



Essentials of Corporate Finance

The McGraw-Hill Education Series in Finance, Insurance, and Real Estate

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Seventeenth Edition

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Principles of Corporate Finance
Thirteenth Edition

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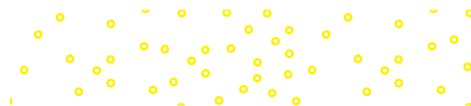
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Essentials of Corporate Finance

Tenth Edition

Stephen A. Ross

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Bradford D. Jordan
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**Mc
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ESSENTIALS OF CORPORATE FINANCE, TENTH EDITION

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About the Authors



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Stephen A. Ross was the Franco Modigliani Professor of Finance and Economics at the Sloan School of Management, Massachusetts Institute of Technology. One of the most widely published authors in finance and economics, Professor Ross was widely recognized for his work in developing the Arbitrage Pricing Theory and his substantial contributions to the discipline through his research in signaling, agency theory, option pricing, and the theory of the term structure of interest rates, among other topics. A past president of the American Finance Association, he also served as an associate editor of several academic and practitioner journals. He was a trustee of CalTech. He died suddenly in March 2017.



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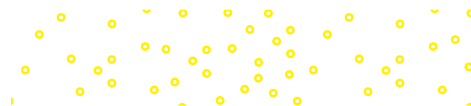
Randolph W. Westerfield is Dean Emeritus of the University of Southern California's Marshall School of Business and is the Charles B. Thornton Professor of Finance Emeritus. Professor Westerfield came to USC from the Wharton School, University of Pennsylvania, where he was the chairman of the finance department and member of the finance faculty for 20 years. He is a member of the Board of Trustees of Oak Tree Capital Mutual Funds. His areas of expertise include corporate financial policy, investment management, and stock market price behavior.



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Bradford D. Jordan is Professor of Finance and holder of the duPont Endowed Chair in Banking and Financial Services. He has a long-standing interest in both applied and theoretical issues in corporate finance and has extensive experience teaching all levels of corporate finance and financial management policy. Professor Jordan has published numerous articles on issues such as cost of capital, capital structure, and the behavior of security prices. He is a past president of the Southern Finance Association and is coauthor of *Fundamentals of Investments: Valuation and Management*, 8th edition, a leading investments text, also published by McGraw-Hill Education.





From the Authors

When we first wrote *Essentials of Corporate Finance*, we thought there might be a small niche for a briefer book that really focused on what students with widely varying backgrounds and interests needed to carry away from an introductory finance course. We were wrong. There was a huge niche! What we learned is that our text closely matches the needs of instructors and faculty at hundreds of schools across the country. As a result, the growth we have experienced through the first nine editions of *Essentials* has far exceeded anything we thought possible.

With the tenth edition of *Essentials of Corporate Finance*, we have continued to refine our focus on our target audience, which is the undergraduate student taking a core course in business or corporate finance. This can be a tough course to teach. One reason is that the class is usually required of all business students, so it is not uncommon for a majority of the students to be nonfinance majors. In fact, this may be the only finance course many of them will ever have. With this in mind, our goal in *Essentials* is to convey the most important concepts and principles at a level that is approachable for the widest possible audience.

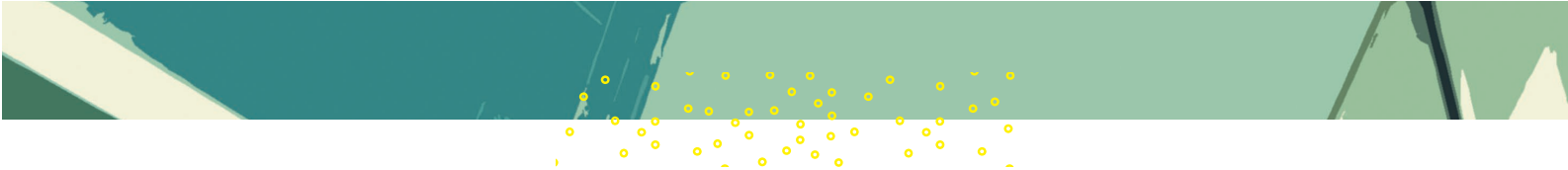
To achieve our goal, we have worked to distill the subject down to its bare essentials (hence, the name of this book), while retaining a decidedly modern approach to finance. We always have maintained that the subject of corporate finance can be viewed as the workings of a few very powerful intuitions. We also think that understanding the “why” is just as important, if not more so, than understanding the “how”—especially in an introductory course. Based on the gratifying market feedback we have received from our previous editions, as well as from our other text, *Fundamentals of Corporate Finance* (now in its twelfth edition), many of you agree.

By design, this book is not encyclopedic. As the table of contents indicates, we have a total of 18 chapters. Chapter length is about 30 pages, so the text is aimed squarely at a single-term course, and most of the book can be realistically covered in a typical semester or quarter. Writing a book for a one-term course necessarily means some picking and choosing, with regard to both topics and depth of coverage. Throughout, we strike a balance by introducing and covering the essentials (there’s that word again!) while leaving some more specialized topics to follow-up courses.

The other things we always have stressed, and have continued to improve with this edition, are readability and pedagogy. *Essentials* is written in a relaxed, conversational style that invites the students to join in the learning process rather than being a passive information absorber. We have found that this approach dramatically increases students’ willingness to read and learn on their own. Between larger and larger class sizes and the ever-growing demands on faculty time, we think this is an essential (!) feature for a text in an introductory course.

Throughout the development of this book, we have continued to take a hard look at what is truly relevant and useful. In doing so, we have worked to downplay purely theoretical issues and minimize the use of extensive and elaborate calculations to illustrate points that are either intuitively obvious or of limited practical use.

As a result of this process, three basic themes emerge as our central focus in writing *Essentials of Corporate Finance*:



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

A Unified Valuation Approach We treat net present value (NPV) as the basic concept underlying corporate finance. Many texts stop well short of consistently integrating this important principle. The most basic and important notion, that NPV represents the excess of market value over cost, often is lost in an overly mechanical approach that emphasizes computation at the expense of comprehension. In contrast, every subject we cover is firmly rooted in valuation, and care is taken throughout to explain how particular decisions have valuation effects.

A Managerial Focus Students shouldn't lose sight of the fact that financial management concerns management. We emphasize the role of the financial manager as decision maker, and we stress the need for managerial input and judgment. We consciously avoid "black box" approaches to finance, and, where appropriate, the approximate, pragmatic nature of financial analysis is made explicit, possible pitfalls are described, and limitations are discussed.

Today, as we prepare once again to enter the market, our goal is to stick with and build on the principles that have brought us this far. However, based on an enormous amount of feedback we have received from you and your colleagues, we have made this edition and its package even more flexible than previous editions. We offer flexibility in coverage and pedagogy by providing a wide variety of features in the book to help students learn about corporate finance. We also provide flexibility in package options by offering the most extensive collection of teaching, learning, and technology aids of any corporate finance text. Whether you use just the textbook, or the book in conjunction with other products, we believe you will find a combination with this edition that will meet your needs.

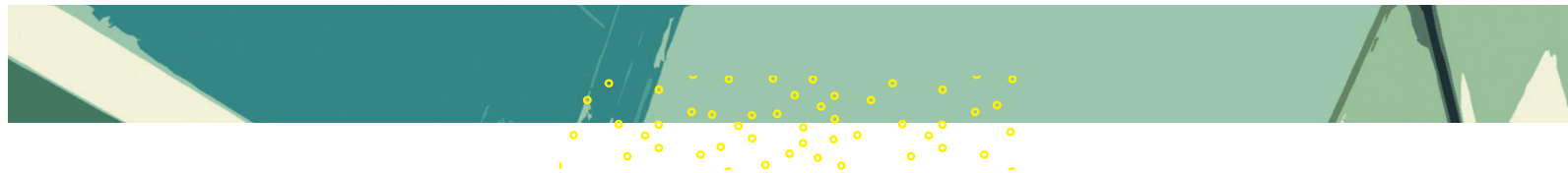
Randolph W. Westerfield
Bradford D. Jordan

Organization of the Text

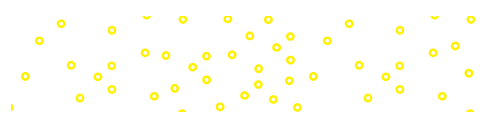
We designed *Essentials of Corporate Finance* to be as flexible and modular as possible. There are a total of nine parts, and, in broad terms, the instructor is free to decide the particular sequence. Further, within each part, the first chapter generally contains an overview and survey. Thus, when time is limited, subsequent chapters can be omitted. Finally, the sections placed early in each chapter are generally the most important, and later sections frequently can be omitted without loss of continuity. For these reasons, the instructor has great control over the topics covered, the sequence in which they are covered, and the depth of coverage.

Just to get an idea of the breadth of coverage in the tenth edition of *Essentials*, the following grid presents for each chapter some of the most significant new features, as well as a few selected chapter highlights. Of course, in every chapter, figures, opening vignettes, boxed features, and in-chapter illustrations and examples using real companies have been thoroughly updated as well. In addition, the end-of-chapter material has been completely revised.

Chapters	Selected Topics	Benefits to Users
PART ONE		
Overview of Financial Management		
Chapter 1	<p><i>New opener</i> discussing Uber</p> <p><i>Updated Finance Matters</i> box on corporate ethics</p> <p><i>Updated</i> information on executive and celebrity compensation</p> <p><i>Updated Work the Web</i> box on stock quotes</p> <p>Goal of the firm and agency problems</p> <p>Ethics, financial management, and executive compensation</p> <p><i>New proxy fight</i> example involving Trian Partners and Procter & Gamble</p> <p><i>New takeover battle</i> discussion involving Verizon and Yahoo!</p>	<p>Describes ethical issues in the context of mortgage fraud, offshoring, and tax havens.</p> <p>Highlights important developments regarding the very current question of appropriate executive compensation.</p> <p>Stresses value creation as the most fundamental aspect of management and describes agency issues that can arise.</p> <p>Brings in real-world issues concerning conflicts of interest and current controversies surrounding ethical conduct and management pay.</p>
PART TWO		
Understanding Financial Statements and Cash Flow		
Chapter 2	<p><i>New opener</i> discussing the Tax Cuts and Jobs Act of 2017</p> <p>Cash flow vs. earnings</p> <p>Market values vs. book values</p> <p><i>New discussion</i> of corporate taxes in light of the TCJA</p>	<p>Clearly defines cash flow and spells out the differences between cash flow and earnings.</p> <p>Emphasizes the relevance of market values over book values.</p>



Chapters	Selected Topics	Benefits to Users
Chapter 3	<p>Additional explanation of alternative formulas for sustainable and internal growth rates</p> <p><i>Updated</i> opener on PE ratios</p> <p><i>Updated</i> examples on Amazon vs. Alibaba</p> <p><i>Updated</i> <i>Work the Web</i> box on financial ratios</p> <p><i>Updated</i> <i>Finance Matters</i> box on financial ratios</p>	<p>Expanded explanation of growth rate formulas clears up a common misunderstanding about these formulas and the circumstances under which alternative formulas are correct.</p> <p>Discusses how to find and analyze profitability ratios.</p> <p>Describes how to interpret ratios.</p>
PART THREE Valuation of Future Cash Flows		
Chapter 4	<p>First of two chapters on time value of money</p> <p><i>Updated</i> <i>Finance Matters</i> box on collectibles</p>	<p>Relatively short chapter introduces just the basic ideas on time value of money to get students started on this traditionally difficult topic.</p>
Chapter 5	<p>Second of two chapters on time value of money</p> <p><i>Updated</i> opener on professional athletes' salaries</p> <p><i>Updated</i> <i>Finance Matters</i> box on lotteries</p> <p><i>Updated</i> <i>Finance Matters</i> box on student loans</p>	<p>Covers more advanced time value topics with numerous examples, calculator tips, and Excel spreadsheet exhibits. Contains many real-world examples.</p> <p>Provides a real-world example of why it's important to properly understand how to value costs incurred today versus future cash inflows.</p>
PART FOUR Valuing Stocks and Bonds		
Chapter 6	<p><i>New</i> opener on negative interest on various sovereign bonds</p> <p>Bond valuation</p> <p><i>Updated</i> bond features example using Sprint issue</p> <p>Interest rates and inflation</p> <p><i>Updated</i> "fallen angels" example using Teva Pharmaceuticals issue</p> <p>"Clean" vs. "dirty" bond prices and accrued interest</p> <p><i>Updated</i> Treasury quotes exhibit and discussion</p> <p><i>Updated</i> historic interest rates figure</p> <p>FINRA's TRACE system and transparency in the corporate bond market</p> <p>"Make-whole" call provisions</p>	<p>Discusses the importance of interest rates and how they relate to bonds.</p> <p>Thorough coverage of bond price/yield concepts.</p> <p>Highly intuitive discussion of inflation, the Fisher effect, and the term structure of interest rates.</p> <p>Clears up the pricing of bonds between coupon payment dates and also bond market quoting conventions.</p> <p>Up-to-date discussion of new developments in fixed income with regard to price, volume, and transactions reporting.</p> <p>Up-to-date discussion of relatively new type of call provision that has become very common.</p>



Chapters	Selected Topics	Benefits to Users
Chapter 7	<p>Stock valuation</p> <p><i>Updated</i> opener on difference in dividend payouts</p> <p><i>Updated</i> discussion of the NYSE, including its acquisition by ICE and rising role of technology of the floor</p> <p><i>Updated Finance Matters</i> box on the OTCBB and the Pink Sheets markets</p>	<p>Thorough coverage of constant and nonconstant growth models.</p> <p>Up-to-date description of major stock market operations.</p>
PART FIVE Capital Budgeting		
Chapter 8	<p><i>Updated</i> opener on GE's "Ecomagination" program</p> <p>First of two chapters on capital budgeting</p> <p>NPV, IRR, MIRR, payback, discounted payback, and accounting rate of return</p>	<p>Illustrates the growing importance of "green" business.</p> <p>Relatively short chapter introduces key ideas on an intuitive level to help students with this traditionally difficult topic.</p> <p>Consistent, balanced examination of advantages and disadvantages of various criteria.</p>
Chapter 9	<p>Project cash flow</p> <p><i>New</i> opener on project failures and successes</p> <p><i>New</i> discussion of bonus depreciation</p> <p>Scenario and sensitivity "what-if" analyses</p>	<p>Thorough coverage of project cash flows and the relevant numbers for a project analysis.</p> <p>Shows the importance of properly evaluating net present value.</p> <p>Illustrates how to actually apply and interpret these tools in a project analysis.</p>
PART SIX Risk and Return		
Chapter 10	<p><i>Updated</i> opener on stock market performance</p> <p>Capital market history</p> <p>Market efficiency</p> <p>Geometric vs. arithmetic returns</p> <p><i>Updated Finance Matters</i> box on professional fund management and performance</p>	<p>Discusses the relationship between risk and return as it relates to personal investing.</p> <p>Extensive coverage of historical returns, volatilities, and risk premiums.</p> <p>Efficient markets hypothesis discussed along with common misconceptions.</p> <p>Discusses calculation and interpretation of geometric returns. Clarifies common misconceptions regarding appropriate use of arithmetic vs. geometric average returns.</p>
Chapter 11	<p>Diversification, systematic, and unsystematic risk</p> <p><i>Updated</i> opener on stock price reactions to announcements</p> <p><i>Updated</i> beta coefficients exhibit and associated discussion</p> <p><i>New</i> discussion of alpha</p>	<p>Illustrates basics of risk and return in a straightforward fashion.</p> <p>Develops the security market line with an intuitive approach that bypasses much of the usual portfolio theory and statistics.</p>
PART SEVEN Long-Term Financing		
Chapter 12	<p>Cost of capital estimation</p> <p><i>Updated</i> WACC calculations for Eastman</p> <p>Geometric vs. arithmetic growth rates</p>	<p>Intuitive development of the WACC and a complete, web-based illustration of cost of capital for a real company.</p> <p>Both approaches are used in practice. Clears up issues surrounding growth rate estimates.</p>

Chapters	Selected Topics	Benefits to Users
	<i>Updated</i> section on company valuation with the WACC	Explores the difference between valuing a project and valuing a company.
Chapter 13	Basics of financial leverage Optimal capital structure <i>New</i> chapter opener on Tax Cuts and Jobs Act <i>New</i> discussion of the effects of the TCJA on corporate taxes Financial distress and bankruptcy	Illustrates effect of leverage on risk and return. Describes the basic trade-offs leading to an optimal capital structure. Briefly surveys the bankruptcy process.
Chapter 14	<i>Updated</i> opener with Apple dividend announcement <i>Updated</i> figures on aggregate dividends, stock repurchases, and proportion of firms paying dividends Dividends and dividend policy <i>Updated</i> examples and <i>Finance Matters</i> box covering buyback activity	Raises questions about why raising dividends and repurchasing stock would please investors. Brings students the latest thinking and evidence on dividend policy. Describes dividend payments and the factors favoring higher and lower payout policies. Includes recent survey results on setting dividend policy. Explores the reasons that buybacks are gaining in popularity now, following the recent recession.
Chapter 15	IPO valuation Dutch auctions <i>New</i> subsection on crowdfunding <i>New</i> subsection on initial coin offerings <i>New</i> discussion of direct listing <i>Updated</i> tables and figures on IPO initial returns and number of offerings	Extensive, up-to-date discussion of IPOs, including the 1999–2000 period and the recent Alibaba IPO. Explains uniform price (“Dutch”) auctions using Google IPO as an example. Discusses the JOBS Act and crowdfunding.
PART EIGHT	Short-Term Financial Management	
Chapter 16	Operating and cash cycles Short-term financial planning <i>Updated Finance Matters</i> box discussing operating and cash cycles	Stresses the importance of cash flow timing. Illustrates the creation of cash budgets and the potential need for financing. Explores how comparing the cash cycles of companies can reveal whether a company is performing well.
Chapter 17	Cash collection and disbursement Credit management Inventory management	Examination of systems used by firms to handle cash inflows and outflows. Analysis of credit policy and implementation. Brief overview of important inventory concepts.
PART NINE	Topics in Business Finance	
Chapter 18	<i>New</i> opener on corporate cash held in international accounts Foreign exchange International capital budgeting <i>Updated</i> discussion of exchange rates and political risk <i>New</i> discussion of the Tax Cuts and Jobs Act	Raises questions about how currency appreciation affects the broader economy. Covers essentials of exchange rates and their determination. Shows how to adapt the basic DCF approach to handle exchange rates. Discusses hedging and issues surrounding sovereign risk. Discusses how U.S. legislation changes the way that corporations manage their profits to minimize taxes.

Learning Solutions

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

Each feature can be categorized by the benefit to the student:

- Real financial decisions
- Application tools
- Study aids

REAL FINANCIAL DECISIONS

We have included two key features that help students connect chapter concepts to how decision makers use this material in the real world.

▼ CHAPTER-OPENING VIGNETTES

Each chapter begins with a contemporary real-world event to introduce students to chapter concepts.

FINANCE MATTERS

Exotic Bonds

Bonds come in many flavors. The unusual types are called “exotics” and can range from the fairly simple to the truly esoteric. Take the case of mortgage-backed securities (MBSs). MBSs are a type of securitized financial instrument. In securitization, cash flows from financial assets are pooled together into securities, and the securities are sold to investors. With an MBS, banks or mortgage brokers who originate mortgages sell the mortgages to a trust. The trust pools the mortgages and sells bonds to investors. Bondholders receive payments based on the mortgage payments made by homeowners. During 2008, problems with MBSs skyrocketed due to the precipitous drop in real estate values and the sharply increased default rates on the underlying mortgages.

The reverse convertible is a relatively new type of structured note. One type generally offers a high coupon rate, but the redemption at maturity can be paid in cash at par value or paid in shares of stock. For example, one recent General Motors (GM) reverse convertible had a coupon rate of 16 percent, which is a very high coupon rate in today’s interest rate environment. However, at maturity, if GM’s stock declined sufficiently, bondholders would receive a fixed number of GM shares that were worth less than par value. So, while the income portion of the bond return would be high, the potential loss in par value easily could erode the extra return.

CAT bonds are issued to cover insurance companies against natural catastrophes. The type of natural catastrophe is outlined in the bond. For example, about 30 percent of all CAT bonds protect against a North Atlantic hurricane. The way these issues are structured is that the borrowers can suspend payment temporarily (or even permanently) if they have significant hurricane-related losses. These CAT bonds may seem like pretty risky investments, but, to date, only five have not been paid in full. Because of Hurricane Katrina, CAT bondholders lost \$190 million. CAT bondholders also lost \$200 million due to the 2011 tsunami in Japan. During 2011, two other CAT bond issues, each worth \$100 million, were triggered due to an unusually active tornado season, and a CAT bond was triggered due to the 2017 earthquake in Mexico. This bond was issued on August 4th and the earthquake occurred on September 7th.

Perhaps the most unusual bond (and certainly the most ghastly!) is the “death bond.” Companies such as Stone Street Financial purchase life insurance policies from individuals who are expected to die within the next 10 years. They then sell bonds that are paid off from the life insurance proceeds received when the policyholders die. The return on the bonds to investors depends on how long the policyholders live. A major risk is that if medical treatment advances quickly, it will raise the life expectancy of the policyholders, thereby decreasing the return to the bondholder.

PART FOUR Valuing Stocks and Bonds

6 Interest Rates and Bond Valuation

Generally, when you make an investment, you expect that you will get back more money in the future than you invested today. But in December 2017, this wasn’t the case for many bond investors. The yield on a 5-year German government bond was about negative .20 percent, and the yields on 2-year and 5-year Japanese government bonds were negative .34 percent and negative .09 percent, respectively. In fact, in 2016, the amount of debt worldwide that had a negative yield reached a record \$13.4 trillion! And negative yields were not restricted to government bonds, as at one point the yield on a bond issued by chocolate maker Nestlé was negative as well.

So what happened? Central banks were in a race to the bottom, lowering interest rates in an attempt to improve their domestic economies.

This chapter takes what we have learned about the time value of money and shows how it can be used to value one of the most

LEARNING OBJECTIVES

After studying this chapter, you should be able to:

- LO 1 Identify important bond features and types of bonds.
- LO 2 Describe bond values and why they fluctuate.
- LO 3 Discuss bond ratings and what they mean.
- LO 4 Evaluate the impact of inflation on interest rates.
- LO 5 Explain the term structure of interest rates and the determinants of bond yields.

▲ FINANCE MATTERS BOXES

Most chapters include at least one *Finance Matters* box, which takes a chapter issue and shows how it is being used right now in everyday financial decision making.

APPLICATION TOOLS

Because there is more than one way to solve problems in corporate finance, we include many sections that encourage students to learn or brush up on different problem-solving methods, including financial calculator and Excel spreadsheet skills.

▼ CHAPTER CASES

Located at the end of most chapters, these cases focus on hypothetical company situations that embody corporate finance topics. Each case presents a new scenario, data, and a dilemma. Several questions at the end of each case require students to analyze and focus on all of the material they learned from the chapters in that part. These are great for homework or in-class exercises and discussions!

▼ WORK THE WEB

These in-chapter boxes show students how to research financial issues using the web and how to use the information they find to make business decisions. All the *Work the Web* boxes also include interactive follow-up questions and exercises.

WORK THE WEB

Bond quotes have become more available with the rise of the web. One site where you can find current bond prices (from TRACE) is finra-markets.morningstar.com/BondCenter. We went to the site and entered "AZO" for AutoZone, the well-known auto parts company. We found a total of 10 bond issues outstanding. Here you see the information we pulled up.

Issuer Name	Symbol	Callable	Sub-Product	Type	Coupon	Maturity	Ratings		Last Sale
							Moody	S&P	
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555
AUTOZONE INC	AZ03090599	Yes	Corporate	Bond	3.125	07/15/2023	Baa1	BBB	97.554 3.555

Most of the information is self-explanatory. The Price and Yield columns show the price and yield to maturity of the issues based on their most recent sales. If you need more information about a particular issue, clicking on it will give you more details such as coupon dates and call dates.

QUESTIONS

- Go to this website and find the last bond shown in the accompanying table. When was this bond issued? What was the size of the bond issue? What were the yield to maturity and price when the bond was issued?
- When you search for Chevron bonds (CVX), you will find bonds for several companies listed. Why do you think Chevron has bonds issued with different corporate names?

204 PART 4 Valuing Stocks and Bonds

CHAPTER CASE

Financing S&S Air's Expansion Plans with a Bond Issue

Mark Sexton and Todd Story, the owners of S&S Air, have decided to expand their operations. They instructed their newly hired financial analyst, Chris Guthrie, to enlist an underwriter to help sell \$20 million in new 10-year bonds to finance construction. Chris has entered into discussions with Renata Harper, an underwriter from the firm of Crowe & Mallard, about which bond features S&S Air should consider and what coupon rate the issue will likely have.

Although Chris is aware of the bond features, he is uncertain as to the costs and benefits of some features, so he isn't clear on how each feature would affect the coupon rate of the bond issue. You are Renata's assistant, and she has asked you to prepare a memo to Chris describing the effect of each of the following bond features on the coupon rate of the bond. She also would like you to list any advantages or disadvantages of each feature.

QUESTIONS

- The security of the bond—that is, whether the bond has collateral.
- The seniority of the bond.
- The presence of a sinking fund.
- A call provision with specified call dates and call price.
- A deferred call accompanying the preceding call provision.
- A make-whole call provision.
- Any positive covenants. Also, discuss several possible positive covenants S&S Air might consider.
- Any negative covenants. Also, discuss several possible negative covenants S&S Air might consider.
- A conversion feature (note that S&S Air is not a publicly traded company).
- A floating rate coupon.

EXPLANATORY WEB LINKS ►

These web links are provided in the margins of the text. They are specifically selected to accompany text material and provide students and instructors with a quick way to check for additional information using the internet.

To learn more about TRACE, visit www.finra.org.

To purchase newly issued corporate bonds, go to www.incapital.com.

Bond Price Reporting

In 2002, transparency in the corporate bond market began to improve dramatically. U.S. new regulations, corporate bond dealers are now required to report trade information through what is known as the Trade Reporting and Compliance Engine (TRACE). A *Work the Web* box shows how to get TRACE prices.

As we mentioned before, the U.S. Treasury market is the largest securities market in the world. As with bond markets in general, it is an OTC market, so there is limited transparency. However, unlike the situation with bond markets in general, trading in Treasury is particularly recently issued ones, is very heavy. Each day, representative prices for outstanding Treasury issues are reported.

Figure 6.3 shows a portion of the daily Treasury note and bond listings from *The Wall Street Journal* online. The only difference between a Treasury note and a Treasury bond is that have 10 years or less to maturity at the time of issuance. The entry that begins "5/15/2030" highlighted. Reading from left to right, the "5/15/2030" tells us that the bond's maturity is 5/15/2030. The 6.250 is the bond's coupon rate. Treasury bonds all make semiannual pay.

WHAT'S ON THE WEB? ►

These end-of-chapter activities show students how to use and learn from the vast amount of financial resources available on the internet.

- 6.1 Bond Quotes** You can find current bond prices at finra-markets.morningstar.com/BondCenter. You want to find the bond prices and yields for bonds issued by Pfizer. Enter the ticker symbol "PFE" to do a search. What is the shortest-maturity bond issued by Pfizer that is outstanding? What is the longest-maturity bond? What is the credit rating for Pfizer's bonds? Do all of the bonds have the same credit rating? Why do you think this is?
- 6.2 Yield Curves** You can find information regarding the most current bond yields at

WHAT'S ON THE WEB?

HOW TO CALCULATE BOND PRICES AND YIELDS USING A FINANCIAL CALCULATOR

Many financial calculators have fairly sophisticated built-in bond valuation routines. However, these vary quite a lot in implementation, and not all financial calculators have them. As a result, we will illustrate a simple way to handle bond problems that will work on just about any financial calculator.

To begin, of course, we first remember to clear out the calculator! Next, for Example 6.3, we have two bonds to consider, both with 12 years to maturity. The first one sells for \$935.08 and has a 10 percent coupon rate. To find its yield, we can do the following:

Enter	12	100	-935.08	1,000
	N	I/Y	PMT	PV
Solve for		11		

Notice that here we have entered both a future value of \$1,000, representing the bond's face value, and a payment of 10 percent of \$1,000, or \$100, per year, representing the bond's annual coupon. Also notice that we have a negative sign on the bond's price, which we have entered as the present value.

For the second bond, we now know that the relevant yield is 11 percent. It has a 12 percent coupon

CALCULATOR HINTS

◀ CALCULATOR HINTS

Calculator Hints is a self-contained section occurring in various chapters that first introduces students to calculator basics and then illustrates how to solve problems with the calculator. Appendix D goes into more detailed instructions by solving problems with two specific calculators.

EXCEL MASTER ICONS ►

Topics covered in the comprehensive Excel Master supplement (found in ^{PV}Connect) are indicated by an icon in the margin.

6.1 BONDS AND BOND VALUATION



When a corporation (or government) wishes to borrow money from the public on a long-term basis, it usually does so by issuing, or selling, debt securities that are generically called bonds. In this section, we describe the various features of corporate bonds and some of the terminology associated with bonds. We then discuss the cash flows associated with a bond and how bonds can be valued using our discounted cash flow procedure.

SPREADSHEET STRATEGIES ►

The unique *Spreadsheet Strategies* feature is also in a self-contained section, showing students how to set up spreadsheets to solve problems—a vital part of every business student's education.

SPREADSHEET STRATEGIES

HOW TO CALCULATE BOND PRICES AND YIELDS USING A SPREADSHEET

Like financial calculators, most spreadsheets have fairly elaborate routines available for calculating bond values and yields; many of these routines involve details that we have not discussed. However, setting up a simple spreadsheet to calculate prices or yields is straightforward, as our next two spreadsheets show.

	A	B	C	D	E	F	G	H
1								
2	Using a spreadsheet to calculate bond yields							
3								
4	Suppose we have a bond with 22 years to maturity, a coupon rate of 8 percent, and a price of							
5	\$960.17. If the bond makes semiannual payments, what is its yield to maturity?							
6								
7	Settlement date:	1/1/00						
8	Maturity date:	1/1/22						
9	Annual coupon rate:	.08						
10	Bond price (% of par):	96.017						
11	Face value (% of par):	100						
12	Coupons per year:	2						
13	Yield to maturity:	.084						
14								

INTERMEDIATE (Questions 18–33)



LO 2 18. Bond Price Movements. Bond X is a premium bond making semiannual payments. The bond has a coupon rate of 7.5 percent, a YTM of 6 percent, and 13 years to maturity. Bond Y is a discount bond making semiannual payments. This bond has a coupon rate of 6 percent, a YTM of 7.5 percent, and also 13 years to maturity. What are the prices of these bonds today assuming both bonds have a \$1,000 par value? If interest rates remain unchanged, what do you expect the prices of these bonds to be in one year? In three years? In eight years? In 12 years? What's going on here? Illustrate your answers by graphing bond prices versus time to maturity.



LO 2 19. Interest Rate Risk. Both Bond Bill and Bond Ted have 5.8 percent coupons, make semiannual payments, and are priced at par value. Bond Bill has 5 years to maturity, whereas Bond Ted has 25 years to maturity. If interest rates suddenly rise by 2 percent, what is the percentage change in the price

◀ EXCEL SIMULATIONS

Indicated by an Excel icon next to applicable end-of-chapter questions and problems, Excel simulation exercises are available for selected problems in Connect. For even more spreadsheet practice, check out Excel Master, also available in Connect.

STUDY AIDS

We want students to get the most from this book and this course, and we realize that students have different learning styles and study needs. We therefore present a number of study features to appeal to a wide range of students.

▼ LEARNING OBJECTIVES

Each chapter begins with a number of learning objectives that are key to the student's understanding of the chapter. Learning objectives also are linked to end-of-chapter problems and test bank questions.

▼ PEDAGOGICAL USE OF COLOR

We continue to use a full-color palette in *Essentials* not only to make the text more inviting, but, more important, as a functional element to help students follow the discussion. In almost every chapter, color plays an important, largely self-evident role.

LEARNING OBJECTIVES

After studying this chapter, you should be able to:

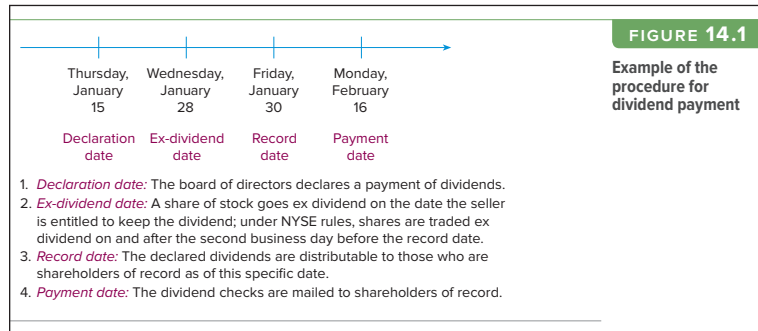
- LO 1** Determine the future value and present value of investments with multiple cash flows.
- LO 2** Calculate loan payments, and find the interest rate on a loan.
- LO 3** Describe how loans are amortized or paid off.
- LO 4** Explain how interest rates are quoted (and misquoted).

What do professional athletes Alex Avila, Yu Darvish, and Jimmy Garoppolo have in common? All three signed big contracts in 2018. The contract values were reported as \$8.25 million, \$126 million, and \$137.5 million, respectively. That's definite major league money, but, even so, reported numbers like these can be misleading. For example, in January 2018, Avila signed with the Arizona Diamondbacks. His contract called for a salary of \$4 million in 2018 and \$4.25 million for 2019. Not bad, especially for someone who makes a living using the "tools of ignorance" (jock jargon for catcher's equipment).

A closer look at the numbers shows that Alex, Yu, and Jimmy did pretty well, but nothing like the quoted figures. Using Yu's contract as an example, although the value was reported to be

FIGURE 14.1

Example of the procedure for dividend payment



CRITICAL THINKING QUESTIONS ►

Every chapter ends with a set of critical thinking questions that challenge the students to apply the concepts they learned in the chapter to new situations.

CRITICAL THINKING AND CONCEPTS REVIEW

- LO 2** **14.1 Dividend Policy Irrelevance.** How is it possible that dividends are so important, but, at the same time, dividend policy is irrelevant?
- LO 4** **14.2 Stock Repurchases.** What is the impact of a stock repurchase on a company's debt ratio? Does this suggest another use for excess cash?
- LO 1** **14.3 Life Cycle Theory of Dividends.** Explain the life cycle theory of dividend payments. How does it explain corporate dividend payments that are seen in the stock market?
- LO 1** **14.4 Dividend Chronology.** On Friday, December 8, Hometown Power Co.'s board of directors declares a dividend of 75 cents per share payable on Wednesday, January 17, to shareholders of record as of Wednesday, January 3. When is the ex-dividend date? If a shareholder buys stock before that date, who gets the dividends on those shares, the buyer or the seller?
- LO 1** **14.5 Alternative Dividends.** Some corporations, like one British company that offers its large shareholders free crematorium use, pay dividends in kind (i.e., offer their services to shareholders at below-market cost). Should mutual funds invest in stocks that pay these dividends in kind? (The fundholders do not receive these services.)

CONCEPT QUESTIONS

- 6.1a** What are the cash flows associated with a bond?
- 6.1b** What is the general expression for the value of a bond?
- 6.1c** Is it true that the only risk associated with owning a bond is that the issuer will not make all the payments? Explain.

◀ CONCEPT QUESTIONS

Chapter sections are intentionally kept short to promote a step-by-step, building-block approach to learning. Each section is then followed by a series of short concept questions that highlight the key ideas just presented. Students use these questions to make sure they can identify and understand the most important concepts as they read.

EXAMPLE 11.4 Portfolio Variance and Standard Deviation

In Example 11.3, what are the standard deviations on the two portfolios? To answer, calculate the portfolio returns in the two states. We will work with the second portfolio 50 percent in Stock A and 25 percent in each of Stocks B and C. The relevant calculations are summarized as follows:

State of Economy	Probability of State	Returns		
		Stock A	Stock B	Stock C
Boom	.40	10%	15%	20%
Bust	.60	8	4	0

NUMBERED EXAMPLES

Separate numbered and titled examples are extensively integrated into the chapters. These examples provide detailed applications and illustrations of the text material in a step-by-step format. Each example is completely self-contained so that students don't have to search for additional information. Based on our classroom testing, these examples are among the most useful learning aids because they provide both detail and explanation.

SUMMARY TABLES

These tables succinctly restate key principles, results, and equations. They appear whenever it is useful to emphasize and summarize a group of related concepts.

I. Internal growth rate		TABLE 3.9 Summary of internal and sustainable growth rates
$\text{Internal growth rate} = \frac{\text{ROA} \times b}{1 - \text{ROA} \times b}$ <p>where</p> <p>ROA = Return on assets = Net income/Total assets b = Plowback (retention) ratio = Addition to retained earnings/Net income = 1 - Dividend payout ratio</p> <p>The internal growth rate is the maximum growth rate that can be achieved with no external financing of any kind.</p>		
II. Sustainable growth rate $\text{Sustainable growth rate} = \frac{\text{ROE} \times b}{1 - \text{ROE} \times b}$ <p>where</p> <p>ROE = Return on equity = Net income/Total equity b = Plowback (retention) ratio = Addition to retained earnings/Net income = 1 - Dividend payout ratio</p> <p>The sustainable growth rate is the maximum growth rate that can be achieved with no external equity financing while maintaining a constant debt-equity ratio.</p>		

3.2 RATIO ANALYSIS



financial ratios
Relationships determined from a firm's financial

Another way of avoiding the problems involved in comparing companies of different sizes is to calculate and compare **financial ratios**. Such ratios are ways of comparing and investigating the relationships between different pieces of financial information. We cover some of the more common ratios next, but there are many others that we don't touch on.

One problem with ratios is that different people and different sources frequently don't compute them in exactly the same way, and this leads to much confusion. The specific definitions we use here may or may not be the same as ones you have seen or will see elsewhere.

KEY TERMS

These are printed in blue the first time they appear and are defined within the text and in the margin.

KEY EQUATIONS

These are called out in the text and identified by equation numbers. Appendix B shows the key equations by chapter.

Total Debt Ratio	The <i>total debt ratio</i> takes into account all debts of all maturities to all creditors. It can be defined in several ways, the easiest of which is:	
	$\text{Total debt ratio} = \frac{\text{Total assets} - \text{Total equity}}{\text{Total assets}}$ $= \frac{\$3,630 - 2,625}{\$3,630} = .28 \text{ times}$	(3.4)
	In this case, an analyst might say that Prufrock uses 28 percent debt. ¹ Whether this is high or low or whether it even makes any difference depends on whether or not capital structure matters, a subject we discuss in a later chapter.	
	Prufrock has \$.28 in debt for every \$1 in total assets. Therefore, there is \$.72 in equity (= \$1 - .28) for every \$.28 in debt. With this in mind, we can define two useful variations on the total debt ratio, the <i>debt-equity ratio</i> and the <i>equity multiplier</i> :	
	$\text{Debt-equity ratio} = \frac{\text{Total debt}}{\text{Total equity}}$ $= \frac{\$28}{\$72} = .38 \text{ times}$	(3.5)
	$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Total equity}}$ $= \frac{\$1}{\$72} = 1.38 \text{ times}$	(3.6)
	The fact that the equity multiplier is 1 plus the debt-equity ratio is not a coincidence:	
	$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Total equity}} = \frac{\$1}{\$72} = 1.38 \text{ times}$ $= \frac{(\text{Total equity} + \text{Total debt})}{\text{Total equity}}$ $= 1 + \text{Debt-equity ratio} = 1.38 \text{ times}$	
	The thing to notice here is that given any one of these three ratios, you can immediately calculate the other two, so they all say exactly the same thing.	
	Times Interest Earned Another common measure of long-term solvency is the <i>times interest earned</i> (TIE) ratio. Once again, there are several possible (and common) definitions, but we'll stick with the most traditional:	
	$\text{Times interest earned ratio} = \frac{\text{EBIT}}{\text{Interest}}$ $= \frac{\$241}{\$46} = 5.26 \text{ times}$	(3.7)
	As the name suggests, this ratio measures how well a company has its interest obligations covered, and it is often called the interest coverage ratio. For Prufrock, the interest bill is covered 5.26 times over.	

Maximize the market value of the existing owners' equity.

HIGHLIGHTED PHRASES

Throughout the text, important ideas are presented separately and printed in boxes to indicate their importance to the students.

SUMMARY AND CONCLUSIONS

This chapter has described how to go about putting together a discounted cash flow analysis and evaluating the results. In it, we covered:

1. The identification of relevant project cash flows. We discussed project cash flows and described how to handle some issues that often come up, including sunk costs, opportunity costs, financing costs, net working capital, and erosion.
2. Preparing and using pro forma, or projected, financial statements. We showed how pro forma financial statement information is useful in coming up with projected cash flows.
3. The use of scenario and sensitivity analysis. These tools are widely used to evaluate the impact of assumptions made about future cash flows and NPV estimates.

CHAPTER SUMMARY AND CONCLUSIONS ▲

These paragraphs review the chapter's key points and provide closure to the chapter.

CHAPTER REVIEW AND SELF-TEST PROBLEMS

- 9.1 Calculating Operating Cash Flow.** Mater Pasta, Inc., has projected a sales volume of \$1,432 for the second year of a proposed expansion project. Costs normally run 70 percent of sales, or about \$1,002 in this case. The depreciation expense will be \$80, and the tax rate is 22 percent. What is the operating cash flow? (See Problem 9.)
- 9.2 Scenario Analysis.** A project under consideration costs \$500,000, has a five-year life, and has no salvage value. Depreciation is straight-line to zero. The required return is 15 percent, and the tax rate is 21 percent. Sales are projected at 400 units per year. Price per unit is \$3,000, variable cost per unit is \$1,900, and fixed costs are \$250,000 per year. No net working capital is required.
- Suppose you think the unit sales, price, variable cost, and fixed cost projections are accurate to within 5 percent. What are the upper and lower bounds for these projections? What is the base-case NPV? What are the best- and worst-case scenario NPVs? (See Problem 21.)


◀ CHAPTER REVIEW AND SELF-TEST PROBLEMS

Review and self-test problems appear after the chapter summaries. Detailed answers to the self-test problems immediately follow. These questions and answers allow students to test their abilities in solving key problems related to the content of the chapter. These problems are mapped to similar problems in the end-of-chapter material. The aim is to help students work through difficult problems using the authors' work as an example.

END-OF-CHAPTER QUESTIONS AND PROBLEMS ►

We have found that many students learn better when they have plenty of opportunity to practice. We therefore provide extensive end-of-chapter questions and problems linked to Learning Objectives. The questions and problems are generally separated into three levels—Basic, Intermediate, and Challenge. All problems are fully annotated so that students and instructors can readily identify particular types. Throughout the text, we have worked to supply interesting problems that illustrate real-world applications of chapter material. Answers to selected end-of-chapter problems appear in Appendix C.

QUESTIONS AND PROBLEMS

 Select problems are available in McGraw-Hill Connect. Please see the packaging options section of the preface for more information.

BASIC (Questions 1–22)

- LO 1** 1. **Calculating Payback.** What is the payback period for the following set of cash flows?

Year	Cash Flow
0	−\$7,800
1	3,100
2	3,200
3	2,200
4	1,400

- LO 1** 2. **Calculating Payback.** An investment project provides cash inflows of \$865 per year for eight years. What is the project payback period if the initial cost is \$3,100? What if the initial cost is \$4,300? What if it is \$7,900?
- LO 1** 3. **Calculating Payback.** Stenson, Inc., imposes a payback cutoff of three years for its international investment projects. If the company has the following two projects available, should it accept either of them?



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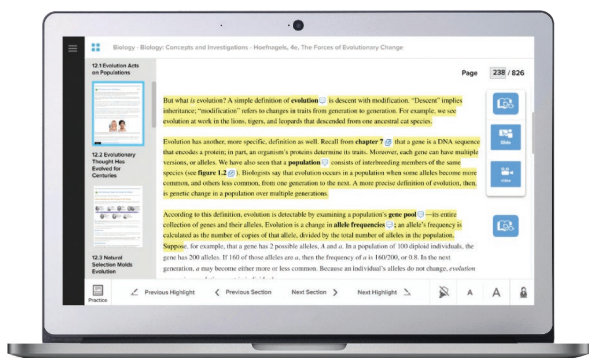
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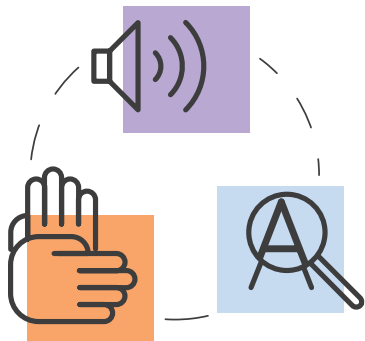
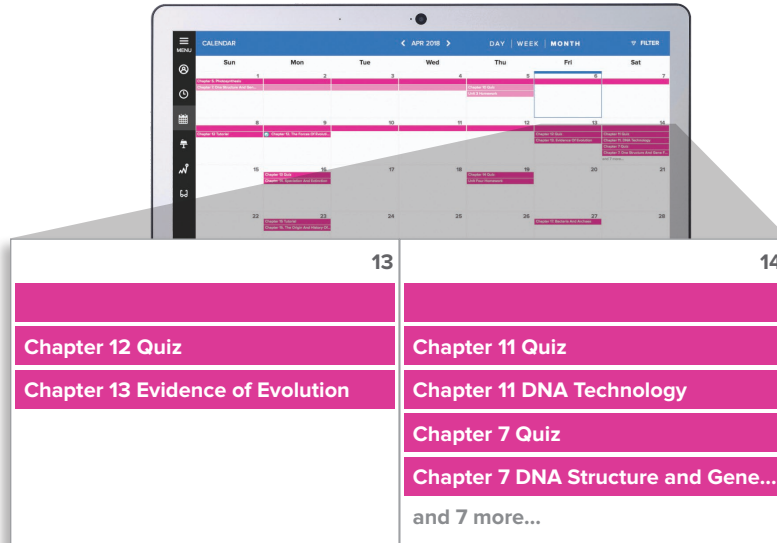
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Assurance of learning is an important element of many accreditation standards. *Essentials of Corporate Finance*, tenth edition, is designed specifically to support your assurance of learning initiatives. Each chapter in the book begins with a list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

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

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Instructor Supplements

■ Instructor's Manual (IM)

Prepared by LaDoris Baugh, Athens State University

A great place to find new lecture ideas! This annotated outline for each chapter includes Lecture Tips, Real-World Tips, Ethics Notes, suggested PowerPoint slides, and, when appropriate, a video synopsis.





■ Solutions Manual (SM)

Prepared by Joseph Smolira, Belmont University, Bradford D. Jordan, University of Kentucky

The *Essentials* Solutions Manual provides detailed solutions to the extensive end-of-chapter material, including concept review questions, quantitative problems, and cases. Select chapters also contain calculator solutions.

■ Test Bank

Prepared by Joseph Hegger, University of Missouri

Great format for a better testing process! All questions closely link with the text material, listing section number, Learning Objective, Bloom's Taxonomy Question Type, and AACSB topic when applicable. Each chapter covers a breadth of topics and types of questions, including questions that test the understanding of the key terms; questions patterned after the learning objectives, concept questions, chapter-opening vignettes, boxes, and highlighted phrases; multiple-choice and true/false problems patterned after the end-of-chapter questions, in basic, intermediate, and challenge levels; and essay questions to test problem-solving skills and more advanced understanding of concepts. Each chapter also includes new problems that pick up questions directly from the end-of-chapter material and converts them into parallel test bank questions. For your reference, each test bank question in this part is linked with its corresponding question in the end-of-chapter section.

■ PowerPoint Presentation System

Prepared by LaDoris Baugh, Athens State University

Customize our content for your course! This presentation has been thoroughly revised to include more lecture-oriented slides, as well as exhibits and examples both from the book and from outside sources. Applicable slides have web links that take you directly to specific internet sites or spreadsheet links to show an example in Excel. You also can go to the Notes Page function for more tips in presenting the slides. Additional PowerPoint slides work through example problems for instructors to show in class. If you already have PowerPoint installed on your computer, you have the ability to edit, print, or rearrange the complete presentation to meet your specific needs.

■ Computerized Test Bank

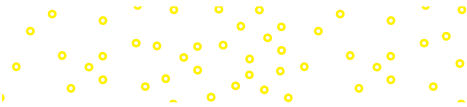
TestGen is a complete, state-of-the-art generator and editing application software that allows instructors to quickly and easily select test items from McGraw-Hill's test bank content. The instructors then can organize, edit, and customize questions and answers to rapidly generate tests for paper or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

■ Excel Simulations

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■ Narrated Lecture Videos

Updated for this edition, the Narrated Lecture Videos provide real-world examples accompanied by step-by-step instructions and explanations for solving problems presented in the chapter. The Concept Checks from the text also are integrated into the slides to reinforce the key topics in the chapter. Designed specifically to appeal to different learning styles, the videos provide a visual and audio explanation of topics and problems.

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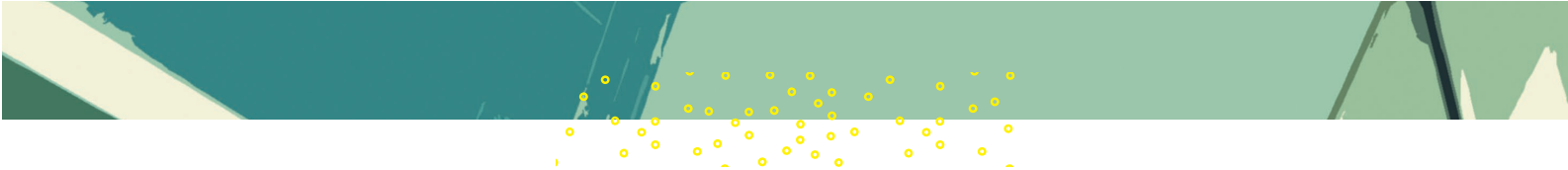
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Throughout the development of this edition, we have taken great care to discover and eliminate errors. Our goal is to provide the best textbook available on the subject. To ensure that future editions are error-free, we will gladly offer \$10 per arithmetic error to the first individual reporting it as a modest token of our appreciation. More than this, we would like to hear from instructors and students alike. Please send your comments to Dr. Brad Jordan, c/o Editorial—Finance, McGraw-Hill Education, 120 S. Riverside Drive, 12th Floor, Chicago, IL 60606.

Randolph W. Westerfield
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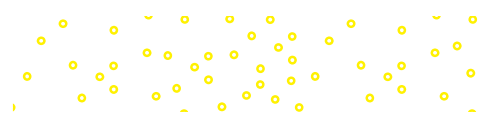
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Financial Statements, Taxes, and Cash Flow | 2

LEARNING OBJECTIVES

After studying this chapter, you should be able to:

- LO 1** Differentiate between accounting value (or “book” value) and market value.
- LO 2** Distinguish accounting income from cash flow.
- LO 3** Explain the difference between average and marginal tax rates.
- LO 4** Determine a firm’s cash flow from its financial statements.

In December 2017, the Tax Cuts and Jobs Act was enacted into law beginning in 2018. The new law was a sweeping change to corporate taxes in the United States. For example, rather than depreciating an asset over time for tax purposes, companies are allowed to depreciate the entire purchase price in the first year. Another change was a limit to the tax deductibility of interest expense. However, possibly the biggest change was the switch from a graduated corporate income tax structure, with rates ranging from 15 percent to 39 percent, to a flat 21 percent corporate tax rate.

While the change in the corporate tax rate affects net income, there is a more important impact. Because taxes are a key consideration in making investment decisions, the change in the tax rate could lead to a significant change in corporate investment and

financing decisions. Understanding why ultimately leads us to the main subject of this chapter: that all-important substance known as *cash flow*.

Please visit us at essentialsofcorporatefinance.blogspot.com for the latest developments in the world of corporate finance.

In this chapter, we examine financial statements, taxes, and cash flow. Our emphasis is not on preparing financial statements. Instead, we recognize that financial statements are frequently a key source of information for financial decisions, so our goal is to briefly examine such statements and point out some of their more relevant features. We pay special attention to some of the practical details of cash flow.

As you read, pay particular attention to two important differences: (1) the difference between accounting value and market value and (2) the difference between accounting income and cash flow. These distinctions will be important throughout the book.

2.1 THE BALANCE SHEET

The **balance sheet** is a snapshot of the firm. It is a convenient means of organizing and summarizing what a firm owns (its *assets*), what a firm owes (its *liabilities*), and the difference between the two (the firm's *equity*) at a given point in time. Figure 2.1 illustrates how the balance sheet is constructed. As shown, the left-hand side lists the assets of the firm, and the right-hand side lists the liabilities and equity.



balance sheet

Financial statement showing a firm's accounting value on a particular date.

Assets: The Left-Hand Side

Assets are classified as either *current* or *fixed*. A fixed asset is one that has a relatively long life. Fixed assets can either be *tangible*, such as a truck or a computer, or *intangible*, such as a trademark or patent. A current asset has a life of less than one year. This means that the asset will normally convert to cash within 12 months. For example, inventory would normally be purchased and sold within a year and is thus classified as a current asset. Obviously, cash itself is a current asset. Accounts receivable (money owed to the firm by its customers) are also a current asset.

Liabilities and Owners' Equity: The Right-Hand Side

The firm's liabilities are the first thing listed on the right-hand side of the balance sheet. These are classified as either *current* or *long term*. Current liabilities, like current assets, have a life of less than one year (meaning they must be paid within the year), and they are listed before long-term liabilities. Accounts payable (money the firm owes to its suppliers) are one example of a current liability.

A debt that is not due in the coming year is classified as a long-term liability. A loan that the firm will pay off in five years is one such long-term debt. Firms borrow over the long term from a variety of sources. We will tend to use the terms *bonds* and *bondholders* generically to refer to long-term debt and long-term creditors, respectively.

Finally, by definition, the difference between the total value of the assets (current and fixed) and the total value of the liabilities (current and long-term) is the *shareholders' equity*, also called *common equity* or *owners' equity*. This feature of the balance sheet is intended to reflect the fact that, if the firm were to sell all of its assets and use the money to pay off its debts, then whatever residual value remained would belong to the shareholders. So, the

Two excellent sites for company financial information are finance.yahoo.com and money.cnn.com.

Disney has a good investor site at thewaltdisneycompany.com.

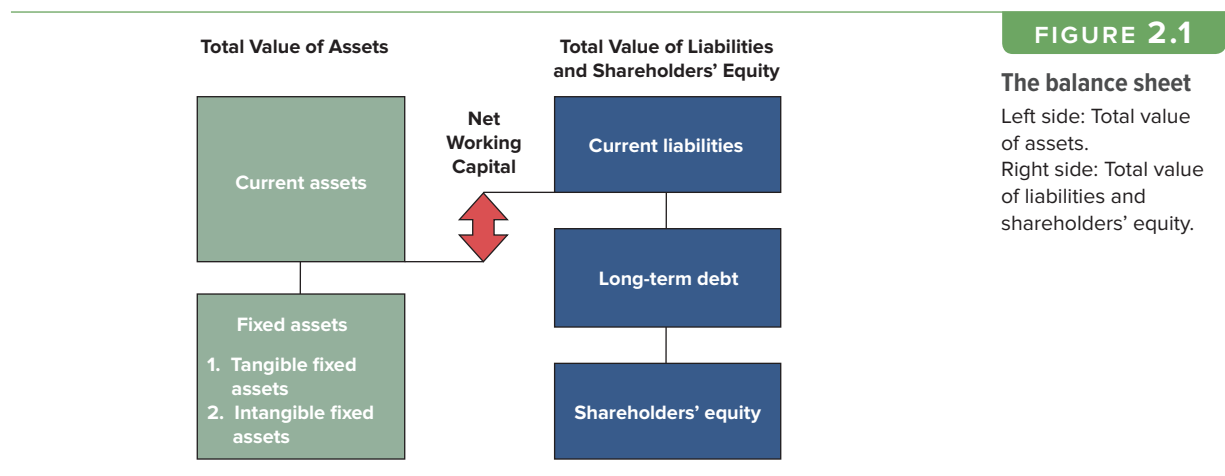


FIGURE 2.1

The balance sheet

Left side: Total value of assets.
Right side: Total value of liabilities and shareholders' equity.

TABLE 2.1

Balance sheets for
U.S. Corporation

U.S. CORPORATION					
Balance Sheets as of December 31, 2018 and 2019					
(\$ in Millions)					
	2018	2019		2018	2019
Assets			Liabilities and Owners' Equity		
Current assets			Current liabilities		
Cash	\$ 104	\$ 160	Accounts payable	\$ 232	\$ 266
Accounts receivable	455	688	Notes payable	196	123
Inventory	553	555	Total	\$ 428	\$ 389
Total	\$1,112	\$1,403			
Fixed assets			Long-term debt	\$ 408	\$ 454
Net fixed assets	\$1,644	\$1,709	Owners' equity		
			Common stock and paid-in surplus	600	640
			Retained earnings	1,320	1,629
			Total	\$1,920	\$2,269
Total assets	\$2,756	\$3,112	Total liabilities and owners' equity	\$2,756	\$3,112

balance sheet “balances” because the value of the left-hand side always equals the value of the right-hand side. That is, the value of the firm’s assets is equal to the sum of its liabilities and shareholders’ equity:¹

$$\text{Assets} = \text{Liabilities} + \text{Shareholders' equity} \quad [2.1]$$

This is the balance sheet identity, or equation, and it always holds because shareholders’ equity is defined as the difference between assets and liabilities.

Net Working Capital

net working capital

Current assets less current liabilities.

As shown in Figure 2.1, the difference between a firm’s current assets and its current liabilities is called **net working capital**. Net working capital is positive when current assets exceed current liabilities. Based on the definitions of current assets and current liabilities, this means that the cash that will become available over the next 12 months exceeds the cash that must be paid over that same period. For this reason, net working capital is usually positive in a healthy firm.

Table 2.1 shows simplified balance sheets for the fictitious U.S. Corporation. There are three particularly important things to keep in mind when examining a balance sheet: liquidity, debt versus equity, and market value versus book value.

EXAMPLE 2.1 Building the Balance Sheet

A firm has current assets of \$100, net fixed assets of \$500, short-term debt of \$70, and long-term debt of \$200. What does the balance sheet look like? What is shareholders’ equity? What is net working capital?

In this case, total assets are $\$100 + 500 = \600 and total liabilities are $\$70 + 200 = \270 , so shareholders’ equity is the difference: $\$600 - 270 = \330 . The balance sheet would thus look like:

(continued)

¹The terms *owners’ equity*, *shareholders’ equity*, and *stockholders’ equity* are used interchangeably to refer to the equity in a corporation. The term *net worth* also is used. Variations exist in addition to these.

Assets		Liabilities and Shareholders' Equity	
Current assets	\$100	Current liabilities	\$ 70
Net fixed assets	<u>500</u>	Long-term debt	200
		Shareholders' equity	<u>330</u>
Total assets	<u>\$600</u>	Total liabilities and shareholders' equity	<u>\$600</u>

Net working capital is the difference between current assets and current liabilities, or $\$100 - 70 = \30 .

Liquidity

Liquidity refers to the speed and ease with which an asset can be converted to cash. Gold is a relatively liquid asset; a custom manufacturing facility is not. Liquidity really has two dimensions: ease of conversion versus loss of value. Any asset can be converted to cash quickly if we cut the price enough. A highly liquid asset, therefore, is one that can be quickly sold without significant loss of value. An illiquid asset is one that cannot be quickly converted to cash without a substantial price reduction.

Assets are normally listed on the balance sheet in order of decreasing liquidity, meaning that the most liquid assets are listed first. Current assets are relatively liquid and include cash and those assets that we expect to convert to cash over the next 12 months. Accounts receivable, for example, represent amounts not yet collected from customers on sales already made. Naturally, we hope these will convert to cash in the near future. Inventory is probably the least liquid of the current assets, at least for many businesses.

Fixed assets are, for the most part, relatively illiquid. These consist of tangible things such as buildings and equipment that don't convert to cash at all in normal business activity (they are, of course, used in the business to generate cash). Intangible assets, such as trademarks, have no physical existence but can be very valuable. Like tangible fixed assets, they won't ordinarily convert to cash and are generally considered illiquid.

Liquidity is valuable. The more liquid a business is, the less likely it is to experience financial distress (i.e., difficulty in paying debts or buying needed assets). Unfortunately, liquid assets are generally less profitable to hold. For example, cash holdings are the most liquid of all investments, but they sometimes earn no return at all—they just sit there. There is, therefore, a trade-off between the advantages of liquidity and forgone potential profits.

Debt versus Equity

To the extent that a firm borrows money, it usually gives first claim to the firm's cash flow to creditors. Equity holders are entitled only to the residual value, the portion left after creditors are paid. The value of this residual portion is the shareholders' equity in the firm, which is the value of the firm's assets less the value of the firm's liabilities:

$$\text{Shareholders' equity} = \text{Assets} - \text{Liabilities}$$

This is true in an accounting sense because shareholders' equity is defined as this residual portion. More importantly, it is true in an economic sense: If the firm sells its assets and pays its debts, whatever cash is left belongs to the shareholders.

Annual and quarterly financial statements (and lots more) for most public U.S. corporations can be found in the EDGAR database at www.sec.gov.

The home page for the Financial Accounting Standards Board (FASB) is www.fasb.org.

The use of debt in a firm's capital structure is called *financial leverage*. The more debt a firm has (as a percentage of assets), the greater is its degree of financial leverage. As we discuss in later chapters, debt acts like a lever in the sense that using it can greatly magnify both gains and losses. So, financial leverage increases the potential reward to shareholders, but it also increases the potential for financial distress and business failure.

Market Value versus Book Value

The true value of any asset is its *market* value, which is the amount of cash we would get if we actually sold it. In contrast, the values shown on the balance sheet for the firm's assets are *book values* and generally are not what the assets are actually worth. Under **Generally Accepted Accounting Principles (GAAP)**, audited financial statements in the United States generally show assets at *historical cost*. In other words, assets are "carried on the books" at what the firm paid for them (minus accumulated depreciation), no matter how long ago they were purchased or how much they are worth today.

Generally Accepted Accounting Principles (GAAP)

The common set of standards and procedures by which audited financial statements are prepared.

For current assets, market value and book value might be somewhat similar because current assets are bought and converted into cash over a relatively short span of time. In other circumstances, they might differ quite a bit. Moreover, for fixed assets, it would be purely a coincidence if the actual market value of an asset (what the asset could be sold for) were equal to its book value. For example, a railroad might own enormous tracts of land purchased a century or more ago. What the railroad paid for that land could be hundreds or thousands of times less than what it is worth today. The balance sheet would nonetheless show the historical cost. There are exceptions to this practice.

Managers and investors frequently will be interested in knowing the market value of the firm. This information is not on the balance sheet. The fact that balance sheet assets are listed at cost means that there is no necessary connection between the total assets shown and the market value of the firm. Indeed, many of the most valuable assets that a firm might have—good management, a good reputation, talented employees—don't appear on the balance sheet at all. To give one example, one of the most valuable assets for many well-known companies is their brand name. According to one source, the names "Coca-Cola," "Microsoft," and "IBM" are all worth in excess of \$50 billion.

Similarly, the owners' equity figure on the balance sheet and the true market value of the equity need not be related. For financial managers, then, the accounting value of the equity is not an especially important concern; it is the market value that matters. Henceforth, whenever we speak of the value of an asset or the value of the firm, we will normally mean its *market value*. So, for example, when we say the goal of the financial manager is to increase the value of the stock, we mean the market value of the stock.

EXAMPLE 2.2 Market versus Book Values

The Klingon Corporation has fixed assets with a book value of \$700 and an appraised market value of about \$1,000. Current assets are \$400 on the books, but approximately \$600 would be realized if they were liquidated. Klingon has \$500 in long-term debt, both book value and market value, and no current liabilities of any kind. What is the book value of the equity? What is the market value?

We can construct two simplified balance sheets, one in accounting (book value) terms and one in economic (market value) terms:

KLINGON CORPORATION Balance Sheets Market Value versus Book Value					
	Book	Market		Book	Market
Assets			Liabilities and Shareholders' Equity		
Current assets	\$ 400	\$ 600	Long-term debt	\$ 500	\$ 500
Net fixed assets	<u>700</u>	<u>1,000</u>	Shareholders' equity	<u>600</u>	<u>1,100</u>
	<u>\$1,100</u>	<u>\$1,600</u>		<u>\$1,100</u>	<u>\$1,600</u>

In this example, shareholders' equity is actually worth almost twice as much as what is shown on the books. The distinction between book and market values is important precisely because book values can be so different from true economic values.

CONCEPT QUESTIONS

- 2.1a What is the balance sheet identity?
- 2.1b What is liquidity? Why is it important?
- 2.1c What do we mean by financial leverage?
- 2.1d Explain the difference between accounting value and market value. Which is more important to the financial manager? Why?

2.2 THE INCOME STATEMENT

The **income statement** measures performance over some period of time, usually a quarter or a year. The income statement equation is:

$$\text{Revenues} - \text{Expenses} = \text{Income} \quad [2.2]$$

If you think of the balance sheet as a snapshot, then you can think of the income statement as a video recording covering the period between a before and an after picture. Table 2.2 gives a simplified income statement for U.S. Corporation.



income statement
Financial statement summarizing a firm's performance over a period of time.

U.S. CORPORATION 2019 Income Statement (\$ in Millions)		
Net sales		\$1,509
Cost of goods sold		750
Depreciation		89
Earnings before interest and taxes		\$ 670
Interest paid		70
Taxable income		\$ 600
Taxes (21%)		126
Net income		\$ 474
Dividends	\$165	
Addition to retained earnings	309	

TABLE 2.2

Income statement for U.S. Corporation

The first thing reported on an income statement is usually revenue and expenses from the firm's principal operations. Subsequent parts include, among other things, financing expenses such as interest paid. Taxes paid are reported separately. The last item is *net income* (the so-called bottom line). Net income often is expressed on a per-share basis and called *earnings per share (EPS)*.

As indicated, U.S. paid cash dividends of \$165. The difference between net income and cash dividends, \$309, is the addition to retained earnings for the year. This amount is added to the cumulative retained earnings account on the balance sheet. If you look back at the two balance sheets for U.S. Corporation, you'll see that retained earnings did go up by this amount, $\$1,320 + 309 = \$1,629$.

EXAMPLE 2.3 Earnings and Dividends per Share

Suppose U.S. Corporation had 200 million shares outstanding at the end of 2019. Based on the income statement in Table 2.2, what was EPS? What were dividends per share?

From the income statement, U.S. Corporation had a net income of \$474 million for the year. Total dividends were \$165 million. Because 200 million shares were outstanding, we can calculate earnings per share and dividends per share as follows:

$$\begin{aligned}\text{Earnings per share} &= \text{Net income/Total shares outstanding} \\ &= \$474/200 = \$2.37 \text{ per share}\end{aligned}$$

$$\begin{aligned}\text{Dividends per share} &= \text{Total dividends/Total shares outstanding} \\ &= \$165/200 = \$0.825 \text{ per share}\end{aligned}$$

When looking at an income statement, the financial manager needs to keep three things in mind: GAAP, cash versus noncash items, and time and costs.

GAAP and the Income Statement

An income statement prepared using GAAP will show revenue when it accrues. This is not necessarily when the cash comes in. The general rule (the recognition principle) is to recognize revenue when the earnings process is virtually complete and the value of an exchange of goods or services is known or can be reliably determined. In practice, this principle usually means that revenue is recognized at the time of sale, which need not be the same as the time of collection.

Expenses shown on the income statement are based on the matching principle. The basic idea here is to first determine revenues as described earlier and then match those revenues with the costs associated with producing them. So, if we manufacture a product and then sell it on credit, the revenue is recognized at the time of sale. The production and other costs associated with the sale of that product likewise would be recognized at that time. Once again, the actual cash outflows may have occurred at some very different times. Thus, as a result of the way revenues and expenses are reported, the figures shown on the income statement may not be at all representative of the actual cash inflows and outflows that occurred during a particular period.

noncash items

Expenses charged against revenues that do not directly affect cash flow, such as depreciation.

Noncash Items

A primary reason that accounting income differs from cash flow is that an income statement contains **noncash items**. The most important of these is *depreciation*. Suppose a firm

purchases a fixed asset for \$5,000 and pays in cash. Obviously, the firm has a \$5,000 cash outflow at the time of purchase. However, instead of deducting the \$5,000 as an expense, an accountant might depreciate the asset over a five-year period.

If the depreciation is straight-line and the asset is written down to zero over that period, then $\$5,000/5 = \$1,000$ would be deducted each year as an expense.² The important thing to recognize is that this \$1,000 deduction isn't cash—it's an accounting number. The actual cash outflow occurred when the asset was purchased.

The depreciation deduction is another application of the matching principle in accounting. The revenues associated with an asset would generally occur over some length of time. So, the accountant seeks to match the expense of purchasing the asset with the benefits produced from owning it.

As we will see, for the financial manager, the actual timing of cash inflows and outflows is critical in coming up with a reasonable estimate of market value, so we need to learn how to separate the cash flows from the noncash accounting entries. In reality, the difference between cash flow and accounting income can be pretty dramatic. For example, in the third quarter of 2017, wireless infrastructure company Westell Technologies announced a net loss of \$14.5 million. Sounds bad, but the company also reported a positive cash flow of \$26.6 million, a difference of \$41.1 million.

Time and Costs

It is often useful to think of the future as having two distinct parts: the short run and the long run. These are not precise time periods. The distinction has to do with whether costs are fixed or variable. In the long run, all business costs are variable. Given sufficient time, assets can be sold, debts can be paid, and so on.

If our time horizon is relatively short, however, some costs are effectively fixed—they must be paid no matter what (e.g., property taxes). Other costs, such as wages to laborers and payments to suppliers, are still variable. As a result, even in the short run, the firm can vary its output level by varying expenditures in these areas.

The distinction between fixed and variable costs is important, at times, to the financial manager, but the way costs are reported on the income statement is not a good guide as to which costs are which. The reason is that, in practice, accountants tend to classify costs as either product costs or period costs.

Product costs include such things as raw materials, direct labor expense, and manufacturing overhead. These are reported on the income statement as costs of goods sold, but they include both fixed and variable costs. Similarly, period costs are incurred during a particular time period and might be reported as selling, general, and administrative expenses. Once again, some of these period costs may be fixed and others may be variable. The company president's salary is a period cost and is probably fixed, at least in the short run.

The balance sheets and income statement we have been using thus far are hypothetical. Our nearby *Work the Web* box shows how to find actual balance sheets and income statements online for almost any public company.

²By "straight-line," we mean that the depreciation deduction is the same every year. By "written down to zero," we mean that the asset is assumed to have no value at the end of five years.

WORK THE WEB

The U.S. Securities and Exchange Commission (SEC) requires that most public companies file regular reports, including annual and quarterly financial statements. The SEC has a public site named EDGAR that makes these reports available for free at www.sec.gov. We went to “Company Filings Search” and searched for “Microsoft.” When we got our results, we limited our search to Form 10-K. Here is what we found:

Filings	Format	Description	Filing Date	File/Item Number
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 0001164590-17-01800 (24 Act) Size: 28 MB	2017-08-02	001-27845 17100007
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-16-062209 (24 Act) Size: 13 MB	2016-07-28	001-27845 16179276
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-15-272809 (24 Act) Size: 14 MB	2015-07-31	001-27845 151019135
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-14-089961 (24 Act) Size: 18 MB	2014-07-31	001-27845 141007161
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-13-310206 (24 Act) Size: 24 MB	2013-07-30	001-27845 13996079
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-12-315848 (24 Act) Size: 17 MB	2012-07-26	001-27845 12987560
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-11-020691 (24 Act) Size: 19 MB	2011-07-28	001-27845 11991262
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-10-171191 (24 Act) Size: 20 MB	2010-07-30	001-27845 10988074
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-09-183758 (24 Act) Size: 1 MB	2009-07-30	001-27845 09071624
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-08-162758 (24 Act) Size: 1 MB	2008-07-31	001-27845 08087025
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-07-170817 (24 Act) Size: 1 MB	2007-08-03	001-27845 07104829
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-06-180009 (24 Act) Size: 1 MB	2006-08-25	001-27845 061056646
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-05-174823 (24 Act) Size: 1 MB	2005-08-26	001-27845 051020009
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-04-150689 (24 Act) Size: 1 MB	2004-09-01	001-27845 041011640
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-03-045832 (24 Act) Size: 1 MB	2003-09-05	001-27845 03082442
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-02-091251 (24 Act) Size: 1 MB	2002-09-06	001-27845 02075765
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-01-301696 (24 Act) Size: 261 KB	2001-09-18	001-27845 1729790
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-00-001961 (24 Act) Size: 457 KB	2000-09-28	001-27845 731656
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-99-091375 (24 Act) Size: 260 KB	1999-09-28	001-27845 9917474
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000119125-98-091987 (24 Act) Size: 178 KB	1998-09-25	001-27845 9815584
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 000117062-97-011164 (24 Act) Size: 198 KB	1997-09-29	001-27845 97081984
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 0000891020-96-001130 (24 Act) Size: 547 KB	1996-09-27	001-27845 96056668
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 0000891020-95-000433 (24 Act) Size: 169 KB	1995-09-25	001-27845 95079968
10-K	Documents	Annual report (Section 13 and 15(d), not S-K Item 405) Acc-no: 0000891020-94-000175 (24 Act) Size: 442 KB	1994-09-27	001-27845 94050472

Source: www.sec.gov

As of the date of this search, EDGAR had 24 of these reports for Microsoft available for downloading. The 10-K is the annual report filed with the SEC. It includes, among other things, the list of officers and their salaries, financial statements for the previous fiscal year, and an explanation by the company for the financial results. Here is an exercise for you: Go to the “Descriptions of SEC Forms” page and find the different forms companies must file with the SEC. What is a 10-Q report?

QUESTIONS

1. Before the popularization of computers, electronic filing of documents with the SEC was not available. Go to www.sec.gov and find the filings for General Electric. What is the date of the oldest 10-K available on the website for General Electric? Look up the 10-K forms for IBM and Apple to see if the year of the first electronic filing is the same for these companies.
2. Go to www.sec.gov and find out when the following forms are used: Form DEF 14A, Form 8-K, and Form 6-K.

Earnings Management

The way that firms are required by GAAP to report financial results is intended to be objective and precise. In reality, there is plenty of wiggle room, and, as a result, companies have significant discretion over their reported earnings. For example, corporations frequently like to show investors that they have steadily growing earnings. To do this, they might take steps to overstate or understate earnings at various times to smooth out dips and surges. Doing so is called *earnings management*, and it is a controversial practice.

With the increasing globalization of business, accounting standards need to be more alike across countries. In recent years, U.S. accounting standards have increasingly become more closely tied to International Financial Reporting Standards (IFRS). In particular, the Financial Accounting Standards Board (in charge of U.S. GAAP) and the International Accounting Standards Board (in charge of IFRS) have been working toward a convergence of policies. Although GAAP and IFRS have become similar in several areas, as of 2018, it appears that a full convergence of accounting policies is off the table, at least for now.

For more information about IFRS, check out the website www.ifrs.org.

CONCEPT QUESTIONS

- 2.2a What is the income statement equation?
- 2.2b What are the three things to keep in mind when looking at an income statement?
- 2.2c Why is accounting income not the same as cash flow?

2.3 TAXES

Taxes can be one of the largest cash outflows a firm experiences. For example, for fiscal year 2018, Walmart’s earnings before taxes were about \$15.1 billion. Its tax bill, including all taxes paid worldwide, was a whopping \$4.6 billion, or about 30 percent of its pretax earnings.



The size of a company’s tax bill is determined through the tax code, an often-amended set of rules. In this section, we examine corporate tax rates and how taxes are calculated. If the various rules of taxation seem a little bizarre or convoluted to you, keep in mind that the tax code is the result of political, not economic, forces. As a result, there is no reason why it has to make economic sense.

Corporate Tax Rates

As we discussed in our chapter introduction, after the passage of the Tax Cuts and Jobs Act of 2017, the federal corporate tax rate in the United States became a flat 21 percent. However, tax rates on other forms of business such as proprietorships, partnerships, and LLCs did not become flat. To illustrate some important points about taxes for such entities, we take a look at personal tax rates in Table 2.3. As shown, in 2018, there are seven tax brackets, ranging from 10 percent to a high of 37 percent, down from 39.6 percent in 2017.

The IRS has a great website! (www.irs.gov)

Taxable Income		Tax Rate
\$	0– 9,525	10%
	9,525– 38,700	12
	38,700– 82,500	22
	82,500– 157,500	24
	157,500– 200,000	32
	200,000– 500,000	35
	500,000+	37

TABLE 2.3

Personal tax rates for 2018 (unmarried individuals)

Average versus Marginal Tax Rates

average tax rate

Total taxes paid divided by total taxable income.

marginal tax rate

Amount of tax payable on the next dollar earned.

In making financial decisions, it is frequently important to distinguish between average and marginal tax rates. Your **average tax rate** is your tax bill divided by your taxable income; in other words, the percentage of your income that goes to pay taxes. Your **marginal tax rate** is the extra tax you would pay if you earned one more dollar. The percentage tax rates shown in Table 2.3 are all marginal rates. Put another way, the tax rates in Table 2.3 apply to the part of income in the indicated range only, not all income.

The difference between average and marginal tax rates can be best illustrated with a simple example. Suppose you are single and your personal taxable income is \$100,000. What is your tax bill? From Table 2.3, we can figure your tax bill like this:

.10(\$9,525)	=	\$ 952.50
.12(\$38,700 – 9,525)	=	3,501.00
.22(\$82,500 – 38,700)	=	9,636.00
.24(\$100,000 – 82,500)	=	<u>4,200.00</u>
		<u>\$18,289.50</u>

Your total tax is \$18,289.50.

In our example, what is the average tax rate? You had a taxable income of \$100,000 and a tax bill of \$18,289.50, so the average tax rate is $\$18,289.50/\$100,000 = .1829$, or 18.29%. What is the marginal tax rate? If you made one more dollar, the tax on that dollar would be 24 cents, so your marginal rate is 24 percent.

EXAMPLE 2.4 Deep in the Heart of Taxes

Algernon, a small proprietorship owned by an unmarried individual, has a taxable income of \$80,000. What is its tax bill? What is its average tax rate? Its marginal tax rate?

From Table 2.3, we see that the tax rate applied to the first \$9,525 is 10 percent; the rate applied over that up to \$38,700 is 12 percent; the rate applied after that up to our total of \$80,000 is 22 percent. So Algernon must pay $.10 \times \$9,525 + .12 \times (\$38,700 - 9,525) + .22 \times (\$80,000 - 38,700) = \$13,540$. The average tax rate is thus $\$13,540/\$80,000 = .1692$, or 16.92%. The marginal rate is 22 percent because Algernon's taxes would rise by 22 cents if it earned another dollar in taxable income.

It will normally be the marginal tax rate that is relevant for financial decision making. The reason is that any new cash flows will be taxed at that marginal rate. Because financial decisions usually involve new cash flows or changes in existing ones, this rate will tell us the marginal effect on our tax bill.

With a flat-rate tax, such as the U.S. federal corporate tax (as of 2018), there is only one tax rate, so the rate is the same for all income levels. With such a tax system, the marginal tax rate is always the same as the average tax rate.

Before moving on, we should note that the tax rates we have discussed in this section relate to federal taxes only. Overall tax rates can be higher if state, local, and any other taxes are considered.

What Is Warren Buffett's Tax Rate?

In 2011, famed investor Warren Buffett, one of the wealthiest individuals in the world, created a stir when he publicly stated that his tax rate was lower than the tax rate paid by his secretary. The previous year, Buffett's gross income was about \$63 million, on which he paid only a 15 percent tax rate. (Remember, this was before the Tax Cuts and Jobs Act of 2017.) His secretary (with a substantially lower income) had a 31 percent marginal tax rate. Also in 2011, when Republican presidential contender Mitt Romney released his income taxes, it was revealed that he, too, paid an income tax rate of only 15 percent on his \$21 million annual income.

Why do Buffett's and Romney's tax rates appear so low? Currently, under the U.S. tax system, wage income is taxed at a much higher rate than dividends and long-term capital gains. In fact, in 2011, in the highest tax bracket, wage income was taxed at 37 percent, while dividends and long-term capital gains were taxed at 15 percent. For Buffett and Romney, most of their annual income comes from their investments, not wages, hence the 15 percent rate.

So do rich guys get all the (tax) breaks? Former U.S. President Barack Obama seems to think so. In his 2012 State of the Union Address, with Buffett's secretary Debbie Bosanek joining First Lady Michelle Obama in her box as a special guest, he called for the creation of a "Buffett tax." As he described it, such a tax would be an extra tax paid by very high-income individuals. Maybe President Obama was mad about the fact that he and the first lady paid (in 2013) \$98,169 in federal taxes on their joint income of \$481,098, implying an average tax rate of 20.4 percent.

Of course, you know that income received from dividends is already taxed. Dividends are paid from corporate income, which was taxed at 35 percent for larger dividend-paying companies. Effectively, any tax on dividends is double taxation on that money. The tax code realizes this. The lower tax rate on dividends lowers the double tax rate. The same thing is true for capital gains; taxes are paid on the money before the investment is made.

In Buffett's case, most of his wealth stems from his approximately 30 percent ownership of Berkshire Hathaway Corporation. Based on its 23,000 (no typo!) page tax return, Berkshire's 2014 corporate tax bill was \$7.9 billion on pretax income of \$28.1 billion—a 28 percent average rate. Buffett's share of Berkshire's tax bill therefore amounts to something on the order of \$2.37 billion! If we include Berkshire's corporate taxes, Buffett's average tax rate is more like $28 + 15 = 43$ percent.

To give another example, consider the situation described by N. Gregory Mankiw, the well-known economist and textbook author. Mankiw considers taking a writing job for \$1,000. He figures that if he earns an 8 percent return and there are no taxes, he would be able to leave his children about \$10,000 in 30 years when he passes on. However, because of federal, state, and Medicare taxes, he would receive only about \$523 after taxes today. And because of corporate taxes and personal income taxes, his return on the same investment would be only about 4 percent, which will result in a balance of \$1,700 in 30 years. When he dies, his account will be taxed using the marginal estate tax rate, which is as high as 55 percent. As a result, his children will receive only about \$1,000, implying a tax rate of 90 percent!

CONCEPT QUESTION

2.3a What is the difference between a marginal and an average tax rate?

2.4 CASH FLOW

At this point, we are ready to discuss perhaps one of the most important pieces of financial information that can be gleaned from financial statements: *cash flow*. By cash flow, we mean the difference between the number of dollars that came in and the number that went out. For example, if you were the owner of a business, you might be very interested in how much cash you actually took out of your business in a given year. How to determine this amount is one of the things we discuss next.

There is no standard financial statement that presents this information in the way that we wish. We will, therefore, discuss how to calculate cash flow for U.S. Corporation and point out how the result differs from that of standard financial statement calculations.



Important note: There is a standard financial accounting statement called the *statement of cash flows*, but it is concerned with a somewhat different issue that should not be confused with what is discussed in this section.

From the balance sheet identity, we know that the value of a firm's assets is equal to the value of its liabilities plus the value of its equity. Similarly, the cash flow from the firm's assets must equal the sum of the cash flow to creditors and the cash flow to stockholders (or owners, if the business is not a corporation):

$$\text{Cash flow from assets} = \text{Cash flow to creditors} + \text{Cash flow to stockholders} \quad [2.3]$$

This is the cash flow identity. What it reflects is the fact that a firm generates cash through its various activities, and that cash either is used to pay creditors or else is paid out to the owners of the firm. We discuss the various things that make up these cash flows next.

Cash Flow from Assets

cash flow from assets

The total of cash flow to creditors and cash flow to stockholders, consisting of the following: operating cash flow, capital spending, and change in net working capital.

operating cash flow

Cash generated from a firm's normal business activities.

Cash flow from assets involves three components: operating cash flow, capital spending, and change in net working capital. **Operating cash flow** refers to the cash flow that results from the firm's day-to-day activities of producing and selling. Expenses associated with the firm's financing of its assets are not included because they are not operating expenses.

In the normal course of events, some portion of the firm's cash flow is reinvested in the firm. *Capital spending* refers to the net spending on fixed assets (purchases of fixed assets less sales of fixed assets). Finally, *the change in net working capital* is the amount spent on net working capital. It is measured as the change in net working capital over the period being examined and represents the net increase or decrease in current assets over current liabilities. The three components of cash flow are examined in more detail next. In all our examples, all amounts are in millions of dollars.

Operating Cash Flow To calculate operating cash flow (OCF), we want to calculate revenues minus costs, but we don't want to include depreciation because it's not a cash outflow, and we don't want to include interest because it's a financing expense. We do want to include taxes because taxes are, unfortunately, paid in cash.

If we look at U.S. Corporation's income statement (Table 2.2), we see that earnings before interest and taxes (EBIT) are \$670. This is almost what we want because it doesn't include interest paid. We need to make two adjustments. First, recall that depreciation is a noncash expense. To get cash flow, we first add back the \$89 in depreciation because it wasn't a cash deduction. The other adjustment is to subtract the \$126 in taxes because these were paid in cash. The result is operating cash flow:

U.S. CORPORATION 2019 Operating Cash Flow	
Earnings before interest and taxes	\$670
+ Depreciation	89
– Taxes	126
Operating cash flow	<u>\$633</u>

U.S. Corporation thus had a 2019 operating cash flow of \$633.

Operating cash flow is an important number because it tells us, on a very basic level, whether or not a firm's cash inflows from its business operations are sufficient to cover its everyday cash outflows. For this reason, a negative operating cash flow is often a sign of trouble.

There is an unpleasant possibility for confusion when we speak of operating cash flow. In accounting practice, operating cash flow often is defined as net income plus depreciation. For U.S. Corporation, this would amount to $\$474 + 89 = \563 . The accounting definition of

operating cash flow differs from ours in one important way: Interest is deducted when net income is computed. Notice that the difference between the \$633 operating cash flow we calculated and this \$563 is \$70, the amount of interest paid for the year. This definition of cash flow thus considers interest paid to be an operating expense. Our definition treats it properly as a financing expense. If there were no interest expense, the two definitions would be the same.

To finish our calculation of cash flow from assets for U.S. Corporation, we need to consider how much of the \$633 operating cash flow was reinvested in the firm. We consider spending on fixed assets first.

Capital Spending Net capital spending is money spent on fixed assets less money received from the sale of fixed assets. At the end of 2018, net fixed assets for U.S. Corporation (Table 2.1) were \$1,644. During the year, we wrote off (depreciated) \$89 worth of fixed assets on the income statement. So, if we didn't purchase any new fixed assets, net fixed assets would have been $\$1,644 - 89 = \$1,555$ at year's end. The 2019 balance sheet shows \$1,709 in net fixed assets, so we must have spent a total of $\$1,709 - 1,555 = \154 on fixed assets during the year:

Ending net fixed assets	\$1,709
– Beginning net fixed assets	1,644
+ Depreciation	89
Net investment in fixed assets	\$ 154

This \$154 is our net capital spending for 2019.

Could net capital spending be negative? The answer is yes. This would happen if the firm sold off more assets than it purchased. The *net* here refers to purchases of fixed assets net of any sales of fixed assets.

Change in Net Working Capital In addition to investing in fixed assets, a firm also will invest in current assets. For example, going back to the balance sheet in Table 2.1, we see that at the end of 2019, U.S. had current assets of \$1,403. At the end of 2018, current assets were \$1,112, so, during the year, U.S. invested $\$1,403 - 1,112 = \291 in current assets.

As the firm changes its investment in current assets, its current liabilities usually will change as well. To determine the change in net working capital, the easiest approach is to take the difference between the beginning and ending net working capital (NWC) figures. Net working capital at the end of 2019 was $\$1,403 - 389 = \$1,014$. Similarly, at the end of 2018, net working capital was $\$1,112 - 428 = \684 . So, given these figures, we have:

Ending NWC	\$1,014
– Beginning NWC	684
Change in NWC	\$ 330

Net working capital thus increased by \$330. Put another way, U.S. Corporation had a net investment of \$330 in NWC for the year.

Conclusion Given the figures we've come up with, we're ready to calculate cash flow from assets. The total cash flow from assets is given by operating cash flow less the amounts invested in fixed assets and net working capital. So, for U.S., we have:

U.S. CORPORATION	
2019 Cash Flow from Assets	
Operating cash flow	\$633
– Net capital spending	154
– Change in NWC	330
Cash flow from assets	\$ 149

From the cash flow identity above, this \$149 cash flow from assets equals the sum of the firm's cash flow to creditors and its cash flow to stockholders. We consider these next.

It wouldn't be at all unusual for a growing corporation to have a negative cash flow. As we shall see below, a negative cash flow means that the firm raised more money by borrowing and selling stock than it paid out to creditors and stockholders that year.

free cash flow

Another name for cash flow from assets.

A Note on “Free” Cash Flow Cash flow from assets sometimes goes by a different name, **free cash flow**. Of course, there is no such thing as “free” cash (we wish!). Instead, the name refers to cash that the firm is free to distribute to creditors and stockholders because it is not needed for working capital or fixed asset investments. We will stick with “cash flow from assets” as our label for this important concept because, in practice, there is some variation in exactly how free cash flow is computed; different users calculate it in different ways. Nonetheless, whenever you hear the phrase “free cash flow,” you should understand that what is being discussed is cash flow from assets or something quite similar.

Cash Flow to Creditors and Stockholders

The cash flows to creditors and stockholders represent the net payments to creditors and owners during the year. They are calculated in a similar way. **Cash flow to creditors** is interest paid less net new borrowing; **cash flow to stockholders** is dividends paid less net new equity raised.

cash flow to creditors

A firm's interest payments to creditors less net new borrowing.

Cash Flow to Creditors Looking at the income statement in Table 2.2, we see that U.S. Corporation paid \$70 in interest to creditors. From the balance sheets in Table 2.1, long-term debt rose by $\$454 - 408 = \46 . So, U.S. Corporation paid out \$70 in interest, but it borrowed an additional \$46. Net cash flow to creditors is thus:

cash flow to stockholders

Dividends paid out by a firm less net new equity raised.

U.S. CORPORATION 2019 Cash Flow to Creditors	
Interest paid	\$70
– Net new borrowing	46
Cash flow to creditors	\$24

Cash flow to creditors is sometimes called *cash flow to bondholders*; we will use these terms interchangeably.

Cash Flow to Stockholders From the income statement, dividends paid to stockholders amount to \$165. To get net new equity raised, we need to look at the common stock and paid-in surplus account. This account tells us how much stock the company has sold. During the year, this account rose by \$40, so \$40 in net new equity was raised. Given this, we have:

U.S. CORPORATION 2019 Cash Flow to Stockholders	
Dividends paid	\$165
– Net new equity raised	40
Cash flow to stockholders	\$125

The cash flow to stockholders for 2019 was thus \$125.

TABLE 2.4

Cash flow summary

I. The cash flow identity	
Cash flow from assets	= Cash flow to creditors (bondholders) + Cash flow to stockholders (owners)
II. Cash flow from assets	
Cash flow from assets	= Operating cash flow – Net capital spending – Change in net working capital (NWC)
where	
Operating cash flow	= Earnings before interest and taxes (EBIT) + Depreciation – Taxes
Net capital spending	= Ending net fixed assets – Beginning net fixed assets + Depreciation
Change in NWC	= Ending NWC – Beginning NWC
III. Cash flow to creditors (bondholders)	
Cash flow to creditors	= Interest paid – Net new borrowing
IV. Cash flow to stockholders (owners)	
Cash flow to stockholders	= Dividends paid – Net new equity raised

Conclusion

The last thing that we need to do is to verify that the cash flow identity holds to be sure that we didn't make any mistakes. From above, cash flow from assets is \$149. Cash flow to creditors and stockholders is $\$24 + 125 = \149 , so everything checks out. Table 2.4 contains a summary of the various cash flow calculations for future reference.

An Example: Cash Flows for Dole Cola

This extended example covers the various cash flow calculations discussed in the chapter. It also illustrates a few variations that may arise.

Operating Cash Flow During the year, Dole Cola, Inc., had sales and cost of goods sold of \$600 and \$300, respectively. Depreciation was \$150, and interest paid was \$30. Taxes were calculated at a straight 21 percent. Dividends were \$30. (All figures are in millions of dollars.) What was operating cash flow for Dole? Why is this different from net income?

The easiest thing to do here is to go ahead and create an income statement. We can then pick up the numbers we need. Dole Cola's income statement is given here:

DOLE COLA 2019 Income Statement	
Net sales	\$600
Cost of goods sold	300
Depreciation	150
Earnings before interest and taxes	\$150
Interest paid	30
Taxable income	\$120
Taxes	25
Net income	\$ 95
Dividends	\$30
Addition to retained earnings	65

Net income for Dole was thus \$95. We now have all the numbers we need. Referring back to the U.S. Corporation example and Table 2.4, we have:

DOLE COLA 2019 Operating Cash Flow	
Earnings before interest and taxes	\$150
+ Depreciation	150
– Taxes	25
Operating cash flow	<u>\$275</u>

As this example illustrates, operating cash flow is not the same as net income because depreciation and interest are subtracted out when net income is calculated. If you recall our earlier discussion, we don't subtract these out in computing operating cash flow because depreciation is not a cash expense and interest paid is a financing expense, not an operating expense.

Net Capital Spending Suppose beginning net fixed assets were \$500 and ending net fixed assets were \$750. What was the net capital spending for the year?

From the income statement for Dole, depreciation for the year was \$150. Net fixed assets rose by \$250. Dole thus spent \$250 along with an additional \$150, for a total of \$400.

Change in NWC and Cash Flow from Assets Suppose Dole Cola started the year with \$2,130 in current assets and \$1,620 in current liabilities. The corresponding ending figures were \$2,260 and \$1,710. What was the change in NWC during the year? What was cash flow from assets? How does this compare to net income?

Net working capital started out as $\$2,130 - 1,620 = \510 and ended up at $\$2,260 - 1,710 = \550 . The change in NWC was thus $\$550 - 510 = \40 . Putting together all the information for Dole Cola, we have:

DOLE COLA 2019 Cash Flow from Assets	
Operating cash flow	\$275
– Net capital spending	400
– Change in NWC	40
Cash flow from assets	<u>–\$165</u>

Dole had cash flow from assets of $-\$165$. Net income was positive at \$95. Is the fact that cash flow from assets was negative a cause for alarm? Not necessarily. The cash flow here is negative primarily because of a large investment in fixed assets. If these are good investments, then the resulting negative cash flow is not a worry.

Cash Flow to Creditors and Stockholders We saw that Dole Cola had cash flow from assets of $-\$165$. The fact that this is negative means that Dole raised more money in the form of new debt and equity than it paid out for the year. For example, suppose we know that Dole didn't sell any new equity for the year. What was cash flow to stockholders? To creditors?

Because it didn't raise any new equity, Dole's cash flow to stockholders is equal to the cash dividend paid:

DOLE COLA 2019 Cash Flow to Stockholders	
Dividends paid	\$30
– Net new equity	<u>0</u>
Cash flow to stockholders	<u>\$30</u>

Now, from the cash flow identity, the total cash paid to creditors and stockholders was $-\$165$. Cash flow to stockholders is $\$30$, so cash flow to creditors must be equal to $-\$165 - 30 = -\195 :

$$\begin{aligned} \text{Cash flow to creditors} + \text{Cash flow to stockholders} &= -\$165 \\ \text{Cash flow to creditors} + \$30 &= -\$165 \\ \text{Cash flow to creditors} &= -\$195 \end{aligned}$$

Because we know that cash flow to creditors is $-\$195$ and interest paid is $\$30$ (from the income statement), we can now determine net new borrowing. Dole must have borrowed $\$225$ during the year to help finance the fixed asset expansion:

DOLE COLA 2019 Cash Flow to Creditors	
Interest paid	\$ 30
– Net new borrowing	<u>225</u>
Cash flow to creditors	<u>-\$195</u>

CONCEPT QUESTIONS

- 2.4a What is the cash flow identity? Explain what it says.
- 2.4b What are the components of operating cash flow?
- 2.4c Why is interest paid not a component of operating cash flow?

SUMMARY AND CONCLUSIONS

This chapter has introduced you to some of the basics of financial statements, taxes, and cash flow. In it, we saw that:

1. The book values on an accounting balance sheet can be very different from market values. The goal of financial management is to maximize the market value of the stock, not its book value.
2. Net income, as it is computed on the income statement, is not cash flow. A primary reason is that depreciation, a noncash expense, is deducted when net income is computed.
3. Marginal and average tax rates can be different, and it is the marginal tax rate that is relevant for most financial decisions.

4. After the Tax Cuts and Jobs Act of 2017, the U.S. corporate income tax is a flat 21 percent.
5. There is a cash flow identity much like the balance sheet identity. It says that cash flow from assets equals cash flow to creditors and stockholders.

The calculation of cash flow from financial statements isn't difficult. Care must be taken in handling noncash expenses, such as depreciation, and in not confusing operating costs with financing costs. Most of all, it is important not to confuse book values with market values and accounting income with cash flow.



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Can you answer the following questions? If your class is using *Connect*, log on to SmartBook to see if you know the answers to these and other questions, check out the study tools, and find out what topics require additional practice!

Section 2.1 What is the relationship between current assets and current liabilities in a healthy firm?

Section 2.2 What is the purpose of the income statement?

Section 2.3 If you make an extra \$1,000 in income and your marginal tax rate is 32 percent while your average tax rate is 20 percent, what will you pay in taxes on this extra income?

Section 2.4 What are the components of cash flow from assets?

CHAPTER REVIEW AND SELF-TEST PROBLEM

- 2.1 Cash Flow for Rasputin Corporation** This problem will give you some practice working with financial statements and figuring cash flow. Based on the following information for Rasputin Corporation, prepare an income statement for 2019 and balance sheets for 2018 and 2019. Next, following our U.S. Corporation examples in the chapter, calculate cash flow from assets for Rasputin, cash flow to creditors, and cash flow to stockholders for 2019. Use a 21 percent tax rate throughout. You can check your answers below. (See Problem 20.)

	2018	2019
Sales	\$3,790	\$3,990
Cost of goods sold	2,043	2,137
Depreciation	975	1,018
Interest	225	267
Dividends	275	305
Current assets	2,140	2,346
Net fixed assets	6,770	7,087
Current liabilities	994	1,126
Long-term debt	2,869	2,962

■ Answer to Chapter Review and Self-Test Problem

- 2.1 In preparing the balance sheets, remember that shareholders' equity is the residual. With this in mind, Rasputin's balance sheets are as follows:

RASPUTIN CORPORATION					
Balance Sheets as of December 31, 2018 and 2019					
	2018	2019		2018	2019
Current assets	\$2,140	\$2,346	Current liabilities	\$ 994	\$1,126
Net fixed assets	<u>6,770</u>	<u>7,087</u>	Long-term debt	2,869	2,962
			Equity	<u>5,047</u>	<u>5,345</u>
			Total liabilities and shareholders' equity	<u>\$8,910</u>	<u>\$9,433</u>
Total assets	<u>\$8,910</u>	<u>\$9,433</u>			

The income statement is straightforward:

RASPUTIN CORPORATION	
2019 Income Statement	
Sales	\$3,990
Cost of goods sold	2,137
Depreciation	<u>1,018</u>
Earnings before interest and taxes	\$ 835
Interest paid	267
Taxable income	<u>\$ 568</u>
Taxes (21%)	119
Net income	<u>\$ 449</u>
Dividends	\$305
Addition to retained earnings	144

Notice that we've used a flat 21 percent tax rate. Also, notice that the addition to retained earnings is net income less cash dividends.

We can now pick up the figures we need to get operating cash flow:

RASPUTIN CORPORATION	
2019 Operating Cash Flow	
Earnings before interest and taxes	\$ 835
+ Depreciation	1,018
– Current taxes	119
Operating cash flow	<u>\$1,734</u>

Next, we get the capital spending for the year by looking at the change in fixed assets, remembering to account for the depreciation:

Ending fixed assets	\$7,087
– Beginning fixed assets	6,770
+ Depreciation	1,018
Net investment in fixed assets	<u>\$1,335</u>

After calculating beginning and ending NWC, we take the difference to get the change in NWC:

Ending NWC	\$1,220
– Beginning NWC	1,146
Change in NWC	<u>\$ 74</u>

We now combine operating cash flow, net capital spending, and the change in net working capital to get the total cash flow from assets:

RASPUTIN CORPORATION 2019 Cash Flow from Assets	
Operating cash flow	\$1,734
– Net capital spending	1,335
– Change in NWC	74
Cash flow from assets	<u>\$ 325</u>

To get cash flow to creditors, notice that long-term borrowing increased by \$93 during the year and that interest paid was \$267, so:

RASPUTIN CORPORATION 2019 Cash Flow to Creditors	
Interest paid	\$267
– Net new borrowing	93
Cash flow to creditors	<u>\$174</u>

Finally, dividends paid were \$305. To get net new equity, we have to do some extra calculating. Total equity was up by $\$5,345 - 5,047 = \298 . Of this increase, \$144 was from additions to retained earnings, so \$154 in new equity was raised during the year. Cash flow to stockholders was thus:

RASPUTIN CORPORATION 2019 Cash Flow to Stockholders	
Dividends paid	\$305
– Net new equity	154
Cash flow to stockholders	<u>\$ 151</u>

As a check, notice that cash flow from assets (\$325) does equal cash flow to creditors plus cash flow to stockholders ($\$174 + 151 = \325).

CRITICAL THINKING AND CONCEPTS REVIEW

- LO 1** 2.1 **Liquidity** What does liquidity measure? Explain the trade-off a firm faces between high-liquidity and low-liquidity levels.
- LO 2** 2.2 **Accounting and Cash Flows** Why is it that the revenue and cost figures shown on a standard income statement may not be representative of the actual cash inflows and outflows that occurred during a period?

- LO 1** **2.3 Book Values versus Market Values** In preparing a balance sheet, why do you think standard accounting practice focuses on historical cost rather than market value?
- LO 2** **2.4 Operating Cash Flow** In comparing accounting net income and operating cash flow, what two items do you find in net income that are not in operating cash flow? Explain what each is and why it is excluded in operating cash flow.
- LO 1** **2.5 Book Values versus Market Values** Under standard accounting rules, it is possible for a company's liabilities to exceed its assets. When this occurs, the owners' equity is negative. Can this happen with market values? Why or why not?
- LO 4** **2.6 Cash Flow from Assets** Suppose a company's cash flow from assets was negative for a particular period. Is this necessarily a good sign or a bad sign?
- LO 4** **2.7 Operating Cash Flow** Suppose a company's operating cash flow was negative for several years running. Is this necessarily a good sign or a bad sign?
- LO 4** **2.8 Net Working Capital and Capital Spending** Could a company's change in NWC be negative in a given year? (*Hint:* Yes.) Explain how this might come about. What about net capital spending?
- LO 4** **2.9 Cash Flow to Stockholders and Creditors** Could a company's cash flow to stockholders be negative in a given year? (*Hint:* Yes.) Explain how this might come about. What about cash flow to creditors?
- LO 4** **2.10 Firm Values** In February 2017, Toshiba announced that it was writing off \$6.3 billion due to its acquisition of nuclear power plant construction firm CB&I Stone & Webster only a year before. We would argue that Toshiba's stockholders probably didn't suffer as a result of the reported loss.

QUESTIONS AND PROBLEMS



Select problems are available in McGraw-Hill *Connect*. Please see the packaging options section of the preface for more information.

BASIC (Questions 1–12)

- LO 1** **1. Building a Balance Sheet** Grey Wolf, Inc., has current assets of \$2,090, net fixed assets of \$9,830, current liabilities of \$1,710, and long-term debt of \$4,520. What is the value of the shareholders' equity account for this firm? How much is net working capital?
- LO 2** **2. Building an Income Statement** Sidewinder, Inc., has sales of \$634,000, costs of \$328,000, depreciation expense of \$73,000, interest expense of \$38,000, and a tax rate of 21 percent. What is the net income for this firm?
- LO 2** **3. Dividends and Retained Earnings** Suppose the firm in Problem 2 paid out \$68,000 in cash dividends. What is the addition to retained earnings?
- LO 2** **4. Per-Share Earnings and Dividends** Suppose the firm in Problem 3 had 35,000 shares of common stock outstanding. What is the earnings per share, or EPS, figure? What is the dividends per share figure?
- LO 3** **5. Calculating Taxes** Duela Dent is single and had \$189,000 in taxable income. Using the rates from Table 2.3 in the chapter, calculate her income taxes.
- LO 3** **6. Tax Rates** In Problem 5, what is the average tax rate? What is the marginal tax rate?





LO 2

7. Calculating OCF Benson, Inc., has sales of \$38,530, costs of \$12,750, depreciation expense of \$2,550, and interest expense of \$1,850. If the tax rate is 21 percent, what is the operating cash flow, or OCF?

LO 4

8. Calculating Net Capital Spending Rottweiler Obedience School's December 31, 2018, balance sheet showed net fixed assets of \$1,945,000, and the December 31, 2019, balance sheet showed net fixed assets of \$2,137,000. The company's 2019 income statement showed a depreciation expense of \$335,000. What was the company's net capital spending for 2019?

LO 4

9. Calculating Additions to NWC The December 31, 2018, balance sheet of Justin's Golf Shop, Inc., showed current assets of \$1,490 and current liabilities of \$1,210. The December 31, 2019, balance sheet showed current assets of \$1,675 and current liabilities of \$1,290. What was the company's 2019 change in net working capital, or NWC?



LO 4

10. Cash Flow to Creditors The December 31, 2018, balance sheet of Whelan, Inc., showed long-term debt of \$1,350,000, and the December 31, 2019, balance sheet showed long-term debt of \$1,470,000. The 2019 income statement showed an interest expense of \$97,500. What was the firm's cash flow to creditors during 2019?



LO 4

11. Cash Flow to Stockholders The December 31, 2018, balance sheet of Whelan, Inc., showed \$120,000 in the common stock account and \$2,289,000 in the additional paid-in surplus account. The December 31, 2019, balance sheet showed \$137,000 and \$2,568,000 in the same two accounts, respectively. If the company paid out \$149,500 in cash dividends during 2019, what was the cash flow to stockholders for the year?

LO 4

12. Calculating Cash Flows Given the information for Whelan, Inc., in Problems 10 and 11, suppose you also know that the firm's net capital spending for 2019 was \$745,000 and that the firm reduced its net working capital investment by \$94,300. What was the firm's 2019 operating cash flow, or OCF?

INTERMEDIATE (Questions 13–22)



LO 1

13. Market Values and Book Values Klingon Widgets, Inc., purchased new cloaking machinery three years ago for \$6 million. The machinery can be sold to the Romulans today for \$4.6 million. Klingon's current balance sheet shows net fixed assets of \$3.15 million, current liabilities of \$830,000, and net working capital of \$210,000. If all the current accounts were liquidated today, the company would receive \$950,000 in cash. What is the book value of Klingon's total assets today? What is the sum of the market value of NWC and the market value of fixed assets?



LO 4

14. Calculating Cash Flows Weiland Co. shows the following information on its 2019 income statement: sales = \$178,000; costs = \$103,600; other expenses = \$5,100; depreciation expense = \$12,100; interest expense = \$8,900; taxes = \$12,705; dividends = \$10,143. In addition, you're told that the firm issued \$2,900 in new equity during 2019 and redeemed \$4,000 in outstanding long-term debt.

- What is the 2019 operating cash flow?
- What is the 2019 cash flow to creditors?

- c. What is the 2019 cash flow to stockholders?
- d. If net fixed assets increased by \$23,140 during the year, what was the addition to NWC?

LO 2 15. **Using Income Statements** Given the following information for Ted's Dread Co., calculate the depreciation expense: sales = \$68,500; costs = \$51,700; addition to retained earnings = \$4,500; dividends paid = \$2,420; interest expense = \$2,130; tax rate = 21 percent.

LO 1 16. **Preparing a Balance Sheet** Prepare a balance sheet for Alaskan Peach Corp. as of December 31, 2019, based on the following information: cash = \$207,000; patents and copyrights = \$871,000; accounts payable = \$293,000; accounts receivable = \$265,000; tangible net fixed assets = \$5,270,000; inventory = \$579,000; notes payable = \$201,000; accumulated retained earnings = \$4,676,000; long-term debt = \$1,680,000.

LO 1 17. **Residual Claims** Tremonti, Inc., is obligated to pay its creditors \$7,900 during the year.

- a. What is the value of the shareholders' equity if assets equal \$9,100?
- b. What if assets equal \$6,900?

LO 2 18. **Net Income and OCF** During the year, Belyk Paving Co. had sales of \$2,275,000. Cost of goods sold, administrative and selling expenses, and depreciation expense were \$1,285,000, \$535,000, and \$420,000, respectively. In addition, the company had an interest expense of \$245,000 and a tax rate of 21 percent. (Ignore any tax loss carryforward provision and assume interest expense is fully deductible.)

- a. What is the company's net income?
- b. What is its operating cash flow?
- c. Explain your results in parts (a) and (b).

LO 2 19. **Accounting Values versus Cash Flows** In Problem 18, suppose Belyk Paving Co. paid out \$370,000 in cash dividends. Is this possible? If net capital spending was zero, no new investments were made in net working capital, and no new stock was issued during the year, what do you know about the firm's long-term debt account?

LO 4 20. **Calculating Cash Flows** Prescott Football Manufacturing had the following operating results for 2019: sales = \$29,874; cost of goods sold = \$21,632; depreciation expense = \$3,470; interest expense = \$514; dividends paid = \$825. At the beginning of the year, net fixed assets were \$19,872, current assets were \$3,557, and current liabilities were \$3,110. At the end of the year, net fixed assets were \$22,987, current assets were \$4,381, and current liabilities were \$2,981. The tax rate for 2019 was 24 percent.

- a. What is net income for 2019?
- b. What is the operating cash flow for 2019?
- c. What is the cash flow from assets for 2019? Is this possible? Explain.
- d. If no new debt was issued during the year, what is the cash flow to creditors? What is the cash flow to stockholders? Explain and interpret the positive and negative signs of your answers in parts (a) through (d).

LO 4 21. **Calculating Cash Flows** Consider the following abbreviated financial statements for Cabo Wabo, Inc.:

CABO WABO, INC. Partial Balance Sheets as of December 31, 2018 and 2019					CABO WABO, INC. 2019 Income Statement		
	2018	2019		2018	2019		
Assets			Liabilities and Owners' Equity				
Current assets	\$ 2,989	\$ 3,169	Current liabilities	\$1,291	\$1,898	Sales	\$44,730
Net fixed assets	13,862	14,493	Long-term debt	7,161	8,221	Costs	22,432
						Depreciation	3,777
						Interest paid	1,032

- What is owners' equity for 2018 and 2019?
- What is the change in net working capital for 2019?
- In 2019, the company purchased \$7,876 in new fixed assets. How much in fixed assets did the company sell? What is the cash flow from assets for the year? (The tax rate is 22 percent.)
- During 2019, the company raised \$2,371 in new long-term debt. How much long-term debt must the company have paid off during the year? What is the cash flow to creditors?

LO 4 22. **Cash Flow Identity** Graffiti Advertising, Inc., reported the following financial statements for the last two years. Construct the cash flow identity for the company. Explain what each number means.

2019 Income Statement	
Sales	\$750,727
Cost of goods sold	430,821
Selling and administrative	165,676
Depreciation	72,489
EBIT	\$ 81,741
Interest	25,630
EBT	\$ 56,111
Taxes	14,028
Net income	\$ 42,083
Dividends	\$ 14,200
Addition to retained earnings	27,883

GRAFFITI ADVERTISING, INC. Balance Sheet as of December 31, 2018			
Cash	\$ 17,691	Accounts payable	\$ 12,721
Accounts receivable	25,228	Notes payable	19,149
Inventory	18,321	Current liabilities	\$ 31,870
Current assets	\$ 61,240	Long-term debt	\$181,000
Net fixed assets	\$457,454	Owners' equity	\$305,824
		Total liabilities and owners' equity	\$518,694
Total assets	\$518,964		

GRAFFITI ADVERTISING, INC.			
Balance Sheet as of December 31, 2019			
Cash	\$ 19,003	Accounts payable	\$ 13,962
Accounts receivable	28,025	Notes payable	21,872
Inventory	30,222	Current liabilities	\$ 35,834
Current assets	\$ 77,250	Long-term debt	\$201,900
Net fixed assets	\$539,679	Owners' equity	\$379,195
		Total liabilities and owners' equity	\$616,929
Total assets	\$616,929		

CHALLENGE (Question 23)

LO 4 **23. Net Fixed Assets and Depreciation** On the balance sheet, the net fixed assets (NFA) account is equal to the gross fixed assets (FA) account (which records the acquisition cost of fixed assets) minus the accumulated depreciation (AD) account (which records the total depreciation taken by the firm against its fixed assets). Using the fact that $NFA = FA - AD$, show that the expression given in the chapter for net capital spending, $NFA_{end} - NFA_{beg} + D$ (where D is the depreciation expense during the year), is equivalent to $FA_{end} - FA_{beg}$.

2.1 Change in Net Working Capital Visit Alcoa at www.alcoa.com. Find the most recent annual report and locate the balance sheets for the past two years. Use these balance sheets to calculate the change in net working capital. How do you interpret this number?

2.2 Book Values versus Market Values The home page for The Coca-Cola Company can be found at www.coca-cola.com. Locate the most recent annual report, which contains a balance sheet for the company. What is the book value of equity for Coca-Cola? The market value of a company is the number of shares of stock outstanding times the price per share. This information can be found at finance.yahoo.com using the ticker symbol for Coca-Cola (KO). What is the market value of equity? Which number is more relevant for shareholders?

2.3 Net Working Capital Duke Energy is one of the world's largest energy companies. Go to the company's home page at www.duke-energy.com, follow the link to the investors' page, and locate the annual reports. What was Duke Energy's net working capital for the most recent year? Does this number seem low to you given Duke's current liabilities? Does this indicate that Duke Energy may be experiencing financial problems? Why or why not?

2.4 Cash Flows to Stockholders and Creditors Cooper Tire & Rubber Company provides financial information for investors on its website at www.coopertire.com. Follow the "Investors" link and find the most recent annual report. Using the consolidated statement of cash flows, calculate the cash flow to stockholders and the cash flow to creditors.

WHAT'S ON THE WEB?

EXCEL MASTER IT! PROBLEM



Using Excel to find the marginal tax rate can be accomplished using the VLOOKUP function. However, calculating the total tax bill is a little more difficult. Here we show a copy of the IRS tax table for an individual for 2018 (the income thresholds are indexed to inflation and change through time). Often, tax tables are presented in this format.

If taxable income is over...	But not over...	The tax is:
\$ 0	\$ 9,525	10% of the amount over \$0
9,525	38,700	\$952.50 plus 12% of the amount over \$9,525
38,700	82,500	\$4,453.50 plus 22% of the amount over \$38,700
82,500	157,500	\$14,089.50 plus 24% of the amount over \$82,500
157,500	200,000	\$32,089.50 plus 32% of the amount over \$157,500
200,000	500,000	\$45,689.50 plus 35% of the amount over \$200,000
500,000		\$150,689.50 plus 37% of the amount over \$500,000

In reading this table, the marginal tax rate for taxable income less than \$9,525 is 10%. If the taxable income is between \$9,525 and \$38,700, the tax bill is \$952.50 plus the marginal taxes. The marginal taxes are calculated as the taxable income minus \$9,525 times the marginal tax rate of 12%.

Below, we have the tax table for a married couple filing jointly.

Taxable income is greater than or equal to...	But less than...	Tax rate
\$ 0	\$ 19,050	10%
19,050	77,400	12
77,400	165,000	22
165,000	315,000	24
315,000	400,000	32
400,000	600,000	35
600,000		37

- Create a tax table in Excel for a married couple similar to the individual tax table shown earlier. Your spreadsheet should then calculate the marginal tax rate, the average tax rate, and the tax bill for any level of taxable income input by a user.
- For a taxable income of \$335,000, what is the marginal tax rate?
- For a taxable income of \$335,000, what is the total tax bill?
- For a taxable income of \$335,000, what is the average tax rate?

CHAPTER CASE

Cash Flows and Financial Statements at Sunset Boards, Inc.

Sunset Boards is a small company that manufactures and sells surfboards in Malibu. Tad Marks, the founder of the company, is in charge of the design and sale of the surfboards, but his background is in surfing, not business. As a result, the company's financial records are not well maintained.

The initial investment in Sunset Boards was provided by Tad and his friends and family. Because the initial investment was relatively small, and the company has made surfboards only for its own store, the investors haven't required detailed financial statements from Tad. But thanks to word of mouth among professional surfers, sales have picked up recently, and Tad is considering a major expansion. His plans include opening another surfboard store in Hawaii, as well as supplying his "sticks" (surfer lingo for boards) to other sellers.

Tad's expansion plans require a significant investment, which he plans to finance with a combination of additional funds from outsiders plus some money borrowed from banks. Naturally, the new investors and creditors require more organized and detailed financial statements than Tad has previously prepared. At the urging of his investors, Tad has hired financial analyst Jameson Reid to evaluate the performance of the company over the past year.

After rooting through old bank statements, sales receipts, tax returns, and other records, Jameson has assembled the following information:

	2018	2019
Cost of goods sold	\$224,359	\$283,281
Cash	32,372	34,394
Depreciation	63,334	71,584
Interest expense	13,783	15,780
Selling and administrative expenses	44,121	57,586
Accounts payable	57,220	63,479
Net fixed assets	279,419	348,508
Sales	440,122	536,483
Accounts receivable	22,939	29,755
Notes payable	26,079	28,474
Long-term debt	141,040	158,368
Inventory	48,272	66,244
New equity	0	27,157

Sunset Boards currently pays out 50 percent of net income as dividends to Tad and the other original investors and has a 21 percent tax rate. You are Jameson's assistant, and he has asked you to prepare the following:

1. An income statement for 2018 and 2019.
2. A balance sheet for 2018 and 2019.
3. Operating cash flow for each year.
4. Cash flow from assets for 2019.
5. Cash flow to creditors for 2019.
6. Cash flow to stockholders for 2019.

QUESTIONS

1. How would you describe Sunset Boards's cash flows for 2019? Write a brief discussion.
2. In light of your discussion in the previous question, what do you think about Tad's expansion plans?