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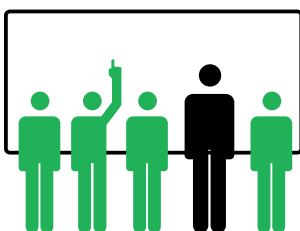
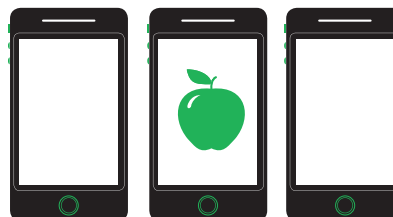
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# Foundations of Finance

The Logic and Practice of Financial Management

Ninth Edition

Global Edition

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*To my parents, from whom I learned the most.*  
Arthur J. Keown

*To the Martin women—wife Sally and daughter-in-law Mel, the Martin men  
—sons Dave and Jess, and the Martin boys—grandsons Luke and Burke.*  
John D. Martin

*To Jack Griggs, who has been a most loyal and dedicated friend for over 55  
years, always placing my interests above his own, and made life's journey a lot  
of fun along the way.*  
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## **Web 17 Cash, Receivables, and Inventory Management**

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**Web Appendix A Using a Calculator**

***Available online at [www.myfinancelab.com](http://www.myfinancelab.com)***

**Glossary 560**

**Indexes 569**

# Preface

The study of finance focuses on making decisions that enhance the value of the firm. This is done by providing customers with the best products and services in a cost-effective way. In a sense we, the authors of *Foundations of Finance*, share the same purpose. We have tried to create a product that provides value to our customers—both students and instructors who use the text. It was this priority that led us to write *Foundations of Finance: The Logic and Practice of Financial Management*, which was the first “shortened book” of financial management when it was first published. This text launched a trend that has since been followed by all the major competing texts in this market. The text broke new ground not only by reducing the breadth of materials covered but also by employing a more intuitive approach to presenting new material. From that first edition, the text has met with success beyond our expectations for eight editions. For that success, we are eternally grateful to the multitude of finance instructors who have chosen to use the text in their classrooms.

## New to the Ninth Edition

Technology is ever present in our lives today, and we are beginning to see its effective use in education. One form of learning technology that we believe has great merit today is the *lecture video*. For all the numbered in-text examples in the Ninth Edition, we have recorded brief (10- to 15-minute) lecture videos that students can replay as many times as they need to help them understand more fully each of the in-text examples. We are confident that many students will enjoy having the authors “tutoring” them when it comes to the primary examples in the text. The videos can be found in the eText within MyFinanceLab.

In addition to the innovations of this edition, we have made some chapter-by-chapter updates in response to the continued development of financial thought, reviewer comments, and the recent economic crisis. Some of these changes include:

### Chapter 1

#### **An Introduction to the Foundations of Financial Management**

- ◆ Revised and updated chapter introduction
- ◆ Revised and updated discussion of the five principles

### Chapter 2

#### **The Financial Markets and Interest Rates**

- ◆ Revised coverage of the term structure of interest rates to address the very low rates that characterize today’s markets
- ◆ Simplified, more intuitive discussion on interest rate determinants
- ◆ Added coverage of the term structure of interest rates into the end-of-chapter problems

### Chapter 3

#### **Understanding Financial Statements and Cash Flows**

- ◆ Uses The Coca-Cola Company, a firm all students are familiar with, to help them understand financial statements
- ◆ Expanded coverage of balance sheets, focusing on what can be learned from them

- ◆ More intuitive presentation of cash flows
- ◆ New explanation of fixed and variable costs as part of presenting an income statement
- ◆ Four lecture videos accompany the in-chapter examples.

#### Chapter 4

##### Evaluating a Firm's Financial Performance

- ◆ Continues the use of The Coca-Cola Company's financial data to illustrate how we evaluate a firm's financial performance, compared to industry norms or a peer group. In this case, we compare Coca-Cola's financial performance to that of PepsiCo, a major competitor.
- ◆ Provides a new Finance at Work box, based on an example from the soft-drink industry
- ◆ Revised presentation of evaluating a company's liquidity to align more closely with how business managers talk about liquidity
- ◆ Four lecture videos accompany the in-chapter examples.

#### Chapter 5

##### The Time Value of Money

- ◆ Revised to appeal to all students regardless of their level of mathematical skill
- ◆ New section added on "Making Interest Rates Comparable," with new end-of-chapter questions dealing with calculation of the effective annual rate
- ◆ Additional problems emphasizing complex streams of cash flows
- ◆ Thirteen lecture videos accompany the in-chapter examples.

#### Chapter 6

##### The Meaning and Measurement of Risk and Return

- ◆ Updated information on the rates of return that investors have earned over the long term with different types of security investments
- ◆ Numerous new examples involving companies the students are familiar with are presented throughout the chapter to illustrate the concepts and applications in the chapter.
- ◆ Two lecture videos accompany the in-chapter examples.

#### Chapter 7

##### The Valuation and Characteristics of Bonds

- ◆ A number of new examples involving real-life firms
- ◆ Two lecture videos accompany the in-chapter examples.

#### Chapter 8

##### The Valuation and Characteristics of Stock

- ◆ More current explanation of options for getting stock quotes from the *Wall Street Journal*
- ◆ Four lecture videos accompany the in-chapter examples.

#### Chapter 9

##### The Cost of Capital

- ◆ Five lecture videos correspond to the five major in-chapter examples
- ◆ End-of-chapter problems revised or replaced by new problem exercises

## Chapter 10

### Capital-Budgeting Techniques and Practice

- ◆ Extensively revised chapter introduction, which looks at Disney's decision to build the Shanghai Disney Resort
- ◆ Addition of a new section along with additional discussion of the modified internal rate of return that not only summarizes the tool, but also provides important caveats concerning its use
- ◆ Eight lecture videos accompany the in-chapter examples.

## Chapter 11

### Cash Flows and Other Topics in Capital Budgeting

- ◆ Revised introduction examining the difficulties Toyota faced in estimating future cash flows when it introduced the Prius
- ◆ New Finance at Work box dealing with Disney World
- ◆ Problem set revised to include additional coverage of real options
- ◆ Three lecture videos accompany the in-chapter examples.

## Chapter 12

### Determining the Financing Mix

- ◆ Problem set revised to include two new and one revised exercise
- ◆ Two lecture videos accompany the in-chapter examples.

## Chapter 13

### Dividend Policy and Internal Financing

- ◆ Updated discussion of the tax code for personal tax treatment of dividends and capital gains
- ◆ A lecture video accompanies the in-chapter example.

## Chapter 14

### Short-Term Financial Planning

- ◆ Two new problems added
- ◆ Two lecture videos accompany the in-chapter examples.

## Chapter 15

### Working-Capital Management

- ◆ Four new problem exercises added
- ◆ Five lecture videos accompany the in-chapter examples.

## Chapter 16

### International Business Finance

- ◆ Revised extensively to reflect changes in exchange rates and global financial markets
- ◆ A new section titled "What a Change in the Exchange Rate Means for Business" deals with the implications of exchange rate changes
- ◆ Three lecture videos accompany the in-chapter examples.

## Web Chapter 17

### Cash, Receivables, and Inventory Management

- ◆ Simplified presentation of chapter materials

## Pedagogy That Works

In our opinion, the success of this textbook derives from our focus on maintaining *pedagogy that works*. We endeavor to provide students with a conceptual understanding of the financial decision-making process that includes a survey of the tools and techniques of finance. For the student, it is all too easy to lose sight of the logic that drives finance and to focus instead on memorizing formulas and procedures. As a result, students have a difficult time understanding the interrelationships among the topics covered. Moreover, later in life, when the problems encountered do not match the textbook presentation, students may find themselves unprepared to abstract from what they have learned. We have worked to be “good at the basics.” To achieve this goal, we have refined the book over the last eight editions to include the following features.

**LO2** Understand the basic principles of finance, their importance, and the importance of ethics and trust.

### Five Principles That Form the Foundations of Finance

To the first-time student of finance, the subject matter may seem like a collection of unrelated decision rules. This impression could not be further from the truth. In fact, our decision rules, and the logic that underlies them, spring from five simple principles that do not require knowledge of finance to understand. These five principles guide the financial manager in the creation of value for the firm’s owners (the stockholders).

As you will see, although it is not necessary to understand finance to understand these principles, it is necessary to understand these principles in order to understand finance. These principles may at first appear simple or even trivial, but they provide the driving force behind all that follows, weaving together the concepts and techniques presented in this text, and thereby allowing us to focus on the logic underlying the practice of financial management. Now let’s introduce the five principles.

PRINCIPLE  
1

#### Principle 1: Cash Flow Is What Matters

You probably recall from your accounting classes that a company’s profits can differ dramatically from its cash flows, which we will review in Chapter 3. But for now

## Building on Foundational Finance Principles

Chapter 1 presents five foundational principles of finance which are the threads that bind all the topics of the book. Then throughout the text, we provide reminders of the foundational principles in “Remember Your Principles” boxes.

The five principles of finance allow us to provide an introduction to financial decision making rooted in current financial theory and in the current state of world economic conditions. What results is an introductory treatment of a discipline rather than the treatment of a series of isolated financial problems that managers encounter.

## Use of an Integrated Learning System

The text is organized around the learning objectives that appear at the beginning of each chapter to provide the instructor and student with an easy-to-use integrated learning system. Numbered icons identifying each objective appear next to the related material throughout the text and in the summary, allowing easy location of material related to each objective.

## A Focus on Valuation

Although many professors and instructors make valuation the central theme of their course, students often lose sight of this focus when reading their text. We reinforce this focus in the content and organization of our text in some very concrete ways:

- ◆ We build our discussion around the five finance principles that provide the foundation for the valuation of any investment.
- ◆ We introduce new topics in the context of “what is the value proposition?” and “how is the value of the enterprise affected?”

## Real-World Opening Vignettes

Each chapter begins with a story about a current, real-world company faced with a financial decision related to the chapter material that follows. These vignettes have

been carefully prepared to stimulate student interest in the topic to come and can be used as a lecture tool to provoke class discussion.

## A Step-by-Step Approach to Problem Solving and Analysis

As anyone who has taught the core undergraduate finance course knows, students demonstrate a wide range of math comprehension and skill. Students who do not have the math skills needed to master the subject sometimes end up memorizing formulas rather than focusing on the analysis of business decisions using math as a tool. We address this problem in terms of both text content and pedagogy.

- ◆ First, we present math only as a tool to help us analyze problems, and only when necessary. We do not present math for its own sake.
- ◆ Second, finance is an analytical subject and requires that students be able to solve problems. To help with this process, numbered chapter examples appear throughout the book. All of these examples follow a very detailed and structured three-step approach to problem solving that helps students develop their problem-solving skills:

*Step 1: Formulate a Solution Strategy.* For example, what is the appropriate formula to apply? How can a calculator or spreadsheet be used to “crunch the numbers”?

*Step 2: Crunch the Numbers.* Here we provide a completely worked out step-by-step solution. We present first a description of the solution in prose and then a corresponding mathematical implementation.

*Step 3: Analyze Your Results.* We end each solution with an analysis of what the solution means. This stresses the point that problem solving is about analysis and decision making. Moreover, in this step we emphasize that decisions are often based on incomplete information, which requires the exercise of managerial judgment, a fact of life that is often learned on the job.

### CAN YOU DO IT?

#### Solving for the Real Rate of Interest

Your banker just called and offered you the chance to invest your savings for 1 year at a quoted rate of 10 percent. You also saw on the news that the inflation rate is 6 percent. What is the real rate of interest you would be earning if you made the investment? (The solution can be found on page 42.)

### DID YOU GET IT?

#### Solving for the Real Rate of Interest

$$\begin{array}{rclclcl}
 \text{Nominal or quoted} & = & \text{real rate of} & + & \text{inflation} & + & \text{product of the real rate of} \\
 \text{rate of interest} & & \text{interest} & & \text{rate} & & \text{interest and the inflation rate} \\
 0.10 & = & \text{real rate of interest} & + & 0.06 & + & 0.06 \times \text{real rate of interest} \\
 0.04 & = & 1.06 \times \text{real rate of interest} & & & & 
 \end{array}$$

Solving for the real rate of interest:

$$\text{Real rate of interest} = 0.0377 = 3.77\%$$

## “Can You Do It?” and “Did You Get It?”

The text provides examples for the students to work at the conclusion of each major section of a chapter, which we call “Can You Do It?,” followed by “Did You Get It?” later in the chapter. This tool provides an essential ingredient in the building-block approach to the material that we use.

### Concept Check

1. According to Principle 3, how do investors decide where to invest their money?
2. What is an efficient market?
3. What is the agency problem, and why does it occur?
4. Why are ethics and trust important in business?

## Concept Check

At the end of major chapter sections we include a brief list of questions that are designed to highlight key ideas presented in the section.

## Financial Decision Tools

A feature that has proven popular with students has been our recapping of key equations shortly after their discussion. Students get to see an equation within the context of related equations.

FINANCIAL DECISION TOOLS		
Name of Tool	Formula	What It Tells You
Return on equity	$\frac{\text{net income}}{\text{total common equity}}$	Measures the shareholders' accounting return on their investment.

## Financial Calculators and Excel Spreadsheets

The use of financial calculators and Excel spreadsheets has been integrated throughout the text, especially with respect to presentation of the time value of money and valuation. Where appropriate, actual calculator and spreadsheet solutions appear in the text.

CALCULATOR SOLUTION	
Data Input	Function Key
10	<b>N</b>
6	<b>I/Y</b>
-500	<b>FV</b>
0	<b>PMT</b>
Function Key	Answer
<b>CPT</b>	
<b>PV</b>	279.20

## Chapter Summaries That Bring Together Concepts, Terminology, and Applications

The chapter summaries have been written in a way that connects them to the in-chapter sections and learning objectives. For each learning objective, the student sees in one place the concepts, new terminology, and key equations that were presented in the objective.

## Revised Study Problems

With each edition, we have provided new and revised end-of-chapter study problems to refresh their usefulness in teaching finance. Also, the study problems continue to be organized according to learning objective so that both the instructor and student can readily align text and problem materials.

## Comprehensive Mini Cases

A comprehensive Mini Case appears at the end of almost every chapter, covering all the major topics included in that chapter. Each Mini Case can be used as a lecture or review tool by the professor. For the students, the Mini Case provides an opportunity to apply all the concepts presented within the chapter in a realistic setting, thereby strengthening their understanding of the material.

### Mini Cases

These Mini Cases are available in MyFinanceLab.

1. Imagine that you were a new CFO of Beily Inc., a children's bicycle manufacturer. The president, Mr. Zhao, started the business 2 years ago. The firm manufactures two types of products, bicycles for girls and bicycles for boys. However, the two products have the same prices and costs structures, the only differences are the colors and designs. Recently, the president has started to focus more on the financial aspects of managing the business. Mr. Zhao has set up a meeting for next week with you, to discuss matters such as the business and financial risks faced by the company.

Accordingly, you are asked to prepare an analysis to assist his future management decisions. As a first step in the work, you are provided the following information regarding the company according to the past financial data:

Output level	25,000 units
Operating assets	RMB 2,000,000
Operating asset turnover	5 times
Return on operating assets	45%
Degree of operating leverage	5 times
Interest expense	RMB 300,000
Tax rate	25%

As the next step, you are required to determine the break-even point in units of output for the company and report the result to Mr. Zhao. You are going to prepare an analytical income statement for the company. This statement will also be useful

## A Complete Support Package for the Student and Instructor

### MyFinanceLab

This fully integrated online homework system gives students the hands-on practice and tutorial help they need to learn finance efficiently. Ample opportunities for online practice and assessment in MyFinanceLab are seamlessly integrated into each chapter. For more details, see the inside front cover.

### Instructor's Resource Center

This password-protected site, accessible at <http://www.pearsonglobaleditions.com/Keown>, hosts all of the instructor resources that follow. Instructors should click on the "IRC Help Center" link for easy-to-follow instructions on getting access or may contact their sales representative for further information.

### Test Bank

This online Test Bank, prepared by Rodrigo Hernandez of Radford University, provides more than 1,600 multiple-choice, true/false, and short-answer questions with complete and detailed answers. The online Test Bank is designed for use with the TestGen-EQ test-generating software. This computerized package allows instructors to custom design, save, and generate classroom tests. The test program permits instructors to edit, add, or delete questions from the Test Bank; analyze test results; and organize a database of tests and student results. This software allows for greater flexibility and ease of use. It provides many options for organizing and displaying tests, along with a search and sort feature.

### Instructor's Manual with Solutions

Written by the authors and updated by Mary Schranz, the Instructor's Manual follows the textbook's organization and represents a continued effort to serve the teacher's goal of being effective in the classroom. Each chapter contains a chapter orientation, answers to end-of-chapter review questions, and solutions to end-of-chapter study problems.

The Instructor's Manual is available electronically, and instructors can download it from the Instructor's Resource Center by visiting <http://www.pearsonglobaleditions.com/Keown>.

### The PowerPoint Lecture Presentation

This lecture presentation tool, prepared by Sonya Britt of Kansas State University, provides the instructor with individual lecture outlines to accompany the text. The slides include many of the figures and tables from the text. These lecture notes can be used as is, or instructors can easily modify them to reflect specific presentation needs.

### Excel Spreadsheets

Created by the authors, these spreadsheets correspond to end-of-chapter problems from the text. This student resource is available on MyFinanceLab.



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As a final word, we express our sincere thanks to those who are using *Foundations of Finance* in the classroom. We thank you for making us a part of your teaching-learning team. Please feel free to contact any member of the author team should you have questions or needs.

—A.J.K. / J.D.M. / J.W.P.

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# CHAPTER 1

# An Introduction to the Foundations of Financial Management

## Learning Objectives

<b>LO1</b>	<b>Identify</b> the goal of the firm.	<b>The Goal of the Firm</b>
<b>LO2</b>	<b>Understand</b> the basic principles of finance, their importance, and the importance of ethics and trust.	<b>Five Principles That Form the Foundations of Finance</b>
<b>LO3</b>	<b>Describe</b> the role of finance in business.	<b>The Role of Finance in Business</b>
<b>LO4</b>	<b>Distinguish</b> among the different legal forms of business organization.	<b>The Legal Forms of Business Organization</b>
<b>LO5</b>	<b>Explain</b> what has led to the era of the multinational corporation.	<b>Finance and the Multinational Firm: The New Role</b>

**A**pple Computer (AAPL) ignited the personal computer revolution in the 1970s with the Apple II and reinvented the personal computer in the 1980s with the Macintosh. But by 1997, it looked like it might be nearing the end for Apple. Mac users were on the decline, and the company didn't seem to be headed in any real direction. It was at that point that Steve Jobs reappeared, taking back his old job as CEO of Apple, the company he cofounded in 1976. To say the least, things began to change. In fact, 18 years later, in 2015, the price of Apple's common stock climbed by 225-fold!

How did Apple accomplish this? The company did it by going back to what it does best, which is to produce products that make the optimal trade-off among ease of use, complexity, and features. Apple took its special skills and applied them to more than just computers, introducing new products such as the iPod, iTunes, the sleek iMac, the MacBook Air, the iPod Touch, and the iPhone along with its unlimited "apps." Although all these products have done well, the success of the iPod has been truly amazing. Between the introduction of the iPod in October 2001 and the beginning of 2005, Apple sold more than 6 million of the devices. Then, in 2004, it came out with the iPod Mini, about the length and width of a business card, which has also

been a huge success, particularly among women. How successful has this new product been? By 2004, Apple was selling more iPods than its signature Macintosh desktop and notebook computers.

How do you follow up on the success of the iPod? You keep improving your products, and you keep developing and introducing new products that consumers want—the iPhone. With this in mind, in October 2014, Apple unveiled its iPhone 6 and 6 Plus, selling over 10 million phones in the first week. In effect, Apple seems to have a never-ending supply of new, exciting products that we all want. Then in April 2015, Apple introduced the Apple Watch, and it is now considering introducing an Apple Car by 2020.

How did Apple make the decision to introduce the original iPod and now the iPad? The answer is by identifying a customer need, combined with sound financial management. Financial management deals with the maintenance and creation of economic value or wealth by focusing on decision making with an eye toward creating wealth. This text deals with financial decisions such as when to introduce a new product, when to invest in new assets, when to replace existing assets, when to borrow from banks, when to sell stocks or bonds, when to extend credit to a customer, and how much cash and inventory to maintain. All of these aspects of financial management were factors in Apple's decision to introduce and continuously improve the iPod, iPhone, and iPad, and the end result is having a major financial impact on Apple.

In this chapter, we lay the foundation for the entire book by explaining the key goal that guides financial decision making: maximizing shareholder wealth. From there we introduce the thread that ties everything together: the five basic principles of finance. Finally, we discuss the legal forms of business. We close the chapter with a brief look at what has led to the rise in multinational corporations.

## The Goal of the Firm

The fundamental goal of a business is to create value for the company's owners (i.e., its shareholders). This goal is frequently stated as "maximization of shareholder wealth." Thus, the goal of the financial manager is to create wealth for the shareholders by making decisions that will maximize the price of the existing common stock. Not only does this goal directly benefit the shareholders of the company, but it also provides benefits to society as scarce resources are directed to their most productive use by businesses competing to create wealth.

We have chosen maximization of shareholder wealth—that is, maximizing the market value of the existing shareholders' common stock—because all financial decisions ultimately affect the firm's stock price. Investors react to poor investment or dividend decisions by causing the total value of the firm's stock to fall, and they react to good decisions by pushing up the price of the stock. In effect, under this goal, good decisions are those that create wealth for the shareholder.



**LO1** Identify the goal of the firm.

Obviously, some serious practical problems arise when we use changes in the value of the firm's stock to evaluate financial decisions. Many things affect stock prices; to attempt to identify a reaction to a particular financial decision would simply be impossible, but fortunately that is unnecessary. To employ this goal, we need not consider every stock price change to be a market interpretation of the worth of our decisions. Other factors, such as changes in the economy, also affect stock prices. What we do focus on is the effect that our decision *should have* on the stock price if everything else were held constant. The market price of the firm's stock reflects the value of the firm as seen by its owners and takes into account the complexities and complications of the real-world risk. As we follow this goal throughout our discussions, we must keep in mind one more question: Who exactly are the shareholders? The answer: Shareholders are the legal owners of the firm.

### Concept Check

1. What is the goal of the firm?
2. How would you apply this goal in practice?

**LO2** Understand the basic principles of finance, their importance, and the importance of ethics and trust.

## Five Principles That Form the Foundations of Finance

To the first-time student of finance, the subject matter may seem like a collection of unrelated decision rules. This impression could not be further from the truth. In fact, our decision rules, and the logic that underlies them, spring from five simple principles that do not require knowledge of finance to understand. These five principles guide the financial manager in the creation of value for the firm's owners (the stockholders).

As you will see, although it is not necessary to understand finance to understand these principles, it is necessary to understand these principles in order to understand finance. These principles may at first appear simple or even trivial, but they provide the driving force behind all that follows, weaving together the concepts and techniques presented in this text, and thereby allowing us to focus on the logic underlying the practice of financial management. Now let's introduce the five principles.

### PRINCIPLE 1

#### Principle 1: Cash Flow Is What Matters

You probably recall from your accounting classes that a company's profits can differ dramatically from its cash flows, which we will review in Chapter 3. But for now understand that cash flows, not profits, represent money that can be spent. Consequently, it is cash flow, not profits, that determines the value of a business. For this reason when we analyze the consequences of a managerial decision, we focus on the resulting cash flows, not profits.

In the movie industry, there is a big difference between accounting profits and cash flow. Many a movie is crowned a success and brings in plenty of cash flow for the studio but doesn't produce a profit. Even some of the most successful box office hits—*Forrest Gump*, *Coming to America*, *Batman*, *My Big Fat Greek Wedding*, and the TV series *Babylon 5*—realized no accounting profits at all after accounting for various movie studio costs. That's because "Hollywood Accounting" allows for overhead costs not associated with the movie to be added on to the true cost of the movie. In fact, the movie *Harry Potter and the Order of the Phoenix*, which grossed almost \$1 billion worldwide, actually lost \$167 million according to the accountants. Was *Harry Potter and the Order of the Phoenix* a successful movie? It certainly was—in fact, it was the 27th highest grossing film of all time. Without question, it produced cash, but it didn't make any profits.



We need to make another important point about cash flows. Recall from your economics classes that we should always look at marginal, or **incremental, cash flows** when making a financial decision. The incremental cash flow to the company as a whole is *the difference between the cash flows the company will produce both with and without the investment it's thinking about making*. To understand this concept, let's think about the incremental cash flows of the movie *Frozen*. Not only did Disney make money on this movie, but it also made an awful lot of money on merchandise from the movie. While Anna and Elsa pulled in an incredible \$1.3 billion at the box office, sales of *Frozen* toys, clothing, and games along with the soundtrack brought in about that same amount. With a Broadway version under development and the possibility of a sequel under way, Disney is going to be singing "Let It Go" all the way to the bank.

**incremental cash flow** the difference between the cash flows a company will produce both with and without the investment it is thinking about making.

## Principle 2: Money Has a Time Value

### PRINCIPLE 2

Perhaps the most fundamental principle of finance is that money has a "time" value. Very simply, a dollar received today is more valuable than a dollar received 1 year from now because we can invest the dollar we have today to earn interest so that at the end of 1 year we will have more than one dollar.

For example, suppose you have a choice of receiving \$1,000 either today or 1 year from now. If you decide to receive it a year from now, you will have passed up the opportunity to earn a year's interest on the money. Economists would say you suffered an "opportunity loss" or an "opportunity cost." The cost is the interest you could have earned on the \$1,000 if you had invested it for 1 year. The concept of opportunity costs is fundamental to the study of finance and economics. Very simply, the **opportunity cost** of any choice you make is *the highest-valued alternative that you had to give up when you made the choice*. So if you loan money to your brother at no interest, money that otherwise would have been loaned to a friend (who is equally likely to repay you) for 8 percent interest, then the opportunity cost of making the loan to your brother is 8 percent.

**opportunity cost** the cost of making a choice in terms of the next best alternative that must be foregone.

In the study of finance, we focus on the creation and measurement of value. To measure value, we use the concept of the time value of money to bring the future benefits and costs of a project, measured by its cash flows, back to the present. Then, if the benefits or cash inflows outweigh the costs, the project creates wealth and should be accepted; if the costs or cash outflows outweigh the benefits or cash inflows, the project destroys wealth and should be rejected. Without recognizing the existence of the time value of money, it is impossible to evaluate projects with future benefits and costs in a meaningful way.

## Principle 3: Risk Requires a Reward

### PRINCIPLE 3

Even the novice investor knows there are an unlimited number of investment alternatives to consider. But without exception, investors will not invest if they do not expect to receive a return on their investment. They will want a return that satisfies two requirements:

- ◆ *A return for delaying consumption.* Why would anyone make an investment that would not at least pay them something for delaying consumption? They won't—even if there is no risk. In fact, investors will want to receive at least the same return that is available for risk-free investments, such as the rate of return being earned on U.S. government securities.
- ◆ *An additional return for taking on risk.* Investors generally don't like risk. Thus, risky investments are less attractive—*unless* they offer the prospect of higher returns. That said, the more unsure people are about how an investment will perform, the higher the return they will demand for making that investment. So, if you are trying to persuade investors to put money into a risky venture you are pursuing, you will have to offer them a higher expected rate of return.

FIGURE 1-1 The Risk–Return Trade-off

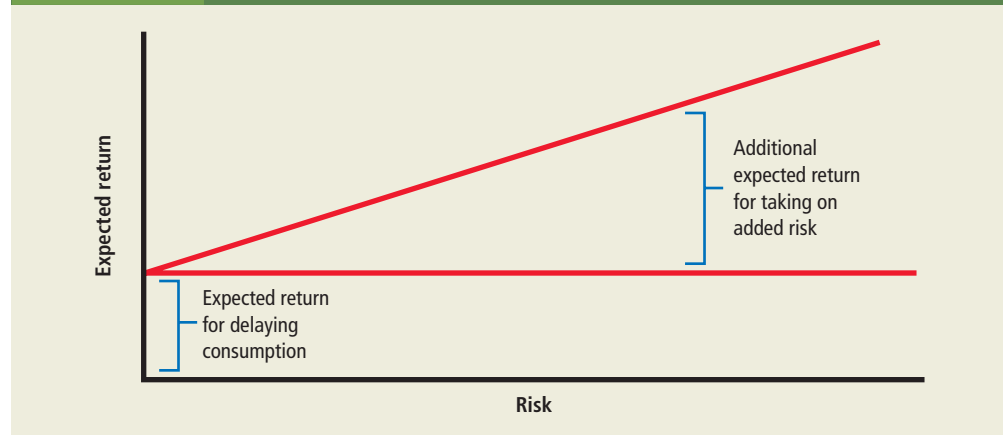


Figure 1-1 depicts the basic notion that an investor's rate of return should equal a rate of return for delaying consumption plus an additional return for assuming risk. For example, if you have \$5,000 to invest and are considering either buying stock in Apple (AAPL) or investing in a new biotech startup firm that has no past record of success, you would want the startup investment to offer the prospect of a higher expected rate of return than the investment in an established company like Apple.

Notice that we keep referring to the *expected* return rather than the *actual* return. As investors, we have expectations about what returns our investments will earn. However, we can't know for certain what they *will* be. For example, if investors could have seen into the future, no one would have bought stock in Vascular Biogenics (VBLT), an Israeli-based clinical-stage biopharmaceutical company, on February 19, 2015. Why? Because on that day the company reported that Phase 2 trials of one of its drugs aimed at psoriasis and ulcerative colitis failed to meet its primary endpoints. The result was that, within minutes of the announcement, the company's stock price dropped by a whopping 65 percent.

The risk–return relationship will be a key concept as we value stocks, bonds, and proposed new investment projects throughout this text. We will also spend some time determining how to measure risk. Interestingly, much of the work for which the 1990 Nobel Prize for economics was awarded centered on the relationship depicted in the graph in Figure 1-1 and how to measure risk. Both the graph and the risk–return relationship it depicts will reappear often in our study of finance.

PRINCIPLE  
4

### Principle 4: Market Prices Are Generally Right

To understand how securities such as bonds and stocks are valued or priced in the financial markets, it is necessary to understand the concept of an efficient market. An **efficient market** is one in which the prices of the assets traded in that market fully reflect all available information at any instant in time.

Security markets such as the stock and bond markets are particularly important to our study of finance because these markets are the place where firms can go to raise money to finance their investments. Whether a security market such as the New York Stock Exchange (NYSE) is efficient depends on the speed with which newly released information is impounded into prices. Specifically, an efficient stock market is characterized by a large number of profit-driven individuals who act very quickly by buying (or selling) shares of stock in response to the release of new information.

If you are wondering just how vigilant investors in the stock market are in watching for good and bad news, consider the following set of events. While Nike

**efficient market** a market in which the prices of securities at any instant in time fully reflect all publicly available information about the securities and their actual public values.