



TENTH EDITION

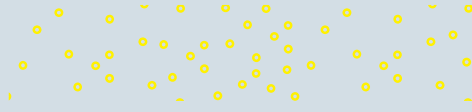
# Fundamentals of Corporate Finance

**Mc  
Graw  
Hill**  
Education

Brealey

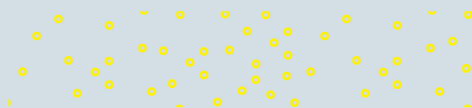
| Myers

| Marcus



Fundamentals of  
**Corporate Finance**

Tenth EDITION



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Sloan School of Management, Massachusetts Institute of Technology  
*Consulting Editor*

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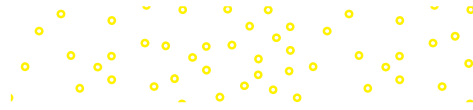
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## FUNDAMENTALS OF CORPORATE FINANCE, TENTH EDITION

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Some ancillaries, including electronic and print components, may not be available to customers outside the United States.

This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 LWI 21 20 19

ISBN 978-1-260-01396-2 (bound edition)

MHID 1-260-01396-0 (bound edition)

ISBN 978-1-260-70390-0 (loose-leaf edition)

MHID 1-260-70390-8 (loose-leaf edition)

Portfolio Manager: *Charles Synovec*

Product Developer: *Allison McCabe-Carroll*

Marketing Manager: *Trina Maurer*

Content Project Managers: *Fran Simon/Jamie Koch*

Buyer: *Susan K. Culbertson*

Design: *Matt Diamond*

Content Licensing Specialist: *Jacob Sullivan*

Cover Image: ©*donskarpo/Shutterstock*

Compositor: *MPS Limited*

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### Library of Congress Cataloging-in-Publication Data

Brealey, Richard A., author. | Myers, Stewart C., author. | Marcus, Alan J., author.

Fundamentals for corporate finance / Richard A. Brealey, London

Business School, Stewart C. Myers, Sloan School of Management, Massachusetts Institute of Technology, Alan J. Marcus, Carroll School of Management, Boston College.

Tenth Edition. | Dubuque, IA : McGraw-Hill Education, [2019] |

Revised edition of Fundamentals of corporate finance, [2018] | Includes bibliographical references and index.

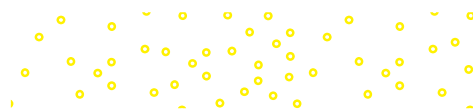
LCCN 2018047649 | ISBN 9781260013962 (student edition : alk. paper)

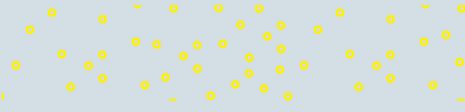
LCSH: Corporations—Finance.

LCC HG4026 .B6668 2019 | DDC 658.15—dc23

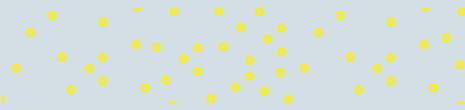
LC record available at <https://lcn.loc.gov/2018047649>

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**Dedication** To Our Families



# About The Authors

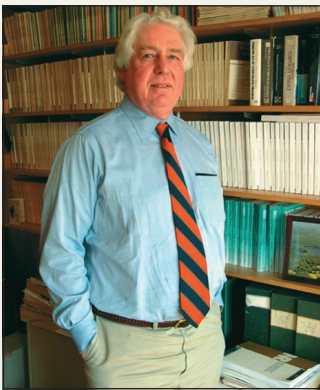


Courtesy of Richard A. Brealey

## Richard A. Brealey

*Professor of Finance at the London Business School*

Professor Brealey is the former president of the European Finance Association and a former director of the American Finance Association. He is a fellow of the British Academy and has served as Special Adviser to the Governor of the Bank of England and as director of a number of financial institutions. Professor Brealey is also the author (with Professor Myers and Franklin Allen) of this book's sister text, *Principles of Corporate Finance* (McGraw-Hill Education).



Courtesy of Stewart C. Myers

## Stewart C. Myers

*Gordon Y Billard Professor of Finance at MIT's Sloan School of Management*

Dr. Myers is past president of the American Finance Association and a research associate of the National Bureau of Economic Research. His research has focused on financing decisions, valuation methods, the cost of capital, and financial aspects of government regulation of business. Dr. Myers is a director of The Brattle Group, Inc. and is active as a financial consultant. He is also the author (with Professor Brealey and Franklin Allen) of this book's sister text, *Principles of Corporate Finance* (McGraw-Hill Education).



Courtesy of Alan J. Marcus

## Alan J. Marcus

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Professor Marcus's main research interests are in derivatives and securities markets. He is co-author (with Zvi Bodie and Alex Kane) of the texts *Investments* and *Essentials of Investments* (McGraw-Hill Education). Professor Marcus has served as a research fellow at the National Bureau of Economic Research. Professor Marcus also spent two years at Freddie Mac, where he helped to develop mortgage pricing and credit risk models. He currently serves on the Research Foundation Advisory Board of the CFA Institute.

This book is an introduction to corporate finance. It focuses on how companies invest in real assets, how they raise the money to pay for the investments, and how those assets ultimately affect the value of the firm. It also provides a broad overview of the financial landscape, discussing, for example, the major players in financial markets, the role of financial institutions in the economy, and how securities are traded and valued by investors. The book offers a framework for systematically thinking about most of the important financial problems that both firms and individuals are likely to confront.

Financial management is important, interesting, and challenging. It is *important* because today's capital investment decisions may determine the businesses that the firm is in 10, 20, or more years ahead. Needless to say, a firm's success or failure also depends, in large part, on its ability to find the capital that it requires.

Finance is *interesting* for several reasons. Financial decisions often involve huge sums of money. Large investment projects or acquisitions may involve billions of dollars. Also, the financial community is international and fast-moving, with colorful heroes and a sprinkling of unpleasant villains.

Finance is *challenging*. Financial decisions are rarely cut and dried, and the financial markets in which companies operate are changing rapidly. Good managers can cope with routine problems, but only the best managers can respond to change. To handle new problems, you need more than rules of thumb; you need to understand why companies and financial markets behave as they do and when common practice may not be best practice. Once you have a consistent framework for making financial decisions, complex problems become more manageable.

This book provides that framework. It is not an encyclopedia of finance. It focuses instead on setting out the basic *principles* of financial management and applying them to the main decisions faced by the financial manager. It explains how managers can make choices between investments that may pay off at different points of time or have different degrees of risk. It also describes the main features of financial markets and discusses why companies may prefer a particular source of finance.

We organize the book around the key concepts of modern finance. These concepts, properly explained, simplify the subject. They are also practical. The tools of financial management are easier to grasp and use effectively when presented in a consistent conceptual framework. This text provides that framework.

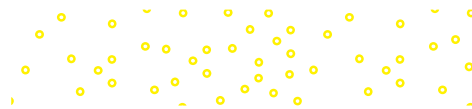
Modern financial management is not "rocket science." It is a set of ideas that can be made clear by words, graphs, and numerical examples. The ideas provide the "why" behind the tools that good financial managers use to make investment and financing decisions.

We wrote this book to make financial management clear, useful, and fun for the beginning student. We set out to show that modern finance and good financial practice go together, even for the financial novice.

## *Fundamentals and Principles of Corporate Finance*

This book is derived in part from its sister text *Principles of Corporate Finance*. The spirit of the two books is similar. Both apply modern finance to give students a working ability to make financial decisions. However, there are also substantial differences between the two books.





First, we provide in *Fundamentals* much more detailed discussion of the principles and mechanics of the time value of money. This material underlies almost all of this text, and we spend a lengthy chapter providing extensive practice with this key concept.

Second, we use numerical examples in this text to a greater degree than in *Principles*. Each chapter presents several detailed numerical examples to help the reader become familiar and comfortable with the material.

Third, we have streamlined the treatment of most topics. Whereas *Principles* has 34 chapters, *Fundamentals* has only 25. The relative brevity of *Fundamentals* necessitates a broader-brush coverage of some topics, but we feel that this is an advantage for a beginning audience.

Fourth, we assume little in the way of background knowledge. While most users will have had an introductory accounting course, we review the concepts of accounting that are important to the financial manager in Chapter 3.

*Principles* is known for its relaxed and informal writing style, and we continue this tradition in *Fundamentals*. In addition, we use as little mathematical notation as possible. Even when we present an equation, we usually write it in words rather than symbols. This approach has two advantages. It is less intimidating, and it focuses attention on the underlying concept rather than the formula.

## Organizational Design

*Fundamentals* is organized in eight parts.

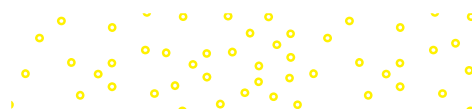
**Part 1 (Introduction)** provides essential background material. In the first chapter, we discuss how businesses are organized, the role of the financial manager, and the financial markets in which the manager operates. We explain how shareholders with many disparate goals might all agree that they want managers to take actions that increase the value of their investment, and we introduce the concept of the opportunity cost of capital and the trade-off that the firm needs to make when assessing investment proposals. We also describe some of the mechanisms that help to align the interests of managers and shareholders. Of course, the task of increasing shareholder value does not justify corrupt and unscrupulous behavior. We, therefore, discuss some of the ethical issues that confront managers.

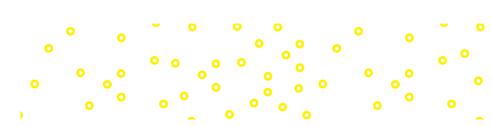
Chapter 2 surveys and sets out the functions of financial markets and institutions. This chapter also reviews the crisis of 2007–2009. The events of those years illustrate clearly why and how financial markets and institutions matter.

A large corporation is a team effort, so the firm produces financial statements to help the players monitor its progress. Chapter 3 provides a brief overview of these financial statements and introduces two key distinctions—between market and book values and between cash flows and profits. This chapter also discusses some of the shortcomings in accounting practice. The chapter concludes with a summary of federal taxes.

Chapter 4 provides an overview of financial statement analysis. In contrast to most introductions to this topic, our discussion is motivated by considerations of valuation and the insight that financial ratios can provide about how management has added to the firm's value.

**Part 2 (Value)** is concerned with valuation. In Chapter 5, we introduce the concept of the time value of money, and because most readers will be more familiar with their own financial affairs than with the big leagues of finance, we motivate our discussion by looking first at some personal financial decisions. We show how to value long-lived





streams of cash flows and work through the valuation of perpetuities and annuities. Chapter 5 also contains a short concluding section on inflation and the distinction between real and nominal returns.

Chapters 6 and 7 introduce the basic features of bonds and stocks and give students a chance to apply the ideas of Chapter 5 to the valuation of these securities. We show how to find the value of a bond given its yield, and we show how prices of bonds fluctuate as interest rates change. We look at what determines stock prices and how stock valuation formulas can be used to infer the return that investors expect. Finally, we see how investment opportunities are reflected in the stock price and why analysts focus on the price-earnings multiple. Chapter 7 also introduces the concept of market efficiency. This concept is crucial to interpreting a stock's valuation; it also provides a framework for the later treatment of the issues that arise when firms issue securities or make decisions concerning dividends or capital structure.

The remaining chapters of Part 2 are concerned with the company's investment decision. In Chapter 8, we introduce the concept of net present value and show how to calculate the NPV of a simple investment project. We then consider more complex investment proposals, including choices between alternative projects, machine replacement decisions, and decisions of when to invest. We also look at other measures of an investment's attractiveness—its internal rate of return, profitability index, and payback period. We show how the profitability index can be used to choose between investment projects when capital is scarce. The appendix to Chapter 8 shows how to sidestep some of the pitfalls of the IRR rule.


The first step in any NPV calculation is to decide what to discount. Therefore, in Chapter 9, we work through a realistic example of a capital budgeting analysis, showing how the manager needs to recognize the investment in working capital and how taxes and depreciation affect cash flows.

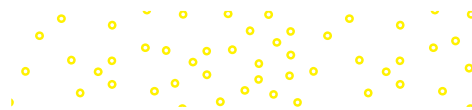
We start Chapter 10 by looking at how companies organize the investment process and ensure everyone works toward a common goal. We then go on to look at various techniques to help managers identify the key assumptions in their estimates, such as sensitivity analysis, scenario analysis, and break-even analysis. We explain the distinction between accounting break-even and NPV break-even. We conclude the chapter by describing how managers try to build future flexibility into projects so that they can capitalize on good luck and mitigate the consequences of bad luck.

**Part 3 (Risk)** is concerned with the cost of capital. Chapter 11 starts with a historical survey of returns on bonds and stocks and goes on to distinguish between the specific risk and market risk of individual stocks. Chapter 12 shows how to measure market risk and discusses the relationship between risk and expected return. Chapter 13 introduces the weighted-average cost of capital and provides a practical illustration of how to estimate it.

**Part 4 (Financing)** begins our discussion of the financing decision. Chapter 14 provides an overview of the securities that firms issue and their relative importance as sources of finance. In Chapter 15, we look at how firms issue securities, and we follow a firm from its first need for venture capital, through its initial public offering, to its continuing need to raise debt or equity.

**Part 5 (Debt and Payout Policy)** focuses on the two classic long-term financing decisions. In Chapter 16, we ask how much the firm should borrow, and we summarize bankruptcy procedures that occur when firms can't pay their debts. In





Chapter 17, we study how firms should set dividend and payout policy. In each case, we start with Modigliani and Miller's (MM's) observation that in well-functioning markets, the decision should not matter, but we use this initial observation to help the reader understand why financial managers in practice do pay attention to these decisions.

**Part 6 (Financial Analysis and Planning)** starts with long-term financial planning in Chapter 18, where we look at how the financial manager considers the combined effects of investment and financing decisions on the firm as a whole. We also show how measures of internal and sustainable growth help managers check that the firm's planned growth is consistent with its financing plans. Chapter 19 is an introduction to short-term financial planning. It shows how managers ensure that the firm will have enough cash to pay its bills over the coming year. Chapter 20 addresses working capital management. It describes the basic steps of credit management, the principles of inventory management, and how firms handle payments efficiently and put cash to work as quickly as possible. It also describes how firms invest temporary surpluses of cash and how they can borrow to offset any temporary deficiency. Chapter 20 is conceptually straightforward, but it contains a large dollop of institutional material.

**Part 7 (Special Topics)** covers several important but somewhat more advanced topics—mergers (Chapter 21), international financial management (Chapter 22), options (Chapter 23), and risk management (Chapter 24). Some of these topics are touched on in earlier chapters. For example, we introduce the idea of options in Chapter 10, when we show how companies build flexibility into capital projects. However, Chapter 23 generalizes this material, explains at an elementary level how options are valued, and provides some examples of why the financial manager needs to be concerned about options. International finance is also not confined to Chapter 22. As one might expect from a book that is written by an international group of authors, examples from different countries and financial systems are scattered throughout the book. However, Chapter 22 tackles the specific problems that arise when a corporation is confronted by different currencies.

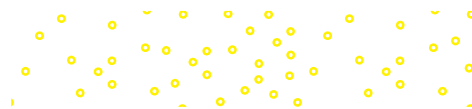
**Part 8 (Conclusion)** contains a concluding chapter (Chapter 25), in which we review the most important ideas covered in the text. We also introduce some interesting questions that either were unanswered in the text or are still puzzles to the finance profession. Thus, the last chapter is an introduction to future finance courses as well as a conclusion to this one.

### Routes through the Book

There are about as many effective ways to organize a course in corporate finance as there are teachers. For this reason, we have ensured that the text is modular so that topics can be introduced in different sequences.

We like to discuss the principles of valuation before plunging into financial planning. Nevertheless, we recognize that many instructors will prefer to move directly from Chapter 4 (Measuring Corporate Performance) to Chapter 18 (Long-Term Financial Planning) in order to provide a gentler transition from the typical prerequisite accounting course. We have made sure that Part 6 (Financial Analysis and Planning) can easily follow Part 1.

Similarly, we like to discuss working capital only after the student is familiar with the basic principles of valuation and financing, but we recognize that here also



many instructors prefer to reverse our order. There should be no difficulty in taking Chapter 20 out of order.

When we discuss project valuation in Part 2, we stress that the opportunity cost of capital depends on project risk. But we do not discuss how to measure risk or how return and risk are linked until Part 3. This ordering can easily be modified. For example, the chapters on risk and return can be introduced before, after, or midway through the material on project valuation.

## Changes in the Tenth Edition

Users of previous editions of this book will not find dramatic changes in either the material or the ordering of topics. But, throughout, we have made the book more up to date and easier to read. Here are some of the ways that we have done this.

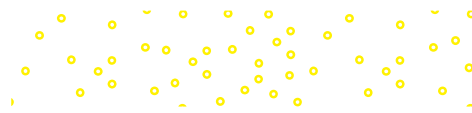
**Beyond the Page** The Beyond the Page digital extensions and applications provide additional examples, anecdotes, spreadsheet programs, and more thoroughgoing explanations of some topics. This material is very easily accessed on the web. In this edition, we have updated them and added a number of additional applications and made them easier to access. For example, the applications are seamlessly available with a click on the e-version of the book, but they are also readily accessible in the traditional hard copy of the text using the shortcut URLs provided in the margins of relevant pages.

**Improving the Flow** A major part of our effort in revising this text was spent on improving the flow. Often this has meant a word change here or a redrawn diagram there, but sometimes we have made more substantial changes. One example is the discussion of discounted cash flow analysis in Chapter 9. Rather than presenting a series of disconnected examples, we now illustrate the many aspects of cash flow analysis in one integrated application. The material is substantially unchanged, but we think that the flow is much improved.

**Updating** Major updates in this edition revolved around the implications of recent tax reform legislation. The Tax Cuts and Jobs Act of 2017 mandated substantial changes in corporate and personal tax rates as well as in the tax treatment of depreciation and investment income. All of these changes potentially affect firms' capital budgeting and financing decisions.

Of course, in each new edition we also try to ensure that any statistics are as up to date as possible. For example, since the previous edition, we have available an extra 2 years of data on security returns. These show up in the figures in Chapter 11 of the long-run returns on stocks, bonds, and bills. Measures of EVA, data on security ownership, dividend payments, and stock repurchases are just a few of the other cases where data have been brought up to date.

**New Illustrative Boxes** The text contains a number of boxes with illustrative real-world examples. Many of these are new. Look, for example, at the box in Chapter 2 that describes prediction markets and what they had to say about the 2016 presidential election. Or look at the box in Chapter 15 that shows how the JOBS Act of 2012 cleared the way for companies to use crowdfunding to raise up to \$50 million from small investors who wish to invest in start-up firms.



**More Worked Examples** We have added more worked examples in the text, many of them taken from real companies.

### Specific Chapter Changes in the Tenth Edition

Here are a few of the additions to chapter material:

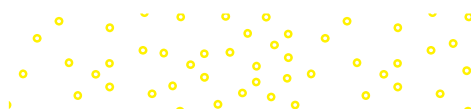
- Chapter 1** contains updated and timely examples of real capital expenditure decisions by major corporations.
- Chapter 2** includes a discussion of prediction markets in the most recent presidential election.
- Chapter 3** includes updated discussions of recent changes in tax law.
- Chapter 6** includes a new Finance in Practice box to show how to find bond information on the web.
- Chapter 7** provides new evidence on efficient markets and some of the anomalies literature.
- Chapter 9** now illustrates cash flow analysis in one integrated, extended example. It also discusses and provides several examples of the impact of accelerated depreciation and immediate expensing on the value of a capital investment.
- Chapter 14** now includes more coverage of alternative sources of cash as well as extended treatment of the variety of corporate debt.
- Chapter 16** reconsiders the present value of interest tax shields at the new, lower, corporate tax rate.
- Chapter 20** introduces the components of working capital and the determinants of the cash cycle. It then looks briefly at each of the components including short-term debt. It provides updated discussions on recent trends in the United States concerning investments in working capital.
- Chapter 21** features numerous updates to our coverage of the market for corporate control, for example, GE's divestment of major sectors of the firm, recent activist investor initiatives, and tax inversion strategies in the wake of recent changes to tax law.

### Assurance of Learning

Assurance of learning is an important element of many accreditation standards. *Fundamentals of Corporate Finance*, Tenth Edition, is designed specifically to support your assurance-of-learning initiatives. Each chapter in the book begins with a list of numbered learning objectives, which are referred to in the end-of-chapter problems and exercises. Every test bank question is also linked to one of these objectives, in addition to level of difficulty, topic area, Bloom's Taxonomy level, and AACSB skill area. Connect, McGraw-Hill's online homework solution, and *EZ Test*, McGraw-Hill's easy-to-use test bank software, can search the test bank by these and other categories, providing an engine for targeted assurance-of-learning analysis and assessment.

### AACSB Statement

McGraw-Hill Education is a proud corporate member of AACSB International. Understanding the importance and value of AACSB accreditation, *Fundamentals of Corporate Finance*, Tenth Edition, has sought to recognize the curricula guidelines detailed in the AACSB standards for business accreditation by connecting selected questions in the test bank to the general knowledge and skill guidelines found in the AACSB standards.



The statements contained in *Fundamentals of Corporate Finance*, Tenth Edition, are provided only as a guide for the users of this text. The AACSB leaves content coverage and assessment within the purview of individual schools, the mission of the school, and the faculty. While *Fundamentals of Corporate Finance*, Tenth Edition, and the teaching package make no claim of any specific AACSB qualification or evaluation, we have, within the test bank, labeled selected questions according to the six general knowledge and skills areas.

# Unique Features

## What makes *Fundamentals of Corporate Finance* such a powerful learning tool?

### Integrated Examples

Numbered and titled examples are integrated in each chapter. Students can learn how to solve specific problems step-by-step as well as gain insight into general principles by seeing how to approach and analyze different problems.

#### Example 5.8

#### Winning Big at the Lottery

In August 2017, a Massachusetts woman bought a Powerball lottery ticket and won a record \$758.7 million. We suspect that she received unsolicited congratulations, good wishes, and requests for money from dozens of more or less worthy charities, relations, and newly devoted friends. In response, she could fairly point out that the prize wasn't really worth \$758.7 million. That sum was to be paid in 30 annual installments of about \$23 million each. Assuming that the first payment occurred at the end of 1 year, what was the present value of the prize? The interest rate at the time was about 2.7%.

The present value of these payments is simply the sum of the present values of each annual payment. But rather than valuing the payments separately, it is much easier to treat them as a 30-year annuity. To value this annuity, we multiply \$23 million by the 30-year annuity factor:

$$PV = 23 \times 30\text{-year annuity factor} \\ = 23 \times \left[ \frac{1}{r} - \frac{1}{r(1+r)^{30}} \right]$$

At an interest rate of 2.7%, the annuity factor is

$$\left[ \frac{1}{.027} - \frac{1}{.027(1.027)^{30}} \right] = 20.3829$$

### Spreadsheet Solutions Boxes

These boxes provide the student with detailed examples of how to use Excel spreadsheets when applying financial concepts. The boxes include questions that apply to the spreadsheet, and their solutions are given at the end of the applicable chapter. These spreadsheets are available for download in Connect.

#### Spreadsheet Solutions

#### Bond Valuation

Excel and most other spreadsheet programs provide built-in functions to compute bond values and yields. They typically ask you to input both the date you buy the bond (called the *settlement date*) and the maturity date of the bond.

The Excel function for bond value is:

`=PRICE(settlement date, maturity date, annual coupon rate, yield to maturity, redemption value as percent of face value, number of coupon payments per year)`

(If you can't remember the formula, just remember that you can go to the Formulas tab in Excel, and from the Financial tab pull down the PRICE function, which will prompt you for the necessary inputs.) For our 2.25% coupon bond, we would enter the values shown in the spreadsheet below.

Alternatively, we could simply enter the following function in Excel:

`=PRICE(2018.2.15, 2021.2.15), .0225, .02391, 100, 1)`

The DATE function in Excel, which we use for both the settlement and maturity dates, uses the format DATE(year,month,day).

Notice that the coupon rate and yield to maturity are expressed as decimals, not percentages. In most cases, redemption value will be 100 (i.e., 100% of face value), and the resulting price will be expressed as a percent of face value. Occasionally, however, you may encounter bonds that pay off at a premium or discount to face value. One example would be callable bonds, which give the company the right to buy back the bonds at a premium before maturity.

### Excel Exhibits

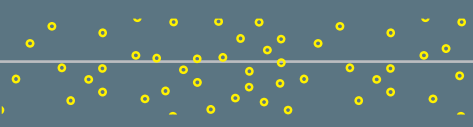
Selected exhibits are set as Excel spreadsheets. The accompanying files are available for instructors and students in Connect.

SPREADSHEET 5.3 Using a spreadsheet to find the present value of multiple cash flows

	A	B	C	D	E
1	Finding the present value of multiple cash flows using a spreadsheet				
2					
3	Time until CF	Cash flow	Present value	Formula in Col C	Alternative formula for Col C
4	0	8000	\$8,000.00	=PV(\$B\$10, A4, 0, -B4)	=B4/(1 + \$B\$10)^A4
5	1	4000	\$3,703.70	=PV(\$B\$10, A5, 0, -B5)	=B5/(1 + \$B\$10)^A5
6	2	4000	\$3,429.36	=PV(\$B\$10, A6, 0, -B6)	=B6/(1 + \$B\$10)^A6
7					
8	SUM		\$15,133.06	=SUM(C4:C6)	=SUM(C4:C6)
9					
10	Discount rate:	0.08			
11					
12	Notice that the time until each payment is found in column A.				
13	Once we enter the formula for present value in cell C4, we can copy it to cells C5 and C6.				
14	The present value for other interest rates can be found by changing the entry in cell B10.				

values (column C) therefore appear as positive numbers. Column E shows an alternative to the use of the PV function, where we calculate present values directly. This allows us to see exactly what is being done.





### Finance in Practice Boxes

These are excerpts that appear in most chapters, often from the financial press, providing real-life illustrations of the chapter's topics, such as ethical choices in finance, disputes about stock valuation, financial planning, and credit analysis.

**Finance in Practice**
Ethical Disputes in Finance

**Short-Selling**  
 Investors who take short positions are betting that securities will fall in price. Usually they do this by borrowing the security, selling it for cash, and then waiting in the hope that they will be able to buy it back cheaply.' In 2007, hedge fund manager John Paulson took a huge short position in mortgage-backed securities. The bet paid off, and that year Paulson's trade made a profit of \$1 billion for his fund.  
 Was Paulson's trade unethical? Some believe not only that he was profiting from the misery that resulted from the crash in mortgage-backed securities, but that his short trades accentuated the collapse. It is certainly true that short-sellers have never been popular. For example, following the crash of 1929, one commentator compared short-selling to the ghouliness of "creatures who, at all great earthquakes and fires, spring up to rob broken homes and injured and dead

But sometimes raids can enhance shareholder value. For example, in 2012 and 2013, Relational Investors teamed up with the California State Teachers' Retirement System (CSTRS, a pension fund) to try to force Timken Co. to split into two separate companies, one for its steel business and one for its industrial bearings business. Relational and CSTRS believed that Timken's combination of unrelated businesses was unfocused and inefficient. Timken management responded that breakup would "deprive our shareholders of long-run value—all in an attempt to create illusory short-term gains through financial engineering." But Timken's stock price rose at the prospect of a breakup, and a nonbinding shareholder vote on Relational's proposal attracted a 53% majority. Finally, in 2014 Timken spun off its steel business in a new corporation, Timken Steel.  
 How do you draw the ethical line in such examples? Was Paulson a "passive investor" or an "active investor"?

### Financial Calculator Boxes and Exercises

In a continued effort to help students grasp the critical concept of the time value of money, many pedagogical tools have been added throughout the first section of the text. Financial Calculator boxes provide examples for solving a variety of problems, with directions for the most popular financial calculators.

**Financial Calculator**
Using a Financial Calculator to Compute Bond Yield

You can use a financial calculator to calculate the yield to maturity on our 2.25% Treasury bond. The inputs are:

	n	i	PV	PMT	FV
Inputs	3		995.938	22.5	1000
Compute		2.392			

Now compute *i* and you should get an answer of 2.392%, which is just a tick above the yield reported in Table 6.1.

Let's now redo this calculation but recognize that the coupons are paid semiannually. Instead of three annual coupon payments of \$22.50, the bond makes six semiannual payments of \$11.25. Therefore, we can find the semiannual yield as follows:

	n	i	PV	PMT	FV
Inputs	6		995.938	11.25	1000
Compute		1.19556			

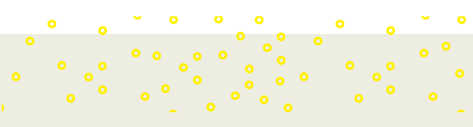
This yield to maturity, of course, is a 6-month yield, not an annual one. Bond dealers would typically annualize the semiannual rate by doubling it, so the yield to maturity would be quoted as  $1.19556 \times 2 = 2.391\%$ , which exactly matches the value in Table 6.1.

### Self-Test Questions

Provided in each chapter, these helpful questions enable students to check their understanding as they read. Answers are worked out at the end of each chapter.

6.4
Self-Test

Suppose that the market interest rate is 4% and then drops overnight to 2%. Calculate the present values of the 2.25%, 3-year bond and of the 2.25%, 30-year bond both before and after this change in interest rates. Assume annual coupon payments. Confirm that your answers correspond with Figure 6.5. Use your financial calculator or a spreadsheet. You can find a box on bond pricing using Excel later in this chapter.





## “Beyond the Page” Interactive Content and Applications

Additional resources and hands-on applications are just a click away. Students can tap or click the icons in the e-version or use the direct web links to learn more about key concepts and try out calculations, tables, and figures when they go “Beyond the Page.”

### BEYOND THE PAGE



How changes in interest rates affect long- and short-term bonds

[mhhe.com/brealey10e](http://mhhe.com/brealey10e)

### BEYOND THE PAGE



Which is the longer-term bond?

[mhhe.com/brealey10e](http://mhhe.com/brealey10e)

A change in interest rates has only a modest impact on the present value of near-term cash flows but a much greater impact on the value of distant cash flows. Therefore, any change has a greater impact on the price of long-term bonds than the price of short-term bonds. For example, compare the two curves in Figure 6.5. The blue line shows how the value of the 3-year, 2.25% coupon bond varies with the interest rate. The green line shows how the price of a 30-year, 2.25% bond varies. You can see that the 30-year bond is more sensitive to interest rate fluctuations than the 3-year bond. This should not surprise you. If you buy a 3-year bond and rates then rise, you will be stuck with a bad deal—you could have got a better interest rate if you had waited. However, think how much worse it would be if the loan had been for 30 years rather than 3 years. The longer the loan, the more you have lost by accepting what turns out to be a low interest rate. This shows up in a bigger decline in the price of the longer-term bond. Of course, there is a flip side to this effect, which you can also see from Figure 6.5. When interest rates fall, the longer-term bond responds with a greater increase in price.

## Web Exercises

Select chapters include Web Exercises that allow students to utilize the Internet to apply their knowledge and skills with real-world companies.

### WEB EXERCISES

1. Log on to [www.investopedia.com](http://www.investopedia.com) to find a simple calculator for working out bond prices. (Start by clicking the *Investing* link and then look for another link to *Calculators*.) Check whether a change in yield has a greater effect on the price of a long-term or a short-term bond.
2. When we plotted the yield curve in Figure 6.7, we used the prices of Treasury strips. You can find current prices of strips by logging on to *The Wall Street Journal* website ([www.wsj.com](http://www.wsj.com)) and clicking on *Markets*, *Market Data*, and then *Rates*. Try plotting the yields on stripped coupons against maturity. Do they currently increase or decline with maturity? Can you explain why? You can also use *The Wall Street Journal* site to compare the yields on nominal Treasury bonds with those on TIPS. Suppose that you are confident that inflation will be 3% per year. Which bonds are the better buy?
3. In Figure 6.9, we showed how bonds with greater credit risk have promised higher yields to maturity. This yield spread goes up when the economic outlook is particularly uncertain. You can check how much extra yield lower-grade bonds offer today by logging on to the Federal Reserve Economic Database (FRED) at the St. Louis Fed website ([fred.stlouisfed.org](http://fred.stlouisfed.org)). Search for Corporate Bonds and compare the yields on Aaa and Baa bonds. How does the current spread

## Minicases

Integrated minicases allow students to apply their knowledge to relatively complex, practical problems and typical real-world scenarios.

### MINICASE

Old Alfred Road, who is well-known to drivers on the Maine Turnpike, has reached his 70th birthday and is ready to retire. Mr. Road has no formal training in finance but has saved his money and invested carefully.

Mr. Road owns his home—the mortgage is paid off—and does not want to move. He is a widower, and he wants to bequeath the house and any remaining assets to his daughter.

He has accumulated savings of \$180,000, conservatively invested. The investments are yielding 9% interest. Mr. Road also has \$12,000 in a savings account at 5% interest. He wants to keep the savings account intact for unexpected expenses or emergencies.

Mr. Road's basic living expenses now average about \$1,500 per month, and he plans to spend \$500 per month on travel and hobbies. To maintain this planned standard of living, he will have to rely on his investment portfolio. The interest from the portfolio is \$16,200 per year (9% of \$180,000), or \$1,350 per month.

Mr. Road will also receive \$750 per month in Social Security

inflation. That is, they will be automatically increased in proportion to changes in the consumer price index.

Mr. Road's main concern is with inflation. The inflation rate has been below 3% recently, but a 3% rate is unusually low by historical standards. His Social Security payments will increase with inflation, but the interest on his investment portfolio will not.

What advice do you have for Mr. Road? Can he safely spend all the interest from his investment portfolio? How much could he withdraw at year-end from that portfolio if he wants to keep its real value intact?

Suppose Mr. Road will live for 20 more years and is willing to use up all of his investment portfolio over that period. He also wants his monthly spending to increase along with inflation over that period. In other words, he wants his monthly spending to stay the same in real terms. How much can he afford to spend per month?

Assume that the investment portfolio continues to yield a 9%

In addition to the overall refinement and improvement of the text material, considerable effort was put into developing an exceptional supplement package to provide students and instructors with an abundance of teaching and learning resources.

## Instructor Library

The Connect Instructor Library is your repository for additional resources to improve student engagement in and out of class. You can select and use any asset that enhances your lecture. The Connect Instructor Library includes all of the instructor supplements for this text.

### Solutions Manual

Andrew Hession-Kunz worked with the authors to prepare this resource containing detailed and thoughtful solutions to all the end-of-chapter problems.

### Instructor's Manual

This manual, updated and enhanced by Matthew Will at the University of Indianapolis, includes a descriptive preface containing alternative course formats and case teaching methods, a chapter overview and outline, key terms and concepts, a description of the PowerPoint slides, video teaching notes, related web links, and pedagogical ideas.

### Test Bank

Matthew Will has also thoroughly reviewed and revised the test bank, adding new questions and ensuring that all of the content is closely correlated to the text. More than 2,000 true/false, multiple-choice, and discussion questions/problems are available to the instructor at varying levels of difficulty and comprehension. All questions are tagged by learning objective, topic, AACSB category, and Bloom's Taxonomy level. Complete answers are provided for all test questions and problems. The test bank is available as downloadable Word files, and tests can also be created online within McGraw-Hill's Connect or through TestGen.

TestGen is a complete, state-of-the-art test generator and editing application software that allows instructors to quickly and easily select test items from

McGraw-Hill's test bank content. The instructors can then organize, edit, and customize questions and answers to rapidly generate tests for paper or online administration. Questions can include stylized text, symbols, graphics, and equations that are inserted directly into questions using built-in mathematical templates. TestGen's random generator provides the option to display different text or calculated number values each time questions are used. With both quick-and-simple test creation and flexible and robust editing tools, TestGen is a complete test generator system for today's educators.

### PowerPoint Presentations

These visually stimulating slides have been fully updated by Matthew Will, with colorful graphs, charts, and lists. The slides can be edited or manipulated to fit the needs of a particular course.

### Beyond the Page Content

The authors have created a wealth of additional examples, explanations, and applications, available for quick access by instructors and students. Each "Beyond the Page" feature is called out in the text with an icon that links directly to the content.

### Excel Solutions and Templates

Excel templates are available in Connect for select exhibits and various end-of-chapter problems that have been set as Excel spreadsheets. They correlate with specific concepts in the text and allow students to work through financial problems and gain experience using spreadsheets. Also refer to the valuable Spreadsheet Solutions Boxes that are sprinkled throughout the text for some helpful prompts on working in Excel.

## Student Study Center

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

- Offers students quick access to the Beyond the Page features, Excel files and templates, lectures, eBooks, and more.
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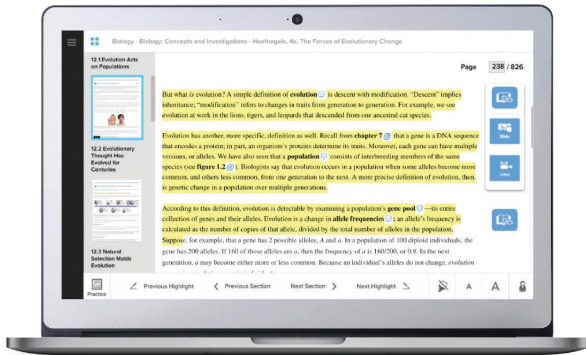
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“I really liked this app—it made it easy to study when you don't have your textbook in front of you.”

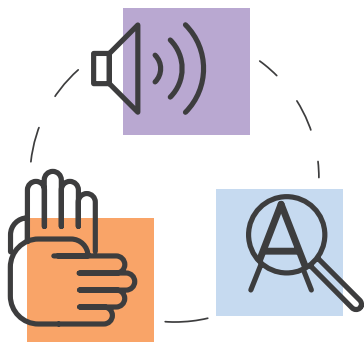
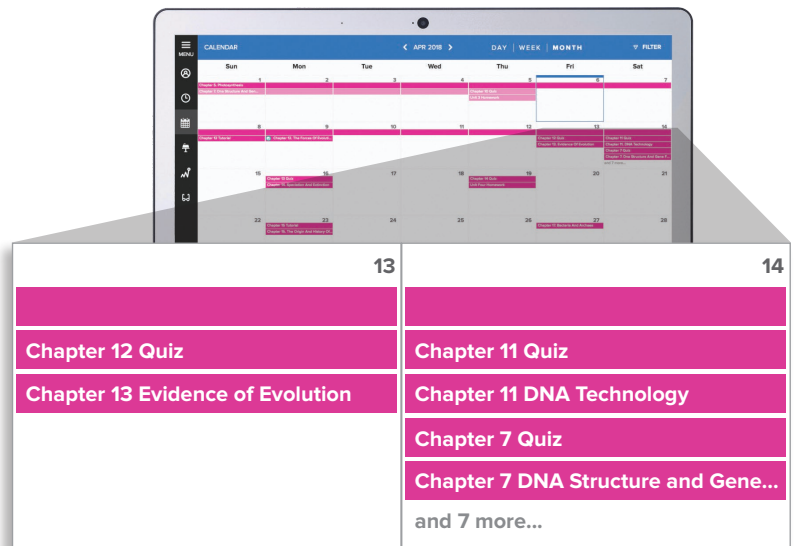
- Jordan Cunningham,  
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# Acknowledgments

We take this opportunity to thank all of the individuals who helped us prepare this and previous editions. We want to express our appreciation to those instructors whose insightful comments and suggestions were invaluable to us during this revision.

Marlena Akhbari  
*Wright State University*

Timothy Alzheimer  
*Montana State University*

Tom Arnold  
*University of Richmond*

Robert Balik  
*Western Michigan University*

Anindam Bandopadhyaya  
*University of  
Massachusetts–Boston*

Chenchu Bathala  
*Cleveland State University*

Richard Bauer  
*Saint Mary's University*

LaDoris Baugh  
*Athens State University*

John R. Becker Blease  
*Washington State  
University–Vancouver*

Theologos Bonitsis  
*New Jersey Institute of  
Technology*

Stephen Borde  
*University of Central Florida*

Edward Boyer  
*Temple University*

Stephen Buell  
*Lehigh University*

Deanne Butchey  
*Florida International  
University*

Shelley Canterbury  
*George Mason University*

Michael Casey  
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Fan Chen  
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University*

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*Saint Joseph's University*

Natalya Delcours  
*Sam Houston State University*

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*Towson University*

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*Slippery Rock University of  
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Mark Johnson  
*Loyola University Maryland*

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*Sam Houston State University*

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*Saint Joseph's University*

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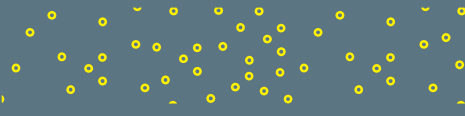
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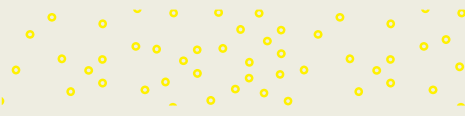
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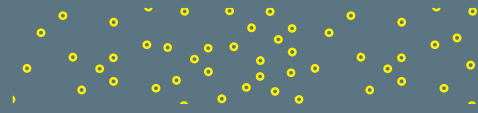
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University–Northridge*





In addition, we would like to thank the dedicated experts who have helped with updates to our instructor materials and online content in Connect and LearnSmart, including Andrew Hession-Kunz, Matt Will, Marc-Anthony Isaacs, and Nicholas Racculia. Their efforts are much appreciated as they will help both students and instructors. We also appreciate help from Aleijda de Cazenove Balsan and Malcolm Taylor.

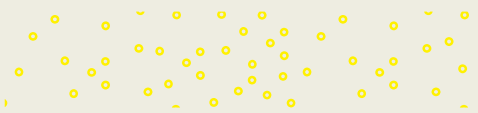
We are grateful to the talented staff at McGraw-Hill Education, especially Allison McCabe-Carroll, Senior Product Developer; Chuck Synovec, Director, Finance; Kevin Moran, Director, Digital Content; Fran Simon and Jamie Koch, Content Project Managers; Matthew Diamond, Senior Designer; Trina Mauer, Senior Marketing Manager; and Dave O'Donnell, Marketing Specialist.

Finally, as was the case with the last nine editions, we cannot overstate the thanks due to our families.

**Richard A. Brealey**

**Stewart C. Myers**

**Alan J. Marcus**



# Contents in Brief

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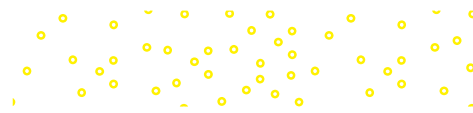
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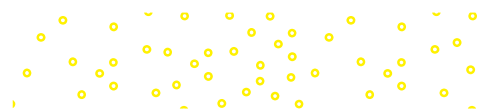
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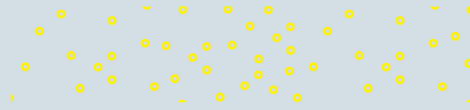
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# 1

## Goals and Governance of the Corporation

### LEARNING OBJECTIVES

*After studying this chapter, you should be able to:*

- 1-1** Give examples of the investment and financing decisions that financial managers make.
- 1-2** Distinguish between real and financial assets.
- 1-3** Cite some of the advantages and disadvantages of organizing a business as a corporation.
- 1-4** Describe the responsibilities of the CFO, treasurer, and controller.
- 1-5** Explain why maximizing market value is the natural financial goal of the corporation.
- 1-6** Understand what is meant by “agency problems,” and cite some of the ways that corporate governance helps mitigate them.
- 1-7** Understand why maximizing market value does not justify behaving unethically.

RELATED WEBSITES FOR THIS CHAPTER CAN BE FOUND IN CONNECT.



To grow from small beginnings to a major corporation, FedEx needed to make good investment and financing decisions.

@Duy Phuong Nguyen/Alamy

To carry on business, a corporation needs an almost endless variety of assets. Some assets are tangible, for example, plant and machinery, office buildings, and vehicles; others are intangible, for example, brand names and patents. Corporations finance these assets by borrowing, by reinvesting profits back into the firm, and by selling additional shares to the firm's shareholders.

Financial managers, therefore, face two broad questions. First, what investments should the corporation make? Second, how should it pay for these investments? *Investment decisions* spend money. *Financing decisions* raise money for investment.

We start this chapter with examples of recent investment and financing decisions by major U.S. and foreign corporations. We review what a corporation is and describe the roles of its top financial managers. We then turn to the financial goal of the corporation, which is usually expressed as *maximizing value*, or at least adding

value. Financial managers add value whenever the corporation can invest to earn a higher return than its shareholders can earn for themselves.

But managers are human beings; they cannot be perfect servants who always and everywhere maximize value. We will consider the conflicts of interest that arise in large corporations and how corporate governance helps to align the interests of managers and shareholders.

If we ask managers to maximize value, can the corporation also be a good citizen? Won't the managers be tempted to try unethical or illegal financial tricks? They sometimes may be tempted, but wise managers realize that such tricks are not just dishonest; they almost always destroy value, not increase it. More challenging for the financial manager are the gray areas where the line between ethical and unethical financial actions is hard to draw.

Finally, we look ahead to the rest of this book and look back to some entertaining snippets of financial history.

## 1.1 Investment and Financing Decisions

Fred Smith is best known today as the founder of FedEx. But in 1965 he was still a sophomore at Yale, where he wrote an economics term paper arguing that delivery systems were not keeping up with increasing needs for speed and dependability.<sup>1</sup> He later joined his stepfather at a struggling equipment and maintenance firm for air carriers. He observed firsthand the difficulties of shipping spare parts on short notice. He saw the need for an integrated air and ground delivery system with a central hub that could connect a large number of points more efficiently than a point-to-point delivery system. In 1971, at the age of 27, Smith founded Federal Express.

Like many start-up firms, Federal Express flirted again and again with failure. Smith and his family had an inheritance of a few million dollars, but this was far from enough. The young company needed to purchase and retrofit a small fleet of aging Dassault Falcon jets; build a central-hub facility; and hire and train pilots, delivery, and office staff. The initial source of capital was short-term bank loans. Because of the company's shaky financial position, the bank demanded that the planes be used as collateral and that Smith personally guarantee the loan with his own money.

In April 1973, the company went live with a fleet of 14 jets, servicing 25 U.S. cities out of its Memphis hub. By then, the company had spent \$25 million and was effectively flat broke, without enough funds to pay for its weekly delivery of jet fuel. In desperation, it managed to acquire a bank loan for \$23.7 million. This loan had to be backed by a guarantee from General Dynamics, which in return acquired an option to buy the company. (Today, General Dynamics must regret that it never exercised this option.)

In November of that year, the company finally achieved some financial stability when it raised \$24.5 million from venture capitalists, investment firms that provide funds and advice to young companies in return for a partial ownership share. Eventually, venture capitalists invested about \$90 million in Federal Express.

In 1977, private firms were allowed for the first time to compete with the Postal Service in package delivery. Federal Express responded by expanding its operations. It acquired seven Boeing 727s, each with about seven times the capacity of the Falcon jets. To pay for these new investments, Federal Express raised about \$19 million by selling shares of stock to the general public in an *initial public offering (IPO)*. The new stockholders became part-owners of the company in proportion to the number of shares they purchased.

From this point on, success followed success, and the company invested heavily to expand its air fleet as well as its supporting infrastructure. It introduced an automated shipping system and a bar-coded tracking system. In 1994, it launched its [fedex.com](http://fedex.com) website for online package tracking. It opened several new hubs across the United States as well as in Canada, France, the Philippines, and China. In 2007, FedEx (as the company was now called) became the world's largest airline measured by number of planes. FedEx also invested in other companies, capped by the acquisition of TNT Express for \$4.4 billion in 2016. By 2017, FedEx had 400,000 employees, annual revenue of \$60 billion, and a stock market value of \$67 billion. Its name had become a verb—to “FedEx a package” was to ship it overnight.

Even in retrospect, FedEx's success was hardly a sure thing. Fred Smith's idea was inspired, but its implementation was complex and difficult. FedEx had to make *good investment decisions*. In the beginning, these decisions were constrained by lack of financing. For example, used Falcon jets were the only option, given the young company's precarious financial position. At first it could service only a short list of major cities. As the company grew, its investment decisions became more complex. Which type of planes should it buy? When should it expand coverage to Europe and Asia?

<sup>1</sup> Legend has it that Smith received a grade of C on this paper. In fact, he doesn't remember the grade.

How many operations hubs should it build? What computer and tracking systems were necessary to keep up with the increasing package volume and geographic coverage? Which companies should it acquire as it expanded its range of services?

FedEx also needed to make *good financing decisions*. For example, how should it raise the money it needed for investment? In the beginning, these choices were limited to family money and bank loans. As the company grew, its range of choices expanded. Eventually it was able to attract funding from venture capitalists, but this posed new questions. How much cash did the firm need to raise from the venture capitalists? How big a share in the firm would the venture capitalists demand in return? The initial public offering of stock prompted similar questions. How many shares should the company try to sell? At what price? As the company grew, it raised more funds by borrowing money from its banks and by selling publicly traded bonds to investors. At each point, it needed to decide on the proper form and terms of financing as well as the amounts to be raised.

In short, FedEx needed to be *good at finance*. It had a head start over potential competitors, but a series of bad financial decisions would have sunk the company. No two companies' histories are the same, but, like FedEx, all successful companies must make good investment and financing decisions. And, as with FedEx, those decisions range from prosaic and obvious to difficult and strategically crucial.

Let's widen our discussion. Table 1.1 gives an example of a recent investment and financing decision for 10 corporations. Five are U.S. corporations and five are foreign. We have chosen very large public corporations that you are likely to be familiar with. You may have shopped at Walmart, posted a picture on Facebook, or dreamed of buying a Ferrari.

Take a look at the decisions now. We think you will agree that they appear sensible—at least there is nothing obviously wrong with them. But if you are new to finance, it may be difficult to think about why these companies made these decisions and not others.

**TABLE 1.1** Examples of recent investment and financing decisions by major public corporations

Company	Recent Investment Decisions	Recent Financing Decisions
Delta Air Lines (U.S.)	Places order for 100 Airbus A321 airliners.	Issues \$1 billion 5-year bond.
ExxonMobil (U.S.)	Announces decision to proceed with development of a huge offshore oil discovery in Guyana.	Reinvests \$8.5 billion of the cash that it generates from operations.
Facebook (U.S.)	Acquires Two Big Ears, a British virtual reality audio company	Leases large new office building in San Francisco.
Fiat Chrysler (Italy)	Spins off its Ferrari luxury car unit.	Repays \$1.8 billion of bank debt.
GlaxoSmithKline (U.K.)	Spends \$3.6 billion on research and development for new drugs.	Issues additional short-term euro debt.
Lenovo (China)	Announces plans to build a new manufacturing facility in India to produce PCs and smartphones	Issues \$500 million of dollar bonds and \$850 million of preferred shares.
LVMH <sup>2</sup> (France)	Acquires high-end perfumery, Maison Francis Kurkdjian	Partly finances acquisitions by issue of debt.
Procter & Gamble (U.S.)	Spends over \$7 billion on advertising.	Buys back \$4.6 billion of stock and pays a \$7.2 billion dividend.
Toshiba (Japan)	Agrees to sell off its bankrupt U.S. nuclear business for \$4.6 billion.	Makes \$5.4 billion issue of common stock.
Walmart (U.S.)	Announces plan to invest \$800 million in Chile over 3 years.	Announces offer to buy back some of its bonds.

<sup>2</sup> LVMH (Moët Hennessy Louis Vuitton) markets perfumes and cosmetics, wines and spirits, leather goods, watches, and other luxury products. And, yes, we know what you are thinking, but "LVMH" really is short for "Moët Hennessy Louis Vuitton."

### capital budgeting or capital expenditure (CAPEX) decision

Decision to invest in tangible or intangible assets.

## The Investment (Capital Budgeting) Decision

Investment decisions, such as those shown in Table 1.1, are also called **capital budgeting or capital expenditure (CAPEX) decisions**. Some of the investments in the table, such as ExxonMobil’s oil platforms or Lenovo’s new factory, involve tangible assets—assets that you can touch and kick. Others involve intangible assets, such as research and development (R&D), advertising, and the design of computer software. For example, major pharmaceutical manufacturers invest billions every year on R&D for new drugs.

Sometimes investments can have very-long-term consequences. For example, many U.S. nuclear power plants, which were initially licensed by the Nuclear Regulatory Commission to operate for 40 years, are now being relicensed for 20 more years, and may be able to operate efficiently for 80 years overall. Other investments may pay off in only a few months. For example, with the approach of the Christmas holidays, Walmart spends nearly \$50 billion to stock up its warehouses and retail stores. As the goods are sold over the following months, the company recovers its investment in these inventories.

The world of business can be intensely competitive, and corporations prosper only if they can keep launching new products or services. In some cases, the costs and risks of doing so are amazingly large. For example, the cost of developing the Gorgon natural gas field in Australia has been estimated at over \$40 billion. It’s not surprising that this cost is being shared among several major energy companies. But do not think of companies as making billion-dollar investments on a daily basis. Most investment decisions are smaller, such as the purchase of a truck, machine tool, or computer system. Corporations make thousands of such investments each year. The cumulative amount of these small expenditures can be just as large as the occasional jumbo investments, such as those shown in Table 1.1.

Not all investments succeed. In October 2011 Hewlett-Packard (HP) paid \$11.1 billion to acquire the British software company Autonomy. Just 13 months later, HP wrote down the value of this investment by \$8.8 billion. HP claimed that it was misled by improper accounting at Autonomy. Nevertheless, the Autonomy acquisition was a disastrous investment for HP. HP’s CEO was fired in short order.

There are no free guarantees in finance. But you can tilt the odds in your favor if you learn the tools of investment analysis and apply them intelligently. We cover these tools in detail later in this book.

## The Financing Decision

The financial manager’s second main responsibility is to raise the money that the firm requires for its investments and operations. This is the **financing decision**. When a company needs to raise money, it can invite investors to put up cash in exchange for a share of future profits, or it can promise to pay back the investors’ cash plus a fixed rate of interest. In the first case, the investors receive shares of stock and become shareholders, part-owners of the corporation. The investors in this case are referred to as *equity investors*, who contribute *equity financing*. In the second case, the investors are lenders, that is, *debt investors*, who one day must be repaid. The choice between debt and equity financing is often called the *capital structure decision*. Here “capital” refers to the firm’s sources of long-term financing. A firm that is seeking to raise long-term financing is said to be “raising capital.”

Notice the essential difference between the investment and financing decisions. When the firm invests, it acquires **real assets**, which are then used to produce the firm’s goods and services. The firm finances its investment in real assets by issuing **financial assets** to investors. A share of stock is a financial asset, which has value as a claim on the firm’s real assets and on the income that those assets will produce. A bank loan is a financial asset also. It gives the bank the right to get its money back plus interest. If the firm’s operations can’t generate enough income to repay the bank,

### financing decision

Decision on the sources and amounts of financing.

### real assets

Assets used to produce goods and services.

### financial assets

Financial claims to the income generated by the firm’s real assets.



the bank can force the firm into bankruptcy and stake a claim on its real assets. Financial assets that can be purchased and traded by investors in public markets are called *securities*. The shares of stock issued by the public corporations in Table 1.1 are all securities. Delta's 5-year bond in Table 1.1 also is a security. But a bank loan from JPMorgan to Delta is not called a security unless the bank resells the loan to public investors.

The firm can issue an almost endless variety of financial assets. Suppose it decides to borrow. It can issue debt to investors, or it can borrow from a bank. It can borrow for 1 year or 20 years. If it borrows for 20 years, it can reserve the right to pay off the debt early. It can borrow in Paris, receiving and promising to repay euros, or it can borrow dollars in New York. (As Table 1.1 shows, GlaxoSmithKline chose to borrow euros, but it could have borrowed U.S. dollars or British pounds instead.)

In some ways, financing decisions are less important than investment decisions. Financial managers say that “value comes mainly from the investment side of the balance sheet.” Also, the most successful corporations sometimes have the simplest financing strategies. Take Microsoft as an example. It is one of the world's most valuable corporations. In mid-2018, Microsoft shares traded for \$94 each. There were 7.71 billion shares outstanding. Therefore Microsoft's market value—its *market capitalization* or *market cap*—was  $7.71 \times \$94 = \$725$  billion. Where did this market value come from? It came from Microsoft's products, from its brand name and worldwide customer base, from its R&D, and from its ability to make profitable future investments. It did not come from sophisticated financing. Microsoft's financing strategy is very simple: It finances almost all investment by retaining and reinvesting operating cash flow.

Financing decisions may not add much value compared to good investment decisions, but they can destroy value if they are stupid or ambushed by bad news. For example, when a consortium of investment companies bought the energy giant TXU in 2007, the company took on an additional \$40 billion in debt. This may not have been a stupid decision, but it did prove fatal. The consortium did not foresee the expansion of shale gas production and the resulting sharp fall in natural gas and electricity prices. By April 2014 the company (renamed Energy Future Holdings) was bankrupt.

## 1.1 Self-Test

Are the following capital budgeting or financing decisions? (*Hint*: In one case the answer is “both.”)

- Intel decides to spend \$7 billion to develop a new microprocessor factory.
- BMW borrows 350 million euros (€350 million) from Deutsche Bank.
- Royal Dutch Shell constructs a pipeline to bring natural gas onshore from a production platform in Australia.
- Avon spends €200 million to launch a new range of cosmetics in European markets.
- Pfizer issues new shares to buy a small biotech company.

We have emphasized the financial manager's responsibility for two decisions:

The investment decision = purchase of real assets

The financing decision = sale of financial assets

But this is an oversimplification because the financial manager is also involved in many other day-to-day activities that are essential to the smooth operation of a business. For example, if the firm sells goods or services on credit, it needs to make sure

that its customers pay on time. Corporations that operate internationally must constantly transfer cash from one currency to another. And the manager must keep an eye on the risks that the firm runs and ensure that they don't land the firm in a pickle.

## 1.2 Self-Test

Which of the following are financial assets, and which are real assets?

- a. A patent.
- b. A share of stock issued by Wells Fargo Bank.
- c. A blast furnace in a steelmaking factory.
- d. A mortgage loan taken out to help pay for a new home.
- e. After a successful advertising campaign, potential customers trust FedEx to deliver packages promptly and reliably.
- f. An IOU ("I owe you") from your brother-in-law.

## 1.2 What Is a Corporation?

We have been referring to "corporations." But before going too far or too fast, we need to offer some basic definitions.

A **corporation** is a distinct, permanent legal entity. Suppose you decide to create a new corporation.<sup>3</sup> You would work with a lawyer to prepare *articles of incorporation*, which set out the purpose of the business and how it is to be financed, managed, and governed. These articles must conform to the laws of the state in which the business is incorporated. For many purposes, the corporation is considered a resident of its state. For example, it can enter into contracts, borrow or lend money, and sue or be sued. It pays its own taxes (but it cannot vote!).

A corporation's owners are called *shareholders* or *stockholders*.<sup>4</sup> The shareholders do not directly own the business's real assets (factories, oil wells, stores, etc.). Instead they have indirect ownership via financial assets (the shares of the corporation).

A corporation is legally distinct from the shareholders. Therefore, the shareholders have **limited liability** and cannot be held personally responsible for the corporation's debts. When the U.S. financial corporation Lehman Brothers failed in 2008, no one demanded that its stockholders put up more money to cover Lehman's massive debts. Shareholders can lose their entire investment in a corporation, but no more.

### corporation

A business organized as a separate legal entity owned by stockholders.

### limited liability

The owners of a corporation are not personally liable for its obligations.

### Example

#### 1.1 ▶

### Business Organization

Suppose you buy a building and open a restaurant. You have invested in the building itself, kitchen equipment, dining-room furnishings, plus various other assets. If you do not incorporate, you own these assets personally, as the *sole proprietor* of the business. If you have borrowed money from a bank to start the business, then you are personally responsible for this debt. If the business loses money and cannot pay the bank, then the bank can demand

<sup>3</sup> In the United States, corporations are identified by the label "Corporation," "Incorporated," or "Inc.," as in *Caterpillar Inc.* The United Kingdom identifies public corporations by "plc" (short for "Public Limited Corporation"). French corporations have the suffix "SA" ("Société Anonyme"). The corresponding labels in Germany are "GmbH" ("Gesellschaft mit beschränkter Haftung") and "AG" ("Aktiengesellschaft").

<sup>4</sup> "Shareholder" and "stockholder" mean exactly the same thing and are used interchangeably.

that you raise cash by selling other assets—your car or house, for example—in order to repay the loan. But if you incorporate the restaurant business, and then the *corporation* borrows from the bank, your other assets are shielded from the restaurant's debts. Of course, incorporation also means that the bank will be more cautious in lending to you because it will have no recourse to your other assets.<sup>5</sup>

Notice that if you incorporate your business, you exchange direct ownership of its real assets (the building, kitchen equipment, etc.) for indirect ownership via financial assets (the shares of the new corporation). ■

When a corporation is first established, its shares may be privately owned by a small group of investors, perhaps the company's managers and a few backers. In this case, the shares are not publicly traded and the company is said to be *closely held*. Eventually, when the firm grows and new shares are issued to raise additional capital, its shares are traded in public markets such as the New York Stock Exchange. Such corporations are known as *public companies*. Most well-known corporations in the United States are public companies with widely dispersed shareholdings. In other countries, it is more common for large corporations to remain in private hands, and many public companies may be controlled by just a handful of investors.

A large public corporation may have hundreds of thousands of shareholders, who together own the business. An individual may have 100 shares, receive 100 votes, and be entitled to a tiny fraction of the firm's income and value. On the other hand, a pension fund or insurance company may own millions of shares, receive millions of votes, and have a correspondingly large stake in the firm's performance.

Public shareholders cannot possibly manage or control the corporation directly. Instead, they elect a *board of directors*, who in turn appoint the top managers and monitor their performance. This *separation of ownership and control* gives corporations permanence. Even if managers quit or are dismissed, the corporation survives. Today's stockholders can sell all their shares to new investors without disrupting the operations of the business. Corporations can, in principle, live forever, and in practice they may survive many human lifetimes. One of the oldest corporations is the Hudson's Bay Company, which was formed in 1670 to profit from the fur trade between northern Canada and England. The company still operates as one of Canada's leading retail chains.

The separation of corporate ownership and control can also have a downside, for it can open the door for managers and directors to act in their own interests rather than in the stockholders' interest. We return to this problem later in the chapter.

There are other disadvantages to being a corporation. One is the cost, in both time and money, of managing the corporation's legal machinery. These costs are particularly burdensome for small businesses.

There is also an important tax drawback to corporations in the United States. Because the corporation is a separate legal entity, it is taxed separately. So corporations pay tax on their profits, and shareholders are taxed again when they receive dividends from the company or sell their shares at a profit. By contrast, income generated by businesses that are not incorporated is taxed just once as personal income.<sup>6</sup>

## Other Forms of Business Organization

Corporations do not have to be prominent, multinational businesses such as those listed in Table 1.1. You can organize a local plumbing contractor or barber shop as a

### BEYOND THE PAGE



S-corporations

[mhhe.com/brealey10e](http://mhhe.com/brealey10e)

<sup>5</sup> The bank may ask you to put up personal assets as collateral for the loan to your restaurant corporation. But it has to ask and get your agreement. It doesn't have to ask if your business is a sole proprietorship.

<sup>6</sup> The U.S. tax system is somewhat unusual in this respect. To avoid taxing the same income twice, many other countries give shareholders at least some credit for the taxes that the corporation has already paid.