

FUNDAMENTALS *of* CORPORATE FINANCE

FOURTH EDITION



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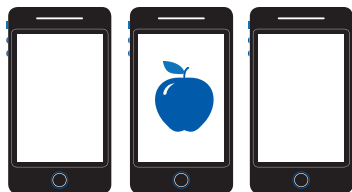
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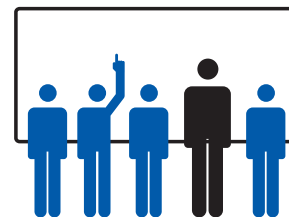
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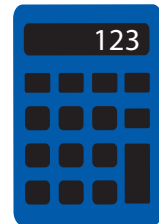
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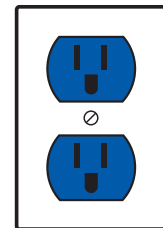
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COMMON SYMBOLS AND NOTATION

A	premerger total value of acquirer	P/E	price-earnings ratio
APR	annual percentage rate	$P\%$	fraction of the firm financed with preferred stock
APY	annual percentage yield	P_A	premerger share price of acquirer
β_i	beta of security i with respect to the market portfolio	P_{cum}	cum-dividend (with dividend) stock price
C	cash flow	P_E	price of common stock equity
$CapEx$	capital expenditures	P_{ex}	ex-dividend (without dividend) stock price
CCC	cash conversion cycle	P_{pfd}	price of preferred stock
C_{FC}	foreign currency cash flow	P_{rep}	stock price with share repurchase
C_n, CF_n	cash flow that arrives at date n	P_T	premerger share price of target
$Corr(R_i, R_j)$	correlation between the returns of security i and security j	P_t	price on date t
CPN	coupon payment on a bond	PV	present value
D	market value of debt	r	interest rate; discount rate; cost of capital
$D\%$	fraction of the firm financed with debt	\bar{R}	average return
Div_1	dividend due in one year	r_S	dollar risk-free interest rate
Div_{pfd}	dividend on preferred stock	r_S^*	dollar cost of capital
Div_t	dividends paid in year t	r_D	expected return (cost of capital) of debt
E	market value of equity	r_E	expected return (cost of capital) of equity
$E[R_i]$	expected return of security i	r_f	risk-free interest rate
$E[R_{Mkt}]$	expected return of the market portfolio	r_{FC}	foreign currency risk-free interest rate
$E[R_P]$	expected return of a portfolio	r_{FC}^*	foreign currency cost of capital
$E\%$	fraction of the firm financed with equity	R_i	return of security i
EAR	effective annual rate	r_n	interest rate or discount rate for an n -year term
$EBIT$	earnings before interest and taxes	ROA	return on assets
$EBITDA$	earnings before interest, taxes, depreciation, and amortization	ROE	return on equity
EPS_t	earnings per share on date t	R_P	return of portfolio P
F	forward exchange rate	r_{pfd}	required return (cost of capital) for preferred stock
FCF_t	free cash flow on date t	R_t	realized or total return of a security from date $t-1$ to t
FV	future value; face value of a bond	r_U	expected return (cost of capital) of unlevered equity
FV_n	future value on date n	r_{wacc}	weighted average cost of capital
g	growth rate	S	spot exchange rate; value of all synergies
IRR	internal rate of return	$SD(R_i)$	standard deviation (volatility) of the return of security i
m	number of compounding periods per year	SGR	sustainable growth rate
$MIRR$	modified internal rate of return	T	premerger total value of target
n	number of periods	T_C	marginal corporate tax rate
N	date of the last cash flow in a stream of cash flows; terminal date	$Var(R_i)$	variance of the return of security i
N_A	premerger number of shares of acquirer outstanding	V^L	value of the firm with leverage
NPV	net present value	V_0^L	initial levered value
N_T	premerger number of shares of target outstanding	V_t	enterprise value on date t
NWC_t	net working capital in year t	V^U	value of the unlevered firm
P	price; initial principal or deposit, or equivalent present value	w_i	fraction of the portfolio invested in security i (its relative <i>weight</i> in the portfolio)
		x	number of new shares issued by acquirer to pay for target
		y, YTM	yield to maturity
		YTC	yield to call on a callable bond



Fundamentals of
Corporate Finance

FOURTH EDITION

Jonathan
Berk

STANFORD UNIVERSITY

Peter
DeMarzo

STANFORD UNIVERSITY

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UNIVERSITY OF WASHINGTON



New York, NY

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and for being there. —J. B.*

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

*To Katrina, Evan, and Cole for your love and
support. —J. H.*

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Library of Congress Cataloging-in-Publication Data

Names: Berk, Jonathan B., 1962- author. | DeMarzo, Peter M., author. | Harford, Jarrad V. T., author.
Title: Fundamentals of corporate finance / Jonathan Berk, Peter DeMarzo, Jarrad Harford.
Description: 4th edition. | New York, NY : Prentice Hall, [2016]
Identifiers: LCCN 2016053928 | ISBN 9780134475561
Subjects: LCSH: Corporations--Finance.
Classification: LCC HG4026 .B464 2016 | DDC 658.15--dc23
LC record available at <https://lccn.loc.gov/2016053928>

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WEB CHAPTER 3 **Corporate Governance**

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Bridging Theory and Practice

EXAMPLE 7.1 Stock Prices and Returns

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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

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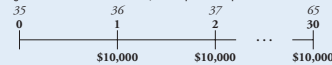
PROBLEM

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

$$\begin{aligned} FV &= \$10,000 \times \frac{1}{0.10} (1.10^{30} - 1) \\ &= \$10,000 \times 164.49 \\ &= \$1.645 \text{ million at age 65} \end{aligned}$$

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

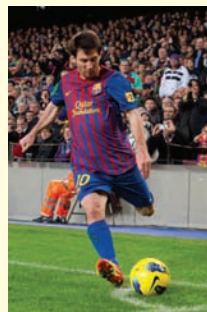
To be successful, students need to master the core concepts and learn to identify and solve problems that today's practitioners face.

- 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 2011, Albert Pujols signed a contract with the Los Angeles Angels that was repeatedly referred to as a "\$240 million" contract. The \$240 million comes from simply adding up all the payments Pujols would receive over the 10 years of the contract—treating dollars received in 10 years the same as dollars received today. The same thing occurred when Lionel Messi signed a contract extension with FC Barcelona in 2013, giving him a "\$150 million" contract through 2018, and in 2015 when Giancarlo Stanton signed a "\$325 million" 13-year contract with the Florida Marlins.



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.

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

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

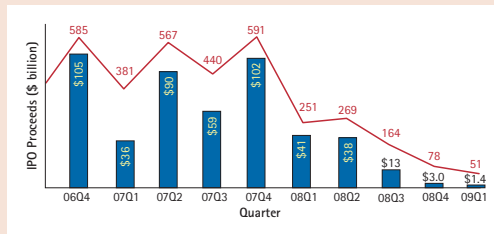
GLOBAL FINANCIAL CRISIS

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.

INTERVIEW WITH

KEVIN M. WARSH

Kevin M. Warsh, a lecturer at Stanford's Graduate School of Business and a distinguished visiting fellow at the Hoover Institution, was a Federal Reserve governor from 2006 to 2011, serving as chief liaison to the financial markets.

QUESTION: What are the main policy instruments used by central banks to control the economy?

ANSWER: The Federal Reserve (Fed) deploys several policy tools to achieve its goals of price stability, maximum sustainable employment, and financial stability. Lowering the federal funds short-term interest rate, the primary policy instrument, stimulates the economy. Raising the federal funds rate generally slows the economy. Buying and selling short-term U.S. Treasury securities through *open market operations* is standard practice. Prior to the 2007–2009 financial crisis, the Fed's balance sheet ranged from \$700–\$900 billion. But when the Fed was unable to lower interest rates further because rates were so close to zero already, it resorted to large-scale, longer-term *open market operations* to increase liquidity in the financial system in the hopes of stimulating the economy further, thus growing its balance sheet significantly. With *open mouth operations*, the Fed's announcements of its intent to buy or sell assets indicates its desired degree of future policy accommodation, often prompting markets to react by adjusting interest rates immediately. The Fed's Lender-of-Last-Resort authority allows it to lend money against good collateral to troubled institutions under certain conditions.

QUESTION: What factors limit the effectiveness of Fed policy?

ANSWER: Monetary policy does not act in isolation. Fiscal (taxing and spending), trade, and regulatory policies have huge consequences on the state of economic and financial conditions. In the short term, monetary policy can help buy time for an economy to improve, but it cannot cure structural failings of an economy in isolation or compensate for the country's growing indebtedness.

QUESTION: What tools did the Fed create to address the 2007–2009 financial crisis?

ANSWER: During the darkest days of the crisis, markets did not operate effectively, prices for securities did not clear, and banks and other financial institutions lacked clarity and confidence in the financial wherewithal of each other. One effective, innovative tool,

the *Term Auction Facility (TAF)*, stimulated the economy by providing cheap and readily available term funding to banks, large and small, on the front lines of the economy, thus encouraging them to extend credit to businesses and consumers. After reducing the policy rate to near zero to help revive the economy, the Fed instituted two *Quantitative Easing (QE)* programs—special purchases of government and agency securities—to increase money supply, promote lending, and according to some proponents, increase prices of riskier assets.

The Fed also addressed the global financial crisis by establishing temporary *central bank liquidity swap lines* with the European Central Bank and other major central banks. Using this facility, a foreign central bank is able to obtain dollar funding for its customers by swapping euros for dollars or another currency and agreeing to reverse the swap at a later date. The Fed does not take exchange rate risk, but it is subject to the credit risk of its central bank counterparty.

QUESTION: What tools is the European Central Bank (ECB) using to address the sovereign debt crisis? How does its approach compare to the Fed's approach to the 2007–2009 financial crisis?

ANSWER: As a novel economic federation, the ECB finds itself in a more difficult position than the Fed. The underlying economies and competitiveness are markedly different across the Eurozone—in Germany versus Greece, for example. From 2007 until mid-2010, many European financiers and policymakers believed that global financial crisis was largely American-made, with some strains exported to the continent. By mid-2010, however, they recognized that it was indeed a global crisis. The ECB is formally charged with a single mandate of ensuring price stability, rather than the broader mandate of the Fed. Still, its actions ultimately mirrored many of those undertaken by the Fed: lowering the effective policy rate to record lows, providing direct liquidity to the Eurozone's financial institutions to avoid a potential run on the banking system, and instituting the Security Market Purchase program (buying sovereign credit of some of its distressed countries).



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

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.

Using a Financial Calculator

Financial calculators are programmed to perform most present and future value calculations. However, we recommend that you develop an understanding of the formulas before using the shortcuts. We provide a more extensive discussion of financial calculators on page 95 and in the appendix to Chapter 4, but we’ll cover the relevant functions for this chapter here. To use financial calculator functions, you always enter the known values first and then the calculator solves for the unknown.

To answer Example 3.4 with a financial calculator, do the following:

Concept	Number of Periods	Interest Rate per Period	Recurring Payments	Future Value
Calculator Key	N	I/Y	PMT	FV
Enter	10	6	0	15000

Because you are solving for the present value (PV), press the **PV** key last (on an HP calculator), or press **CPT** then the **PV** key on a TI calculator. The calculator will return -8375.92 . Note that the calculator balances inflows with outflows, so because the FV is positive (an inflow), it returns the PV as a negative (an outflow).

If you were solving for the future value instead, you would enter:

N	I/Y	PV	PMT
10	6	-8375.92	0

And finally, on an HP, press the **FV** key or on a TI, press **CPT** and then the **FV** key.

- **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 Professional calculators, highlight this problem-solving tool.

- **Spreadsheet Tables.** Select tables are available on [MyFinanceLab](#) as Excel® files, enabling students to change inputs and manipulate the underlying calculations. Icons in the text show students where spreadsheets are available in the eText.

- **Using Excel** boxes describe Excel techniques and include screenshots to serve as a guide for students using this technology.

TABLE 18.18
Pro Forma Statement of Cash Flows for KMS, 2016–2021

1 Year	2016	2017	2018	2019	2020	2021
2 Statement of Cash Flows (\$000s)						
3 Net Income	7,600	8,807	11,141	13,739	16,627	
4 Depreciation	7,443	7,498	7,549	7,594	7,634	
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	11,942	12,884	14,884	17,107	19,574	
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	-4,786	-2,503	-4,237	-6,167	-8,313	
15 Cash from Financing Activities	15,214	-2,503	-4,237	-6,167	-8,313	
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	J
1	HomeNet Capital Budget									
2	Key Assumptions									
3	Revenues & Costs									
4	HomeNet Units Sold	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5			
5	HomeNet Ave. Price/Unit	\$ 260.00	\$ 260.00	\$ 260.00	\$ 260.00	\$ 260.00	\$ 260.00			
6	HomeNet Cost/Unit	\$ 110.00	\$ 110.00	\$ 110.00	\$ 110.00	\$ 110.00	\$ 110.00			
7	Operating Expenses									
8	Marketing, Support & Rent		(2,800)	(2,800)	(2,800)	(2,800)				
9	Capital Expenditures									
10	Purchase Equipment	(7,500)								
11	Other Assumptions									
12	Depreciation Schedule	0.0%	20.0%	20.0%	20.0%	20.0%	20.0%			
13	Corporate Tax Rate	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%			
14	Receivables (% sales)	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%			
15	Payables (% expenses)	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%			
16										

Practice Finance to Learn Finance

MyFinanceLab

Here is what you should know after reading this chapter. MyFinanceLab will help you identify what you know, and where to go when you need to practice.

KEY POINTS AND EQUATIONS

KEY TERMS

ONLINE PRACTICE

4.1 Valuing a Stream of Cash Flows

- The present value of a cash flow stream is:

$$PV = C_0 + \frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_N}{(1+r)^N} \quad (4.3)$$

stream of cash flows, p. 94

MyFinanceLab Study Plan 4.1

4.2 Perpetuities

- A perpetuity is a stream of equal cash flows C paid every period, forever. The present value of a perpetuity is:

$$PV(C \text{ in Perpetuity}) = \frac{C}{r} \quad (4.4)$$

consol, p. 98
perpetuity, p. 98

MyFinanceLab Study Plan 4.2

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:

$$C \times \frac{1}{r} \left(1 - \frac{1}{(1+r)^N} \right) \quad (4.5)$$

- The future value of an annuity at the end of the annuity is:

$$C \times \frac{1}{r} \left((1+r)^N - 1 \right) \quad (4.6)$$

annuity, p. 101

MyFinanceLab Study Plan 4.3

Interactive Annuity Calculator

Financial Calculator Tutorials: Calculating the Present Value of an Annuity and Solving for the Future Value of an Annuity

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. All end-of-chapter problems are available in MyFinanceLab, the fully integrated homework and tutorial system. Both the problems and solutions, which were also prepared by the authors, have been class-tested and accuracy checked to ensure quality. Excel icons indicate the availability of instructor solutions and student templates in the Textbook Resources tab of MyFinanceLab.

End-of-Chapter Materials Reinforce Learning

Testing understanding of central concepts is crucial to learning finance.

- MyFinanceLab 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:

- 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.
- 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 50 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

All text discussions and figures, tables, and facts have been updated to accurately reflect exciting developments in the field of finance in the last three years. Specific highlights include the following:

- **New Interviews** with Frank Hatheway, Chief Economist and Senior VP for NASDAQ; Ruth Porat, Senior VP and CFO of Alphabet and Google; Kevin Laws, COO of Angel-List; and Douglas Kehrung, Senior VP of Oracle.
- **Real-world examples** have been updated to reflect data through 2016.
- **New, Enhanced Media-Rich Pearson eText** includes Author Solution Videos that walk through the in-text examples using math, the financial calculator, and spreadsheets.
- **Using Excel boxes** have been updated and provide hands-on instruction of how to use Excel to solve financial problems and include screenshots to serve as a guide for students.
- **Added discussion of current issues** including negative interest rates, crowdfunding, new trading venues such as BATS and dark pools.

- **Added and revised end-of-chapter problems throughout the book**, once again personally writing and solving each one. In addition, every single problem is available in MyFinanceLab, the groundbreaking homework and tutorial system that accompanies the book.
- **We updated Data Cases and Integrative Cases** throughout the book, giving students a chance to apply the material with realistic data-analyzing exercises and problems that integrate material across chapters in each major part of the book.

Emphasis on Valuation

As painful as the financial crisis was, there is a silver lining: with the increasing focus on finance in the news, 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 rate

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	New chapter-long example of Facebook; Overview of the stages of equity financing, from venture capital to IPO to seasoned equity offerings; New box “Crowdfunding: The Wave of the Future?”
Ch. 15: Debt Financing	Overview of debt financing, including covenants, convertible bonds and call provisions; New section on other types of debt; New box on Detroit’s Art Museum at Risk”; and new Global Financial Crisis box “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 Trade-off 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; New section on seasonalities; and new box “Loan Guarantees: The Ex-Im Bank Controversy”
Part 8	Special Topics
Ch. 21: Option Applications and Corporate Finance	Introduces the concept of a 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
Online Chapters (on MyFinanceLab at www.myfinancelab.com)	
Leasing	Opportunities for course customization with online-only chapter offerings
Insurance and Risk Management	
Corporate Governance	

A Complete Instructor and Student Support Package

MyFinanceLab

Not every student learns the same way or at the same rate. With the growing need for acceleration through many courses, it's more important than ever to meet students where they learn. Personalized learning in the MyFinanceLab gives you the flexibility to incorporate the approach that best suits your course and your students.

Study Plan

The **Study Plan** acts as a tutor, providing personalized recommendations for each of your students based on his or her ability to master the learning objectives in your course. This allows students to focus their study time by pinpointing the precise areas they need to review, and allowing them to use customized practice and learning aids—such as videos, eText, tutorials, and more—to get them back on track. Using the report available in the Gradebook, you can then tailor course lectures to prioritize the content where students need the most support—offering you better insight into classroom and individual performance.

Dynamic Study Modules

Dynamic Study Modules help students study effectively on their own by continuously assessing their activity and performance in real time. Here's how it works: students complete a set of questions with a unique answer format that also asks them to indicate their confidence level. Questions repeat until the student can answer them all correctly and confidently. Once completed, Dynamic Study Modules explain the concept using materials from the text. These are available as graded assignments prior to class, and accessible on smartphones, tablets, and computers. NEW! Instructors can now remove questions from Dynamic Study Modules to better fit their course.

Enhanced eText

The **Enhanced eText** keeps students engaged in learning on their own time, while helping them achieve greater conceptual understanding of course material. The worked examples bring learning to life, and algorithmic practice allows students to apply the very concepts they are reading about. Combining resources that illuminate content with accessible self-assessment, MyFinanceLab with Enhanced eText provides students with a complete digital learning experience—all in one place.

And with the **Pearson eText 2.0 mobile app** (available for select titles) students can now access the Enhanced eText and all of its functionality from their computer, tablet, or mobile phone. Because students' progress is synced across all of their devices, they can

stop what they're doing on one device and pick up again later on another one—without breaking their stride.

Auto-Graded Excel Projects

Auto-graded Excel Projects allow instructors to seamlessly integrate Excel content into their course without having to manually grade spreadsheets. Students have the opportunity to practice important Finance skills in Microsoft Excel, helping them to master key concepts and gain proficiency with Excel.

Videos

Video clips available in MyFinanceLab profile well-known firms such as Boeing and Intel through interviews and analysis. The videos focus on core topical areas such as capital budgeting and risk and return. Author-created videos walk students through guided problem solutions for every in-text example.

Financial Calculator

The **Financial Calculator** is available as a smartphone application, as well as on a computer, and includes important functions such as cash flow, net present value, and internal rate of return. Fifteen helpful tutorial videos show the many ways to use the Financial Calculator in MyFinanceLab.

Interactive Figures

Select in-text graphs and figures have been digitally enhanced to allow students to interact with variables to affect outcomes and bring concepts to life.

Solutions Manual

The **Solutions Manual** provides students with detailed, accuracy-verified solutions to the problems in the book. The solutions, like the problems, were written by the authors themselves. Spreadsheet solutions in Excel, which allow the student to see the effect of changes in the input variables on the outcome, are also available to instructors for designated problems at the Instructor Resource Center (www.pearsonhighered.com/irc).

PowerPoint Presentations

The **PowerPoint Presentation**, authored by William Chittenden of Texas State University, is available in lecture form and includes art and tables from the book and additional examples. The PowerPoint presentation includes all tables and figures, examples, key terms, and spreadsheet tables from the textbook. All PowerPoint presentations are also available for download from the Instructor Resource Center at www.pearsonhighered.com/irc.

Test Bank

The **Test Bank** provides a wealth of accuracy-verified, algorithmic testing material. Each chapter offers a wide variety of true/false, short answer, and multiple-choice questions updated by Brian Nethercutt. Questions are verified by difficulty level and skill type, and correlated to the chapter topics. Numerical problems include step-by-step solutions and have been made algorithmic so they can be assigned for repeated practice.

TestGen

TestGen is a computerized test generation program, available exclusively from Pearson, that allows instructors to easily create and administer tests on paper, electronically, or

online. Instructors can select test items from the publisher-supplied test bank, which is organized by chapter and based on the associated textbook material, or create their own questions from scratch. With both quick-and-simple test creation and flexible and robust editing tools, TestGen is a complete test generator system for today's educators.

Instructor's Manual

The **Instructor's Manual** was written by Mary R. Brown of the University of Illinois–Chicago, and contains annotated chapter outlines, lecture launchers, and questions for further class discussion. It also contains the solutions to the Data Cases and part-ending case problems, as well as answers to the end-of-chapter Critical Thinking questions in the book. As an additional resource to guide instructors with students who are planning to take the CFA exam, CFA learning outcomes met in each chapter are listed. A section also details how the end-of-chapter problems map to the accreditation standards set by the Association to Advance Collegiate Schools of Business (AACSB), so that instructors can track students' mastery of the AACSB standards. The Instructor's Manual is available for download as Microsoft Word files or as Adobe® PDF files from the Instructor Resource Center at www.pearsonhighered.com/irc.

Acknowledgments

Given the scope of this project, identifying the many people who made it happen is a tall order. This textbook was the product of the expertise and hard work of many talented colleagues. We are especially gratified with the work of those who developed the array of print supplements that accompany the book: William Chittenden for the PowerPoint presentations; Mary R. Brown, for the Instructor's Manual; James Linck, for serving as advisor for the videos; and our MyFinanceLab content development team, including Melissa Honig, Miguel Leonarte, Noel Lotz, and Sarah Peterson. We're also deeply appreciative of Susan White's contributions to the part-ending cases.

Creating a truly error-free text is a challenge we could not have lived up to without our team of expert error checkers. Jared Stanfield subjected the text and problem solutions to his exacting standards. We are also indebted to Jared for his adept research support throughout the writing process and Michael Wittry's assistance in providing updates.

At Pearson Education, we would like to single out Donna Battista, for her continued leadership and market insight; Kate Fernandes for her energy and fresh perspective as our new editor; Melissa Honig for her digital media expertise; and our production team, Meredith Gertz and especially Gillian Hall, for expertly managing the transformation of our files into a beautiful bound book. They were helped by Kalpana Arumugam at Spi Global, whose team provided the fantastic composition and artwork. We are truly thankful for the indispensable help provided by these and other professionals.

We are indebted to our colleagues for the time and expertise invested as manuscript reviewers, class testers, and focus group participants. We list all of these contributors on the following pages, but want to single out one group, our First Edition editorial board, for special notice: Tom Berry, *DePaul University*; Elizabeth Booth, *Michigan State University*; Julie Dahlquist, the *University of Texas–San Antonio*; Michaël Dewally, *Marquette University*; Robert M. Donchez, the *University of Colorado–Boulder*; Belinda Mucklow, the *University of Wisconsin–Madison*; Coleen Pantalone, *Northeastern University*; and Susan White, the *University of Maryland*. We strived to incorporate every contributor's input and are truly grateful for each comment and suggestion. The book has benefited enormously from this input.

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PART



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. The focus of this book is how to make optimal corporate financial decisions. 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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1

Corporate Finance and the Financial Manager

LEARNING OBJECTIVES

- Grasp the importance of financial information in both your personal and business lives
- Understand the important features of the four main types of firms and see why the advantages of the corporate form have led it to dominate economic activity
- Explain the goal of the financial manager and the reasoning behind that goal, as well as understand the three main types of decisions a financial manager makes
- Know how a corporation is managed and controlled, the financial manager's place in it, and some of the ethical issues financial managers face
- Understand the importance of financial markets, such as stock markets, to a corporation and the financial manager's role as liaison to those markets
- Recognize the role that financial institutions play in the financial cycle of the economy

This book focuses on how people in corporations make financial decisions. Despite its name, much of what we discuss in corporate finance applies to the financial decisions made within any organization, including not-for-profit entities such as charities and universities. In this chapter, we introduce the four main types of firms. We stress corporations, however, because they represent 85% of U.S. business revenue. We also highlight the financial manager's critical role inside any business enterprise. What products to launch, how to pay to develop those products, what profits to keep and how to return profits to investors—all of these decisions and many more fall within corporate finance. The financial manager makes these decisions with the goal of maximizing the value of the business, which is determined in the financial markets. In this chapter and throughout the book, we will focus on this goal, provide you with the tools to make financial management decisions, and show you how the financial markets provide funds to a corporation and produce market prices that are key inputs to any financial manager's investment analysis.

1.1 Why Study Finance?

Finance and financial thinking are everywhere in our daily lives. Consider your decision to go to college. You surely weighed alternatives, such as starting a full-time job immediately, and then decided that college provided you with the greatest net benefit. More and more, individuals are taking charge of their personal finances with decisions such as:

- When to start saving and how much to save for retirement.
- Whether a car loan or lease is more advantageous.
- Whether a particular stock is a good investment.
- How to evaluate the terms of a home mortgage.

Our career paths have become less predictable and more dynamic. In previous generations, it was common to work for one employer your entire career. Today, that would be highly unusual. Most of us will instead change jobs, and possibly even careers, many times. With each new opportunity, we must weigh all the costs and benefits, financial and otherwise.

Some financial decisions, such as whether to pay \$2.00 for your morning coffee, are simple, but most are more complex. In your business career, you may face questions such as:

- Should your firm launch a new product?
- Which supplier should your firm choose?
- Should your firm produce a part of the product or outsource production?
- Should your firm issue new stock or borrow money instead?
- How can you raise money for your start-up firm?

In this book, you will learn how all of these decisions in your personal life and inside a business are tied together by one powerful concept, the *Valuation Principle*. The Valuation Principle shows how to make the costs and benefits of a decision comparable so that we can weigh them properly. Learning to apply the Valuation Principle will give you the skills to make the types of comparisons—among loan options, investments, and projects—that will turn you into a knowledgeable, confident financial consumer and manager.

From 2007 to 2009 we witnessed a credit freeze, a severe stock market decline, and the failures of well-known financial institutions. Attempts to understand these elements of the crisis, their origins, and how they affect our businesses and personal finances have highlighted the need for learning core financial principles and concepts.

Whether you plan to major in finance or simply take this one course, you will find the fundamental financial knowledge gained here to be essential in your personal and business lives.

1.2 The Four Types of Firms

We begin our study of corporate finance by examining the types of firms that financial managers run. As shown in Figure 1.1, There are 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.

sole proprietorship A business owned and run by one person.

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. In 2012, an estimated 72% of businesses in the United States were sole proprietorships, although they generated only 3% of the revenue.¹

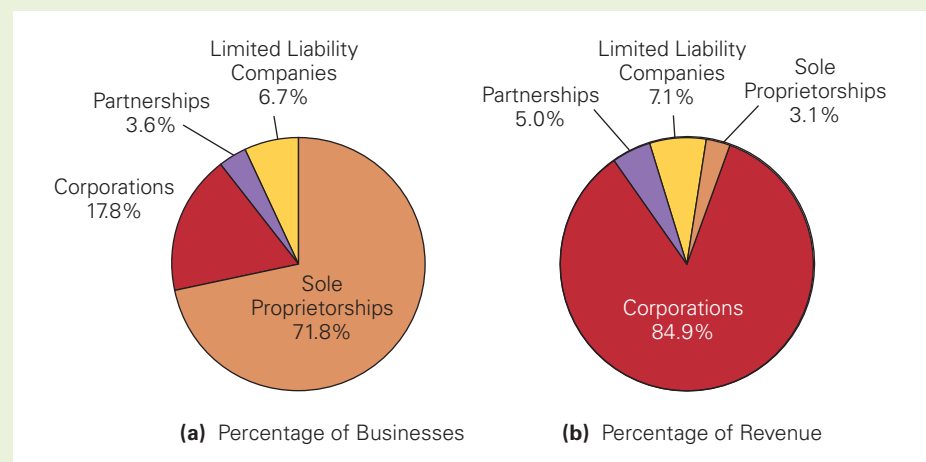
We now consider the key features of a sole proprietorship.

1. Sole proprietorships have the advantage of being 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 who runs the business. If there are other investors, they cannot hold an ownership stake in the firm.
3. The owner has unlimited personal liability for 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 a loan for which he or she is personally liable 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.

For most growing 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 another form. Conversion also has other benefits that we will consider as we discuss the other forms below.

FIGURE 1.1
Types of U.S. Firms

There are four major 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.

¹U.S. Census Bureau National Data Book.

Partnerships

partnership A business owned and run by more than one owner.

A **partnership** is a business owned and run by more than one owner. Key features include the following:

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 in the event of the death or withdrawal of any single partner.
3. 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 as 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, medical practices, and accounting firms are frequently 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 the firm's reputation.

limited partnership A partnership with two kinds of owners: general partners and limited partners.

A **limited partnership** is a partnership with two kinds of owners: general partners and limited partners. In this case, the general partners have the same rights and privileges as partners in any 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.

limited liability When an investor's liability is limited to her investment.

Limited Liability Companies

limited liability company (LLC) A limited partnership without a general partner.

A **limited liability company (LLC)** is like a limited partnership but without a general partner. That is, all the owners (referred to as *members*) have limited liability, but unlike limited partners, they can also run the business (as managing members). The LLC is a relatively new entity 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 first rose to prominence 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

corporation A legally defined, artificial being, separate from its owners.

A **corporation** is a legally defined, artificial being (a 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, and incur obligations, and 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.

In the same way that it is difficult to imagine modern business life without e-mail and cell phones, the corporation revolutionized the economy. On February 2, 1819, the U.S. Supreme Court established the legal precedent that the property of a corporation,

similar to that of a person, is private and entitled to protection under the U.S. Constitution.² This decision led to dramatic growth in the number of U.S. corporations from fewer than 1000 in 1830 to 50,000 in 1890. Today, the corporate structure is ubiquitous, not only in the United States (where it is responsible for 85% of business revenue), but all over the world.

Formation of a Corporation. A corporation 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. The state of 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 to the number of owners a corporation can have. Because most corporations have many owners, each owner owns only a 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**. Shareholders are 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 would be entitled to 25% of the total dividend payment.

An important 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 and anonymous trade in the shares of the corporation and provides one of the most important advantages of organizing a firm as a corporation. 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. Let's look at one of the world's largest firms, Microsoft Corporation, as an example. Microsoft reported annual revenue of \$93.6 billion over the 12 months from July 2014 through June 2015. The total value of the company (the owners' collective wealth in the company) as of June 2015 was \$354 billion. The company employed 118,000 people. Putting these numbers into perspective, treating the sales of \$93.6 billion as gross domestic product (GDP) in 2014 would rank Microsoft (just behind Slovak Republic) as the 62nd richest *country* (out of almost 200).³ The Slovak Republic has almost 5.4 million people, about 45 times as many people as employees at Microsoft. Indeed, if the number of Microsoft employees were used as the "population" of the corporation, Microsoft would rank just above Curacao as the 28th least populous country on Earth!

stock The ownership or equity of a corporation divided into shares.

equity The collection of all the outstanding shares of a corporation.

shareholder (also stockholder or equity holder) An owner of a share of stock or equity in a corporation.

dividend payments Payments made at the discretion of the corporation to its equity holders.

²The case was *Dartmouth v. Woodward* and the full text of John Marshall's decision can be found at www.constitution.org/dwebster/dartmouth_decision.htm.

³World Development Indicators database, April 11, 2016. For quick reference tables on GDP, go to <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.

Tax Implications for Corporate Entities

An important difference among the types of corporate 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

MyFinanceLab

PROBLEM

You are a shareholder in a corporation. The corporation earns \$5.00 per share before taxes. After it has paid taxes, it will distribute the rest of its earnings to you as a dividend (we make this simplifying assumption, but should note that most corporations retain some of their earnings for reinvestment). The dividend is income to you, so you will then pay taxes on these earnings. The corporate tax rate is 40% and your tax rate on dividend income is 15%. How much of the earnings remains after all taxes are paid?

SOLUTION

PLAN

Earnings before taxes: \$5.00 Corporate tax rate: 40% Personal dividend tax rate: 15%

To calculate the corporation's earnings after taxes, first we subtract the taxes paid at the corporate level from the pretax earnings of \$5.00. The taxes paid will be 40% (the corporate tax rate) of \$5.00. Since all of the after-corporate tax earnings will be paid to you as a dividend, you will pay taxes of 15% on that amount. The amount leftover is what remains after all taxes are paid.

EXECUTE

$\$5.00 \text{ per share} \times 0.40 = \2.00 in taxes at the corporate level, leaving $\$5.00 - \$2.00 = \$3.00$ in after-corporate tax earnings per share to distribute.

You will pay $\$3.00 \times 0.15 = \0.45 in taxes on that dividend, leaving you with $\$2.55$ from the original \$5.00 after all taxes.

EVALUATE

As a shareholder, you keep \$2.55 of the original \$5.00 in earnings; the remaining $\$2.00 + \$0.45 = \$2.45$ is paid as taxes. Thus, your total effective tax rate is $2.45/5 = 49\%$.

S corporations Those corporations that elect subchapter S tax treatment and are exempted by the U.S. Internal Revenue Service's tax code from double taxation.

S Corporations. The corporate organizational structure is the only organizational structure subject to double taxation. However, the U.S. Internal Revenue Code exempts **S corporations** from double taxation because they elect subchapter S tax treatment. Under subchapter S 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 Organization for Economic Co-operation and Development (OECD), and of these countries, only Ireland offers no relief whatsoever. A few countries,

including Australia, Finland, Mexico, New Zealand, and Norway, offer complete relief by effectively not taxing dividend income. The United States offers partial relief by having a lower tax rate on dividend income than on other sources of income. As of 2016, qualified dividends are taxed at 15% or 20%, depending on the investor's tax bracket, rates significantly below their personal income tax rate.

EXAMPLE 1.2

Taxation of S Corporation Earnings

MyFinanceLab

PROBLEM

Rework Example 1.1, assuming the corporation in that example has elected subchapter S tax treatment and your tax rate on non-dividend income is 30%.

SOLUTION

PLAN

Earnings before taxes: \$5.00 Corporate tax rate: 0% Personal tax rate: 30%

In this case, the corporation pays no taxes. It earned \$5.00 per share. In an S corporation, all income is treated as personal income to you, whether or not the corporation chooses to distribute or retain this cash. As a result, you must pay a 30% tax rate on those earnings.

EXECUTE

Your income taxes are $0.30 \times \$5.00 = \1.50 , leaving you with $\$5.00 - \$1.50 = \$3.50$ in after-tax earnings.

EVALUATE

The \$1.50 in taxes that you pay is substantially lower than the \$2.45 you paid in Example 1.1. As a result, you are left with \$3.50 per share after all taxes instead of \$2.55. However, note that in a C corporation, you are only taxed when you receive the income as a dividend, whereas in an S corporation, you pay taxes on the income immediately regardless of whether the corporation distributes it as a dividend or reinvests it in the company.

C corporations

Corporations that have no restrictions on who owns their shares or the number of shareholders; they cannot qualify for subchapter S tax treatment and are subject to direct taxation.

C Corporations. 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 tax treatment. Thus, most corporations are **C corporations**, which are corporations subject to corporate taxes.

As we have discussed, there are four main types of firms: sole proprietorships, partnerships (general and limited), limited liability companies, and corporations (“S” and “C”). To help you see the differences among them, Table 1.1 compares and contrasts the main characteristics of each.

TABLE 1.1
Characteristics of the Different Types of Firms

	Number of Owners	Liability for Firm's Debts	Owners Manage the Firm	Ownership Change Dissolves Firm	Taxation
Sole Proprietorship	One	Yes	Yes	Yes	Personal
Partnership	Unlimited	Yes; each partner is liable for the entire amount	Yes	Yes	Personal
Limited Partnership	At least one general partner (GP), no limit on limited partners (LP)	GP-Yes LP-No	GP-Yes LP-No	GP-Yes LP-No	Personal
Limited Liability Company	Unlimited	No	Yes	No*	Personal
S Corporation	At most 100	No	No (but they legally may)	No	Personal
C Corporation	Unlimited	No	No (but they legally may)	No	Double

*However, most LLCs require the approval of the other members to transfer your ownership.