Cornett Adair Nofsinger

finance

Third Edition

Applications & Theory

finance

applications & theory

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

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Sloan School of Management Massachusetts Institute of Technology, Consulting Editor

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Mc Graw Hill Education

FINANCE: APPLICATIONS & THEORY, THIRD EDITION

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dedicated

to my parents, Tom and Sue—Marcia Millon Cornett

to Kieran, the love of my life—Troy A. Adair Jr.

to Anna, my wife and best friend—John Nofsinger

about the authors

Marcia Millon Cornett ***Professor of Finance in the School of Management at Bentley University.*** She received her BS degree in economics from Knox College in Galesburg, Illinois, and her MBA and PhD degrees in finance from Indiana University in Bloomington, Indiana. Dr. Cornett has written and published several articles in the areas of bank performance, bank regulation, corporate finance, and investments. Articles authored by Dr. Cornett have appeared in such academic journals as the *Journal of Finance;* the *Journal of Money, Credit, and Banking;* the *Journal of Financial Economics; Financial Management;* and the *Journal of Banking and Finance.* In 2008, Dr. Cornett was ranked the 124th most-published out of 17,600 and the number five female author in finance literature over the last 50 years. Along with Anthony Saunders (John M. Schiff Professor of Finance at the Stern School of Business at New York University), Dr. Cornett has just completed writing the 8th edition of *Financial Institutions Management* (McGraw-Hill/Irwin) and the 5th edition of *Financial Markets and Institutions* (McGraw-Hill/Irwin). She serves as an associate editor for the *Journal of Financial Services Research,* the *Review of Financial Economics, Financial Review,* and *Multinational Finance Journal.* Dr. Cornett has served as a member of the board of directors, the executive committee, and the finance committee of the SIU Credit Union. Dr. Cornett has also taught at Southern Illinois University at Carbondale, the University of Colorado, Boston College, and Southern Methodist University. She is a member of the Financial Management Association, the American Finance Association, and the Western Finance Association.

Troy Alton Adair Jr. ***Associate Vice President for Institutional Effectiveness at Berkeley College.*** He received his BS degree in computers/information science from the University of Alabama at Birmingham, his MBA from the University of North Dakota, and his PhD in finance from Indiana University. Dr. Adair has written articles on bank regulator self-interest, analyst earnings per share forecasting, and capital budgeting in continuous time and is the author of *Corporate Finance Demystified, Excel Applications in Corporate Finance,* and *Excel Applications in Investments* (all McGraw-Hill/Irwin). He has also served as a consultant on financial data information systems and business intelligence to a number of international banks and insurance companies, and as the faculty representative to the board of trustees investments committee at Alma College. Dr. Adair has also taught at the University of Michigan, Alma College, Hofstra University, Indiana University, and the University of North Carolina at Chapel Hill. He is a member of the Financial Management Association, the American Finance Association, and the Southern Finance Association.

John Nofsinger ***Professor of Finance at Washington State University.*** He earned his BS degree in electrical engineering from Washington State University, his MBA degree from Chapman University, and his PhD degree in finance from Washington State University. Dr. Nofsinger has written dozens of articles in the areas of investments, corporate finance, and behavioral finance. These papers have appeared in the scholarly journals, the *Journal of Finance, Journal of Business, Journal of Financial and Quantitative Analysis, Financial Management, Journal of Corporate Finance, Journal of Banking and Finance, Journal of Behavioral Decision Making*, among others. Dr. Nofsinger has also authored (or coauthored) six trade books and textbooks that have been translated into six different languages. The most prominent of these books are the industry book, *The Psychology of Investing*, and a textbook, *Investments: Analysis and Behavior* (McGraw-Hill/Irwin, coauthored with Mark Hirschey, the Anderson W. Chandler Professor of Business at the University of Kansas). Dr. Nofsinger is a leading expert in behavioral finance and is a frequent speaker on this topic at industry conferences, universities, and academic conferences. He has often been quoted or appeared in the financial media, including *The Wall Street Journal, Financial Times, Fortune, Bloomberg BusinessWeek, Smart Money, Washington Post*, and *CNBC*, and other media from *The Dolans* to *The Street.com.*

a note from the authors

"There is a lot to cover in this course so I focus on the core concepts, theories, and problems."

"I like to teach the course by using examples from their own individual lives."

"My students come into this course with varying levels of math skills."

How many of these quotes might you have said while teaching the undergraduate corporate finance course? Our many years of teaching certainly reflect such sentiments, and as we prepared to write this book, we conducted many market research studies that confirm just how much these statements—or ones similar—are common across the country. This critical course covers so many crucial topics that instructors need to focus on core ideas to ensure that students are getting the preparation they need for future classes—and for their lives beyond college.

We did not set out to write this book to change the way finance is taught, but rather to parallel and support the way that instructors from across the country currently teach finance. Well over 600 instructors teaching this course have shared their class experiences and ideas via a variety of research methods that we used to develop the framework for this text. We are excited to have authored a book that we think you will find fits your classroom style perfectly.

KEY THEMES

This book's framework emphasizes three themes. See pages xiii to xvi for a description of features in our book that support these themes.

- **Finance is about connecting core concepts.** We all struggle with fitting so many topics into this course, so this text strives to make it easier for you by getting back to the core concepts, key research, and current topics. We realize that today's students expect to learn more in class from lectures than in closely studying their textbooks, so we've created brief chapters that clearly lead students to crucial material that they need to review if they are to understand how to approach core financial concepts. The text is also organized around learning goals, making it easier for you to prep your course and for students to study the right topics.
- **Finance can be taught using a personal perspective.** Most long-term finance instructors have often heard students ask "How is this course relevant to me?" on the first day of class. We no longer teach classes dedicated solely to finance majors; many of us now must teach the first finance course to a mix of business majors. We need to give finance majors the rigor they need while not overwhelming class members from other majors. For years, instructors have used individual examples to help teach these concepts, but this is the first text to integrate this personal way of teaching into the chapters.
- **Finance focuses on solving problems and decision making.** This isn't to say that concepts and theories aren't important, but students will typically need to solve some kind of mathematical problem—or at least understand

the impact of different numerical scenarios—to make the right decision on common finance issues. If you, as an instructor, either assign problems for homework or create exams made up almost entirely of mathematical material, you understand the need for good problems (and plenty of them). You also understand from experience the number of office hours you spend tutoring students and grading homework. Students have different learning styles, and this text aims to address that challenge to allow you more time in class to get through the critical topics.

CHANGES IN THE THIRD EDITION

Based on feedback from users and reviewers, we undertook an ambitious revision in order to make the book follow your teaching strategy even more closely. Below are the changes we made for this third edition, broken out by chapter.

Overall

- Simplified figures where appropriate and added captions to emphasize the main "takeaways"
- Updated data, company names, and scenarios to reflect latest available data and real-world changes
- Cross-referenced numbered examples with similar end-of-chapter problems and self-test problems so students can easily model their homework
- Updated the numbers in the end-of-chapter problems to provide variety and limit the transfer of answers from previous classes

Chapter 1: Introduction to Financial Management

- Expanded discussion of agency relationships and problems between managers and stakeholders

Chapter 2: Reviewing Financial Statements

- Added discussion of earnings before interest, taxes, depreciation, and assets (EBITDA) and net operating profit after taxes (NOPAT)
- Added discussion of EPS dilution, including new in-chapter example and end-of-chapter problem
- Added discussion of where to find financial statements for a firm
- Added a new Finance at Work on American Apparel delisting letter
- Added Appendix with financial statements in Excel format

Chapter 3: Analyzing Financial Statements

- Added discussion of gross profit margin and operating profit margin
- Added explanation of debt-to-asset ratio transformed to equity multiplier and debt-to-equity ratios
- Expanded definition of debt management ratios to include coverage ratios
- Added additional end-of-chapter problems on interactions between ratios
- Added Excel file for calculating ratios from financial statements

Chapter 4: Time Value of Money 1: Analyzing Single Cash Flows

- Expanded introductory discussion
- Converted all tables to spreadsheet layout
- Clarified discussion of payment to cash flow

- Added PV and FV labels to all time line diagrams
- Updated Mini-Case data

Chapter 5: Time Value of Money 2: Analyzing Annuity Cash Flows

- Converted all tables to spreadsheet layout
- Added PV and FV labels to all time line diagrams
- Updated and revised Finance at Work boxes
- Reduced derivation part of an equation
- Added new Math Coach to compute amortization in TVM calculators

Chapter 6: Understanding Financial Markets and Institutions

- Updated all figures, tables, and examples
- Added Finance at Work box on JPMorgan, "London whale," and derivative losses
- Added discussion on financial institutions move away from risk measurement and management to servicers of mortgages and other risky assets
- Added discussion of shadow banks
- Added new example on determinants of interest rates in individual securities
- Added new self-test problem and end-of-chapter problems
- Updated Appendix

Chapter 7: Valuing Bonds

- Updated real data, real bonds, and real companies in examples and figures
- Converted all tables to spreadsheet layout
- Added a discussion of convertible bonds with margin definition
- Added PV and FV labels to all time line diagrams
- Added TVM calculator to Example 7-6
- Clarified and expanded discussion of the call price
- Updated Greek tragedy Finance at Work box
- Added a new self-test problem on capital gains and losses in bonds

Chapter 8: Valuing Stocks

- Updated real data, real stocks, and real companies in examples and figures
- Converted all tables to spreadsheet layout
- Changed specialist to designated market maker
- New Example 8-1
- Clarified description of equation 8-6
- Simplified variable growth figure, equation, and discussion
- Added discussion of P/CF and P/B relative price ratios
- Updated Mini-Case

Chapter 9: Characterizing Risk and Return

- Updated real data, real indexes, and real companies in examples, discussions, and tables
- Converted all tables to spreadsheet layout
- Improved discussion of dollar returns and percentage returns

- Moved geometric mean return equation from footnote into the text
- Updated Mini-Case

Chapter 10: Estimating Risk and Return

- Updated real data, indexes, betas, and companies in examples, discussions, and tables
- Converted all tables to spreadsheet layout
- Clarified description of equations 10-1 and 10-2
- Changed example from Boeing to General Electric
- New table and description for spreadsheet computation of computing beta
- Updated the Mini-Case

Chapter 11: Calculating the Cost of Capital

- Expanded discussion of WACC for projects versus WACC for firm
- Added discussion of WACC from the viewpoint of the investor versus that of the firm
- Expanded discussion of intuition underlying calculation of project WACC
- Enhanced intuitive explanation for the use of divisional WACCs
- Added details concerning flotation costs to the corporation

Chapter 12: Estimating Cash Flows on Capital Budgeting Projects

- Enhanced intuitive explanation of why accelerated depreciation is preferred
- Added additional explanation of adjusting the project's initial cash flow to account for flotation costs
- Added additional end-of-chapter problems dealing with replacement projects' cash flows

Chapter 13: Weighing Net Present Value and Other Capital Budgeting Criteria

- Changed calculation and discussion of profitability index to reflect a benchmark of 1
- Enhanced explanation of calculation of MIRR
- Enhanced discussion of payback
- Added additional clarifications concerning use of NPV profiles

Chapter 14: Working Capital Management and Policies

- Added discussion of relationship between working capital management and operations management
- Enhanced explanation and example concerning use of Miller-Orr model

Chapter 15: Financial Planning and Forecasting

- Updated examples of naïve approach to forecasting sales, average approach, adjusting for seasonality and trend, and calculating additional funds needed using pro forma balance sheets

Chapter 16: Assessing Long-Term Debt, Equity, and Capital Structure

- Added coverage of operating leverage and total leverage to discussion of financial leverage
- Enhanced discussion of break-even EBIT

Chapter 17: Sharing Firm Wealth: Dividends, Share Repurchases, and Other Payouts

- Revised discussion of residual dividend model to reflect firms' responses to changing economic conditions
- Enhanced discussion of extraordinary dividends
- Updated dividend policy examples

Chapter 18: Issuing Capital and the Investment Banking Process

- Revised/simplified Figure 18.1
- Added Finance at Work box and discussion of Facebook IPO
- Added discussion of Dutch auction IPO and direct IPO

Chapter 19: International Corporate Finance

- Updated the real data and companies in examples, discussions, and tables
- Converted all tables to spreadsheet layout

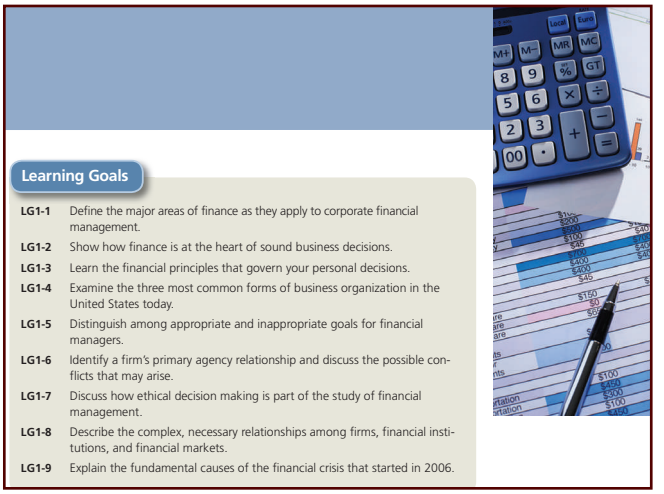
Chapter 20: Mergers and Acquisitions and Financial Distress

- Added Herfindahl-Hirschman Index (HHI)
- Added new end-of-chapter problems
- Increased discussion of debtor in possession and cramdown
- New Finance at Work box on American Airline bankruptcy
- Added M&A calculation in Excel format

Chapter Features

CONNECTING CORE CONCEPTS

Learning Goals appear at the beginning of each chapter and are indicated throughout the text next to headings, examples, summary, and end-of-chapter problems to which they relate. These outcomes help instructors structure their classes and assign readings and homework. The accompanying test bank provides instructors with hundreds of questions organized by level and learning goals to make customization even easier!



Learning Goals

LG1-1	Define the major areas of finance as they apply to corporate financial management.
LG1-2	Show how finance is at the heart of sound business decisions.
LG1-3	Learn the financial principles that govern your personal decisions.
LG1-4	Examine the three most common forms of business organization in the United States today.
LG1-5	Distinguish among appropriate and inappropriate goals for financial managers.
LG1-6	Identify a firm's primary agency relationship and discuss the possible conflicts that may arise.
LG1-7	Discuss how ethical decision making is part of the study of financial management.
LG1-8	Describe the complex, necessary relationships among firms, financial institutions, and financial markets.
LG1-9	Explain the fundamental causes of the financial crisis that started in 2006.

finance at work markets

JP MORGAN'S $2 BILLION BLUNDER

A massive trading bet boomeranged on JPMorgan Chase & Co., leaving the bank with at least $2 billion in trading losses and its chief executive, Jamie Dimon, with a rare black eye following a long run as what some called the "King of Wall Street." The losses stemmed from wagers gone wrong in the bank's Chief Investment Office, which manages risk for the New York company . . . Large positions taken in that office by a trader nicknamed "the London whale" had roiled a sector of the debt markets. The bank, betting on a continued economic recovery with a complex web of trades tied to the values of corporate bonds, was hit hard when prices moved against it starting last month, causing losses in many of its derivative positions. The losses occurred while JPMorgan tried to scale back the trade.

The bank's strategy was "flawed, complex, poorly reviewed, poorly executed, and poorly monitored," Mr. Dimon said Thursday in a hastily arranged conference call with analysts and investors after the stock-market close. He called the mistake "egregious, self-inflicted," and said: "We will admit it, we will fix it and move on." . . . JPMorgan, the nation's largest bank by assets, said in its quarterly filing with regulators Thursday that the plan it has been using to hedge risks "has proven to be riskier, more volatile, and less effective as an economic hedge than the firm previously believed." . . . Mr. Dimon said the trading losses were "slightly more" than $2 billion so far in the second quarter. . . The *Journal* reported in April that hedge funds and other investors were making bets in the market for insurance-like products called credit-default swaps, or CDS, to try to take advantage of trades done by a London-based trader named Bruno Michel Iksil who worked out of the Chief Investment Office, or CIO. . . On Thursday he admitted the bank acted "defensively" when news reports surfaced. "With hindsight we should have been paying more attention to it," he said. "This not how we want to run a business."

The CIO group once had a large trade designed to protect the company from a downturn in the economy. Earlier this year, it began reducing that position and taking a bullish stance on the financial health of certain companies and selling protection that would compensate buyers if those companies defaulted on debts. Mr. Iksil was a heavy seller of CDS contracts tied to a basket, or index, of companies. In April the cost of protection began to rise, contributing to the losses. Mr. Iksil's group had roughly $350 billion of investment securities at December 31, according to company filings, or about 15 percent of the bank's total assets . . . Mr. Dimon said the bank has an extensive review underway of what went wrong, which he said included "many errors," "sloppiness," and "bad judgment."

Source: Dan Fitzpatrick, Gregory Zuckerman, and Liz Rappaport, "J.P. Morgan's $2 Billion Blunder," *The Wall Street Journal Online*, May 11, 2012. Reprinted by permission of *The Wall Street Journal*. © 2012 Dow Jones & Company, Inc. All rights Reserved Worldwide. www.wsj.com

want to know more? **Key Words to Search for Updates:** JPMorgan, London whale, derivative trading losses

Finance at Work boxes highlight current events and hot topics noted in the news. The *Want to know more?* feature in each box contains suggested words to use for searching the Internet for updates. These features are great to use for class discussion or as homework assignments.

Time Out boxes, featured at the end of sections, test students' understanding of the key terms and core concepts just presented. Answers to the Time Out questions appear at the end of each chapter.

TIME OUT

3-1	What are the three major liquidity ratios used in evaluating financial statements?
3-2	How do the three major liquidity ratios used in evaluating financial statements differ?
3-3	Does a firm generally want to have high or low liquidity ratios? Why?

ANSWERS TO TIME OUT

3-1	The three most commonly used liquidity ratios are the current ratio, the quick (or acid-test) ratio, and the cash ratio.
3-2	The current ratio measures the dollars of current assets available to pay each dollar of current liabilities. The quick ratio measures the dollars of more liquid assets (cash and marketable securities and accounts receivable) available to pay each dollar of current liabilities. The cash ratio measures the dollars of cash and marketable securities available to pay each dollar of current liabilities

Research It! projects, perfect for individual assignments or as group projects, are included at the end of each chapter and require students to search the Web for data and other information to answer the questions.

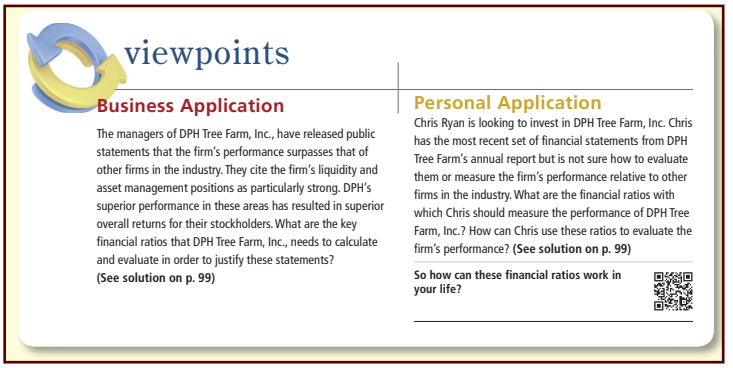
research it! Analyzing Financial Statements

Go to the website of Walmart Stores, Inc., at **www.walmartstores.com** and get the latest financial statements from the annual report using the following steps.

Click on "Investors." Click on "Financial Information." Click on "Annual Reports." Click on the most recent date. This will bring the file onto your computer that contains the relevant data.

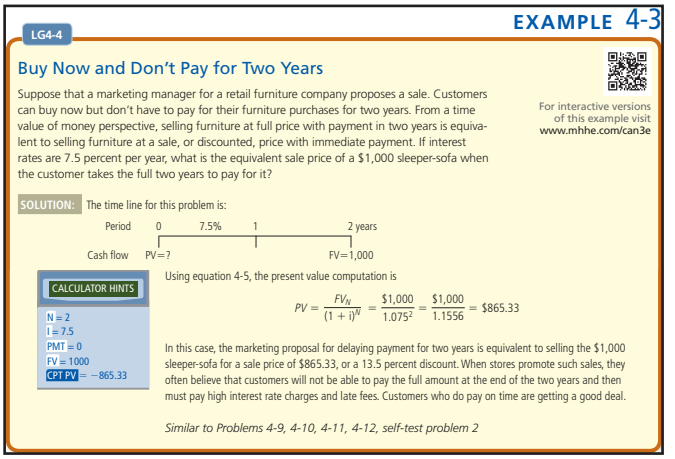
Using the most recent balance sheet and income statement, calculate the financial ratios for the firm, including the internal and sustainable growth rates.

PERSONAL PERSPECTIVE



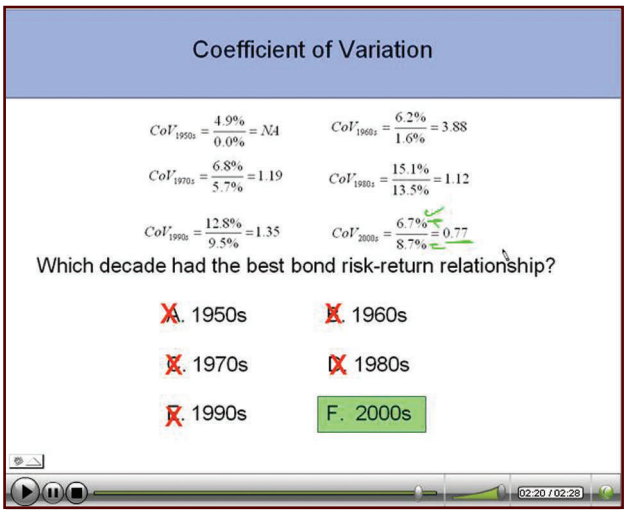
Viewpoints, a unique feature presented at the beginning of each chapter, pose both a business and a personal problem using key chapter topics. These Viewpoints scenarios immediately set a context for the chapter and allow instructors to take class discussion in multiple directions to make key concepts clearer. **Viewpoints Revisited** at the end of the chapter show how these problems are solved. **Viewpoints Extended** leverage a variety of media to provide an extended look at each personal application raised. These are accessible online at **www.mhhe.com/can3e** or through the QR code shown at the bottom of the column.

Numbered examples in each chapter feature various perspectives, so students gain practice in solving problems in both business and individual contexts. Each example contains a list of end-of-chapter problems that are similar, in order to better model the solution process. The QR codes in the top corner of each example link to the interactive video guided examples.

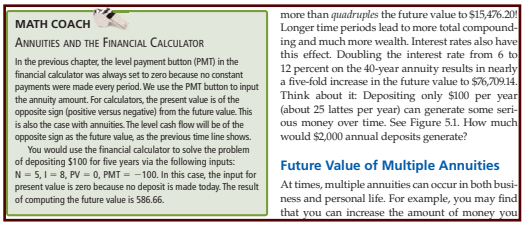


PROBLEM-SOLVING AND LEARNING STYLES

Each numbered example is accompanied by a **video guided example.** These exciting, unique features detail the solution to a key problem or concept within each chapter. For each example, students can scan the accompanying QR code or go to the book's website at **www.mhhe.com/can3e** to find the following additional support. **(See inside back cover for more information.)**



- The exact example in the book is worked out in a visual, narrated format.
- A similar example is presented in a video format, which stops at decision points in the problem and asks the students to identify the next step. The video continues, explaining why the student is correct or incorrect, and continues solving the problem. This feature allows students to apply and check their learning before doing homework.
- The solution to the example in the book is demonstrated using the TI-83, HP, and BA II Plus Professional calculators—reducing the class time needed to teach students how to use their calculators.
- The solution to the example in the book is demonstrated using Excel, to help you and your students get a basic understanding of how to set up the spreadsheets.


MATH COACH

ANNUITIES AND THE FINANCIAL CALCULATOR

In the previous chapter, the level payment button (PMT) in the financial calculator was always set to zero because no constant payments were made every period. We use the PMT button to input the annuity amount. For calculators, the present value is of the opposite sign (positive versus negative) from the future value. This is also the case with annuities. The level cash flow will be of the opposite sign as the future value, as the previous time line shows.

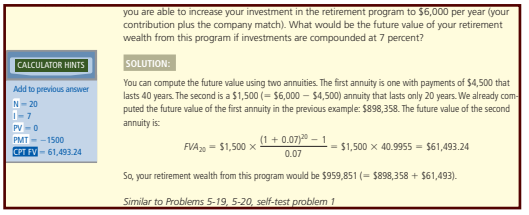
You would use the financial calculator to solve the problem of depositing $100 for five years via the following inputs: N = 5, I = 8, PV = 0, PMT = −100. In this case, the input for present value is zero because no deposit is made today. The result of computing the future value is 586.66.

more than *quadruples* the future value to $15,476.20! Longer time periods lead to more total compounding and much more wealth. Interest rates also have this effect. Doubling the interest rate from 6 to 12 percent on the 40-year annuity results in nearly a five-fold increase in the future value to $76,709.14. Think about it: Depositing only $100 per year (about 25 lattes per year) can generate some serious money over time. See Figure 5.1. How much would $2,000 annual deposits generate?

Future Value of Multiple Annuities

At times, multiple annuities can occur in both business and personal life. For example, you may find that you can increase the amount of money you

Math Coach boxes are featured in many chapters to help avoid the most common mathematical mistakes in a particular problem.


you are able to increase your investment in the retirement program to $6,000 per year (your contribution plus the company match). What would be the future value of your retirement wealth from this program if investments are compounded at 7 percent?

CALCULATOR HINTS

Add to previous answer
N = 20
I = 7
PV = 0
PMT = −1500
CPT FV = 61,493.24

SOLUTION:

You can compute the future value using two annuities. The first annuity is one with payments of $4,500 that lasts 40 years. The second is a $1,500 (= $6,000 − $4,500) annuity that lasts only 20 years. We already computed the future value of the first annuity in the previous example: $898,358. The future value of the second annuity is:

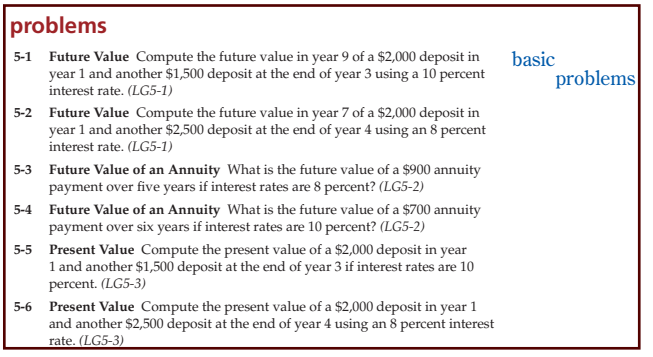
$$FVA_{20} = \$1{,}500 \times \frac{(1 + 0.07)^{20} - 1}{0.07} = \$1{,}500 \times 40.9955 = \$61{,}493.24$$

So, your retirement wealth from this program would be $959,851 (= $898,358 + $61,493).

Similar to Problems 5-19, 5-20, self-test problem 1

Calculator keystroke hints are included in the margin and next to key examples, if applicable, showing a quick snapshot of how to solve the problem using a financial calculator. These can easily be skipped if calculators are not used for your class.

End-of-chapter problems are grouped according to level of difficulty and are structured so that every odd-numbered problem is mirrored by a similar even-numbered problem. Therefore, instructors can assign two different sets of similar problems to different sections. Alternatively, instructors can use one set of problems to work in class and use the other as homework.


problems

basic problems

5-1 Future Value Compute the future value in year 9 of a $2,000 deposit in year 1 and another $1,500 deposit at the end of year 3 using a 10 percent interest rate. *(LG5-1)*

5-2 Future Value Compute the future value in year 7 of a $2,000 deposit in year 1 and another $2,500 deposit at the end of year 4 using an 8 percent interest rate. *(LG5-1)*

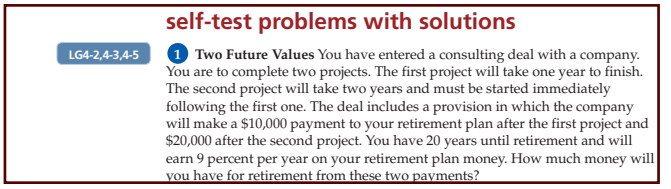
5-3 Future Value of an Annuity What is the future value of a $900 annuity payment over five years if interest rates are 8 percent? *(LG5-2)*

5-4 Future Value of an Annuity What is the future value of a $700 annuity payment over six years if interest rates are 10 percent? *(LG5-2)*

5-5 Present Value Compute the present value of a $2,000 deposit in year 1 and another $1,500 deposit at the end of year 3 if interest rates are 10 percent. *(LG5-3)*

5-6 Present Value Compute the present value of a $2,000 deposit in year 1 and another $2,500 deposit at the end of year 4 using an 8 percent interest rate. *(LG5-3)*

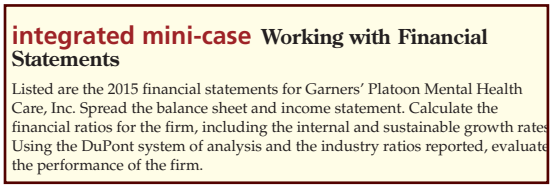
Self-Test Problems with Solutions appear before the gradable problem sets so students can test themselves before diving into their homework.



self-test problems with solutions

LG4-2,4-3,4-5

1 **Two Future Values** You have entered a consulting deal with a company. You are to complete two projects. The first project will take one year to finish. The second project will take two years and must be started immediately following the first one. The deal includes a provision in which the company will make a $10,000 payment to your retirement plan after the first project and $20,000 after the second project. You have 20 years until retirement and will earn 9 percent per year on your retirement plan money. How much money will you have for retirement from these two payments?

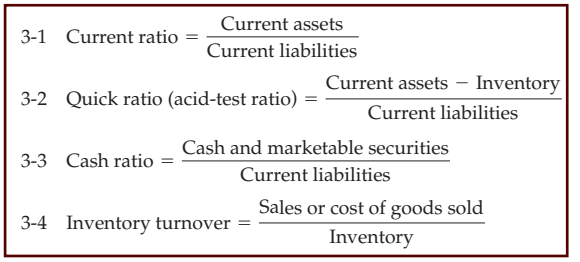


integrated mini-case **Working with Financial Statements**

Listed are the 2015 financial statements for Garners' Platoon Mental Health Care, Inc. Spread the balance sheet and income statement. Calculate the financial ratios for the firm, including the internal and sustainable growth rates. Using the DuPont system of analysis and the industry ratios reported, evaluate the performance of the firm.

Integrated Mini-Cases at the end of each chapter combine the chapter's key concepts into a more complex problem to help students understand how concepts and methods tie together.

Numbered equations are presented throughout and summarized at the end of each chapter. A concerted effort has been made to reduce the number of different variables used in equations in order to simplify some of the critical financial formulas. Where possible, equations are also presented in "word form" at the same time they are presented in "number form" to address alternate learning styles.



3-1 $$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

3-2 $$\text{Quick ratio (acid-test ratio)} = \frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$$

3-3 $$\text{Cash ratio} = \frac{\text{Cash and marketable securities}}{\text{Current liabilities}}$$

3-4 $$\text{Inventory turnover} = \frac{\text{Sales or cost of goods sold}}{\text{Inventory}}$$

SUPPLEMENTS FOR THE INSTRUCTOR

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- **Test Bank** Hundreds of questions complement the material presented in the book. The Test Bank is tagged by level of difficulty, learning goal, AACSB knowledge categories, and Bloom's taxonomy—making it easy for instructors to customize exams to reflect the material stressed in class. The test bank is available in Word files and in McGraw-Hill's flexible electronic test creation and testing program, ***EZ Test Online.***

  In EZ Test Online, instructors can select questions from multiple McGraw-Hill test banks or compose their own, and then either print the test for paper distribution or administer it online. The test bank is also available in McGraw-Hill's dynamic online homework management system, ***Connect*** (see page xviii for details).
- **Solutions Manual** Developed by authors Marcia Cornett, Troy Adair, and John Nofsinger, this resource contains the worked-out solutions to all the end-of-chapter problems, in the consistent voice and method of the book. The solutions have been class-tested and checked by multiple instructors to ensure accuracy.
- **PowerPoint Presentation** The PowerPoint presentations have been carefully updated for the third edition. These slides contain lecture notes, which closely follow the book content, enhanced with the tables and figures from the chapters. Several chapters are also supplemented with additional presentations that contain notes and examples using financial calculators. Instructors can easily customize these slides to suit their classroom needs and various presentation styles.

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The statements contained in *Finance: Applications and Theory,* 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 *Finance: Applications and Theory,* and the teaching package make no claim of any specific AACSB qualification or evaluation, we have,

within *Finance: Applications and Theory,* labeled selected questions according to the six general knowledge and skills areas.

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Marcia Millon Cornett
Troy A. Adair Jr.
John Nofsinger

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finance

applications & theory

1 Introduction to Financial Management

viewpoints

Business Application

Caleb has worked very hard to create and expand his juice stand at the mall. He has finally perfected his products and feels that he is offering the right combination of juice and food. As a result, the stand is making a nice profit. Caleb would like to open more stands at malls all over his state and eventually all over the country.

Caleb knows he needs more money to expand. He needs money to buy more equipment, buy more inventory, and hire and train more people. How can Caleb get the capital he needs to expand? **(See solution on p. 24)**

Personal Application

Dagmar is becoming interested in investing some of her money. However, she has heard about several corporations in which the investors lost all of their money. In the past decade, Dagmar has heard that Lehman Brothers (2008), Chrysler (2009), and Six Flags (2009) have all filed for bankruptcy. These firms' stockholders lost their entire investments in these firms.

Many of the stockholders who lost money were employees of these companies who had invested some of their retirement money in the company stock. Dagmar wonders what guarantee she has as an investor against losing her money. **(See solution on p. 24)**

What is the best way for Dagmar to ensure a happy retirement?

Learning Goals

LG1-1 Define the major areas of finance as they apply to corporate financial management.

LG1-2 Show how finance is at the heart of sound business decisions.

LG1-3 Learn the financial principles that govern your personal decisions.

LG1-4 Examine the three most common forms of business organization in the United States today.

LG1-5 Distinguish among appropriate and inappropriate goals for financial managers.

LG1-6 Identify a firm's primary agency relationship and discuss the possible conflicts that may arise.

LG1-7 Discuss how ethical decision making is part of the study of financial management.

LG1-8 Describe the complex, necessary relationships among firms, financial institutions, and financial markets.

LG1-9 Explain the fundamental causes of the financial crisis that started in 2006.

Do you know: What finance entails? How financial management functions within the business world? Why you might benefit from studying financial principles? This chapter is the ideal place to get answers to those questions. **Finance** is the study of *applying specific value* to things we own, services we use, and decisions we make. Examples are as varied as shares of stock in a company, payments on a home mortgage, the purchase of an entire firm, and the personal decision to retire early. In this text, we focus primarily on one area of finance, **financial management,** which concentrates on valuing things from the perspective of a company, or firm.

Financial management is critically important to the success of any business organization, and throughout the text we concentrate on describing the key financial concepts in corporate finance. As a bonus, you will find that many tools and techniques for handling the financial management of a firm also apply to broader types of financial problems, such as personal finance decisions.

In finance, *cash flow* is the term that describes the process of paying and receiving money. It makes sense to start our discussion of finance with an illustration of various financial cash flows. We use simple graphics to help explain the nature of finance and to demonstrate the different *subareas* of the field of finance.

After we have an overall picture of finance, we will discuss four important variables in the business environment that can and do have significant impact on the firm's financial decisions. These are (1) the organizational form of the business, (2) the agency relationship between the managers and owners of a firm, (3) ethical considerations as finance is applied in the real world, and (4) the source and implications of the current financial crisis.

LG1-1

1.1 • Finance in Business and in Life

finance

The study of applying specific value to things we own, services we use, and decisions we make.

financial management

The process for and the analysis of making financial decisions in the business context.

As you begin this course, what is your first impression of the world of finance? No doubt you've experienced the current economic recession firsthand and read, perhaps in detail, about the financial crisis that peaked in the fall of 2008. An understanding of cause, effect, and future impact will be important as we go forward, so please see the nearby Finance at Work reading and Section 1.7 of this chapter for brief background information and some analyses to set the stage for more complete explanations to come. But setting aside thoughts of recession and indulging in a quick look at popular culture, you'll recognize that other influences have been at work for some time. Your opinions already may have been negatively skewed by entertainment. Many movies have portrayed finance professionals as greedy and unethical (see, for example, *Wall Street,* 1987; *Barbarians at the Gate,* 1993; *Boiler Room,* 2000; and *Wall Street: Money Never Sleeps,* 2010). While colorful characters make for good entertainment, fictional depictions do not reflect reality when it comes to what finance professionals actually do and how they contribute to society. The more you study managerial finance, the more you'll appreciate this discipline's broad potential to power the managerial decision making that moves our economy forward.

And what exactly makes up this engine of financial decision making? Successful application of *financial theories* helps money flow from individuals who want to improve their financial future to businesses that want to expand the scale or scope of their operations. These exchanges lead to a growing economy and more employment opportunities for people at all income levels. So, two important things result from this simple exchange: the economy will be more productive as a result, and individuals' wealth will grow into the future.

In this first section, we develop a comprehensive description of finance and its subareas, and we look at the specific decisions that professionals in each subarea must make. As you will see, all areas of finance share a common set of ideas and application tools.

What Is Finance?

To get the clearest possible picture of how finance works, let's begin by grouping all of an economy's participants along two dimensions. The first dimension is made up of those who may have "extra" money (i.e., money above and beyond their current spending needs) for investment. The second dimension is made up of those who have an ability to develop viable business ideas, a sense of business creativity. Both money and ideas are fuel for the financial engine. In our simple model, these two dimensions result in four groups representing economic roles in society, as shown in Figure 1.1. Of course, people can move from one group to another over time.

figure 1.1

Participants in Our Hypothetical Economy

Four groups form according to the availability of money and ideas.

	No Extra Money	Extra Money
No Economically Viable Business Ideas	Type 1: No money and no ideas	Type 2: Money but no ideas
Economically Viable Business Ideas	Type 3: No money but ideas	Type 4: Both money and ideas

THE FINANCIAL CRISIS: INTRODUCTION AND OVERVIEW

At the time of this writing, the world economy has been reeling for over six years from the effects of the worst financial crisis since the Great Depression of the 1930s. By mid-March 2009, the Dow Jones Industrial Average (DJIA) had fallen in value 53.8 percent in less than 1½ years' time, larger than the decline during the market crash of 1937–1938 when it fell 49 percent. Though the Dow has since recovered much of those losses, the markets continue to be very volatile and unsettled: On May 6, 2010, just after 2:30 pm EST, the Dow plunged by 998.50 points, a loss of 9.2 percent and the biggest one-day fall ever.

The commonly accepted cause of the crisis was the collapse of U.S. home prices in late 2006 and early 2007, but the problem has since spread to affect every part of the economy: The investment banking industry saw the failure or acquisition of all but two of its major firms (Goldman Sachs and Morgan Stanley), and these two firms converted to commercial bank holding companies (i.e., banks much like your neighborhood bank that tend to be safer and less profitable than investment banks). AIG, one of the largest insurance companies in the United States, survived only because of a federal government bailout. Commercial banking giant Citigroup required a massive government guarantee against losses and an injection of cash to prevent failure. The crisis spread internationally, too. Real estate markets fell in many countries across the world. The crisis had a profound impact on the financial health of banks, especially in Europe. In 2010, the unemployment rate had risen to over 10 percent. By 2012, it was still over 8 percent.

The exact mechanisms by which falling home prices led to such dramatic changes in the economic landscape are complicated and have yet to be covered in this book, so we will delay an in-depth discussion of the crisis until later, but we did feel that this is a good place to touch upon the ways that the fallout from the financial crisis are going to affect you, the student, in the years and decades to come.

First, those of you who hoped to fund your education with student loans may be finding it difficult to obtain such loans, especially at favorable rates. If so, thank the financial crisis: Lenders are much more leery about lending money due to the uncertain economic future they (and you, in your hopeful future employment) face. (And we won't even get into the whole idea of your parents taking out a home equity loan to help you through . . .)

Second, as you've no doubt noticed, jobs are scarce, primarily due to companies' uncertainty about the future. We expect it to stay this way for a while, though the impending retirement of the baby boomers will eventually benefit you.

Third, once you do make it through school and start your career, you may want to hold off on buying a home for a while. Most of the reasons are probably obvious, but compounding the uncertainty about being able to eventually unload any house you buy is the fact that lenders have greatly cut back on the availability of credit, asking for substantial down payments and loan servicing fees when they *do* lend.

By now, you're probably starting to wonder if you missed the part about Eeyore (the gloomy donkey in the Winnie-the-Pooh books) being one of the coauthors of this book. Don't despair: The current financial crisis *does* have potential silver linings to offer to those who are prepared and educated enough to take advantage of them.

After the extent of the crisis had started to become evident to everyone, one of the authors of this book was asked by a television reporter, "Why would anyone want to study finance *now?!?!*" Well, on the one hand, and in the words of the Spanish-born American philosopher and poet George Santayana, "Those who do not learn from history are doomed to repeat it." You *really* don't want to go through this type of thing again, do you?

Another reason to study finance is that some of those silver linings we referred to are beginning to peek through the clouds: For example, in the aftermath of the crisis, more firms in general (and financial institutions in particular) are much more focused on the concepts of measuring and managing risks than ever before, and to effectively do so they need a trained and informed workforce.

want to know more? Key Words to Search for Updates: housing bubble, subprime lending, mortgage-backed securities, AIG, Countrywide Financial

Type 1 people in our model do not lend significant sums of money (*capital*) or spend much money in a business context, so they play no direct role in **financial markets,** the mechanisms by which capital is exchanged. Although these people probably play indirect roles by providing labor to economic enterprises or by consuming their products, for simplicity we focus on those who play direct roles. Therefore, type 1 participants will be asked to step aside.

financial markets

The places and processes that facilitate the trading of financial assets between investors.

Type 4 people use financial tools to evaluate their own business concepts and then choose the ideas with the most potential. From there, they create their own enterprises to implement their best ideas efficiently and effectively. Type 4 individuals, however, are self-funded and do not need financial markets. The

figure 1.2

Capital Flow from Investors to Companies
Investors are people or groups who need ideas to make more money, and companies are groups who need money to develop the ideas they do have.

financial tools they use and the types of decisions they make are narrowly focused or specific to their own purposes. For our discussion, then, type 4 individuals also are asked to move to the sidelines.

Now for our financial role players, the type 2 and type 3 people. Financial markets and financial institutions allow these people to participate in a mutually advantageous exchange. Type 2 people temporarily lend their money to type 3 people, who put that money to use with their good business ideas.

investors
Those who buy securities or other assets in hopes of earning a return and getting more money back in the future.

In most developed economies, type 2 participants are usually individual **investors.** *You* will likely be an individual investor for most of your life. Each of us separately may not have a lot of extra money at any one time, but by aggregating our available funds, we can provide sizable amounts for investment.

Type 3 participants, the idea generators, may be individuals, but they are more commonly corporations or other types of companies with research and development (R&D) departments dedicated to developing innovative ideas. It's easy to see that investors and companies can help one another. If investors lend their "extra" capital to companies, as shown in Figure 1.2, then companies can use this capital to fund expansion projects. Economically successful projects will eventually be able to repay the money (plus profit) to investors, as Figure 1.3 shows.

figure 1.3

Return of Capital to Investors
In this basic process, the company can expand its business, hire more employees, and create a promising future for its own growth. Meanwhile, the investor can increase wealth for the future.

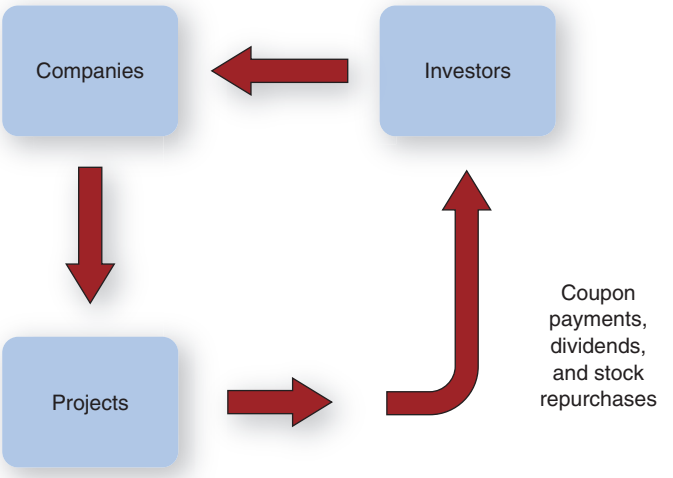
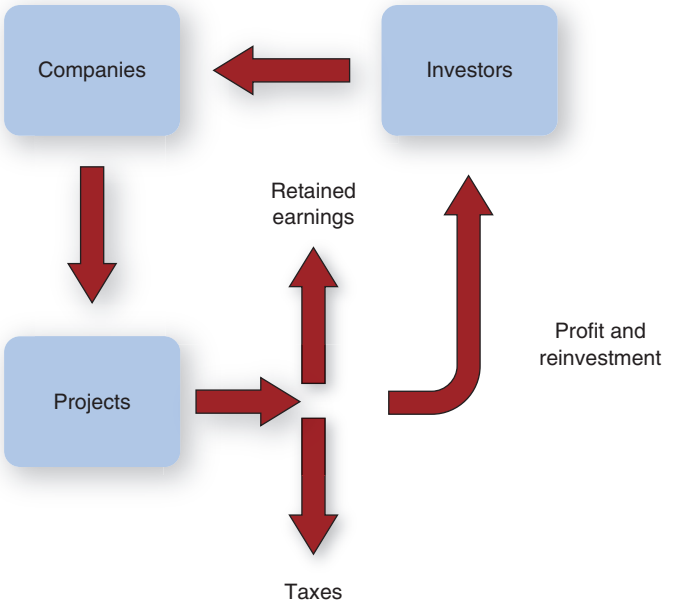


figure 1.4



The Complete Cash Flows of Finance
All the subareas of the financial system interact, with retained earnings and taxes playing a role in the flows.

Of course, not all of the cash will return to the investors. In reality, sources of friction arise in this system, and the amount of capital returned to investors is reduced. Two primary sources of friction are **retained earnings,** which are basically funds the firm keeps for its ongoing operations, and *taxes,* which the government imposes on the company and individuals to help fund public services. Figure 1.4 shows an analysis of cash flows with the associated retained earnings and tax payments. In a very simple way, this figure provides an intuitive overall explanation of finance and of its major subareas. For example, individuals must assess which investment opportunities are right for their needs and risk tolerance; financial institutions and markets must efficiently distribute the capital; and companies must evaluate their potential projects and wisely decide which projects to fund, what kind of capital to use, and how much capital to return to investors. All of these types of decisions deal with the basic cash flows of finance shown in Figure 1.4, but from different perspectives.

retained earnings
The portion of company profits that are kept by the company rather than distributed to the stockholders as cash dividends.

Subareas of Finance

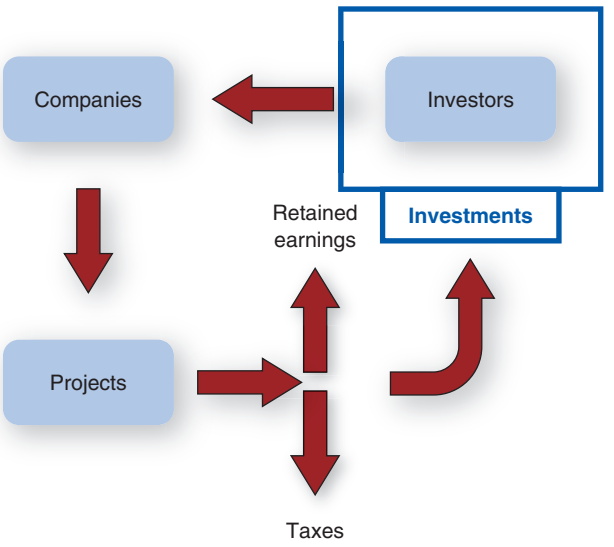
Investments is the subarea of finance that involves methods and techniques for making decisions about what kinds of *securities* to own (e.g., bonds or stocks), which firms' securities to buy, and how to pay the investor back in the form that the investor wishes (e.g., the timing and certainty of the promised cash flows). Figure 1.5 models cash flows from the investor's perspective. The concerns of the investments subarea of finance are shown (with the movement of red arrows) from the investor's viewpoint (seen as the blue box).

investments
The analysis and process of choosing securities and other assets to purchase.

Financial management is the subarea that deals with a firm's decisions in acquiring and using the cash that is received from investors or from retained earnings. Figure 1.6 depicts the financial management process very simply. As

figure 1.5

Investments
Investors mark the start and end of the financial process; they put money in and reap the rewards (or take the risk).



we know, this text focuses primarily on financial management. We'll see that this critical area of finance involves decisions about:

- How to organize the firm in a manner that will attract capital.
- How to raise capital (e.g., bonds versus stocks).
- Which projects to fund.
- How much capital to retain for ongoing operations and new projects.
- How to minimize taxation.
- How to pay back capital providers.

figure 1.6

Financial Management
Financial managers make decisions that should benefit both the company and the investor.

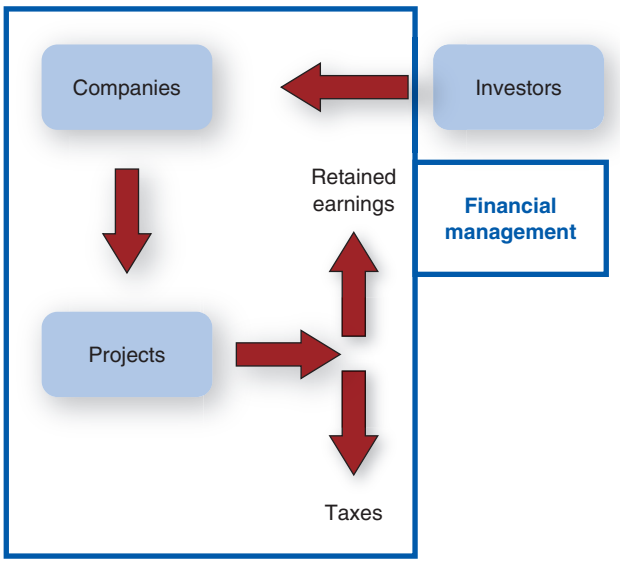
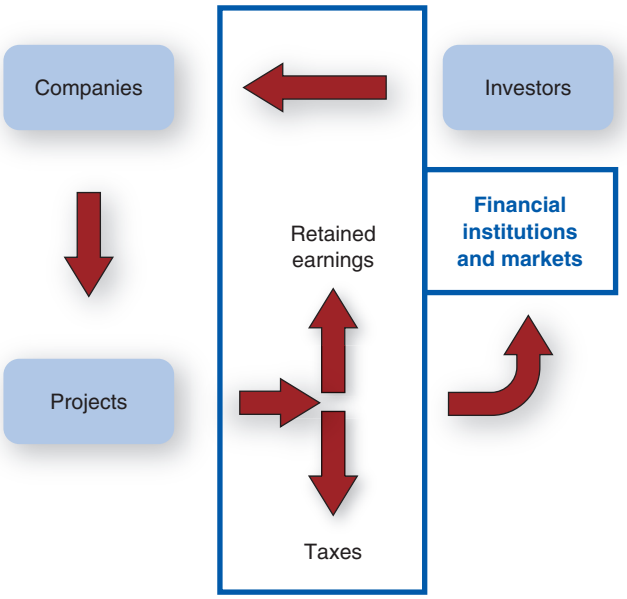


figure 1.7



Financial Institutions and Markets
Financial institutions and markets facilitate the flows of money between investors and companies.

All of these decisions are quite involved, and we will discuss them throughout later chapters.

Financial institutions and markets make up another major subarea of finance. These two dynamic entities work in different ways to facilitate capital flows between investors and companies. Figure 1.7 illustrates the process in which the firm acquires capital and investors take part in ongoing securities trading to increase that capital. Financial institutions, such as banks and pension administrators, are vital players that contribute to the dynamics of interest rates.

financial institutions and markets
The organizations that facilitate the flow of capital between investors and companies.

International finance is the final major subarea of finance we will study. As the world has transformed into a global economy, finance has had to become much more innovative and sensitive to changes in other countries. Investors, companies, business operations, and capital markets may all be located in different countries. Adapting to this environment requires understanding of international dynamics, as Figure 1.8 shows. In the past, international financial decisions were considered to be a straightforward application of the other three financial subareas. But experience has shown that the uncertainty about future exchange rates, political risk, and changing business laws across the globe adds enough complexity to these decisions to classify international finance as a subarea of finance in its own right.

international finance
The use of finance theory in a global business environment.

Application and Theory for Financial Decisions

Cash flows are neither instantaneous nor guaranteed. We need to keep this in mind as we begin to apply finance theory to real decisions. Future cash flows are uncertain in terms of both timing and size, and we refer to this uncertainty as **risk.** Investors experience risk about the return of their capital. Companies experience risk in funding and operating their business projects. Most financial decisions involve comparing the rewards of a decision to the risks that decision may generate.

risk
A potential future negative impact to value and/or cash flows. It is often discussed in terms of the probability of loss and the expected magnitude of the loss.