what should not be included. Based on their feedback, we eliminated some chapters on more specialized subjects altogether. We then went through every remaining page, paring back where recommended and eliminating material not absolutely essential. We very consciously tried to hold computation and mathematical formulations to the minimum needed to convey key financial principles. This process led us to condense several subject treatments, such as capital budgeting, to single chapters. As a result, Essentials provides a thorough survey in only 18 chapters.

Of course, we didn't just cut and combine in producing Essentials. For example, we learned from our reviewers (and our own teaching experience) that a single chapter on time value of money just contains too much number crunching and too many new concepts for a large percentage of students. We therefore wrote two chapters on time value for Essentials to break the subject into more manageable size and promote a building block approach. The first chapter considers only the basics of compounding and discounting. With these principles firmly in place, the second chapter expands to cover annuities and other financial instruments. For similar reasons, we provide two chapters on risk and return because the subject is so important and contains so many new and novel ideas.

Beyond this, to motivate various subjects and to illustrate the wide applicability and relevance of topics covered in the text, we created a new running series of boxes called *Principles in Action*. These appear in almost every chapter throughout the text and discuss current subjects as diverse as the recent attempted takeover of Chrysler to Shaquille O'Neill's salary.

#### The Underlying Philosophy

As the 21st century approaches, the challenge of financial management is greater than ever. In recent years, we have seen fundamental changes in financial markets and instruments, and the practice of corporate finance continues to evolve rapidly. Often, what was yesterday's state of the art is commonplace today, and it is essential that our finance courses and finance texts do not get left behind.

Rapid and extensive change place new burdens on those teaching corporate finance. It becomes much more difficult to keep materials up to date. Further, the permanent must be distinguished from the temporary to avoid following what is merely the latest fad. Our approach is to stress the modern fundamentals of finance and make the subject come alive with contemporary examples.

From our survey of existing introductory textbooks, this commonsense approach seems to be the exception rather than the rule. All too often, the beginning student views corporate finance as a collection of unrelated topics which are unified by virtue of being bound together between the covers of one book. In many cases, this perception is only natural because the subject is treated in a way that is both topic oriented and procedural. Commonly, emphasis is placed on detailed and specific "solutions" to certain narrowly posed problems. How often have we heard students exclaim that they could solve a particular problem if only they knew which formula to use?

We think this approach misses the forest for the trees. As time passes, the details fade, and what remains, if we are successful, is a sound grasp of the underlying principles. This is why our overriding concern, from the first page to the last, is with the basic logic of financial decision making.

#### Distinctive Features

Our general philosophy is apparent in the following ways:

An Emphasis on Intuition We are always careful to separate and explain the principles at work on an intuitive level before launching into any specifics. The underlying ideas are discussed first in very general terms and then by way of examples that illustrate in more concrete terms how a financial manager might proceed in a given situation.

A Unified Valuation Approach Many texts pay only lip service to net present value (NPV) as the basic concept of corporate finance and stop short of consistently integrating this important principle. The most basic notion, that

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NPV represents the excess of market value over cost, tends to get lost in an overly mechanical approach to NPV that emphasizes computation at the expense of understanding. Every subject covered in *Essentials of Corporate Finance*, from capital budgeting to capital structure, is firmly rooted in valuation, and care is taken throughout to explain how particular decisions have valuation effects.

A Managerial Focus Students won't lose sight of the fact that financial management concerns management. Throughout the text, the role of the financial manager as decision maker is emphasized, and the need for managerial input and judgment is stressed. "Black box" approaches to finance are consciously avoided.

In Essentials of Corporate Finance, these three themes work together to provide a consistent treatment, a sound foundation, and a practical, workable understanding of how to evaluate financial decisions. Because Essentials is not a "me-too" book, we have, with extensive help from our colleagues across the country, taken a hard look at what is really relevant and important for an introductory class. This process led us to take a fresh, modern approach to many traditional subjects. Along the way, we downplay purely theoretical issues and associated mathematical formulations, and we avoid the use of elaborate computations to illustrate points that are either intuitively obvious or of limited practical use.

#### Intended Audience

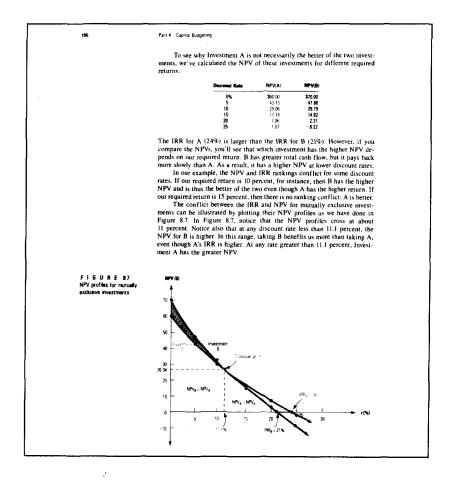
This text is designed and developed explicitly for a first course in business or corporate finance. The typical student will not have previously taken a course in finance, and no previous knowledge of finance is assumed. Since this course is frequently part of a common business core, the text is intended for majors and nonmajors alike. In terms of background or prerequisites, the book is nearly self-contained. Some familiarity with basic accounting principles is helpful, but even these are reviewed very early on. As a result, students with very different backgrounds will find the text very accessible.

## **Attention to Pedagogy**

In addition to illustrating pertinent concepts and presenting up-to-date coverage, Essentials of Corporate Finance strives to present the material in a way that makes it coherent and easy to understand. To meet the varied needs of the intended audience, Essentials of Corporate Finance is rich in valuable learning tools and support, including:

1. Pedagogical Use of Color. Throughout Essentials, color is used as a functional element in the discussion. In almost every chapter, color plays an important, largely self-evident role. An example of the pedagogical use of color follows.

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- 2. Principles in Action Boxes. This unique series of boxes appears throughout the text. Each box takes a particular chapter issue and shows how it is being used right now in everyday financial decision-making.
- 3. Concept Building. Chapter sections are intentionally kept short to promote a step-by-step, building block approach to learning. Each section is then followed by a series of short concept questions that highlight the key ideas just presented. Students use these questions to make sure they can identify and understand the most important concepts as they read.
- 4. Summary Tables. These tables succinctly restate key principles, results, and equations. They appear whenever it is useful to emphasize and summarize a group of related concepts.

O . O . O

Principles in Action

#### Was Chrysler's Cash Flow to Stockholders Too Small?

In April 1995, financier Kirk Kerkorian and former Chrysler Chairman. Lee A lacocca stumed the financial world by offering to buy the common stock of Chrysler Corporation for \$55 a share. The purchase was to be financed primarily with debt, but the offer had a novel twist. They also planned to use \$5.5 billion of Chrysler's own cash to finance the purchase. Their offer increased the level of debate over how large a cash balance is appropriate for a corporation and just how the financial managers of a corporation should go about maximizing share-

holder wealth.

At the time of the offer, Chrysler had amassed a cash balance in excess of \$7 billion. Chrysler's board of directors argued the company needed about \$7.5 billion in cash to survive the next recession, a goal charty in the best interest of the stockholders. However, Chrysler's largest stockholders, Kirk Kerkorian, who at that time owned just under 10 percent of Chrysler's outstanding stock (an investment valued at \$1.5 billion), disagreed. He believed Chrysler's cash balance was excessive and should be reduced by returning the cash to its owners, the stockholders.

To understand Kerkorian's perspective, it is crucial to determine who the cash of the corporation belongs to. Each quarter, Chrysler's corporate directors decide what to do with any excess cash generated from operations. The cash can be paid out to stockholders in the form of a dividend or it can be retained in the business. If a dividend is paid, it is a cash flow to stockholders. If a dividend is paid, it is a cash flow to stockholders. But the directors to the stockholders, but the directors have effectively reinvested the shareholder's money in the corporation itself by increasing net working capital.

capital.

At issue is whether or not the investment in net working capital provides an adequate return to the stockholders. Chrysler's directors argued that the cash lessened the chance of financial distress, a benefit to stockholders. However, from Kertonrar's praspective, while Chrysler's cash balance grow, its stock price did not. In late 1994, Kerkorian convinced Chrysler's board to use some oil ris excess cash to boost its dividend by 60 percent and initiate a \$1 billion stock-burylack program, each of which is a cash flow to stockholders. Despite these actions, Chrysler's cash balance continued to rise in early 1995 while the stock price languished. Kerkorian argued that scrumulating

cash was not enhancing shareholde wealth, and a better way to do so was to allow the stockholders to reinvest it themselves.

reinvest it themselves. How the struggle for control between Kerkorian and Chrysler is uthately played out will not above the more general issue of how much cash a corporation should hold, and Chrysler isn't the only company with large amounts of cash. In April 1985, The Wall Street Journal reported that Chrysler had a cash balance quelt to about 30 percent of the market value of its stock, Ford had cash equal to 22 percent of its value, into had 39 percent, and Apple Computer held about 25 percent. These corporations have reinvested substantial sums of money for their stockholders. Corporations such as these who accumulate large cash balances may utilinately need to defend their actions to an important and sometimes vocal group: their stockholders.

Source: "Chrysler Boosts Divisied, Sets Buyback of Stock in Effort to Malify Karlonian," The Wolf Storest Journal, December 2, 1984, p. A3, "Rich and Richer: How Mahh Chair & From Stock Keep in tessus in Wilke of Druyder Bid," The Wall Street Journal, Agin 20, 1995, p. A1, "Ref Land Factory Steek Storman, Angin 20, 1995, p. A1, "Ref Land Street Journal, Angin 20, 1995, p. A1, "Wall Street Journal, Agril 13, 1995, p. A1,"

As we have seen in this section, estimating NPV is one way of assessing the optimal proprise of the proposed investment. It is certainly not the only way profitability is assessed, and we now turn to some alternatives. As we will see, when compared to NPV, each of the ways of assessing profitability that we examine is flawed in some key way; so NPV is the preferred approach in principle, if not always in practice.

CONCEPT QUESTIONS

- 8.1a What is the net present value rule?
- 8.1b If we say an investment has an NPV of \$1,000, what exactly do we mean?

T A B L E 4.9 Summary of internal and sustainable growth rates

```
L Internal Growth Rate

Internal growth rate = \frac{ROA \times b}{1 - ROA \times b}

where

ROA = Return on assets = Net income/Total assets

b = Plowback (retarrition) ratio
= Addition to retained earning/Net income

The internal growth rate is the maximum growth rate that can be achieved with one scatarrial francing of any kind.

II. Sustainable Growth Rate

Sustainable growth rate = \frac{ROE \times b}{1 - ROE \times b}

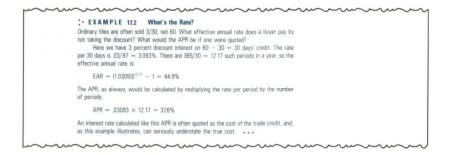
where

ROE = Return on equity = Net income/Total equity
b = Plowback (internition) ratio
= Addition to retained earning/Net income

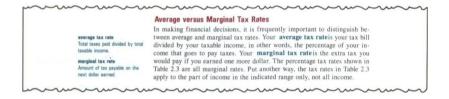
The sustainable growth rate is the maximum growth rate that can be achieved with no external equity francing within martinaling a constant delif-legistry francing.
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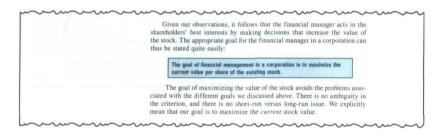
5. Numbered Examples. Separate numbered and titled examples are extensively integrated into the chapters as indicated below. These examples provide detailed applications and illustrations of the text material in a step-by-step format. Each example is completely self-contained so that students don't have to search for additional information. Based on our classroom testing, these examples are among the most useful learning aids because they provide both detail and explanation. A small color icon signals the end of each example.



6. Key Terms. These are contained in each chapter and are printed in teal the first time they appear. These terms are defined within the text and also in the marginal definitions.



- 7. **Key Equations.** These are called out in the text and identified by equation numbers. The list in Appendix B shows the key equations by chapter.
- 8. Highlighted Phrases. Throughout the text important ideas are presented separately and printed in teal. Printing these phrases in color not only draws attention to them, but also indicates their importance to the students.



**9. Chapter Summary and Conclusion.** These paragraphs review the chapter's key points and provide closure to the chapter.

#### 14.9 SUMMARY AND CONCLUSIONS

The ideal mixture of debt and equity for a firm—its optimal capital structure—is the one that maximizes the value of the firm and minimizes the overail cost of capital. If we ignore taxes, linancial distress costs, and other imperfections, we find that there is no ideal mixture. Under these circumstances, the firm's capital structure is simply irrelevant.

cumstances, the firm's capital structure is simply irrelevant. If we consider the effect of corporate taxes, we find that capital structure matters a great deal. This conclusion is based on the fact that interest is tax deductible and thus generates a valuable tax shield. Unfortunately, we also find that the optimal capital structure is 100 percent debt, which is not something we observe for healthy firms.

We next introduced costs associated with bankrupicy, or, more generally, financial distress. These costs reduce the attractiveness of debt financing. We conclude that an optimal capital structure exists when the net tax saving from an additional dollar in interest just equals the increase in expected financial distress costs. This is the essence of the static theory of capital structure.

10. Chapter Review Problems and Self-Tests. Review and self-test problems appear after the chapter summaries. Detailed answers to the self-test problems immediately follow. These questions and answers allow students to test their abilities in solving key problems related to the content of the chapter.

#### Chapter Review Problems and Self-Test

14.1 EBIT and EPS Suppose the GNR Corporation has decided in favor of a capital restructuring that involves innecasing its existing 55 million in debt to \$25 million. The interest rate on the debt is 12 percent and is not expected to change. The firm currently has 1 million shares outstanding, and the price per share is \$40. If the restructuring is expected to increase the ROE, what is the minimum level for EBIT that GNR's management must be expecting? Ignore taxes in your answer.

#### Answers to Self-Test Problems

14.1 To answer, we can calculate the break-even EBIT. At any EBIT above this, the increase EPS. Under the old capital structure, the interest bill is \$5 million × .12 = \$6001.000. There are 1 million shares of stock, so, ignoring taxes, EPS is (EBIT - \$6000.000)/1 million.

Under the new capital structure, the interest expense will be \$25 million × .12 = \$3 million. Furthermore, the debt rises by \$20 million. This amount is sufficient to repurchase \$20 million/\$40 = \$600,000 shares of stock, leaving \$90,000 outstanding. EPS is thus (EBHT = \$3 million/\$500,000.

Now that we know how to calculate EPS under both scenarios, we set them equal to each other and solve for the break-even EBIT:

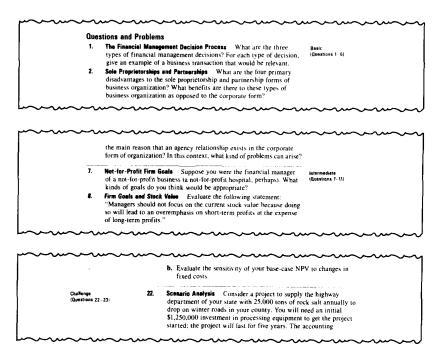
(EBIT - \$600,000)/1 million = (EBIT - \$3 million)/500,000 (EBIT - \$600,000) =  $2 \times (EBIT - $3 million)$ EBIT = \$5.400,000

Check that, in either case, EPS is \$4.80 when EBIT is \$5.4 million

14.2 According to M&M Proposition II (no taxes), the cost of equity is:

 $R_t = R_A + (R_A - R_D) \times (D/E)$ = 20% + (20% - 12%) × 2 = 36% xviii Preface

11. End-of-Chapter Questions and Problems. We have found that many students learn better when they have plenty of opportunity to practice. We therefore provide extensive end-of-chapter questions and problems. The end-of-chapter support we provide greatly exceeds what is typical in an introductory textbook. The questions and problems are generally segregated into two levels—Basic and Intermediate. All problems are fully annotated so that students and instructors can readily identify particular types. Throughout the text, we have worked to supply interesting problems that illustrate real world applications of chapter material. Answers to selected end-of-chapter questions appear in Appendix C.



12. Indexes. This edition is divided into three types—name, equation, and subject indexes.

## Organization of the Text

We have found that the phrase "so much to do, so little time" accurately describes an introductory finance course. For this reason, we designed Essentials of Corporate Finance to be as flexible and modular as possible. There are a total of eight parts, and, in broad terms, the instructor is free to decide the particular sequence. Further, within each part, the first chapter generally contains an overview and survey. Thus, when time is limited, subsequent chapters can be omitted. Finally, the sections placed early in each chapter are generally the most important, and later sections frequently can be omitted without loss of continuity. For these reasons, the instructor has great control over the topics covered, the sequence in which they are covered, and the depth of coverage.

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Essentials has a total of 18 chapters. The average chapter length is well under 30 pages, so it is quite possible to cover the vast majority of the text in a single term. Based on our experience, covering every single chapter in depth might be a bit of a stretch, although it can certainly be done. However, we have found that it is not difficult to cover all but one or two.

Part One of the text contains two chapters. Chapter 1 considers the goal of the corporation, the corporate form of organization, the agency problem, and, briefly, financial markets. Chapter 2 succinctly discusses cash flow versus accounting income, market value versus book value, and taxes. It also provides a useful review of financial statements.

After Part One, either Part Two, on financial statements analysis, long-range planning, and corporate growth, or Part Three, on time value and stock and bond valuation, follows naturally. Part Two can be omitted entirely if desired. After Part Three, most instructors will probably want to move directly into Part Four, which covers net present value, discounted cash flow valuation, and capital budgeting.

Part Five contains two chapters on risk and return. The first one, on market history, is designed to give students a feel for typical rates of return on risky assets. The second one discusses the expected return/risk tradeoff, and it develops the security market line in a highly intuitive way that bypasses much of the usual portfolio theory and statistics.

Part Six contains four chapters on long-term financing. The first covers cost of capital. The second chapter describes ways businesses raise capital. Venture capital, the role of investment banks, and the costs of going public are emphasized. Because this chapter contains a good deal of descriptive material, it can be assigned as outside reading if time is tight. The third chapter covers leverage and capital structure. It also contains a brief discussion of the bankruptcy process. The final chapter in Part Six covers dividends and dividend policy.

Part Seven contains two chapters on short-term financial management. The first is an introduction to the subject that emphasizes the cash cycle and the need for short-term planning. The second chapter provides greater detail, covering essentials of cash, inventory, and receivables management. The second chapter can be omitted as time constraints dictate.

Finally, Part Eight has a single chapter on international financial management. Because of the importance of this subject, we felt it should be included. We designed the chapter to be a stand-alone treatment so that it can be covered at almost any point in the term, not necessarily at the very end. For example, it would come very naturally after discussing risk and return or after covering long-term financing.

## **Acknowledgments**

To borrow a phrase, writing an introductory finance textbook is easy—all you do is sit down at a word processor and open a vein. We never would have completed any of our books without the incredible amount of help and support we received from literally dozens of our colleagues, students, editors, family members, and friends. We would like to thank, without implicating, all of you.

Preface

Clearly, our greatest debt is to our many colleagues (and their students) around the world who, like us, wanted to try an alternative to what they were using and made the switch to our first book, Fundamentals of Corporate Finance. In the six years since we first launched Fundamentals, we have been through three U.S. editions. With various coauthors, we have developed country-specific Australian, Canadian, and South African editions. There's an international edition, and the book has even been translated into Chinese and Spanish. Needless to say, without this support, we would not be writing another book!

Our plan for developing *Essentials* revolved around the detailed feedback we received from eight of our colleagues who had an interest in the book and regularly teach the introductory course. These brave souls, to whom we are very grateful, are:

Anand Desai, Kansas State University
Glenn Pettingill, Emporia State University
Wallace Davidson, Southern Illinois University
E. Bruce Frederickson, Syracuse University
Alan Robert Jung, San Francisco State University
Karlyn Mitchell, North Carolina State University
Reinhold Lamb, University of North Carolina-Charlotte
Bill Francis, University of North Carolina-Charlotte

Randy D. Jorgensen of the University of Southern Maine worked closely with us to develop the Principles in Action boxes. We think these turned out great, so we would like to particularly thank Randy for his efforts. We also thank Robert C. Higgins of the University of Washington, Clifford Smith, Jr. of the University of Rochester, and Samuel Weaver of Hershey Foods for contributing to the Principles boxes.

We owe a special, and continuing, debt to Thomas H. Eyssell of the University of Missouri. As he has done with our other books, Tom did yeoman's work getting the many supplements to this text ready. Tom also worked with us to develop the Annotated Instructor's Edition of the text, which, along with Instructor's Manual, contains a wealth of lecture tips, teaching notes, international notes, and ethics notes. Between the Instructor's Manual, Study Guide, Testbank, Transparencies, and Ready Notes, there are many more pages of supplemental material than there are pages in the book, so we are especially appreciative of Tom's efforts.

The following University of Missouri doctoral students did outstanding work on this edition of *Essentials:* Barbara Lippincott, Michael Sleight, and David Kuipers. To them fell the unenviable task of technical proofreading and, in particular, of carefully checking each calculation throughout the text.

Finally, in every phase of this project, we have been privileged to have had the complete and unwavering support of two great organizations: Richard D. Irwin, Inc. and Times Mirror. We are deeply grateful to the select group of professionals who served as our development team. They are: John Black, Mike Junior, Jim Keefe, Beth Kessler, Ron Bloecher, Bette Ittersagen, Michael Warrell, Becky Dodson, and Heather Burbridge. Others at Irwin, too numerous to list here, have improved the book in countless ways.

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Throughout the development of this edition, we have taken great care to discover and eliminate errors. Our goal is to provide the best textbook available on the subject. We want to ensure that future editions are error free, and, to that end, we will gladly offer \$10 per arithmetic error to the first individual reporting it as a modest token of our appreciation. More than this, we would like to hear from instructors and students alike. Please write and tell us how to make this a better text. Forward your comments to: Dr. Brad Jordan, c/o Irwin Editorial—Finance, Richard D. Irwin, Inc., 1333 Burr Ridge Parkway, Burr Ridge, IL 60521.

Stephen A. Ross Randolph W. Westerfield Bradford D. Jordan

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