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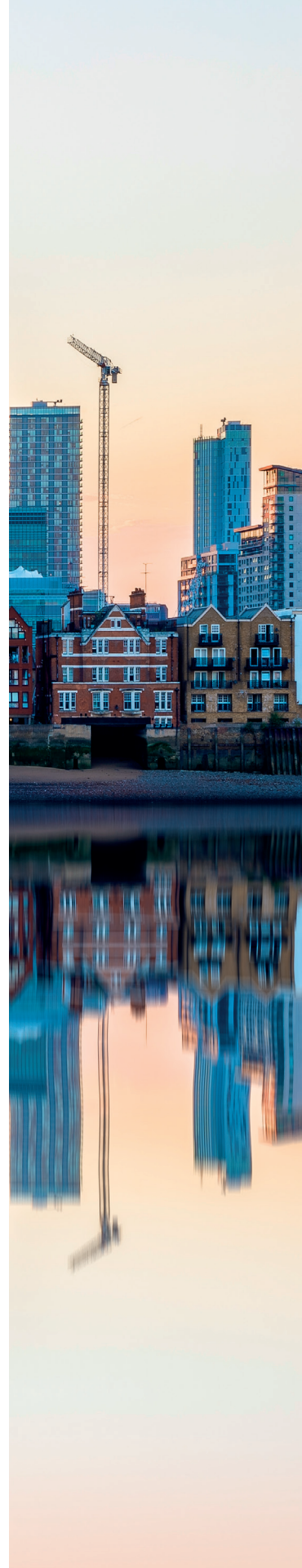
JONATHAN BERK
STANFORD UNIVERSITY

PETER DEMARZO
STANFORD UNIVERSITY



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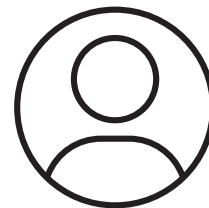
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and joy. —J. B.*

*To Kauai, Pono, Koa, and Kai, for all the love
and laughter —P. D.*

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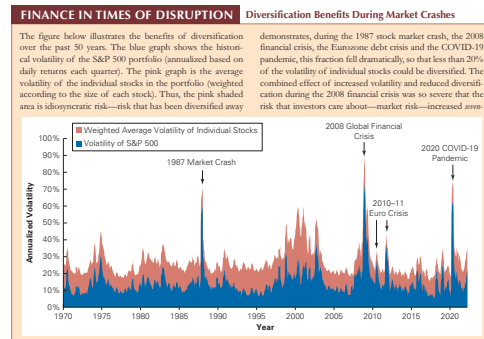
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Bridging Theory and Practice

The Law of One Price as the Unifying Valuation Framework

The Law of One Price framework reflects the modern idea that the absence of arbitrage is the unifying concept of valuation. This critical insight is introduced in Chapter 3, revisited in each part opener, and integrated throughout the text—motivating all major concepts and connecting theory to practice.



Focus on Financial Crises and Disruptions

Finance in Times of Disruption boxes reflect the reality of the recent COVID-19 pandemic, the global financial crisis, and sovereign debt crises, illustrating important lessons learned. Twenty-four boxes across the book illustrate and analyze key details.

Study Aids with a Practical Focus

To be successful, students need to master the core concepts and learn to identify and solve problems that today's practitioners face.

Common Mistakes boxes alert students to frequently made mistakes stemming from misunderstanding core concepts and calculations—in the classroom and in the field.

COMMON MISTAKE Discounting One Too Many Times

The perpetuity formula assumes that the first payment occurs at the end of the first period (at date 1). Sometimes perpetuities have cash flows that start later in the future. In this case, we can adapt the perpetuity formula to compute the present value, but we need to do so carefully to avoid a common mistake.

To illustrate, consider the MBA graduation party described in Example 4.7. Rather than starting immediately, suppose that the first party will be held two years from today (for the current entering class). How would this delay change the amount of the donation required?

Now the timeline looks like this:

Our goal can now be restated more simply: How much do we need to invest today to have \$375,000 in one year? This is a simple present value calculation:

$$PV = \$375,000 / 1.08 = \$347,222 \text{ today}$$

A common mistake is to discount the \$375,000 twice because the first party is in two periods. *Remember—the present value formula for the perpetuity already discounts the cash flows to one period prior to the first cash flow.* Keep in mind that this common mistake may be made with perpetuities, annuities, and all of the other special cases discussed in this section. All of these formulas discount the cash flows to one period prior to the first cash flow.

EXAMPLE 4.14 Evaluating an Annuity with Monthly Cash Flows

Problem
You are about to purchase a new car and have two options to pay for it. You can pay \$20,000 in cash immediately, or you can get a loan that requires you to pay \$500 each month for the next 48 months (four years). If the monthly interest rate you earn on your cash is 0.5%, which option should you take?

Solution
Let's start by writing down the timeline of the loan payments:

The timeline shows that the loan is a 48-period annuity. Using the annuity formula the present value is

$$PV \text{ (48-period annuity of } \$500) = \$500 \times \frac{1}{0.005} \left(1 - \frac{1}{1.005^{48}} \right) = \$21,290$$

Alternatively, we may use the annuity spreadsheet to solve the problem:

	NPER	RATE	PMT	PV	Excel Formula
Given	48	0.50%	500	0	
Solve for PV			(21,290)	0	=PV(0.005,48,500,0)

Thus, taking the loan is equivalent to paying \$21,290 today. So, by paying \$20,000 in cash rather than taking the loan, you save the equivalent of \$1,290 today.

Fahmi Quadir is the Founder and Chief Investment Officer of Salkhet Capital Management. Her investments focus on short selling by deploying investigative and forensic methods to identify businesses potentially engaged in fraud, money laundering, and other predatory activity.

QUESTION: What is the role of short-sellers in the market, and why are they important for market efficiency?

ANSWER: At times of market exuberance, without meaningful short interest to weigh on valuations, prices can climb quite literally to the moon, thus rendering the end of the cycle even more painful. Short-sellers are thus necessary for healthy market function and historically we have seen that in markets where short selling is either restricted or banned, there are meaningful consequences on the price of securities.

The public broadly has the misconception that short selling is conducted by greed-blind individuals, hiding behind their screens, betting against economic prosperity. However, the vast majority of short-selling volume is largely agnostic, driven by algorithms and technical signals. Short selling allows market participants to access additional leverage and further build their long bets, but also importantly provides a way to hedge portfolios and protect against losses.

There are instances where a company is

INTERVIEW WITH FAHMI QUADIR

ANSWER: Unfortunately, all arguments leveled against short selling are rooted in human psychology and not in market theory, or logic for that matter. As humans, we are perennially optimistic about our own prospects, and that extends to the prospects of the businesses we invest in. The idea that someone could bet against those prospects feels inherently distasteful. In fact, this idea goes hand-in-hand with the susceptibility of the vast majority of us to be defrauded. Human progress has largely been reliant on faith in our fellow man, so I make no complaints about these qualities. However, the consequence is that most struggle to find the capacity to understand short selling, particularly in times of crisis. Company executives looking to place blame and shift accountability can cry and suggest market manipulation rather than admit to their own mistakes. Politicians too, can point to short-sellers, and even restrict short selling when markets fall, as that would be easier than remedying their own policy-making failures.

QUICK QUIZ

Worked Examples accompany every important concept using a step-by-step procedure that guides students through the solution process. Clear labels make them easy to find for help with homework and studying.

Applications that Reflect Real Practice

Corporate Finance features actual companies and leaders in the field.

Interviews with notable practitioners—four new for this edition—highlighting leaders in the field and addressing topical subjects.

General Interest boxes highlight timely material from financial publications that shed light on business problems and real-company practices.

Teaching Students to Think Finance

With a consistency in presentation and an innovative set of learning aids that have set the standard since the very first edition, *Corporate Finance* simultaneously meets the needs of both future financial managers and non-financial managers. This textbook truly shows every student how to “think finance.”

Simplified Presentation of Mathematics

One of the hardest parts of learning finance is mastering the jargon, math, and non-standardized notation. *Corporate Finance* systematically uses:

Notation Boxes: Each chapter opens by defining the variables and acronyms used in the chapter as a “legend” for students’ reference.

Timelines: Introduced in Chapter 4, timelines are emphasized as the important first step in solving *every* problem that involves cash flows.

Numbered and Labeled Equations: The first time a full equation is given in notation form it is numbered. Key equations are titled and revisited in the chapter summary.

Using Excel Boxes: Provide hands-on instruction of Excel techniques and include screenshots to serve as a guide for students.

Spreadsheet Tables: Select tables are available as Excel files, enabling students to change inputs and manipulate the underlying calculations.

USING EXCEL Excel’s IRR Function

Excel also has a built-in function, IRR, that will calculate the IRR of a stream of cash flows. Excel’s IRR function has the format, IRR (values, guess), where “values” is the range containing the cash flows, and “guess” is an optional starting guess where Excel begins its search for an IRR. See the example below:

	A	B	C	D	E
1	Period	0	1	2	3
2	Cash Flow C_t	(1,000.0)	300.0	400.0	500.0
3	IRR	8.9% =IRR(B2:E2)			

There are three things to note about the IRR function. First, the values given to the IRR function should include all of the cash flows of the project, including the one at date 0. In this sense, the IRR and NPV functions in Excel are inconsistent. Second, like the NPV function, the IRR ignores the period associated with any blank cells. Finally, as we will discuss in Chapter 7, in some settings the IRR function may fail to find a solution, or may give a different answer, depending on the initial guess.

See the eTextbook or MyLab Finance for an interactive IRR calculator.

TABLE 8.1 SPREADSHEET

HomeNet’s Incremental Earnings Forecast

	Year	0	1	2	3	4	5
Incremental Earnings Forecast (\$000s)							
1	Sales	—	26,000	26,000	26,000	26,000	—
2	Cost of Goods Sold	—	(11,000)	(11,000)	(11,000)	(11,000)	—
3	Gross Profit	—	15,000	15,000	15,000	15,000	—
4	Selling, General, and Administrative	—	(2,800)	(2,800)	(2,800)	(2,800)	—
5	Research and Development	(15,000)	—	—	—	—	—
6	Depreciation	—	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)
7	EBIT	(15,000)	10,700	10,700	10,700	10,700	(1,500)
8	Income Tax at 20%	—	3,000	(2,140)	(2,140)	(2,140)	300
9	Unlevered Net Income	(12,000)	8,560	8,560	8,560	8,560	(1,200)

Practice Finance to Learn Finance

Working problems is the proven way to cement and demonstrate an understanding of finance.

Concept Check questions at the end of each section enable students to test their understanding and target areas in which they need further review.

End-of-chapter problems written personally by Jonathan Berk and Peter DeMarzo offer instructors the opportunity to assign first-rate materials to students for homework and practice with the confidence that the problems are consistent with chapter content. Both the problems and solutions, which also were written by the authors, have been class-tested and accuracy-checked to ensure quality.

Data Cases present in-depth scenarios in a business setting with questions designed to guide students’ analysis. Many questions involve the use of Internet resources and Excel techniques.

Data Case

This is your second interview with a prestigious brokerage firm for a job as an equity analyst. You survived the morning interviews with the department manager and the Vice President of Equity. Everything has gone so well that they want to test your ability as an analyst. You are seated in a room with a computer and a list with the names of two companies—Ford (F) and Microsoft (MSFT). You have 90 minutes to complete the following tasks:

- Download each company’s annual income statements, balance sheets, and cash flow statements for the last four fiscal years and export the statements to Excel.
- Find historical stock prices for each firm for the dates of each financial statement. Use the closing stock prices (not the adjusted close). To calculate the firm’s market capitalization at each date, multiply the number of shares outstanding at the time by the firm’s historic stock price.
- For each of the four years of statements, compute the following ratios for each firm:

Valuation Ratios

Price-Earnings Ratio (for EPS use Diluted EPS Total)

Market-to-Book Ratio

Enterprise Value-to-EBITDA

(For debt, include long-term and short-term debt; for cash, include marketable securities.)

Profitability Ratios

Operating Margin

Net Profit Margin

Return on Equity

Financial Strength Ratios

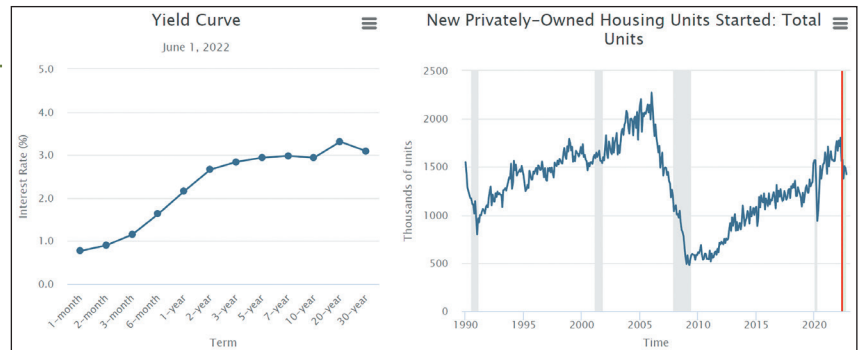
Current Ratio

Engaging with Concepts and Data

Available in both the Sixth Edition eTextbook and MyLab Finance, interactive graphs and tools offer exploration of the current and historical yield curve (and how it moves in relation to other macro data), analysis of common financial statement data and valuation metrics across firms and industries, a compound interest calculator, use of an annuity calculator with an amortization table, a Modigliani and Miller WACC tool, and an efficient frontier portfolio explorer. Instructors also can link to these tools with pre-populated default values for efficient use in the classroom.

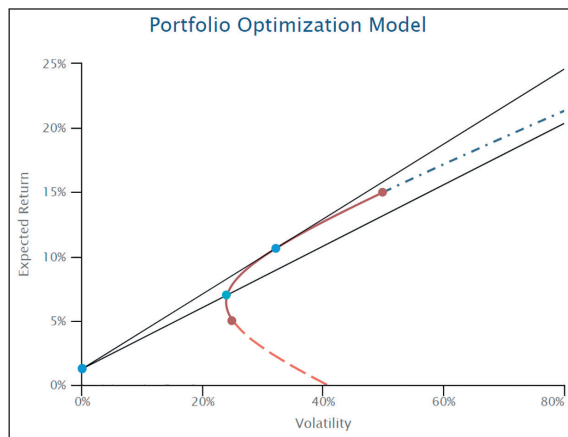
Yield Curve Tool

See the history of the U.S. yield curve (back to 1990) and animate its evolution along with important macroeconomic data including GDP growth, inflation, housing starts, home prices, corporate investment, bond spreads, and the S&P 500 index.



Annuity Calculator

An interactive annuity calculator allows students to solve standard time value of money problems and track the corresponding account balance over time. Students can also toggle to see the discounted cash flow solution and the corresponding Excel formula. (See further description in box on page 161 in Chapter 4.)

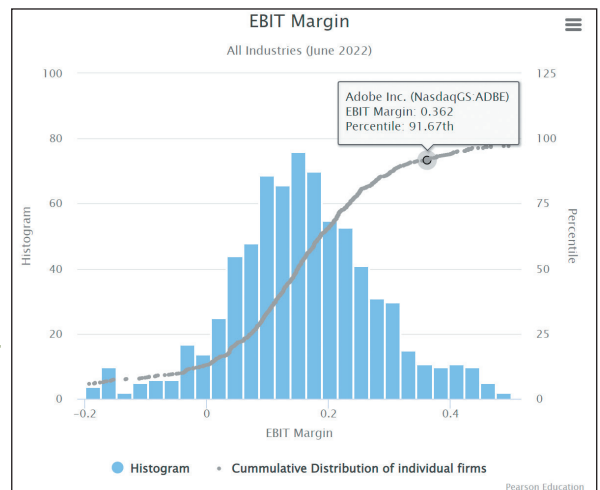


Portfolio Optimizer

The portfolio optimizer tool allows students to explore two-stock portfolios including short-sales and risk-free borrowing and lending, providing an interactive visualization of the two-fund separation that is the foundation for understanding risk and return.

Corporate Data Analysis

The data analysis tool illustrates the current distribution of standard accounting margins and ratios, as well as key leverage and valuation measures, for U.S. stocks by size and industry.



About the Authors

Jonathan Berk is the A.P. Giannini Professor of Finance at the Graduate School of Business, Stanford University and is a Research Associate at the National Bureau of Economic Research. Before coming to Stanford, he was the Sylvan Coleman Professor of Finance at Haas School of Business at the University of California, Berkeley. Prior to earning his Ph.D., he worked as an Associate at Goldman Sachs (where his education in finance really began).

Professor Berk's research interests in finance include corporate valuation, capital structure, mutual funds, asset pricing, experimental economics, and labor economics. His work has won a number of research awards including the Stephen A. Ross Prize in Financial Economics, TIAA-CREF Paul A. Samuelson Award, the Smith Breeden Prize, Best Paper of the Year in *The Review of Financial Studies*, and the FAME Research Prize. His paper, "A Critique of Size-Related Anomalies," was selected as one of the two best papers ever published in *The Review of Financial Studies*. In recognition of his influence on the practice of finance he has received

the Bernstein-Fabozzi/Jacobs Levy Award, the Graham and Dodd Award of Excellence, and the Roger F. Murray Prize. He served two terms as an Associate Editor of the *Journal of Finance*, and a term as a director of the American Finance Association, the Western Finance Association, and academic director of the Financial Management Association. He is a Fellow of the Financial Management Association and a member of the advisory board of the *Journal of Portfolio Management*.

Born in Johannesburg, South Africa, Professor Berk has two daughters, and is an avid skier and biker.



Peter DeMarzo and Jonathan Berk shortly before the first edition was published.

Peter DeMarzo is the John G. McDonald Professor of Finance at the Graduate School of Business, Stanford University, and Faculty Director of Stanford LEAD. He is the former President of the American Finance Association and a Research Associate at the National Bureau of

Economic Research. He teaches MBA and Ph.D. courses in Corporate Finance and Financial Modeling. Professor DeMarzo has also taught at the Haas School of Business and the Kellogg Graduate School of Management. He is a Fellow of the Econometric Society, the American Finance Association, and former National Fellow at the Hoover Institution.

Professor DeMarzo received the Sloan Teaching Excellence Award at Stanford and the Earl F. Cheit Outstanding Teaching Award at U.C. Berkeley. Professor DeMarzo has served as an Associate Editor for *The Review of Financial Studies* and *Financial Management*, as well as Vice President and director of the American Finance Association and President of the Western Finance Association. Professor DeMarzo's research is in the area of corporate finance, asset securitization, and contracting, as well as market structure and regulation. His recent work has examined issues of the optimal design of contracts and securities, leverage dynamics and the role of bank capital regulation, and the influence of information asymmetries on stock prices and corporate investment. He has received numerous awards including the Western Finance Association Corporate Finance Best-Paper Award, the Charles River Associates Best-Paper Award, the Barclays Global Investors/Michael Brennan Best-Paper of the Year Award from *The Review of Financial Studies*, and the Brattle Prize for the best corporate finance paper from the *Journal of Finance*.

Professor DeMarzo was born in Whitestone, New York. He and his family enjoy hiking, biking, and skiing.

Preface

THE WORLD HAS CHANGED DRAMATICALLY since we first sat down together and conceived of this book. We have now published 6 editions and reached millions of students worldwide. We were originally motivated to write this textbook by a central insight: The core concepts in finance are simple and intuitive. What makes the subject challenging is that it is often difficult for a novice to distinguish between these core ideas and other intuitively appealing approaches that, if used in financial decision making, will lead to incorrect decisions. In this regard, nothing has changed in the intervening years. De-emphasizing the core concepts that underlie finance strips students of the essential intellectual tools they need to differentiate between good and bad decision making. The book's continued success is a testament to the value of this approach.

We present corporate finance as an application of a set of simple, powerful ideas. At the heart is the principal of the absence of arbitrage opportunities, or Law of One Price—*in life, you don't get something for nothing*. This simple concept is a powerful and important tool in financial decision making. By relying on it, and the other core principles in this book, financial decision makers can avoid the bad decisions brought to light by the financial crisis and still ongoing every day. We use the Law of One Price as a compass; it keeps financial decision makers on the right track and is the backbone of the entire book.

New to This Edition

We have updated all text discussions and figures, tables, data cases, and facts to accurately reflect developments in the field in the last few years. Specific highlights include the following:

- Broadened the Global Financial Crisis boxes to be about Finance in Times of Disruption and included discussion of the COVID-19 pandemic.
- Developed interactive graphs and tools for the eTextbook, including an interactive exploration of the historical yield curve, a tool to analyze common financial statement data and ratios across firms and industries, an annuity calculator with an amortization table, a Modigliani and Miller WACC tool, and an efficient frontier portfolio explorer.
- Enhanced discussion of stakeholder and ESG concerns in Chapter 1 to put them in the context of the shareholder value maximization goal.
- Updated discussion of accounting scandals (Chapter 2) and cryptocurrency and stock price bubbles (Chapter 9).
- Added a new section on SPACs in Chapter 23 as an alternative to IPOs.
- Updated the coverage of leasing to reflect accounting treatment changes in Chapter 25 on Leasing.
- Updated and added new interviews: Fahmi Quadi on the role of short sellers, Adena Friedman on the ongoing evolution of stock exchanges, Kenneth Frazier on real options analysis at Merck, and Sally Johnson on managing international risk.
- Incorporated new and/or revised features throughout, including Common Mistakes, Finance in Times of Disruption, Nobel Prize, and General Interest boxes, as well as Examples.
- Revised and redesigned the data cases so that they will be more robust to changes in available data sources. Revised problems, once again personally writing and solving each one.
- Updated tables and figures to reflect current data.

The Law of One Price as a Unifying Principle of Valuation

This book presents corporate finance as an application of a small set of simple core ideas. Modern finance theory and practice is grounded in the idea of the absence of arbitrage—or the Law of One Price—as the unifying concept in valuation. We introduce the Law of One Price concept as the basis for NPV and the time value of money in Chapter 3, Financial Decision Making and the Law of One Price. In the opening of each part and as pertinent throughout the remaining chapters, we relate major concepts to the Law of One Price, creating a framework to ground the student reader and connect theory to practice.

Table of Contents Overview

Corporate Finance offers coverage of the major topical areas for introductory-level MBA students as well as the depth required in a reference textbook for upper-division courses. Most professors customize their classes by selecting a subset of chapters reflecting the subject matter they consider most important. We designed this book from the outset with this need for flexibility in mind. Parts 2 through 6 are the core chapters in the book. We envision that most MBA programs will cover this material—yet even within these core chapters instructors can pick and choose.

Single quarter course: Cover Chapters 3–15; if time allows, or students are previously familiar with the time value of money, add on Chapters 16–19.

Semester-long course: Incorporate options (Chapters 20–22) and Part 10, *Special Topics*, chapters as desired.

Single mini-semester: Assign Chapters 3–10, 14, and 15 if time allows.

Chapter	Highlights and Changes
1 The Corporation and Financial Markets	Introduces the corporation and its governance, financial markets, and financial intermediation; updated discussion of ESG and stakeholder considerations in the context of shareholder value maximization; new interview with Nasdaq CEO Adena Friedman.
2 Introduction to Financial Statement Analysis	Introduces key financial statements; coverage of financial ratios is centralized to prepare students to analyze financial statements holistically. The eTextbook includes an interactive data analyzer for common financial statement information and ratios. Updated discussion of financial scandals.
3 Financial Decision Making and the Law of One Price	Introduces the Law of One Price and net present value as the basis of the book's unifying framework.
4 The Time Value of Money	Introduces the mechanics of discounting with applications to personal finance; Using Excel boxes familiarizes students with spreadsheet functionality. The eTextbook includes extensive use of the new interactive annuity calculator.
5 Interest Rates	Discusses key determinants of interest rates and their relation to the cost of capital; Interview with Janet L. Yellen, current U.S. Treasury Secretary and former Chair of the Board of Governors of the Federal Reserve System.
6 Valuing Bonds	Analyzes bond prices and yields, as well as the risk of fixed-income securities as illustrated by the sovereign debt crisis and the COVID-19 pandemic; expanded Finance in Times of Disruption box on negative bond yields; Data Case on corporate yield curves and case study on sovereign default.
7 Investment Decision Rules	Introduces the NPV rule as the “golden rule” against which we evaluate other investment decision rules; introduces the use of Data Tables for sensitivity analysis.

Chapter	Highlights and Changes
8 Fundamentals of Capital Budgeting	Provides a clear focus on the distinction between earnings and free cash flow, and shows how to build a financial model to assess the NPV of an investment decision (including tips on using Excel); Common Mistake box on corporate tax rates and investment; updates to align with corporate tax changes.
9 Valuing Stocks	Provides a unifying treatment of projects within the firm and the valuation of the firm as a whole; updated box on cryptocurrencies and financial bubbles; new interview with Fahmi Quadir on the role of short sellers.
10 Capital Markets and the Pricing of Risk	Establishes the intuition for understanding risk and return, explains the distinction between diversifiable and systematic risk, and introduces beta and the CAPM; extensive data updates throughout to reflect current market conditions.
11 Optimal Portfolio Choice and the Capital Asset Pricing Model	Presents the CAPM and develops the details of mean-variance portfolio optimization; interview with Anne Martin, Wesleyan University Chief Investment Officer; updated examples and Data Case.
12 Estimating the Cost of Capital	Demonstrates the practical details of estimating the cost of capital for equity, debt, or a project, and introduces asset betas, and the unlevered and weighted-average cost of capital; Using Excel box on estimating beta.
13 Investor Behavior and Capital Market Efficiency	Examines the role of behavioral finance and ties investor behavior to the topic of market efficiency and alternative models of risk and return; expanded discussion of fund manager performance; Nobel Prize box on Behavioral Finance; discussion of “Smart Beta”.
14 Capital Structure in a Perfect Market	Presents Modigliani and Miller’s results and introduces the market value balance sheet, discussion of important leverage fallacies with application to bank capital regulation.
15 Debt and Taxes	Analyzes the tax benefits of leverage, including the debt tax shield and the after-tax WACC; Common Mistake box on retirement investing; updates to align with corporate tax changes.
16 Financial Distress, Managerial Incentives, and Information	Examines the role of asymmetric information and introduces agency costs including debt overhang and leverage ratchet effects; Nobel Prize boxes on asymmetric information and adverse selection, and bank runs and default.
17 Payout Policy	Considers alternative payout policies including dividends and share repurchases; analyzes the role of market imperfections in determining the firm’s payout policy; updated discussion of corporate cash retention.
18 Capital Budgeting and Valuation with Leverage	Develops in depth the three main methods for capital budgeting with leverage and market imperfections: the weighted average cost of capital (WACC) method, the adjusted present value (APV) method, and the flow-to-equity (FTE) method; appendix explains the relation between DCF and residual income valuation methods.
19 Valuation and Financial Modeling: A Case Study	Builds a financial model for a leveraged acquisition; Using Excel box “Summarizing Model Outputs”.
20 Financial Options	Introduces the concept of financial options, how they are used and exercised; demonstrates how corporate securities may be interpreted using options.
21 Option Valuation	Develops the binomial, Black-Scholes, and risk-neutral pricing methods for option pricing.
22 Real Options	Analyzes real options using decision tree and Black-Scholes methods, and considers the optimal staging of investment; discussion of decision tree methodology with examples; new interview with Kenneth Frazier on real options in drug development at Merck.
23 Raising Equity Capital	Overview of the stages of equity financing, from angel financing and venture capital to IPO to seasoned equity offerings; venture capital financing including common deal terms and protections as well as an illustration of typical funding patterns and success rates; new section on SPACs with examples.

Chapter	Highlights and Changes
24 Debt Financing	Overview of debt financing, including a discussion of asset-backed securities and their role in the financial crisis.
25 Leasing	Introduces leasing as an alternative form of levered financing; update on new FASB rules for lease accounting; new examples and discussion of potential benefits of leasing.
26 Working Capital Management	Introduces the Cash Conversion Cycle and methods for managing working capital; new Finance in Times of Disruption box on supply chain disruptions during COVID-19.
27 Short-Term Financial Planning	Develops methods for forecasting and managing short-term cash needs.
28 Mergers and Acquisitions	Considers motives and methods for mergers and acquisitions, including leveraged buyouts; expanded discussion of valuation and premiums paid.
29 Corporate Governance	Evaluates direct monitoring, compensation policies, and regulation as methods to manage agency conflicts within the firm; addresses impact of Dodd-Frank Act; discussion of shareholder activism and its recent impact on corporate governance; Common Mistake box on celebrity boards.
30 Risk Management	Analyzes the methods and motives for the use of insurance, commodity futures, currency forwards and options, and interest rate swaps to hedge risk.
31 International Corporate Finance	Analyzes the valuation of projects with foreign currency cash flows with integrated or segregated capital markets; updates to align with corporate tax changes; new interview with Sally Johnson on managing international risks.

Acknowledgments

With six editions now behind us, we are heartened by the book's success and its impact on the profession by shaping future practitioners. As any textbook writer will tell you, achieving this level of success requires a substantial amount of help. First and foremost we thank Donna Battista, whose leadership, talent, and market savvy are imprinted on all aspects of the project and are central to its more than 14 years of success; Denise Clinton, a friend and a leader in fact not just in name, whose experience and knowledge were indispensable in the earliest stages; Rebecca Ferris-Caruso, for her unparalleled expertise in managing the complex writing, reviewing, and editing processes and patience in keeping us on track—it is impossible to imagine writing the first edition without her; Jami Minard, for spearheading marketing efforts; Emily Biberger, for her energy and fresh perspective as our editor; Miguel Leonarte, for his central role on MyLab Finance; and Tristann Jones for getting the book from draft pages into print. We were blessed to be approached by the best publisher in the business and we are both truly thankful for the indispensable help provided by these and other professionals, including Meredith Gertz, Melissa Honig, Noel Lotz, and Latoya Douse.

Updating a textbook like ours requires a lot of painstaking work, and there are many who have provided insights and input along the way. We would especially like to call out Jared Stanfield for his important contributions and suggestions throughout. We're also appreciative of Marlene Bellamy's work conducting the lively interviews that provide a critically important perspective, and to the interviewees who graciously provided their time and insights.

Of course, this sixth edition text is built upon the shoulders of the first five, and we have many to thank for helping us make those early versions a reality. We remain forever grateful for Jennifer Koski's critical insights, belief in this project, and tireless effort, all of which were critical to the first edition. Many of the later, non-core chapters required specific detailed knowledge. Nigel Barradale, Reid Click, Jarrad Harford, and Marianne Plunkert ensured that this knowledge was effectively communicated. Joseph Vu and Vance P. Lesseig contributed their talents to the Concept Check questions and Data Cases, respectively.

Creating a truly error-free text is a challenge we could not have lived up to without our team of expert error checkers; we owe particular thanks to Sukarnen Suwanto, Siddharth Bellur, Robert James, Anand Goel, Ian Drummond Gow, Janet Payne, Mike Casey, and Jared Stanfield. Thomas Gilbert and Miguel Palacios tirelessly worked examples and problems in the first edition, while providing numerous insights along the way.

A corporate finance textbook is the product of the talents and hard work of many talented colleagues. We are especially gratified with the work of those who updated the impressive array of supplements to accompany the book: Janet Payne for the Instructor's Manual; William Chittenden for the PowerPoint; and Michael Woodworth for the Test Bank.

As a colleague of both of us, Mark Rubinstein inspired us with his passion to get the history of finance right by correctly attributing the important ideas to the people who first enunciated them. We have used his book, *A History of the Theory of Investments: My Annotated Bibliography*, extensively in this text and we, as well as the profession as a whole, owe him a debt of gratitude for taking the time to write it all down.

We could not have written this text if we were not once ourselves students of finance. As any student knows, the key to success is having a great teacher. In our case we are lucky to have been taught and advised by the people who helped create modern finance: Ken Arrow, Darrell Duffie, Mordecai Kurz, Stephen Ross, and Richard Roll. It was from them that we learned the importance of the core principles of finance, including the Law of One Price, on which this book is based. The learning process does not end at graduation and like most people we have had especially influential colleagues and mentors from which we learned a great deal during our careers and we would like to recognize them explicitly here: Mike Fishman, Richard Green, Vasant Naik, Art Raviv, Mark Rubinstein, Joe Williams, and Jeff Zwiebel. We continue to learn from all of our colleagues and we are grateful to all of them. Finally, we would like to thank those with whom we have taught finance classes over the years: Anat Admati, Ming Huang, Dirk Jenter, Robert Korajczyk, Paul Pfleiderer, Sergio Rebelo, Richard Stanton, and Raman Uppal. Their ideas and teaching strategies have without a doubt influenced our own sense of pedagogy and found their way into this text.

Finally, and most importantly, we owe our biggest debt of gratitude to Rebecca Schwartz and Kauai Chun DeMarzo. Little did we (or they) know how much this project would impact our lives, and without their love and support—and especially their patience and understanding—this text could not have been completed. We owe a special thanks to Kauai DeMarzo, for her inspiration and support at the start of this project, and for her willingness to be our in-house editor, contributor, advisor, and overall sounding-board throughout each stage of its development.

Jonathan Berk
Peter DeMarzo

Contributors

We are truly thankful to have had so many manuscript reviewers, class testers, and focus group participants. We list all of these contributors below, but Gordon Bodnar, James Conover, Anand Goel, James Linck, Evgeny Lyandres, Marianne Plunkert, Mark Simonson, and Andy Terry went so far beyond the call of duty that we would like to single them out.

We are very grateful for all comments—both informal and in written evaluations—from Sixth Edition users. We carefully weighed each reviewer suggestion as we sought to streamline the narrative to improve clarity and add relevant new material. The book has benefited enormously for this input.

Reviewers

- Ashok B. Abbott, *West Virginia University*
 Michael Adams, *Jacksonville University*
 Ilan Adler, *University of California, Berkeley*
 Ibrahim Affaneh, *Indiana University of Pennsylvania*
 Kevin Ahlgrim, *Illinois State University*
 Andres Almazan, *University of Texas, Austin*
 Confidence Amadi, *Florida A&M University*
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 John Banko, *University of Florida*
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 Omar Benkato, *Ball State University*
 Gordon Bodnar, *Johns Hopkins University*
 Stephen Borde, *University of Central Florida*
 Waldo Born, *Eastern Illinois University*
 Alex Boulatov, *Higher School of Economics, Moscow*
 Chen Cai, *Cleveland State University*
 Tyrone Callahan, *University of Southern California*
 David Carter, *Oklahoma State University*
 Yingpin (George) Chang, *Grand Valley State University*
 Engku Ngah S. Engku Chik, *University Utara Malaysia*
 William G. Christie, *Vanderbilt University*
 Ting-Heng Chu, *East Tennessee State University*
 John H. Cochrane, *Stanford University*
 James Conover, *University of North Texas*
 James Cordeiro, *SUNY Brockport*
 Henrik Cronqvist, *Claremont McKenna College*
 Maddur Daggarr, *Citigroup*
 Hazem Daouk, *Cornell University*
 Sougata Das, *Montana State University Billings*
 Theodore Day, *University of Texas at Dallas*
 Daniel Deli, *DePaul University*
 Andrea DeMaskey, *Villanova University*
 David Dicks, *Baylor University*
 B. Espen Eckbo, *Dartmouth College*
 Larry Eisenberg, *University of Southern Mississippi*
 Riza Emekter, *Robert Morris University*
 Gayle Erwin, *University of Virginia*
 T. Hanan Eytan, *Baruch College*
 Andre Farber, *Universite Libre de Bruxelles*
 Stephen Ferris, *University of Missouri—Columbia*
 Eliezer Fich, *Drexel University*
 Michael Fishman, *Northwestern University*
 Fangjian Fu, *Singapore Management University*
 Vito Gala, *Wharton School of the University of Pennsylvania*
 Michael Gallmeyer, *University of Virginia*
 Amar Gande, *Southern Methodist University*
 Diego Garcia, *University of Colorado*
 Tom Geurts, *Marist College*
 Frank Ghannadian, *University of Tampa*
 Thomas Gilbert, *University of Washington*
 Anand Goel, *Stevens Institute of Technology*
 Marc Goergen, *Cardiff Business School*
 David Goldenberg, *Rensselaer Polytechnic Institute*
 Qing (Grace) Hao, *University of Missouri*
 Milton Harris, *University of Chicago*
 Christopher Hennessy, *London Business School*
 J. Ronald Hoffmeister, *Arizona State University*
 Vanessa Holmes, *Xavier University*
 Ruidi Huang, *Southern Methodist University*
 Wenli Huang, *Boston University School of Management*
 Mark Hutchinson, *University College Cork*
 Michael Hutchinson, *Wilmington University*
 Stuart Hyde, *University of Manchester*
 Ronen Israel, *IDC*
 Robert James, *Boston College*
 Keith Johnson, *University of Kentucky*
 Jouko Karjalainen, *Helsinki University of Technology*
 Ayla Kayhan, *Louisiana State University*
 Doseong Kim, *University of Akron*
 Kenneth Kim, *State University of New York—Buffalo*
 Elinda Kiss, *University of Maryland*
 Halil Kiyamaz, *Rollins College*
 Brian Kluger, *University of Cincinnati*
 John Knopf, *University of Connecticut*
 C.N.V. Krishnan, *Case Western Reserve University*
 George Kutner, *Marquette University*
 Vance P. Lesseig, *Texas State University*
 Martin Lettau, *University of California, Berkeley*
 Michel G. Lévassieur, *Esu Université de Lille 2*
 Jose Liberti, *Northwestern University*
 Wendell Licon, *Arizona State University*
 James Linck, *Southern Methodist University*
 David Lins, *University of Illinois at Urbana-Champaign*
 Lan Liu, *California State University, Sacramento*
 Michelle Lowry, *Drexel University*
 Deborah Lucas, *Massachusetts Institute of Technology*
 Peng (Peter) Liu, *Cornell University*
 Evgeny Lyandres, *Tel Aviv University*
 Balasundram Maniam, *Sam Houston State University*
 Suren Mansinghka, *University of California, Irvine*
 Daniel McConaughy, *California State University, Northridge*
 Robert McDonald, *Northwestern University*

- Mark McNabb, *University of Cincinnati*
 Ilhan Meric, *Rider University*
 Timothy Michael, *James Madison University*
 Dag Michalsen, *Norwegian School of Management*
 Todd Milbourn, *Washington University in St. Louis*
 James Miles, *Penn State University*
 Darius Miller, *Southern Methodist University*
 Emmanuel Morales-Camargo, *University of New Mexico*
 Helen Moser, *University of Minnesota*
 Arjen Mulder, *Erasmus University*
 Michael Muoghalu, *Pittsburg State University*
 Jeryl Nelson, *Wayne State College*
 Tom Nelson, *University of Colorado*
 Chee Ng, *Fairleigh Dickinson University*
 Ben Nunnally, *University of North Carolina, Charlotte*
 Terrance Odean, *University of California, Berkeley*
 Frank Ohara, *University of San Francisco*
 Marcus Opp, *Stockholm School of Economics*
 Henry Oppenheimer, *University of Rhode Island*
 Miguel Palacios, *University of Calgary*
 Mitchell Petersen, *Northwestern University*
 Marianne Plunkert, *University of Colorado at Denver*
 Paul Povel, *University of Houston*
 Eric A. Powers, *University of South Carolina*
 Michael Provitera, *Barry University*
 Brian Prucyk, *Marquette University*
 Charu Raheja, *TriageLogic Management*
 Latha Ramchand, *University of Houston*
 Adriano Rampini, *Duke University*
 P. Raghavendra Rau, *University of Cambridge*
 S. Abraham Ravid, *Yeshiva University*
 William A. Reese, Jr., *Tulane University*
 Ali Reza, *San Jose State University*
 Steven P. Rich, *Baylor University*
 Antonio Rodriguez, *Texas A&M International University*
 Mauricio Rodriguez, *Texas Christian University*
 Bruce Rubin, *Old Dominion University*
 Mark Rubinstein, *University of California, Berkeley*
 Doriana Ruffino, *University of Minnesota*
 Harley E. Ryan, Jr., *Georgia State University*
 Jacob A. Sagi, *University of North Carolina*
 Jesus Salas, *Lehigh University*
 Harikumar Sankaran, *New Mexico State University*
 Mukunthan Santhanakrishnan, *Southern Methodist University*
 Frederik Schlingemann, *University of Pittsburgh*
 Eduardo Schwartz, *University of California, Los Angeles*
 Mark Seasholes, *Arizona State University*
 Berk Sensoy, *Vanderbilt University*
 Mark Shackleton, *Lancaster University*
 Jay Shanken, *Emory University*
 Dennis Sheehan, *Penn State University*
 Anand Shetty, *Iona College*
 Clemens Sialm, *University of Texas at Austin*
 Mark Simonson, *Arizona State University*
 Rajeev Singhal, *Oakland University*
 Erik Stafford, *Harvard Business School*
 David Stangeland, *University of Manitoba*
 Richard H. Stanton, *University of California, Berkeley*
 Mark Hoven Stohs, *California State University, Fullerton*
 Ryan Stever, *Bank for International Settlements*
 Ilya A. Strebulaev, *Stanford University*
 John Strong, *College of William and Mary*
 Diane Suhler, *Columbia College*
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 Thomas Tallero, *Stony Brook University*
 Mark Taranto, *University of Maryland*
 Amir Tavakkol, *Kansas State University*
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 Sorin Tuluca, *Fairleigh Dickinson University*
 P. V. Viswanath, *Pace University*
 Gautam Vora, *University of New Mexico*
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 Joe Walker, *University of Alabama at Birmingham*
 Edward Waller, *University of Houston, Clear Lake*
 Kainan Wang, *University of Toledo*
 Shelly Webb, *Xavier University*
 Peihwang Wei, *University of New Orleans*
 Peter Went, *Global Association of Risk Professionals (GARP)*
 John White, *Georgia Southern University*
 Lucy White, *Boston University*
 Michael E. Williams, *University of Denver*
 Annie Wong, *Western Connecticut State University*
 K. Matthew Wong, *International School of Management, Paris*
 Bob Wood, Jr., *Tennessee Tech University*
 Lifan (Frank) Wu, *California State University, Los Angeles*
 Tzyy-Jeng Wu, *Pace University*
 Feixue Xie, *University of Texas at El Paso*
 Michal Zator, *University of Notre Dame*
 Jaime Zender, *University of Colorado Boulder*
 Jeffrey H. Zwiebel, *Stanford University*
- ### Chapter Class Testers
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 Tom Geurts, *Marist College*

Lou Gingerella, *Rensselaer Polytechnic Institute*
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 Gautum Kaul, *University of Michigan*
 Doseong Kim, *University of Akron*
 Jennifer Koski, *University of Washington*
 George Kutner, *Marquette University*
 Larry Lynch, *Roanoke College*
 Vasil Mihov, *Texas Christian University*
 Jeryl Nelson, *Wayne State College*
 Chee Ng, *Fairleigh Dickinson University*
 Ben Nunnally, *University of North Carolina, Charlotte*
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 Bruce Rubin, *Old Dominion University*
 Mark Seasholes, *University of California, Berkeley*
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 Andy Terry, *University of Arkansas*
 Sorin Tuluca, *Fairleigh Dickinson University*
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End-of-Chapter Problems Class Testers

James Angel, *Georgetown University*
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 Don Panton, *University of Texas at Arlington*
 P. Raghavendra Rau, *Purdue University*
 Carolyn Reichert, *University of Texas at Dallas*
 Mark Simonson, *Arizona State University*
 Diane Suhler, *Columbia College*

Focus Group Participants

Christopher Anderson, *University of Kansas*
 Chenchu Bathala, *Cleveland State University*
 Matthew T. Billett, *University of Iowa*
 Andrea DeMaskey, *Villanova University*
 Anand Desai, *Kansas State University*
 Ako Doffou, *Sacred Heart University*
 Shannon Donovan, *Bridgewater State University*
 Ibrahim Elsaify, *Goldey-Beacom College*
 Mark Holder, *Kent State University*
 Steve Isberg, *University of Baltimore*
 Arun Khanna, *Butler University*
 Brian Kluger, *University of Cincinnati*
 Greg La Blanc, *University of California, Berkeley*
 Dima Leshchinskii, *Rensselaer Polytechnic University*

James S. Linck, *University of Georgia*
 Larry Lynch, *Roanoke College*
 David C. Mauer, *Southern Methodist University*
 Alfred Mettler, *Georgia State University*
 Stuart Michelson, *Stetson University*
 Vassil Mihov, *Texas Christian University*
 Jeryl Nelson, *Wayne State College*
 Chee Ng, *Fairleigh Dickinson University*
 Ben Nunnally, *University of North Carolina at Charlotte*
 Sunny Onyiri, *Campbellsville University*
 Janet Payne, *Texas State University*
 Michael Provitera, *Barry University*
 S. Abraham Ravid, *Yeshiva University*
 William A. Reese, Jr., *Tulane University*
 Mario Reyes, *University of Idaho*
 Hong Rim, *Shippensburg University*
 Robert Ritchey, *Texas Tech University*
 Antonio Rodriquez, *Texas A&M International University*
 Dan Rogers, *Portland State University*
 Harley E. Ryan, Jr., *Georgia State University*
 Harikumar Sankaran, *New Mexico State University*
 Sorin Sorescu, *Texas A&M University*
 David Stangeland, *University of Manitoba*
 Jonathan Stewart, *Abilene Christian University*
 Mark Hoven Stohs, *California State University, Fullerton*
 Tim Sullivan, *Bentley College*
 Olie Thorp, *Babson College*
 Harry Turtle, *Washington State University*
 Joseph Vu, *DePaul University*
 Joe Walker, *University of Alabama at Birmingham*
 Jill Wetmore, *Saginaw Valley State University*
 Jack Wolf, *Clemson University*
 Bob Wood, Jr., *Tennessee Tech University*
 Donald H. Wort, *California State University, East Bay*
 Scott Wright, *Ohio University*
 Tong Yao, *University of Arizona*

MyLab Finance Contributors

Carlos Bazan, *San Diego State University*
 Ting-Heng Chu, *East Tennessee State University*
 Shannon Donovan, *Bridgewater State College*
 Michael Woodworth

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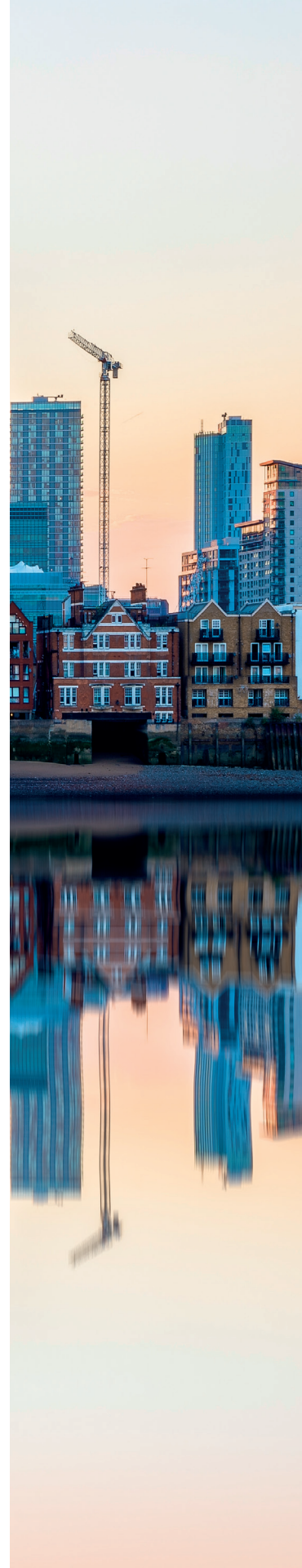
Reviewers

Ann-Ngoc Nguyen, *Middlesex University*
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CORPORATE FINANCE

SIXTH EDITION

GLOBAL EDITION



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Introduction

WHY STUDY CORPORATE FINANCE? No matter what your role in a corporation, an understanding of why and how financial decisions are made is essential. Even the best and most innovative business ideas require an investment of resources. The tools of finance allow you to assess whether that investment is worthwhile, how it might be improved, and how it might be funded. And while the main focus of this book is how to make optimal corporate financial decisions, along the way you will learn skills that will guide you in your personal financial decisions as well.

In this part of the book, we lay the foundation for our study of corporate finance. We begin, in Chapter 1, by introducing the corporation and related business forms. We then examine the role of financial managers and outside investors in decision making for the firm. To make optimal decisions, a decision maker needs information. As a result, in Chapter 2, we review an important source of information for corporate decision-making—the firm’s financial statements.

We then introduce the most important idea in this book, the concept of *the absence of arbitrage* or *Law of One Price* in Chapter 3. The Law of One Price allows us to use market prices to determine the value of an investment opportunity to the firm. We will demonstrate that the Law of One Price is the one unifying principle that underlies all of financial economics and links all of the ideas throughout this book. We will return to this theme throughout our study of Corporate Finance.

CHAPTER 1
The Corporation
and Financial
Markets

CHAPTER 2
Introduction
to Financial
Statement
Analysis

CHAPTER 3
Financial
Decision Making
and the Law of
One Price

The Corporation and Financial Markets

THE MODERN U.S. CORPORATION WAS BORN IN A COURTROOM in Washington, D.C., on February 2, 1819. On that day the U.S. Supreme Court established the legal precedent that the property of a corporation, like that of a person, is private and entitled to protection under the U.S. Constitution. Today, it is hard to entertain the possibility that a corporation's private property would not be protected under the Constitution. However, before the 1819 Supreme Court decision, the owners of a corporation were exposed to the possibility that the state could take their business. This concern was real enough to stop most businesses from incorporating and, indeed, in 1816 that concern was realized: The state seized Dartmouth College.

Dartmouth College was incorporated in 1769 as a private educational institution governed by a self-perpetuating board of trustees. Unhappy with the political leanings of the board, the state legislature effectively took control of Dartmouth by passing legislation in 1816 that established a governor-appointed board of overseers to run the school. The legislation had the effect of turning a private university under private control into a state university under state control. If such an act were constitutional, it implied that any state (or the federal government) could, at will, nationalize any corporation.

Dartmouth sued for its independence and the case made it to the Supreme Court under Chief Justice John Marshall in 1818. In a nearly unanimous 5–1 decision, the court struck down the New Hampshire law, ruling that a corporation was a “contract” and that, under Article 1 of the Constitution, “the state legislatures were forbidden to pass any law impairing the obligation of contracts.”¹ The precedent was set: Owners of businesses could incorporate and still enjoy the protection of private property, as well as protection from seizure, both guaranteed by the U.S. Constitution. The modern business corporation was born.

¹ The full text of John Marshall's decision can be found at <https://caselaw.findlaw.com/us-supreme-court/17/518.html>.

Today, the corporate structure is ubiquitous all over the world, and continues to evolve in the face of new forces. For example, in 2008, the financial crisis transformed the financial landscape, bringing down giants like Bear Stearns, Lehman Brothers, and AIG and reshaping investment banks like Goldman Sachs into government-guaranteed commercial banks. Government bailouts of institutions such as General Motors and AIG have provoked challenging questions regarding the role of the federal government in the control and management of private corporations. In the wake of that crisis, significant reforms of the regulation and oversight of financial markets were passed into law. And though the crisis has now passed, new political agendas and global tensions continue to reshape the practice of business, so that understanding the principles of corporate finance remains as important as ever.

The focus of this book is on how people in corporations make financial decisions. This chapter introduces the corporation and explains alternative business organizational forms. A key factor in the success of corporations is the ability to easily trade ownership shares, and so we will also explain the role of stock markets in facilitating trading among investors in a corporation and the implications that has for the ownership and control of corporations.

1.1 The Four Types of Firms

We begin our study of corporate finance by introducing the four major types of firms: *sole proprietorships*, *partnerships*, *limited liability companies*, and *corporations*. We explain each organizational form in turn, but our primary focus is on the most important form—the corporation. In addition to describing what a corporation is, we also provide an overview of why corporations are so successful.

Sole Proprietorships

A **sole proprietorship** is a business owned and run by one person. Sole proprietorships are usually very small with few, if any, employees. Although they do not account for much sales revenue in the economy, they are the most common type of firm in the world, as shown in Figure 1.1. Statistics indicate that nearly 72% of businesses in the United States are sole proprietorships, although they generate only 4% of the revenue. Contrast this with corporations, which make up under 18% of firms but are responsible for 82% of U.S. revenue.

Sole proprietorships share the following key characteristics:

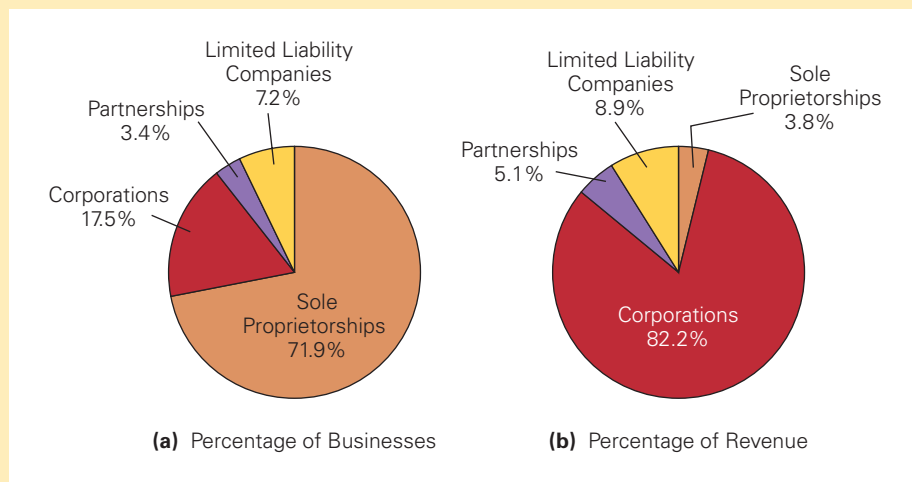
1. Sole proprietorships are straightforward to set up. Consequently, many new businesses use this organizational form.
2. The principal limitation of a sole proprietorship is that there is no separation between the firm and the owner—the firm can have only one owner. If there are other investors, they cannot hold an ownership stake in the firm.
3. The owner has unlimited personal liability for any of the firm's debts. That is, if the firm defaults on any debt payment, the lender can (and will) require the owner to repay the loan from personal assets. An owner who cannot afford to repay the loan must declare personal bankruptcy.
4. The life of a sole proprietorship is limited to the life of the owner. It is also difficult to transfer ownership of a sole proprietorship.

FIGURE 1.1

Types of U.S. Firms

There are four different types of firms in the United States. As (a) and (b) show, although the majority of U.S. firms are sole proprietorships, they generate only a small fraction of total revenue, in contrast to corporations.

Source: www.irs.gov



For most businesses, the disadvantages of a sole proprietorship outweigh the advantages. As soon as the firm reaches the point at which it can borrow without the owner agreeing to be personally liable, the owners typically convert the business into a form that limits the owner's liability.

Partnerships

A **partnership** is identical to a sole proprietorship except it has more than one owner. The following are key features of a partnership:

1. *All* partners are liable for the firm's debt. That is, a lender can require *any* partner to repay all the firm's outstanding debts.
2. The partnership ends on the death or withdrawal of any single partner, although partners can avoid liquidation if the partnership agreement provides for alternatives such as a buyout of a deceased or withdrawn partner.

Some old and established businesses remain partnerships or sole proprietorships. Often these firms are the types of businesses in which the owners' personal reputations are the basis for the businesses. For example, law firms, groups of doctors, and accounting firms are often organized as partnerships. For such enterprises, the partners' personal liability increases the confidence of the firm's clients that the partners will strive to maintain their reputation.

A **limited partnership** is a partnership with two kinds of owners, general partners and limited partners. General partners have the same rights and privileges as partners in a (general) partnership—they are personally liable for the firm's debt obligations. Limited partners, however, have **limited liability**—that is, their liability is limited to their investment. Their private property cannot be seized to pay off the firm's outstanding debts. Furthermore, the death or withdrawal of a limited partner does not dissolve the partnership, and a limited partner's interest is transferable. However, a limited partner has no management authority and cannot legally be involved in the managerial decision making for the business.

Private equity funds and venture capital funds are two examples of industries dominated by limited partnerships. In these firms, a few general partners contribute some of

their own capital and raise additional capital from outside investors who are limited partners. The general partners control how all the capital is invested. Most often they will actively participate in running the businesses they choose to invest in. The outside investors play no active role in the partnership other than monitoring how their investments are performing.

Limited Liability Companies

A **limited liability company (LLC)** is a limited partnership without a general partner. That is, all the owners have limited liability, but unlike limited partners, they can also run the business.

The LLC is a relatively new phenomenon in the United States. The first state to pass a statute allowing the creation of an LLC was Wyoming in 1977; the last was Hawaii in 1997. Internationally, companies with limited liability are much older and established. LLCs rose to prominence first in Germany over 100 years ago as a *Gesellschaft mit beschränkter Haftung* (GmbH) and then in other European and Latin American countries. An LLC is known in France as a *Société à responsabilité limitée* (SARL), and by similar names in Italy (SRL) and Spain (SL).

Corporations

The distinguishing feature of a **corporation** is that it is a legally defined, artificial being (a judicial person or legal entity), separate from its owners. As such, it has many of the legal powers that people have. It can enter into contracts, acquire assets, incur obligations, and, as we have already established, it enjoys protection under the U.S. Constitution against the seizure of its property. Because a corporation is a legal entity separate and distinct from its owners, it is solely responsible for its own obligations. Consequently, the owners of a corporation (or its employees, customers, etc.) are not liable for any obligations the corporation enters into. Similarly, the corporation is not liable for any personal obligations of its owners.

Formation of a Corporation. Corporations must be legally formed, which means that the state in which it is incorporated must formally give its consent to the incorporation by chartering it. Setting up a corporation is therefore considerably more costly than setting up a sole proprietorship. Delaware has a particularly attractive legal environment for corporations, so many corporations choose to incorporate there. For jurisdictional purposes, a corporation is a citizen of the state in which it is incorporated. Most firms hire lawyers to create a corporate charter that includes formal articles of incorporation and a set of bylaws. The corporate charter specifies the initial rules that govern how the corporation is run.

Ownership of a Corporation. There is no limit on the number of owners a corporation can have. Because most corporations have many owners, each owner owns only a small fraction of the corporation. The entire ownership stake of a corporation is divided into shares known as **stock**. The collection of all the outstanding shares of a corporation is known as the **equity** of the corporation. An owner of a share of stock in the corporation is known as a **shareholder, stockholder, or equity holder** and is entitled to **dividend payments**, that is, payments made at the discretion of the corporation to its equity holders. Shareholders usually receive a share of the dividend payments that is proportional to the amount of stock they own. For example, a shareholder who owns 25% of the firm's shares will be entitled to 25% of the total dividend payment.

A unique feature of a corporation is that there is no limitation on who can own its stock. That is, an owner of a corporation need not have any special expertise or qualification. This feature allows free trade in the shares of the corporation and provides one of the most important advantages of organizing a firm as a corporation rather than as sole proprietorship, partnership, or LLC. Corporations can raise substantial amounts of capital because they can sell ownership shares to anonymous outside investors.

The availability of outside funding has enabled corporations to dominate the economy, as shown by Panel (b) of Figure 1.1. Let's take one of the world's largest firms, Walmart Inc., as an example. Walmart had over 2 million employees, and reported annual revenue of \$560 billion in 2021. Indeed, the top six U.S. companies by sales volume in 2021 (Walmart, Amazon, Apple, Exxon Mobil, CVS, and United Health) had combined sales of over \$2 trillion, an amount significantly larger than the total sales of the more than 25 million U.S. sole proprietorships.

Tax Implications for Corporate Entities

An important difference between the types of organizational forms is the way they are taxed. Because a corporation is a separate legal entity, a corporation's profits are subject to taxation separate from its owners' tax obligations. In effect, shareholders of a corporation pay taxes twice. First, the corporation pays tax on its profits, and then when the remaining profits are distributed to the shareholders, the shareholders pay their own personal income tax on this income. This system is sometimes referred to as double taxation.

EXAMPLE 1.1

Taxation of Corporate Earnings

Problem

You are a shareholder in a corporation. The corporation earns \$8 per share before taxes. After it has paid taxes, it will distribute the rest of its earnings to you as a dividend. The dividend is income to you, so you will then pay taxes on these earnings. The corporate tax rate is 25% and your tax rate on dividend income is 20%. How much of the earnings remains after all taxes are paid?

Solution

First, the corporation pays taxes. It earned \$8 per share, but must pay $0.25 \times \$8 = \2 to the government in corporate taxes. That leaves \$6 to distribute. However, you must pay $0.20 \times \$6 = \1.20 in income taxes on this amount, leaving $\$6 - \$1.20 = \$4.80$ per share after all taxes are paid. As a shareholder you only end up with \$4.80 of the original \$8 in earnings; the remaining $\$2 + \$1.20 = \$3.20$ is paid as taxes. Thus, your total effective tax rate is $3.20/8 = 40\%$.

S Corporations. The corporate organizational structure is the only organizational structure subject to double taxation. However, the U.S. Internal Revenue Code allows an exemption from double taxation for "**S**" corporations, which are corporations that elect subchapter S tax treatment. Under these tax regulations, the firm's profits (and losses) are not subject to corporate taxes, but instead are allocated directly to shareholders based on their ownership share. The shareholders must include these profits as income on their individual tax returns (even if no money is distributed to them). However, after the shareholders have paid income taxes on these profits, no further tax is due.

Corporate Taxation Around the World

Most countries offer investors in corporations some relief from double taxation. Thirty countries make up the Organisation for Economic Co-operation and Development (OECD), and of these countries, only Ireland offers no relief whatsoever. A few countries, including Australia, Canada, Chile, Mexico, and New Zealand, give shareholders a tax credit for the amount of corporate taxes paid, while others, such as Estonia and Latvia, fully or partially exempt dividend income from individual taxes. The United States offers partial relief by having a lower tax rate on dividend income than on other sources of income. Currently, for most investors

dividends are taxed at up to 20%, a rate significantly below their personal income tax rate. Despite this relief, the effective corporate tax rate in the U.S. had been one of the highest in the world—in 2017 it was nearly 30% above the median for the OECD.* Reducing this disparity was a key motive of the **Tax Cut and Jobs Act of 2017 (TCJA)** which, among other changes, lowered the federal corporate tax rate from 35% to 21% and included provisions that made it less attractive for U.S. firms to seek tax havens overseas.

*OECD Tax Database Table II.4

EXAMPLE 1.2

Taxation of S Corporation Earnings

Problem

Rework Example 1.1 assuming the corporation in that example has elected subchapter S treatment and your tax rate on non-dividend income is 35%.

Solution

In this case, the corporation pays no taxes. It earned \$8 per share. Whether or not the corporation chooses to distribute or retain this cash, you must pay $0.35 \times \$8 = \2.80 in income taxes, which is \$0.40 lower than the \$3.20 paid in Example 1.1.²

The government places strict limitations on the qualifications for subchapter S tax treatment. In particular, the shareholders of such corporations must be individuals who are U.S. citizens or residents, and there can be no more than 100 of them. Because most corporations have no restrictions on who owns their shares or the number of shareholders, they cannot qualify for subchapter S treatment. Thus most large corporations are **“C” corporations**, which are corporations subject to corporate taxes. S corporations account for less than one quarter of all corporate revenue.

CONCEPT CHECK

1. What is a limited liability company (LLC)? How does it differ from a limited partnership?
2. What are the advantages and disadvantages of organizing a business as a corporation?

1.2 Ownership Versus Control of Corporations

It is often not feasible for the owners of a corporation to have direct control of the firm because there are sometimes many owners, each of whom can freely trade his or her stock. That is, in a corporation, direct control and ownership are often separate. Rather than the owners, the *board of directors* and *chief executive officer* possess direct control of the corporation. In this section, we explain how the responsibilities for the corporation are divided between these two entities and how together they shape and execute the goals of the firm.

The Corporate Management Team

The shareholders of a corporation exercise their control by electing a **board of directors**, a group of people who have the ultimate decision-making authority in the corporation. In most corporations, each share of stock gives a shareholder one vote in the election of the board of directors,

² In reality the tax savings might be even higher. Under the new tax code some owners of S corporations will be able to shield 20% of their income from taxes.

David Viniar was Chief Financial Officer and Executive Vice President at Goldman Sachs from 1999 until 2013. As the firm's CFO, he played a leading role in the firm's conversion to a corporation in 1999—the last major investment bank to do so—and charting the firm's course through the financial crisis of 2008–2009, when it became a bank holding company.

QUESTION: *What are the advantages of partnerships and corporations?*

ANSWER: We debated this question at length when we were deciding whether to go public or stay a private partnership in the mid-1990s. There were good arguments on both sides. Those in favor of going public argued we needed greater financial and strategic flexibility to achieve our aggressive growth and market leadership goals. As a public corporation, we would have a more stable equity base to support growth and disperse risk; increased access to large public debt markets; publicly traded securities with which to undertake acquisitions and reward and motivate our employees; and a simpler and more transparent structure with which to increase scale and global reach.

Those against going public argued our private partnership structure worked well and would enable us to achieve our financial and strategic goals. As a private partnership, we could generate enough capital internally and in the private placement markets to fund growth; take a longer-term view of returns on our investments with less focus on earnings volatility, which is not valued in public companies; and retain voting control and alignment of the partners and the firm.

A big perceived advantage of our private partnership was its sense of distinctiveness and mystique, which reinforced our culture of teamwork and excellence and helped differentiate us from our competitors. Many questioned whether the special qualities of our culture would survive if the firm went public.

QUESTION: *What was the driving force behind the conversion?*

ANSWER: We ultimately decided to go public for three main reasons: to secure permanent capital to grow; to be able to use publicly traded securities to finance strategic acquisitions; and to enhance the culture of ownership and gain compensation flexibility.

INTERVIEW WITH DAVID VINIAR



QUESTION: *Did the conversion achieve its goals?*

ANSWER: Yes. As a public company, we have a simpler, bigger and more permanent capital base, including enhanced long-term borrowing capacity in the public debt markets. We have drawn on substantial capital resources to serve clients, take advantage of new business opportunities, and better control our own destiny through changing economic and business conditions. We have been able to use stock to finance key acquisitions and support large strategic and financial investments. Given how the stakes in our industry changed, how capital demands grew, going public when we did fortunately positioned us to compete effectively through the cycle.

Our distinctive culture of teamwork and excellence has thrived in public form, and our equity compensation programs turned out better than we could have hoped. Making everyone at Goldman Sachs an owner, rather than just 221 partners, energized all our employees. The growing size and scope of our business—not the change to public form—has presented the greatest challenges to the positive aspects of our culture.

QUESTION: *What prompted Goldman's decision to become a bank holding company in Fall 2008?*

ANSWER: The market environment had become extraordinarily unstable following the collapse of Bear Stearns in March 2008. There was an increased focus on the SEC-supervised broker/dealer business model, and in September, market sentiment had become increasingly negative with growing concerns over Lehman Brothers' solvency. Following the bankruptcy of Lehman Brothers and the sale of Merrill Lynch in the middle of September, and notwithstanding the reporting of quite strong earnings by both Goldman Sachs and Morgan Stanley, it became clear to us that the market viewed oversight by the Federal Reserve and the ability to source insured bank deposits as offering a greater degree of safety and soundness. By changing our status, we gained all the benefits available to our commercial banking peers, including access to permanent liquidity and funding, without affecting our ability to operate or own any of our current businesses or investments.

so investors with the most shares have the most influence. When one or two shareholders own a very large proportion of the outstanding stock, these shareholders may either be on the board of directors themselves, or they may have the right to appoint a number of directors.

The board of directors makes rules on how the corporation should be run (including how the top managers in the corporation are compensated), sets policy, and monitors the performance of the company. The board of directors delegates most decisions that involve day-to-day running of the corporation to its management. The **chief executive officer (CEO)** is charged with running the corporation by instituting the rules and policies set by the board of directors. The size of the rest of the management team varies from corporation to corporation. The separation of powers within corporations between the board of directors and the CEO is not always distinct. In fact, it is not uncommon for the CEO also to be the chairman of the board of directors. The most senior financial manager is the **chief financial officer (CFO)**, who often reports directly to the CEO. Figure 1.2 presents part of a typical organizational chart for a corporation, highlighting the key positions a financial manager may take.

The Financial Manager

Within the corporation, financial managers are responsible for three main tasks: making investment decisions, making financing decisions, and managing the firm's cash flows.

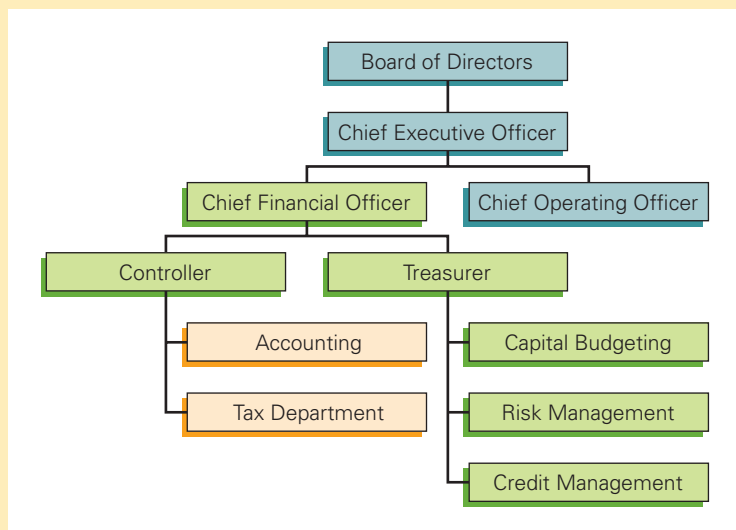
Investment Decisions. The financial manager's most important job is to make the firm's investment decisions. The financial manager must weigh the costs and benefits of all investments and projects and decide which of them qualify as good uses of the money stockholders have invested in the firm. These investment decisions fundamentally shape what the firm does and whether it will add value for its owners. In this book, we will develop the tools necessary to make these investment decisions.

Financing Decisions. Once the financial manager has decided which investments to make, he or she also decides how to pay for them. Large investments may require the corporation to raise additional money. The financial manager must decide whether to raise more money from new and existing owners by selling more shares of stock (equity) or to borrow the money (debt). In this book, we will discuss the characteristics of each source of funds and how to decide which one to use in the context of the corporation's overall mix of debt and equity.

FIGURE 1.2

Organizational Chart of a Typical Corporation

The board of directors, representing the stockholders, controls the corporation and hires the Chief Executive Officer who is then responsible for running the corporation. The Chief Financial Officer oversees the financial operations of the firm, with the Controller managing both tax and accounting functions, and the Treasurer responsible for capital budgeting, risk management, and credit management activities.



FINANCE IN TIMES OF DISRUPTION | The Dodd-Frank Act

In response to the 2008 financial crisis, the U.S. federal government reevaluated its role in the control and management of financial institutions and private corporations. Signed into law on July 21, 2010, the **Dodd-Frank Wall Street Reform and Consumer Protection Act** brought a sweeping change to financial regulation in response to widespread calls for financial regulatory system reform after the near collapse of the world's financial system in the fall of 2008 and the ensuing global credit crisis. History indeed repeats itself: It was in the wake of the 1929 stock market crash and subsequent Great Depression that Congress passed the Glass-Steagall Act establishing the Federal Deposit Insurance Corporation (FDIC) and instituted significant bank reforms to regulate transactions between commercial banks and securities firms.

The Dodd-Frank Act aims to (i) promote U.S. financial stability by “improving accountability and transparency in the financial system,” (ii) put an end to the notion of “too big to fail,” (iii) “protect the American taxpayer by ending bailouts,” and (iv) “protect consumers from abusive financial services practices.”* Time will tell whether the Act will actually achieve these important goals.

Implementing the wide-ranging financial reforms in the Dodd-Frank Act required the work and coordination of many federal agencies, either through rulemaking or other regulatory actions. A decade after the crisis, just over two-thirds of the rules had been finalized.

* The full text of the act is available from the U. S. Government publishing Office: <https://www.gpo.gov/fdsys/pkg/PLAW-111publ203>

Cash Management. The financial manager must ensure that the firm has enough cash on hand to meet its day-to-day obligations. This job, also commonly known as managing working capital, may seem straightforward, but in a young or growing company, it can mean the difference between success and failure. Even companies with great products require significant amounts of money to develop and bring those products to market. Consider the \$150 million Apple spent during its secretive development of the iPhone, the \$32 billion Boeing spent producing the 787 before it even left the ground, or the \$16 billion Audi plans to spend by 2023 on self-driving technology. A company typically burns through a significant amount of cash developing a new product before its sales generate income. The financial manager's job is to make sure that access to cash does not hinder the firm's success.

The Goal of the Firm

In theory, the goal of a firm should be determined by the firm's owners. A sole proprietorship has a single owner who runs the firm, so the goals of a sole proprietorship are the same as the owner's goals. But in organizational forms with multiple owners, the appropriate goal of the firm—and thus of its managers—is not as clear.

Many corporations have thousands of owners (shareholders). Each owner is likely to have different interests and priorities. Whose interests and priorities determine the goals of the firm? Later in the book, we examine this question in more detail. However, you might be surprised to learn that the interests of shareholders are aligned for many, if not most, important decisions. That is because, regardless of their own personal financial position and stage in life, all the shareholders will agree that they are better off if management makes decisions that increase the value of their shares. For example, by April 2022, Apple shares were worth over 760 times as much as they were in October 2001, when the first iPod was introduced. Clearly, regardless of their preferences and other differences, all investors who held shares of Apple stock over this period have benefited from the investment decisions Apple's managers have made.

The Firm and Society

Are decisions that increase the value of the firm's equity beneficial for society as a whole? Most often they are. While Apple's shareholders have become much richer since 2001, its customers also are better off with products like the iPod and iPhone that they might otherwise never

have had. More generally, firms create value for their shareholders by producing products or services that are valuable to their customers and creating jobs that attract employees.

The problem occurs when increasing the value of equity comes at the expense of others. Consider a corporation that, in the course of business, pollutes the environment and does not pay the costs to clean up the pollution. Alternatively, a corporation may not itself pollute, but use of its products may harm the environment. In such cases, decisions that increase shareholder wealth can be costly for society as a whole.

The 2008 financial crisis highlighted another example of decisions that can increase shareholder wealth but are costly for society. In the early part of the last decade, banks took on excessive risk. For a while, this strategy benefited the banks' shareholders. But when the bets went bad, the resulting financial crisis harmed the broader economy.

When the actions of the corporation impose harm on others in the economy, appropriate public policy and regulation is required to assure that corporate interests and societal interests remain aligned. Sound public policy should allow firms to continue to pursue the maximization of shareholder value in a way that benefits society overall.

Ethics and Incentives within Corporations

But even when all the owners of a corporation agree on the goals of the corporation, these goals must be implemented. In a simple organizational form like a sole proprietorship, the owner, who runs the firm, can ensure that the firm's goals match his or her own. But a corporation is run by a management team, separate from its owners, giving rise to conflicts of interest. How can the owners of a corporation ensure that the management team will implement their goals?

Agency Problems. Many people claim that because of the separation of ownership and control in a corporation, managers have little incentive to work in the interests of the shareholders when this means working against their own self-interest. Economists call this

Shareholder versus Stakeholder Value

Non-financial goals and Environmental, Social and Governance (ESG) considerations have been highlighted in recent high profile statements from large asset managers, such as Larry Fink (CEO of Blackrock), and by the Business Roundtable.*

While the goal of a financial manager is to increase the value of the firm to its shareholders, this responsibility does not imply that the impact of the firm's decisions on other stakeholders, such as employees or customers, can be ignored. Profitable firms are those that create value for their customers, and that can include producing in a way that aligns with customer preferences on environmental and social issues. Similarly, if the firm makes decisions that benefit employees (for example, increasing their job security or providing better health benefits), it will be able to attract better employees and benefit from increased productivity. On the other hand, if customers or employees anticipate that the firm is likely to exploit them, they will pay less for its products and demand higher wages. Thus, to maximize shareholder value, the financial manager must consider the impact of her decision on all stakeholders of the firm.

In fact, these points are emphasized in Fink's letter (Blackrock is the world's largest asset manager, making it the largest shareholder in many companies); Fink argues,

“Stakeholder capitalism is ... capitalism, driven by mutually beneficial relationships between you and the employees, customers, suppliers, and communities your company relies on to prosper. This is the power of capitalism. In today's globally interconnected world, a company must create value for and be valued by its full range of stakeholders in order to deliver long-term value for its shareholders.”

When firms do make decisions that affect firm value and also have important social consequences, the job of a financial manager is to quantify the impact both on the firm and society, allowing the CEO, the board, and ultimately the shareholders to evaluate the tradeoff and make an informed decision. Finally, one should not lose sight of the fact that a company must be making sound financial decisions in order to have the resources (profit) to allocate to ESG improvements and stakeholder welfare. Failing companies do not have the luxury of such considerations.

*<https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter>; <https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans>.

FINANCE IN TIMES OF DISRUPTION The Dodd-Frank Act on Corporate Compensation

Compensation is one of the most important conflicts of interest between corporate executives and shareholders. To limit senior corporate executives' influence over their own compensation and prevent excessive compensation, the Act directs the SEC to adopt new rules that:

- Mandate the independence of a firm's compensation committee and its advisers.
- Provide shareholders the opportunity to approve—in a non-binding, advisory vote—the compensation of executive officers at least once every three years (referred to as a “Say-on-Pay” vote).
- Require firm disclosure and shareholder approval of large bonus payments (so-called “golden parachutes”) to ousted senior executives as the result of a takeover.
- Require disclosure of the relationship of executive pay to the company's performance, as well as the ratio between the CEO's total compensation and that of the median employee.
- Require disclosure of whether executives are permitted to hedge their stock or option holdings.
- Create “clawback” provisions that allow firms to recoup compensation paid based on erroneous financial results.

As of early 2022, however, the last requirement had not yet been fully implemented by the SEC.

an **agency problem**—when managers, despite being hired as the agents of shareholders, put their own self-interest ahead of the interests of shareholders. Managers face the ethical dilemma of whether to adhere to their responsibility to put the interests of shareholders first, or to do what is in their own personal best interest.

This agency problem is commonly addressed in practice by minimizing the number of decisions managers must make for which their own self-interest substantially differs from the interests of the shareholders. For example, managers' compensation contracts are designed to ensure that most decisions in the shareholders' interest are also in the managers' interests; shareholders often tie the compensation of top managers to the corporation's profits or perhaps to its stock price. There is, however, a limitation to this strategy. By tying compensation too closely to performance, the shareholders might be asking managers to take on more risk than they are comfortable taking. As a result, managers may not make decisions that the shareholders want them to, or it might be hard to find talented managers willing to accept the job. On the other hand, if compensation contracts reduce managers' risk by rewarding good performance but limiting the penalty associated with poor performance, managers may have an incentive to take excessive risk.

Further potential for conflicts of interest and ethical considerations arise when some stakeholders in the corporation benefit and others lose from a decision. Shareholders and managers are two stakeholders in the corporation, but others include the regular employees and the communities in which the company operates, for example. Managers may decide to take the interests of other stakeholders into account in their decisions, such as keeping a loss-generating factory open because it is the main provider of jobs in a small town, paying above-market wages to factory workers in a developing country, or operating a plant at a higher environmental standard than local law mandates.

In some cases, these actions that benefit other stakeholders also benefit the firm's shareholders by creating a more dedicated workforce, generating positive publicity with customers, or other indirect effects. In other instances, when these decisions benefit other stakeholders at shareholders' expense, they represent a form of corporate charity. Indeed, many corporations explicitly donate (on behalf of their shareholders) to local and global charitable and political causes. For example, in 2019, Gilead Sciences gave nearly \$400 million in cash to charity (making it one of the largest corporate donors of cash in that year). These actions are costly and reduce shareholder wealth. Thus, while some shareholders might support such policies because they feel that they reflect their own moral and ethical priorities, it is unlikely that all shareholders will feel this way, leading to potential conflicts of interest amongst shareholders.

This conflict of interest can be resolved in cases for which shareholders can take equivalent actions on their own, such as giving cash to charity. In that case the firm can return the cash to

Citizens United v. Federal Election Commission

On January 21, 2010, the U.S. Supreme Court ruled on what some scholars have argued is the most important First Amendment case in many years. In *Citizens United v. Federal Election Commission* the Court held, in a controversial 5–4 decision, that the First Amendment allows corporations and unions to make political expenditures in

support of a particular candidate. This ruling overturned existing restrictions on political campaigning by corporations. But because it is highly unlikely that all shareholders of a corporation would unanimously support a particular candidate, allowing such activities effectively guarantees a conflict of interest.

shareholders who can then determine how much to give on their own. But this simple solution is not available when there are actions only the corporation can take, such as operating at a higher environmental standard. In that case, to maximize shareholder welfare, it is appropriate for the firm's managers to weigh conflicting shareholder preferences in their decision making.

The CEO's Performance. Another way shareholders can encourage managers to work in the interests of shareholders is to discipline them if they don't. If shareholders are unhappy with a CEO's performance, they could, in principle, pressure the board to oust the CEO. Disney's Michael Eisner, Hewlett Packard's Carly Fiorina, GE's Jeff Immelt, J. Crew's Mickey Drexler, and WeWork's Adam Neumann were all reportedly forced to resign by their boards. Despite these high-profile examples, directors and top executives are rarely replaced through a grassroots shareholder uprising. Instead, dissatisfied investors often choose to sell their shares. Of course, somebody must be willing to buy the shares from the dissatisfied shareholders. If enough shareholders are dissatisfied, the only way to entice investors to buy (or hold on to) the shares is to offer them a low price. Similarly, investors who see a well-managed corporation will want to purchase shares, which drives the stock price up. Thus, the stock price of the corporation is a barometer for corporate leaders that continuously gives them feedback on their shareholders' opinion of their performance.

When the stock performs poorly, the board of directors might react by replacing the CEO. In some corporations, however, the senior executives are entrenched because boards of directors do not have the will to replace them. Often the reluctance to fire results because the board members are close friends of the CEO and lack objectivity. In corporations in which the CEO is entrenched and doing a poor job, the expectation of continued poor performance will decrease the stock price. Low stock prices create a profit opportunity. In a **hostile takeover**, an individual or organization—sometimes known as a corporate raider—can purchase a large fraction of the stock and acquire enough votes to replace the board of directors and the CEO. With a new superior management team, the stock is a much more attractive investment, which would likely result in a price rise and a profit for the corporate raider and the other shareholders. Although the words “hostile” and “raider” have negative connotations, corporate raiders themselves provide an important service to shareholders. The mere threat of being removed as a result of a hostile takeover is often enough to discipline poorly performing managers and motivate boards of directors to make difficult decisions. Consequently, when a corporation's shares are publicly traded, a “market for corporate control” is created that encourages managers and boards of directors to act in the interests of their shareholders.

Corporate Bankruptcy. Ordinarily, a corporation is run on behalf of its shareholders. But when a corporation borrows money, the holders of the firm's debt also become investors in the corporation. While the debt holders do not normally exercise control over the firm, if the corporation fails to repay its debts, the debt holders are entitled to seize the assets of the corporation in compensation for the default. To prevent such a seizure, the firm may attempt to renegotiate with the debt holders, or file for bankruptcy protection in a federal court. (We describe the details of the bankruptcy process and its implications for corporate decisions in much more detail in Part 5 of the textbook.) Ultimately, however, if the firm is unable to repay or renegotiate with the debt holders, the control of the corporation's assets will be transferred to them.

Airlines in Bankruptcy

On December 9, 2002, United Airlines filed for bankruptcy protection following an unsuccessful attempt to convince the federal government to bail out the company's investors by providing loan guarantees. Although United remained in bankruptcy for the next three years, it continued to operate and fly passengers, and even expanded capacity in some markets. One of those expansions was "Ted," an ill-fated attempt by United to start a budget airline to compete directly with Southwest Airlines. In short, although United's original shareholders were wiped out, as far as customers were concerned it was business as usual. People continued to book tickets and United continued to fly and serve them.

It is tempting to think that when a firm files for bankruptcy, things are "over." But often, rather than liquidate the firm, bondholders and other creditors are better off allowing the firm to continue operating as a going concern. United was just one of many airlines to move in and out of bankruptcy since 2002; others include US Airways, Air Canada, Hawaiian Airlines, Northwest Airlines, and Delta Airlines. In November 2011, American Airlines became the latest airline to declare bankruptcy. Like United in 2002, American continued to operate while it cut costs and reorganized, returning to profitability in mid-2012. American ultimately settled with creditors in December 2013 as part of a merger agreement with US Airways.

Thus, when a firm fails to repay its debts, the end result is a change in ownership of the firm, with control passing from equity holders to debt holders. Importantly, bankruptcy need not result in a **liquidation** of the firm, which involves shutting down the business and selling off its assets. Even if control of the firm passes to the debt holders, it is in the debt holders' interest to run the firm in the most profitable way possible. Doing so often means keeping the business operating. For example, in 1990, Federated Department Stores declared bankruptcy. One of its best-known assets at the time was Bloomingdale's, a nationally recognized department store. Because Bloomingdale's was a profitable business, neither equity holders nor debt holders had any desire to shut it down, and it continued to operate in bankruptcy. In 1992, when Federated Department Stores was reorganized and emerged from bankruptcy, Federated's original equity holders had lost their stake in Bloomingdale's, but this flagship chain continued to perform well for its new owners, and its value as a business was not adversely affected by the bankruptcy.

Thus, a useful way to understand corporations is to think of there being two sets of investors with claims to its cash flows—debt holders and equity holders. As long as the corporation can satisfy the claims of the debt holders, ownership remains in the hands of the equity holders. If the corporation fails to satisfy debt holders' claims, debt holders may take control of the firm. Corporate bankruptcy is therefore best thought of as a *change in ownership* of the corporation, and not necessarily as a failure of the underlying business.

CONCEPT CHECK

1. What are the three main tasks of a financial manager?
2. What is a principal-agent problem that may exist in a corporation?
3. How may a corporate bankruptcy filing affect the ownership of a corporation?

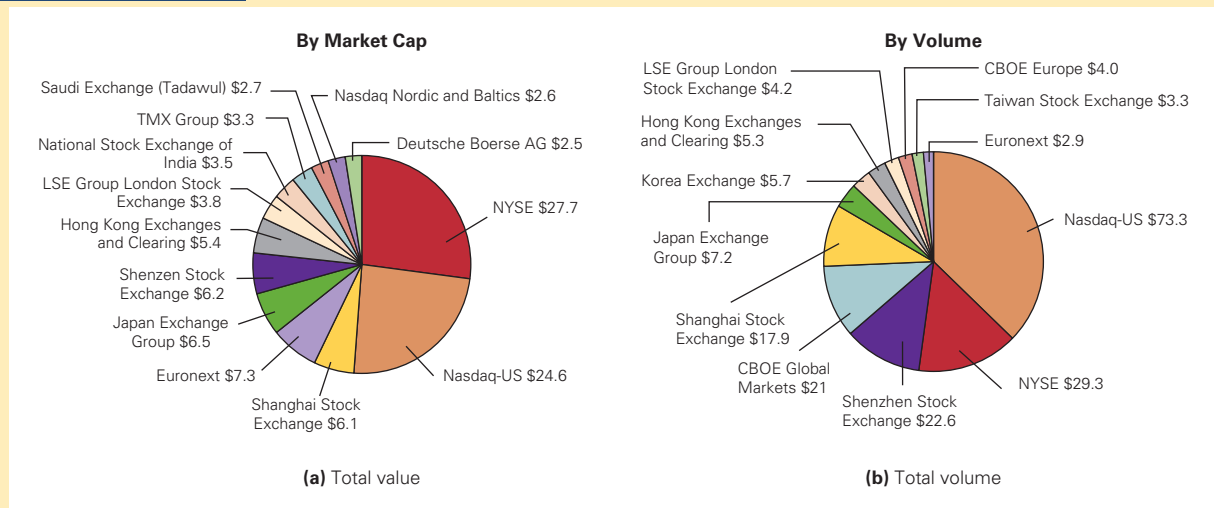
1.3 The Stock Market

As we have discussed, shareholders would like the firm's managers to maximize the value of their investment in the firm. The value of their investment is determined by the price of a share of the corporation's stock. Because **private companies** have a limited set of shareholders and their shares are not regularly traded, the value of their shares can be difficult to determine. But many corporations are **public companies**, whose shares trade on organized markets called a **stock market** (or **stock exchange**). Figure 1.3 shows the major exchanges worldwide, by total value of listed stocks and trading volume.

These markets provide *liquidity* and determine a market price for the company's shares. An investment is said to be **liquid** if it is possible to sell it quickly and easily for a price very close

FIGURE 1.3

Worldwide Stock Exchanges Ranked by Two Common Measures



The largest stock markets in the world (a) by total value of all domestic corporations listed on the exchange at year-end 2021 and (b) by total volume of shares traded on the exchange in 2021.

Source: www.world-exchanges.org

to the price at which you could contemporaneously buy it. This liquidity is attractive to outside investors, as it provides flexibility regarding the timing and duration of their investment in the firm. In addition, the research and trading of participants in these markets give rise to share prices that provide constant feedback to managers regarding investors' views of their decisions.

Primary and Secondary Stock Markets

When a corporation itself issues new shares of stock and sells them to investors, it does so on the **primary market**. After this initial transaction between the corporation and investors, the shares continue to trade in a **secondary market** between investors without the involvement of the corporation. For example, if you wish to buy 100 shares of Starbucks Coffee, you would place an order on a stock exchange, where Starbucks trades under the ticker symbol SBUX. You would buy your shares from someone who already held shares of Starbucks, not from Starbucks itself. Because firms only occasionally issue new shares, secondary market trading accounts for the vast majority of trading in the stock market.

Traditional Trading Venues

Historically, a firm would choose one stock exchange on which to list its stock, and almost all trade in the stock would occur on that exchange. In the U.S., the two most important exchanges are the New York Stock Exchange (NYSE) and the National Association of Security Dealers Automated Quotation (Nasdaq).

Prior to 2005, almost all trade on the NYSE took place on the exchange's trading floor in lower Manhattan. **Market makers** (known then on the NYSE as **specialists**) matched buyers and sellers. They posted two prices for every stock in which they made a market: the price at which they were willing to *buy* the stock (the **bid price**) and the price at which they were willing to *sell* the stock (the **ask price**). When a customer arrived and wanted to make a trade at these prices, the market maker would honor the posted prices (up to a limited number of shares) and make the trade even when they did not have another customer

Adena T. Friedman is President and Chief Executive Officer of Nasdaq and a member of the Board of Directors. With more than 20 years of industry leadership, she has focused on driving efficiency, product development, growth and expansion, shaping Nasdaq into a leading global exchange and technology solutions company.

QUESTION: *Why do public stock markets like Nasdaq play such an important role in economic growth?*

ANSWER: Financial markets are a fundamental engine of prosperity, economic growth, job creation, and innovation. Ensuring fair, secure, and accessible markets for all is vital to creating strong economies worldwide. The capital companies raise in the public equities markets catalyzes job creation and fuels innovation, which can become a virtuous cycle of economic growth. For individuals, healthy public markets are drivers of wealth creation and secure retirements. But for individuals to be willing to invest, they must be confident they will be able to sell at a fair price in the future. The competitive real-time price discovery that takes place in public markets allows buyers and sellers of equities to arrive instantly on an agreed-upon price, creating liquidity for investors and allowing capital to be deployed for other opportunities, innovation, and growth.

QUESTION: *Recent developments like the ability to trade fractional shares and the rise of intermediaries like Robinhood have increased access for individuals. Do you think this is a positive development?*

ANSWER: Our job as a market operator is to eliminate friction and maximize access, to give more investors direct access to markets and empower them to manage their money—and to get the benefits of compounding returns over time. We view increased access and increased engagement as a positive overall. It also means there is even greater importance on disclosure, transparency, and financial education so that every investor, whether institutional or individual, can make informed decisions as to the opportunities and risks associated with their investments.

Investing in the capital markets creates opportunity for wealth creation for individual investors, but there are

INTERVIEW WITH ADENA T. FRIEDMAN



always risks. We focus on teaching new investors those risks and the importance of being responsible in how you interact with markets. Any time a new constituent of investors comes into the markets, you need to make sure they are having a fair experience and are protected.

QUESTION: *Payment for order flow has enabled commission-free trading for retail investors. Are there potential downsides to this practice?*

ANSWER: New technology and initiatives have improved access to the markets by allowing a broader range of investors to in-

vest more inexpensively and easily. Payment for order flow is one initiative that developed as our markets have evolved. It's a process by which a broker can receive compensation for directing orders to a specific trading partner, or market maker. Because payment for order flow is complex and nuanced, Nasdaq does not believe there is a single, one-size-fits-all answer. Our most important principle is creating fair markets with level playing fields in which no participant has an unfair advantage or disadvantage.

QUESTION: *Nasdaq had historically been associated with technology stocks. Why is that and do you believe that it will continue to be true?*

ANSWER: Nasdaq continues to be home to innovators; we are currently the marketplace of choice for approximately 70% of publicly traded U.S. tech companies. To understand why tech companies choose Nasdaq, it's important to understand that we are, ourselves, a tech company, founded more than 50 years ago as the first fully digital marketplace. Innovation is in our DNA, and we have continually innovated the way markets are fundamentally structured, leveraging technology to create efficiencies for our issuers and greater opportunity for investors.

Looking forward, several trends are fundamentally reshaping what our markets and economies will look like over the next decade and decades—ranging from the modernization of markets to the evolution to a low-carbon global economy. These trends present opportunities for companies across all sectors.

willing to take the other side of the trade. In this way, market makers provided **liquidity** by ensuring that market participants always had somebody to trade with.

In contrast to the NYSE, the Nasdaq market never had a trading floor. Instead, all trades were completed over the phone or on a computer network. An important difference between the NYSE and Nasdaq was that on the NYSE, each stock had only one market maker. On the Nasdaq, stocks had multiple market makers who competed with one another. Each market maker posted bid and ask prices on the Nasdaq network that were viewed by all participants.

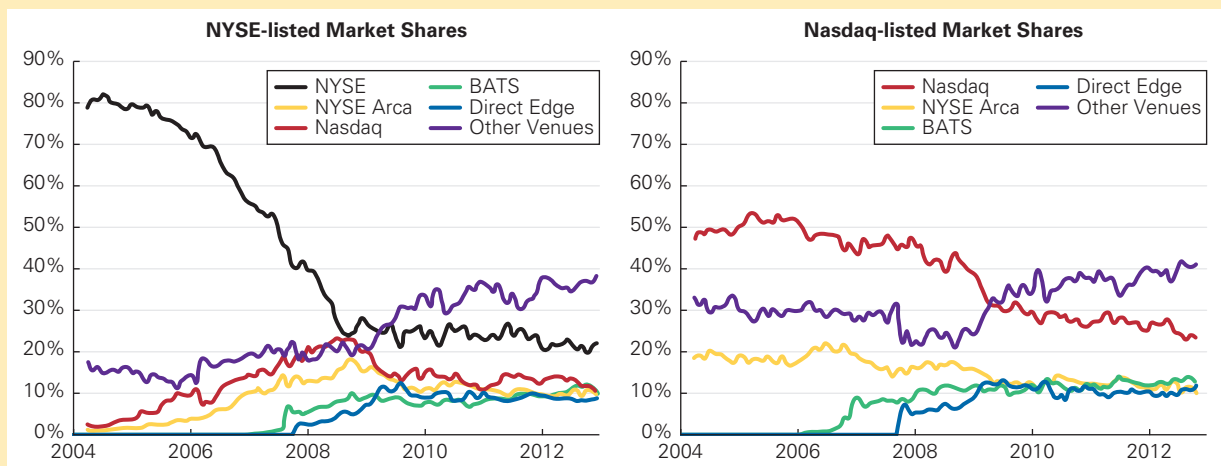
Market makers make money because ask prices are higher than bid prices. This difference is called the **bid-ask spread**. Customers always buy at the ask (the higher price) and sell at the bid (the lower price). The bid-ask spread is a **transaction cost** investors pay in order to trade. Because specialists on the NYSE took the other side of the trade from their customers, this cost accrued to them as a profit. This was the compensation they earned for providing a liquid market by standing ready to honor any quoted price. Investors also paid other forms of transactions costs like commissions.

New Competition and Market Changes

Stock markets went through enormous changes in the first decade of the 21st century. In 2005, the NYSE and Nasdaq exchanges accounted for over 75% of all trade in U.S. stocks. Since that time, however, competition from new, fully electronic exchanges and alternative trading systems has caused their market share to dramatically decline, as shown in Figure 1.4. By 2012, these new entrants handled more than 50% of all trades.

With this change in market structure, the role of an official market maker has largely disappeared. Because all transactions occur electronically with computers matching buy and sell orders, anyone can make a market in a stock by posting a **limit order**—an order to buy or sell a set amount at a fixed price. For example, a limit buy order might be an order to buy 100 shares of IBM at a price of \$138/share. The bid-ask spread of a stock is determined

FIGURE 1.4



Distribution of trading volume for NYSE-listed shares (left panel) and Nasdaq-listed shares (right panel). NYSE-Arca is the electronic trading platform of the NYSE. BATS and Direct Edge merged in 2014; these new electronic exchanges now handle about 20% of all trades. Other venues, including internal dealer platforms and so called “dark pools,” accounted for almost 40% of all trades in 2015.

Source: J. Angel, L. Harris, and C. Spatt, “Equity Trading in the 21st Century: An Update,” *Quarterly Journal of Finance* 5 (2015): 1–39.