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Fundamentals of Corporate Finance

FIFTH EDITION

Jonathan Berk Peter DeMarzo Jarrad Harford

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Corporate Finance

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To Natasha and Hannah for all the joy you bring to my life. —*J. B.*

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

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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 is the Staehelin Family Professor of Finance at the Graduate School of Business, Stanford University and Faculty Director of the Stanford LEAD program. He is past President and Fellow 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. In addition to his experience at the Stanford Graduate School of Business, Professor DeMarzo has taught at the Haas School of Business and the Kellogg Graduate School of Management, and he was a 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*, *Financial Management*, and the *B.E. Journals in Economic Analysis and Policy*, as well as 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 also received numerous awards including the Western Finance Association Corporate Finance Best-Paper Award, the Charles River Associates Best-Paper Award, and the Barclays Global Investors/Michael Brennan Best-Paper of the Year Award from *The Review of Financial Studies*.

Professor DeMarzo was born in Whitestone, New York, and is married with three boys. He and his family enjoy hiking, biking, and skiing.

Jarrad Harford is the Paul Pigott-PACCAR Professor of Finance at the University of Washington's Foster School of Business. Prior to Washington, Professor Harford taught at the University of Oregon. He received his Ph.D. in Finance with a minor in Organizations and Markets from the University of Rochester. Professor Harford has taught the core undergraduate finance course, Business Finance, for over twenty years, as well as an elective in Mergers and Acquisitions, and "Finance for Non-financial Executives" in the executive education program. He has won numerous awards for his teaching, including the UW Finance Professor of the Year (2010, 2012, 2016), Panhellenic/Interfraternity Council Business Professor of the Year Award (2011, 2013), ISMBA Excellence in Teaching Award (2006), and the Wells Fargo Faculty Award for Undergraduate Teaching (2005). Professor Harford is currently a Managing Editor of the *Journal of Financial and Quantitative Analysis*, and serves as an Associate Editor for the *Journal of Financial Economics*, and the *Journal of Corporate Finance*. His main research interests are understanding the dynamics of merger and acquisition activity as well as the interaction of corporate cash management policy with governance, payout and global tax considerations. Professor Harford was born in Pennsylvania, is married, and has two sons. He and his family enjoy traveling, hiking, and skiing.

Bridging Theory and Practice

EXAMPLE 7.1
Stock Prices and Returns

PROBLEM

Suppose you expect Longs Drug Stores to pay an annual dividend of $0.56 per share in the coming year and to trade for $45.50 per share at the end of the year. If investments with equivalent risk to Longs' stock have an expected return of 6.80%, what is the most you would pay today for Longs' stock? What dividend yield and capital gain rate would you expect at this price?

SOLUTION

PLAN

We can use Eq. 7.1 to solve for the beginning price we would pay now (P_0) given our expectations about dividends ($Div_1 = \$0.56$) and future price ($P_1 = \$45.50$) and the return we need to expect to earn to be willing to invest ($r_E = 0.068$). We can then use Eq. 7.2 to calculate the dividend yield and capital gain rate.

EXECUTE

Using Eq. 7.1, we have

$$P_0 = \frac{Div_1 + P_1}{1 + r_E} = \frac{\$0.56 + \$45.50}{1.0680} = \$43.13$$

Referring to Eq. 7.2, we see that at this price, Longs' dividend yield is $Div_1/P_0 = 0.56/43.13 = 1.30\%$. The expected capital gain is $\$45.50 - \$43.13 = \$2.37$ per share, for a capital gain rate of $2.37/43.13 = 5.50\%$.

EVALUATE

At a price of $43.13, Longs' expected total return is $1.30\% + 5.50\% = 6.80\%$, which is equal to its equity cost of capital (the return being paid by investments with equivalent risk to Longs'). This amount is the most we would be willing to pay for Longs' stock. If we paid more, our expected return would be less than 6.8% and we would rather invest elsewhere.

PERSONAL FINANCE

EXAMPLE 4.5
Retirement Savings Plan Annuity

PROBLEM

Ellen is 35 years old and she has decided it is time to plan seriously for her retirement. At the end of each year until she is 65, she will save $10,000 in a retirement account. If the account earns 10% per year, how much will Ellen have in her account at age 65?

SOLUTION

PLAN

As always, we begin with a timeline. In this case, it is helpful to keep track of both the dates and Ellen's age:

Ellen's savings plan looks like an annuity of $10,000 per year for 30 years. (*Hint:* It is easy to become confused when you just look at age, rather than at both dates and age. A common error is to think there are only $65 - 36 = 29$ payments. Writing down both dates and age avoids this problem.)

To determine the amount Ellen will have in her account at age 65, we'll need to compute the future value of this annuity.

EXECUTE

$$FV = \$10{,}000 \times \frac{1}{0.10}(1.10^{30} - 1)$$

$$= \$10{,}000 \times 164.49$$

$$= \$1.645 \text{ million at age } 65$$

Using a financial calculator or Excel:

	N	I/Y	PV	PMT	FV
Given:	30	10	0	−10,000	
Solve for:					1,644,940

Excel Formula: =FV(RATE,NPER, PMT, PV)=FV(0.10,30,−10000,0)

EVALUATE

By investing $10,000 per year for 30 years (a total of $300,000) and earning interest on those investments, the compounding will allow Ellen to retire with $1.645 million.

Study Aids with a Practical Focus

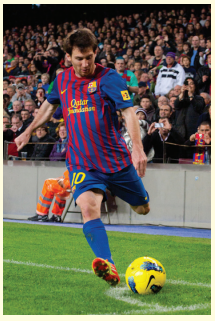
To be successful, students need to master the core concepts and learn to identify and solve problems that today's practitioners face.

- The **Valuation Principle** is presented as the foundation of all financial decision making: The central idea is that a firm should take projects or make investments that increase the *value* of the *firm*. The tools of finance determine the impact of a project or investment on the firm's value by comparing the costs and benefits in equivalent terms. The Valuation Principle is first introduced in Chapter 3, revisited in the part openers, and integrated throughout the text.
- **Guided Problem Solutions (GPS)** are Examples that accompany every important concept using a consistent problem-solving methodology that breaks the solution process into three steps: *Plan*, *Execute*, and *Evaluate*. This approach aids student comprehension, enhances their ability to model the solution process when tackling problems on their own, and demonstrates the importance of interpreting the mathematical solution.
- **Personal Finance GPS** Examples showcase the use of financial analysis in everyday life by setting problems in scenarios, such as purchasing a new car or house and saving for retirement.
- **Common Mistake** boxes alert students to frequently made mistakes stemming from misunderstanding of core concepts and calculations—in the classroom and in the field.

COMMON MISTAKE

Summing Cash Flows Across Time

Once you understand the time value of money, our first rule may seem straightforward. However, it is very common, especially for those who have not studied finance, to violate this rule, simply treating all cash flows as comparable regardless of when they are received. One example is in sports contracts. In 2019, Mike Trout signed a contract extension with the Los Angeles Angels that was repeatedly referred to as a "$430 million" contract. The $430 million comes from simply adding up all the payments Trout would receive over the 12 years of the contract—treating dollars received in 12 years the same as dollars received today. The same thing occurred when Lionel Messi signed a contract extension with FC Barcelona in 2017, giving him a "$320 million" contract through 2021, and in 2011 when Albert Pujols agreed to a "240 million" ten-year contract with the Los Angeles Angels.



Applications That Reflect Real Practice

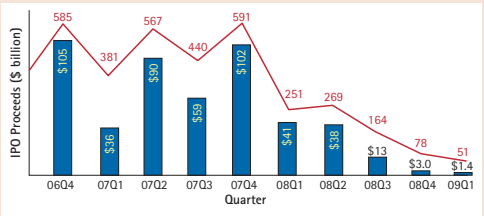
Global Financial Crisis boxes reflect the reality of the recent financial crisis and sovereign debt crisis, noting lessons learned. Boxes interspersed through the book illustrate and analyze key details.

GLOBAL FINANCIAL CRISIS

2008–2009: A Very Cold IPO Market

The drop in IPO issues during the 2008 financial crisis was both global and dramatic. The bar graph shows the total worldwide dollar volume of IPO proceeds in billions of dollars (blue bars) and number of deals (red line) by quarter, from the last quarter of 2006 to the first quarter of 2009. Comparing the fourth quarter of 2007 (a record quarter for IPO issues) to the fourth quarter of 2008, dollar volume dropped a stunning 97% from $102 billion to just $3 billion. Things got even worse in the first quarter of 2009 with just $1.4 billion raised. The market for IPOs essentially dried up altogether.

During the 2008 financial crisis, IPO markets were not the only equity issue markets that saw a collapse in volume. Markets for seasoned equity offerings and leveraged buyouts also collapsed. The extreme market uncertainty at the time created a "flight to quality." Investors, wary of taking risk, sought to move their capital into risk-free investments like U.S. Treasury securities. The result was a crash in existing equity prices and a greatly reduced supply of new capital to risky asset classes.



Source: Shifting Landscape—Are You Ready? Global IPO Trends report 2009, Ernst & Young.

Practitioner Interviews from notable professionals featured in many chapters highlight leaders in the field and address the effects of the financial crisis.

INTERVIEW WITH DR. JANET YELLEN

Dr. Janet L. Yellen served as the Chair of the Board of Governors of the Federal Reserve System from 2014 to 2018, and as Vice Chair from 2010 to 2014. Previously she was President and Chief Executive Officer of the Federal Reserve Bank of San Francisco; Chair of the White House Council of Economic Advisers under President Bill Clinton; and business professor at the University of California, Berkeley, Haas School of Business. She is currently Distinguished Fellow in Residence—Economic Studies, at The Brookings Institution's Hutchins Center on Fiscal and Monetary Policy.

QUESTION: ***What are the main policy instruments used by central banks to control the economy, and how did they change as a result of the financial crisis?***

ANSWER Before the financial crisis, short-term interest rates were the main tool of monetary policy. The Federal Reserve (The Fed) controlled these rates by adjusting the quantity of bank reserves (cash in the banking system) it made available. By purchasing or selling Treasury securities the Federal Reserve raised or lowered the available quantity of reserves and thereby controlled short-term interest rates.

In the aftermath of the crisis, short-term interest rates remain a prime tool of monetary policy, but they are now set in a different way and the quantity of reserves is an order-of-magnitude larger—peaking at around $2.5 trillion compared to about $25 billion precrisis. At the height of the financial crisis (December 2008), the Fed set the interest rate on reserves at 25 basis points, bringing the general level of safe short-term rates down to near zero (its so-called "effective lower bound"), where it remained for seven years. It also began buying long-term Treasury bonds and agency mortgage-backed securities—"unconventional" policies that lowered longer-term interest rates once short rates had reached the effective lower bound. In addition, the Federal Reserve began providing more detailed forward guidance about the likely path of short-term rates. These "unconventional" policies were intended to lower longer-term interest rates once short rates had reached the effective lower bound.

QUESTION: ***What challenges does the Fed face in the aftermath of the financial crisis?***

ANSWER The Fed faces the challenge of raising interest rates and shrinking the quantity of reserves at an appropriate pace as the economy recovers and no longer needs the level of stimulus required post-crisis. The danger of raising rates too slowly is the risk of the economy overheating and inflation significantly overshooting the Fed's 2% target level; raising rates too quickly, on the other hand, could stall economic growth. As of March 2018, the Fed had raised rates six times, bringing the fed funds rate to almost 1.75%. It also began a gradual process of shrinking its massive balance sheet by diminishing its reinvestments of principal.

QUESTION: ***In the last 10 years we have witnessed a period of very low interest rates. Is this a new norm, or do you think rates will eventually rise to their historic averages?***

ANSWER The evidence suggests, and I concur, that low interest rates may be the "new norm" in developed countries. Short-term interest rates appeared to be falling in the United States and other developed countries even before the financial crisis. Estimates now place the "neutral rate"—the rate consistent with stable growth and low inflation—at a bit under 1% in real terms. Two key factors that influence the level of neutral rates are productivity growth and demographics. Productivity growth in most developed countries has been slow relative to the postwar period; at the same time, populations are aging and labor force growth has slowed. These factors tend to boost a society's saving rate and reduce investment spending, pushing the level of neutral rates down.

QUESTION: ***How will the recent tax cuts affect future Fed policy?***

ANSWER Monetary policy is designed to achieve the Fed's Congressionally mandated goals of maximum or "full" employment and 2% inflation. This means that all factors that affect these dimensions of economic performance will influence Fed policy. Tax cuts serve to boost domestic demand—both consumer and investment spending. Higher investment spending, over time, boosts the economy's capital stock and its potential output to some extent. Moreover, lower marginal tax rates may boost labor supply. Over the next few years, the demand impact of the spending increases and tax cuts seems likely to dominate any supply effects. With the economy near full employment, the Fed may need to raise interest rates a bit faster as a consequence.

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

The Credit Crisis and Bond Yields

The financial crisis that engulfed the world's economies in 2008 originated as a credit crisis that first emerged in August 2007. At that time, problems in the mortgage market had led to the bankruptcy of several large mortgage lenders. The default of these firms, and the downgrading of many of the bonds backed by mortgages these firms had made, caused many investors to reassess the risk of other bonds in their portfolios. As perceptions of risk increased, and investors attempted to move into safer U.S. Treasury securities, the prices of corporate bonds fell and so their credit spreads rose relative to Treasuries, as shown in Figure 6.7. Panel (a) shows the yield spreads for long-term corporate bonds, where we can see that spreads of even the highest-rated Aaa bonds increased dramatically, from a typical level of 0.5% to over 2% by the fall of 2008. Panel (b) shows a similar pattern for the rate banks had to pay on short-term loans compared to the yields of short-term Treasury bills. This increase in borrowing costs made it more costly for firms to raise the capital needed for new investment, slowing economic growth. The decline in these spreads in early 2009 was viewed by many as an important first step in mitigating the ongoing impact of the financial crisis on the rest of the economy.

Teaching Every Student to Think Finance

notation

C	cash flow	N	date of the last cash flow in a stream of cash flows
C_n	cash flow at date n	P	initial principal or deposit, or equivalent present value
FV	future value	PV	present value
FV_n	future value on date n	r	interest rate or rate of return
g	growth rate		

Simplified Presentation of Mathematics

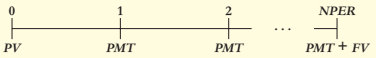
Because one of the hardest parts of learning finance for non-majors is mastering the jargon, math, and non-standardized notation, *Fundamentals of Corporate Finance* systematically uses:

- **Notation Boxes.** Each chapter begins with a Notation box that defines the variables and the acronyms used in the chapter and serves as a "legend" for students' reference.
- **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 summary and in end papers.
- **Timelines.** Introduced in Chapter 3, timelines are emphasized as the important first step in solving *every* problem that involves cash flows over time.
- **Financial Calculator** instructions, including a box in Chapter 4 on solving for future and present values, and appendices to Chapters 4, 6, and 15 with keystrokes for HP-10bII+ and TI BAII Plus calculators, highlight this problem-solving tool.
- **Spreadsheet Tables.** Select tables are available as Excel® files, enabling students to change inputs and manipulate the underlying calculations.
- **Using Excel** boxes describe Excel techniques and include screenshots to serve as a guide for students using this technology.

Using a Financial Calculator: Solving for Present and Future Values of Cash Flow Streams

So far, we have used formulas to compute present values and future values of cash flow streams. As we discussed at the end of Chapter 3, both financial calculators and spreadsheets have these formulas preprogrammed to quicken the process. In this box, we focus on financial calculators, but spreadsheets such as Excel have very similar shortcut functions.

Financial calculators have a set of functions that perform the calculations that finance professionals do most often. These functions are all based on the following timeline, which among other things can handle most types of loans:

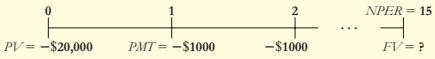


There are a total of five variables: number of periods (*N* or *NPER*), present value (*PV*), cash flow or "payment" (*PMT*), future value (*FV*), and the interest rate, denoted *I/Y*. Each function takes four of these variables as inputs and returns the value of the fifth one that ensures that the sum of the present value of the cash flows is zero.

By setting the recurring payments equal to 0, you could compute present and future values of single cash flows such as we have done above using Eqs. 4.2 and 4.1. In the examples shown in Sections 4.2 through 4.4, we will calculate cash flows using the PMT button. The best way to learn to use a financial calculator is by practicing. We present one example below. We will also show the calculator buttons for any additional examples in this chapter that can be solved with financial calculator functions. Finally, the appendix to this chapter contains step-by-step instructions for using the two most popular financial calculators.

Example

Suppose you plan to invest $20,000 in an account paying 8% interest. You will invest an additional $1000 at the end of each year for 15 years. How much will you have in the account in 15 years? We represent this problem with the following timeline:



To compute the solution, we enter the four variables we know, $N = 15$, $I/Y = 8$, $PV = -20{,}000$, $PMT = -\$1000$, and solve for the one we want to determine: *FV*. Specifically, for the HP-10bII+ or TI BAII Plus calculators:

1. Enter 15 and press the N button.
2. Enter 8 and press the I/Y button (I/YR for the HP calculator).
3. Enter −20,000 and press the PV button.
4. Enter −$1000 and press the PMT button.
5. Press the FV button (for the Texas Instruments calculator, press CPT and then FV).

	N	I/Y	PV	PMT	FV
Given:	15	8	−20,000	−1000	
Solve for:					90,595.50

Excel Formula: =FV(0.08,15,−1000,−20000)

The calculator then shows a future value of $90,595.50.

Note that we entered *PV* and *PMT* as negative numbers (the amounts we are putting *into* the bank), and *FV* is shown as a positive number (the amount we can take *out* of the bank). It is important to use signs correctly to indicate the direction in which the money is flowing when using the calculator functions. You will see more examples of getting the sign of the cash flows correct throughout the chapter.

Excel has the same functions, but it calls "N," "NPER" and "I/Y," "RATE." ***Also, it is important to note that you enter an interest rate of 8% as "8" in a financial calculator, but as "0.08" in Excel.***

TABLE 18.18
Pro Forma Statement of Cash Flows for KMS, 2019–2024

	Year	2019	2020	2021	2022	2023	2024
2	**Statement of Cash Flows ($000s)**						
3	**Net Income**		8,769	10,162	12,854	15,852	19,184
4	Depreciation		7,444	7,499	7,549	7,594	7,635
5	**Changes in Working Capital**						
6	Accounts Receivable		−2,561	−2,827	−3,144	−3,491	−3,872
7	Inventory		−2,696	−2,976	−3,309	−3,675	−4,076
8	Accounts Payable		2,157	2,381	2,647	2,940	3,261
9	**Cash from Operating Activities**		13,112	14,239	16,598	19,221	22,132
10	Capital Expenditures		−25,000	−8,000	−8,000	−8,000	−8,000
11	Other Investment		—	—	—	—	—
12	**Cash from Investing Activities**		−25,000	−8,000	−8,000	−8,000	−8,000
13	Net Borrowing		20,000	—	—	—	—
14	Dividends		−5,955	−3,858	−5,951	−8,280	−10,871
15	**Cash from Financing Activities**		14,045	−3,858	−5,951	−8,280	−10,871
16							
17	**Change in Cash (9 + 12 + 15)**		**2,157**	**2,381**	**2,647**	**2,940**	**3,261**

USING EXCEL
Capital Budgeting Using a Spreadsheet Program

Capital budgeting forecasts and analysis are most easily performed in a spreadsheet program. Here, we highlight a few best practices when developing your own capital budgets.

Create a Project Dashboard

All capital budgeting analyses begin with a set of assumptions regarding future revenues and costs associated with the investment. Centralize these assumptions within your spreadsheet in a project dashboard so they are easy to locate, review, and potentially modify. Here, we show an example for the HomeNet project.

	A	B	C	D	E	F	G	H	I
1		HOMENET KEY ASSUMPTIONS			Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
2		Units Sold (000s)				50	50	50	50	
3		Sale Price ($/unit)				260	260	260	260	
4		Cost of Goods ($/unit)				110	110	110	110	
5		Operating Expenses: Marketing, Support, and Rent				-2800	-2800	-2800	-2800	
6		Capital Expenditures: Lab Equipment			-7500					
7		Depreciation			0%	20%	20%	20%	20%	20%
8		Corporate Tax Rate			20%	20%	20%	20%	20%	20%
9		Receivables (% of Sales)			15%	15%	15%	15%	15%	15%
10		Payables (% of COGS)			15%	15%	15%	15%	15%	15%

Practice Finance to Learn Finance

KEY POINTS AND EQUATIONS	KEY TERMS
4.1 Valuing a Stream of Cash Flows • The present value of a cash flow stream is: $PV = C_0 + \frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2} + \cdots + \frac{C_N}{(1+r)^N}$ (4.3)	stream of cash flows, p. 122
4.2 Perpetuities • A perpetuity is a stream of equal cash flows C paid every period, forever. The present value of a perpetuity is: $PV(C \text{ in Perpetuity}) = \frac{C}{r}$ (4.4)	consol, p. 126 perpetuity, p. 126
4.3 Annuities • An annuity is a stream of equal cash flows C paid every period for N periods. The present value of an annuity is: $C \times \frac{1}{r}\left(1 - \frac{1}{(1+r)^N}\right)$ (4.5) • The future value of an annuity at the end of the annuity is: $C \times \frac{1}{r}\left((1+r)^N - 1\right)$ (4.6)	annuity, p. 129

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

End-of-Chapter Materials Reinforce Learning

Testing understanding of central concepts is crucial to learning finance.

- **The Chapter Summary** presents the key points and conclusions from each chapter, provides a list of key terms with page numbers, and indicates online practice opportunities.
- **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.
- **Integrative Cases** occur at the end of most parts and present a capstone extended problem for each part with a scenario and data for students to analyze based on that subset of chapters.

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:

1. Download the annual income statements, balance sheets, and cash flow statements for the last four fiscal years from Morningstar (www.morningstar.com). Enter each company's stock symbol and then go to "financials." Copy and paste the financial statements into Excel.

2. Find historical stock prices for each firm from Yahoo! Finance (finance.yahoo.com). Enter the stock symbol, click "Historical Prices" in the left column, and enter the proper date range to cover the last day of the month corresponding to the date 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 by the firm's historic stock price. You can find the number of shares by using "Basic" under "Weighted average shares outstanding" at the bottom of the Income Statement.

Preface

Finance professors are united by their commitment to shaping future generations of financial professionals as well as instilling financial awareness and skills in non-majors. Our goal with *Fundamentals of Corporate Finance* is to provide an accessible presentation for both finance and non-finance majors. We know from experience that countless undergraduate students have felt that corporate finance is challenging. It is tempting to make finance *seem* accessible by de-emphasizing the core principles and instead concentrating on the results. In our over 75 years of combined teaching experience, we have found that emphasizing the core concepts in finance—which are clear and intuitive at heart—is what makes the subject matter accessible. 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.

The 2007–2009 financial crisis was fueled in part by many practitioners' poor decision making when they did not understand—or chose to ignore—the core concepts that underlie finance and the pedagogy in this book. With this point in mind, we present finance as one unified whole based on two simple, powerful ideas: (1) valuation drives decision making—the firm should take projects for which the value of the benefits exceeds the value of the costs, and (2) in a competitive market, market prices (rather than individual preferences) determine values. We combine these two ideas with what we call the *Valuation Principle*, and from it we establish all of the key ideas in corporate finance.

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:

- Extensive updates made to Chapter 9 (Fundamentals of Capital Budgeting), Chapter 16 (Capital Structure), and Chapter 23 (International Corporate Finance).
- Added discussion of Finance and Technology (Fintech) in Chapter 1 (Corporate Finance and the Financial Manager).
- Added a new interview with Janet L. Yellen in Chapter 5 (Interest Rates).
- Incorporated new and/or revised features throughout, including Common Mistakes, Global Financial Crisis, Nobel Prize, and General Interest boxes, as well as Examples.
- Extensively revised and updated Data Cases and end-of-chapter problems, once again personally writing and solving each one.
- Updated tables and figures to reflect current data.
- Updates made throughout the text to reflect the Tax Cuts and Jobs Act of 2017.

Emphasis on Valuation

While the global financial crisis was not a formative experience for many of today's students, financial topics ranging from speculative start-up valuations to sovereign debt crises continue to dominate the news. As a result, today's undergraduate students arrive in the classroom with an interest in finance. We strive to use that natural interest and motivation to overcome their fear of the subject and communicate time-tested core principles. Again, we take what has worked in the classroom and apply it to the text: By providing examples involving familiar companies such as Starbucks and Apple, making consistent use of real-world data, and demonstrating personal finance applications of core concepts, we strive to keep both non-finance and finance majors engaged.

By learning to apply the Valuation Principle, students develop the skills to make the types of comparisons—among loan options, investments, projects, and so on—that turn them into knowledgeable, confident financial consumers and managers. When students see how to apply finance to their personal lives and future careers, they grasp that finance is more than abstract, mathematically based concepts.

Table of Contents Overview

Fundamentals of Corporate Finance offers coverage of the major topical areas for introductory-level undergraduate courses. Our focus is on financial decision making related to the corporation's choice of which investments to make or how to raise the capital required to fund an investment. We designed the book with the need for flexibility and with consideration of time pressures throughout the semester in mind.

Part **1**	**Introduction**	
	Ch. 1: Corporate Finance and the Financial Manager	Introduces the corporation and its governance; updated to include comparison of traditional trading venues, new electronic exchanges, and how the market for trading stocks is changing
	Ch. 2: Introduction to Financial Statement Analysis	Introduces key financial statements; Coverage of financial ratios has been centralized to prepare students to analyze financial statements holistically
Part **2**	**Interest Rates and Valuing Cash Flows**	
	Ch. 3: Time Value of Money: An Introduction	Introduces the Valuation Principle and time value of money techniques for single-period investments
	Ch. 4: Time Value of Money: Valuing Cash Flow Streams	Introduces the mechanics of discounting; Includes examples with non-annual interest rates that provide time value of money applications in a personal loan context
	Ch. 5: Interest Rates	Presents how interest rates are quoted and compounding for all frequencies; Discusses key determinants of interest rates and their relation to the cost of capital; New discussion of negative interest rates
	Ch. 6: Bonds	Analyzes bond prices and yields; Discusses credit risk and the effect of the financial crisis on credit spreads
	Ch. 7: Stock Valuation	Introduces stocks and presents the dividend discount model as an application of the time value of money

Part 3	**Valuation and the Firm**	
	Ch. 8: Investment Decision Rules	Introduces the NPV rule as the "golden rule" against which we evaluate other investment decision rules
	Ch. 9: 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; Using Excel boxes demonstrate best-practices and sensitivity analysis
	Ch. 10: Stock Valuation: A Second Look	Builds on capital budgeting material by valuing the ownership claim to the firm's free cash flows and discusses market efficiency and behavioral finance
Part 4	**Risk and Return**	
	Ch. 11: Risk and Return in Capital Markets	Establishes the intuition for understanding risk and return; Explains the distinction between diversifiable and systematic risk; New Global Financial Crisis box "Diversification Benefits During Market Crashes"
	Ch. 12: Systematic Risk and the Equity Risk Premium	Develops portfolio risk, the CAPM, beta and the Security Market Line
	Ch. 13: The Cost of Capital	Calculates and uses the firm's overall costs of capital with the WACC method; New Common Mistake box "Using a Single Cost of Capital in Multi-Divisional Firms
Part 5	**Long-Term Financing**	
	Ch. 14: Raising Equity Capital	Chapter-long example of Facebook from founding to SEO; Overview of the stages of equity financing, from venture capital to IPO to seasoned equity offerings; Discussion of crowdfunding and direct listings
	Ch. 15: Debt Financing	Overview of debt financing, including covenants, convertible bonds and call provisions; Other types of debt; Boxes on "Detroit's Art Museum at Risk" and "CDOs, Subprime Mortgages, and the Financial Crisis"
Part 6	**Capital Structure and Payout Policy**	
	Ch. 16: Capital Structure	Analyzes the tax benefits of leverage, including the debt tax shield; Discusses distress costs and the Tradeoff Theory
	Ch. 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
Part 7	**Financial Planning and Forecasting**	
	Ch. 18: Financial Modeling and Pro Forma Analysis	Demonstrates careful pro forma modeling of an expansion plan
	Ch. 19: Working Capital Management	Introduces the Cash Conversion Cycle and methods for managing working capital
	Ch. 20: Short-Term Financial Planning	Develops methods for forecasting and managing short-term cash needs
Part 8	**Special Topics**	
	Ch. 21: Option Applications and Corporate Finance	Introduces the concept of financial options, how they are used and exercised
	Ch. 22: Mergers and Acquisitions	Considers motives and methods for mergers and acquisitions, including leveraged buyouts
	Ch. 23: International Corporate Finance	Analyzes the valuation of projects with foreign currency cash flows with integrated or segregated capital markets

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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.

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PART 1

Introduction

Valuation Principle Connection. What is *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 own personal financial decisions as well.

In Part 1, we lay the foundation for our study of corporate finance. In Chapter 1, we begin 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 and analyze an important source of information for corporate decision making—the firm's accounting statements. These chapters will introduce us to the role and objective of the financial manager and some of the information the financial manager uses in applying the Valuation Principle to make optimal decisions. Then, in Part 2, we will introduce and begin applying the Valuation Principle.

Chapter 1
Corporate Finance and the Financial Manager

Chapter 2
Introduction to Financial Statement Analysis

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