

PART 1

Some Preliminaries

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CHAPTER 1

Managers, Profits, and Markets

“

*Student of managerial economics: Will I ever use this?
Professor: Only if your career is successful.*

”

Success in the business world, no matter how you slice it, means winning in the marketplace. From CEOs of large corporations to managers of small, privately held companies—and even nonprofit institutions such as hospitals and universities—managers of any of these kinds of organizations cannot expect to make successful business decisions without a clear understanding of how market forces create both opportunities and constraints for business enterprises. Business publications such as *The Wall Street Journal*, *BusinessWeek*, *The Economist*, *Harvard Business Review*, *Forbes*, and *Fortune* regularly cover the many stories of brilliant and disastrous business decisions and strategies made by executive managers. Although luck often plays a role in the outcome of these stories, the manager’s understanding—or lack of understanding—of fundamental economic relations usually accounts for the difference between success and failure in business decisions. While economic analysis is not the only tool used by successful managers, it is a powerful and essential tool. Our primary goal in this text is to show you how business managers can use economic concepts and analysis to make decisions and design strategies that will achieve the firm’s primary goal, which is usually the maximization of profit.

Publishers roll out dozens of new books and articles each year touting the latest strategy *du jour* from one of the year's most "insightful" business gurus. The never-ending parade of new business "strategies," buzzwords, and anecdotes might lead you to believe that successful managers must constantly replace outdated analytical methods with the latest fad in business decision making. While it is certainly true that managers must constantly be aware of new developments in the marketplace, a clear understanding of the economic way of thinking about business decision making is a valuable and timeless tool for analyzing business practices and strategies. Managerial economics addresses the larger economic and market forces that shape both day-to-day business practices, as well as strategies for sustaining the long-run profitability of firms. Instead of presenting cookbook formulas, the economic way of thinking develops a systematic, logical approach to understanding business decisions and strategies—both today's and tomorrow's.

While this text focuses on making the most profitable business decisions, the principles and techniques set forth also offer valuable advice for managers of non-profit organizations such as charitable foundations, universities, hospitals, and government agencies. The manager of a hospital's indigent-care facility, for example, may wish to minimize the cost of treating a community's indigent patients while maintaining a satisfactory level of care. A university president, facing a strict budget set by the state board of regents, may want to enroll and teach as many students as possible subject to meeting the state-imposed budget constraint. Although profit maximization is the primary objective addressed in this text, the economic way of thinking about business decisions and strategies provides *all* managers with a powerful and indispensable set of tools and insights for furthering the goals of their firms or organizations.

1.1 THE ECONOMIC WAY OF THINKING ABOUT BUSINESS PRACTICES AND STRATEGY

Since this text relies primarily on economic theory to explain how to make more profitable business decisions, we want to explain briefly how and why economic theory is valuable in learning how to run a business. Managerial economics applies the most useful concepts and theories from two closely related areas of economics—microeconomics and industrial organization—to create a systematic, logical way of analyzing business practices or tactics to get the most profit, as well as formulating strategies for sustaining or protecting these profits in the long run.

Economic Theory Simplifies Complexity

No doubt you have heard statements such as "That's OK in theory, but what about the real world?" or "I don't want ivory-tower theorizing; I want a practical solution." Practical solutions to challenging real-world problems are seldom found in cookbook formulas, superficial rules of thumb, or simple guidelines and anecdotes. Profitable solutions generally require that people understand how the real world functions, which is often far too complex to comprehend without making the simplifying assumptions used in theories. Theory allows people to gain

ILLUSTRATION 1.1

Managerial Economics
The Right R for Doctors

A number of universities offer M.B.A. programs designed specifically for medical doctors. The majority of the doctors enrolled in these specialized programs are seeking to develop the business-decision-making skills they need to manage private and public medical clinics and hospitals.

As a group, doctors in these M.B.A. programs tend to be intelligent high-achievers who are in a hurry to learn something useful. They recognize their high opportunity costs of attending class rather than attending to patients, and they are understandably most interested in courses that will quickly teach them practical business skills. In managerial economics, they have found many valuable tools for business decision making and have been quick to apply the principles and tools of managerial economics to a variety of business problems in medicine. Some of the more interesting of these applications, all of which are topics you will learn about in this text, are discussed here:

- *Irrelevance of fixed costs in decision making:* Nearly all the physicians admitted to making some decisions based on fixed costs. A director of a radiation oncology department complained that many of her hospital's administrative costs are included as part of the incremental costs of treating additional patients. While the hospital

prided itself in moving toward a marginal cost pricing structure for services, the accounting department's calculation of marginal cost was inflated by fixed administrative costs.

- *Price discrimination:* A doctor specializing in vasectomies wanted to increase revenue by engaging in price discrimination. After a lengthy discussion about the legality of charging different prices for medical services, he decided to promote his vasectomy clinic by placing a \$40-off coupon in the local newspaper's TV guide. He believes that only lower-income patients will clip the coupon and pay the lower price.
- *Advertising dilemma:* After a class discussion on the advertising dilemma in oligopoly markets, a doctor who specializes in LASIK eye surgery expressed her relief that none of the other three LASIK surgeons in her small town had shown any interest in advertising their services. She decided it would not be wise for her to begin running radio ads.
- *Linear trend forecasting:* Several physicians used linear trend analysis to forecast patient load. An administrator of a hospital's emergency room services found that using "day-of-week" dummy variables, he could offer hospital administrators statistical evidence—instead of his casual observation—that certain days of the week tend to be (statistically) significantly busier than others.

insights into complicated problems using simplifying assumptions to make sense out of confusion, to turn complexity into relative simplicity. By abstracting away from the irrelevant, managers can use the economic way of thinking about business problems to make predictions and explanations that are valid in the real world, even though the theory may ignore many of the actual characteristics of the real world.

Using economic theory is in many ways like using a road map. A road map abstracts away from nonessential items and concentrates on what is relevant for the task at hand. Suppose you want to drive from Dallas to Memphis. Having never made this trip, you need to have a map. So, you log on to the Internet and go to Google maps, you get to choose either a satellite view of the region between Dallas and Memphis or a simple street view. The satellite view is an exact representation of the real world; it shows every road, tree, building, cow, and river between

- *Strategic entry deterrence:* A doctor in New Orleans decided to open new clinics in Baton Rouge and Morgan City. No other clinics like his are currently operating in these two cities. In order to discourage other doctors from opening similar clinics, he plans to price his services just slightly above average total cost but significantly below the price that would maximize profit under monopoly.
 - *Profit maximization vs. revenue maximization:* A doctor with a 25 percent ownership interest in a pharmaceutical supply firm realized during class that his sales manager is probably selling too many units, since the manager's compensation is based substantially on commissions. The doctor plans to recommend raising drug prices to sell fewer units and to begin paying the sales manager a percentage of profit.
 - *Economies of scale and scope:* Hospital managers perceive the current trend toward "managed care" to be forcing hospitals to reduce costs without reducing quality. Economies of scale and scope, to the extent that such economies exist, offer an attractive solution to the need for cost reduction. Hospital administrators in the class were especially interested in empirical methods of measuring economies of scale in order to plan for future expansion or contraction.
 - *Cost-minimizing input combination:* One doctor who owns and manages a chain of walk-in clinics decided to reduce the employment of M.D.s and increase the employment of R.N.s on the basis of classroom discussion of cost minimization. Apparently, for many of the procedures performed at the clinic, experienced nurses can perform the medical tasks approximately as well as the physicians, as long as the nurses are supervised by M.D.s. The doctor-manager reasoned that even though M.D.s have higher marginal products than R.N.s, the marginal product per dollar spent on R.N.s exceeded the marginal product per dollar spent on M.D.s.
- Business publications report that doctors with M.B.A. degrees are becoming increasingly powerful in the medical profession as hospitals, health maintenance organizations, and other types of health care clinics hire them to manage the business aspect of health care. Some doctors, as well as the American Medical Association, are opposed to blending business and medical values. Given the nature of the applications of managerial economics cited here, it appears that a course in managerial economics offers doctors insights into the business of medicine that they would not usually get in medical school. Many doctors think this knowledge is good medicine.

Dallas and Memphis. While the satellite view is certainly fascinating to look at, its inclusion of every geographic detail makes it inferior to the much simpler street view in its ability to guide you to Memphis. The simpler street view is better suited to guide you because it abstracts from reality by eliminating irrelevant information and showing only the important roads between Dallas and Memphis. As such, the (abstract) street view gives a much clearer picture of how to get to Memphis than the (real-world) satellite view. Likewise, the economic approach to understanding business reduces business problems to their most essential components.

The Roles of Microeconomics and Industrial Organization

As we mentioned previously, managerial economics draws on two closely related areas of economic theory: microeconomics and industrial organization. If you have

微观经济学 研究单个消费者、企业和市场的行为，帮助我们理解企业运作和策略。

商业实践或经营策略 在企业面对的特定市场条件下，管理者为获取更大利润所做的企业日常决策。

产业组织理论 微观经济学的一个分支，集中讨论企业和行业的行为和构架。

战略决策 为了提高或巩固长期利润，企业针对不同市场条件和不同竞争所采取的行动。

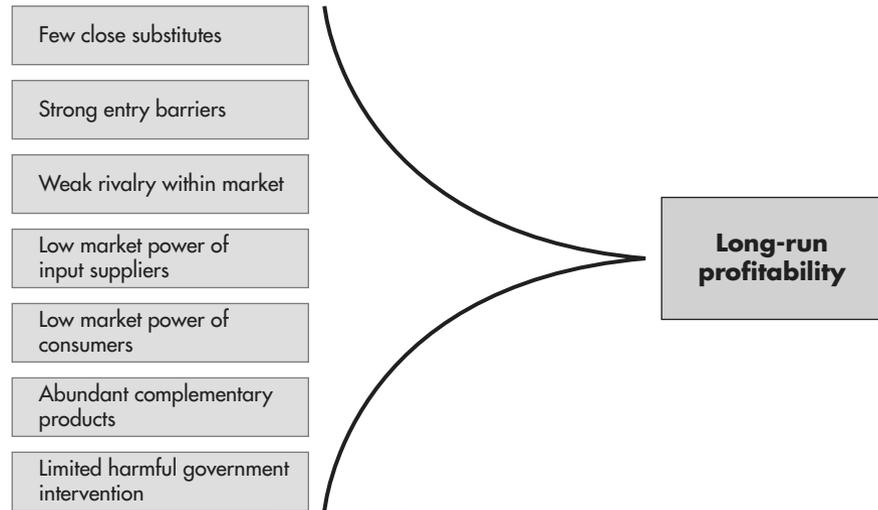
taken a basic course in economics, you will recall that **microeconomics** is the study and analysis of the behavior of individual segments of the economy: individual consumers, workers and owners of resources, individual firms, industries, and markets for goods and services. As a necessary means for addressing the behavior of rational individuals (both consumers and producers), microeconomics develops a number of foundation concepts and optimization techniques that explain the everyday business decisions managers must routinely make in running a business. These decisions involve such things as choosing the profit-maximizing production level, deciding how much of the various productive inputs to purchase in order to produce the chosen output level at lowest total cost, choosing how much to spend on advertising, allocating production between two or more manufacturing plants located in different places, and setting the profit-maximizing price(s) for the good(s) the firm sells.

These routine business decisions, made under the prevailing market conditions, are sometimes referred to as *business practices* or *tactics* to distinguish them from *strategic decisions*, which involve business moves designed intentionally to influence the behavior of rival firms. In other words, the firm's management team makes many decisions about **business practices** or **tactics** in order to create the greatest possible profit for the specific business environment faced by the firm. Because business practices typically involve maximizing or minimizing something, the field of microeconomics can be extremely helpful in understanding how to make these operating decisions. As we will stress throughout this book, microeconomics, with its emphasis on maximizing and minimizing processes, provides a kind of all-purpose, Swiss army knife for explaining how to make the most profitable business decisions. Once you get the hang of this approach, you will see that managerial economics is really just a series of repeated applications of a general method of reasoning known as "marginal analysis." In Chapter 3, we will explain and illustrate the powerful logic of marginal analysis. Economists like to say that marginal analysis provides "the key to the kingdom of microeconomics." Given the central role of microeconomics in managerial economics, we can safely tell you that marginal analysis also provides "the key to the kingdom of *managerial economics*."

While microeconomics serves as our "Swiss army knife" for explaining most business practices, a specialized branch of microeconomics, known as *industrial organization*, gives us an additional, complementary tool for business analysis. **Industrial organization**, which focuses specifically on the behavior and structure of firms and industries, supplies considerable insight into the nature, motivation, and consequences of strategic actions firms may wish to undertake. Many of the most important developments in business analysis and strategic thinking over the past 30 years flow directly from advances in the theory of industrial organization. Most of the discussion in this text about strategic decisionmaking can be attributed to these advances in the field of industrial organization.

Strategic decisions differ from routine business practices and tactics because strategic decisions do not accept the existing conditions of competition as fixed, but rather attempt to shape or alter the circumstances under which a firm

FIGURE 1.1
Economic Forces That
Promote Long-Run
Profitability



competes with its rivals. In so doing, strategic decisions can create greater profits and, in some cases, protect and sustain the profits into the future. While common business practices and tactical decisions are necessary for keeping organizations moving toward their goals—usually profit-maximization—strategic decisions are, in a sense, “optional” actions managers might be able to undertake should circumstances arise making a strategy suitable and likely to succeed. In Chapter 13, we will show you how to apply a variety of concepts from game theory and industrial organization to design strategic moves to make more profit.

With its emphasis on noncooperative game theory and the behavior of firms when rivals are few in number, industrial organization concepts now play a central role in every modern course in business strategy. Business strategists rely heavily on the field of industrial organization to identify and examine the economic forces that influence the long-run profitability of businesses. Figure 1.1 shows a list of economic forces that determine the *level* of profit a firm can expect to earn in the long run and the *durability* of long-run profits.¹ As a business or economics major, you may wish to take an entire course in industrial organization to learn about these forces. In this book, we will cover most of these factors in varying degrees of detail. We are confident that when you finish this course, you will agree that managerial economics covers a wide range of important business decisions and offers a powerful, indispensable view of the business world.

¹ Michael Porter, in his book *Competitive Strategy*, New York: Free Press, 1980, examines the first five forces in Figure 1.1. His pioneering work, called “Five Forces Analysis,” remains a widely studied framework in business strategy courses. More recently, Adam Brandenburger and Barry Nalebuff have added complementarity of products and inputs to the list of economic forces affecting long-run profitability. See their book, *Co-Opetition*, New York: Doubleday, 1996.

1.2 MEASURING AND MAXIMIZING ECONOMIC PROFIT

As mentioned earlier, the primary purpose of this text is to show managers how to make decisions that will generate the most profit for their businesses. Profit serves as the score in the “game” of business. It’s the amount by which revenues exceed costs. And when costs exceed revenues, the resulting negative profits, or losses, signal owners in no uncertain terms that they are reducing their wealth by owning and running unprofitable businesses. The success of managers’ decisions is judged according to a single overriding concern: Are managers’ decisions creating higher or lower profits? Managers who can make the largest possible profits not only enrich the owners of firms—and managers are often part or full owners of firms they manage—but they also create for themselves a reputation for profitable decision making that can be worth millions of dollars in executive compensation. Thus it is crucial for managers to understand how the “score” is calculated and how to achieve the highest possible score without getting sidetracked by issues that don’t affect the score. It is essential that managers never forget that the goal of the firm is to maximize economic profits. Nothing else matters in the world of business as much as profit does because the value of a business and the wealth of its owners are determined solely by the amount of profits the firm can earn.

After hearing so much news about scandals over financial reporting errors, as well as several spectacular cases of management and accounting fraud—think Enron and WorldCom—you probably won’t be surprised when we explain in this section why “profits” reported in corporate financial statements generally overstate the profitability of firms. The tendency for overstating profits examined in this section, however, has nothing to do with accounting mistakes or fraud. Indeed, the reason accounting reports of profit (which accountants may call net income, net earnings, or net profit, depending on the circumstances) poorly reflect the actual profitability of firms can be explained by examining the generally accepted accounting practices set forth by professional accounting associations subject to approval from government agencies. Before we can explain why financial accounting procedures overstate business profitability, we must first show you how to measure the economic costs businesses incur when using resources to produce goods or services.

Economic Cost of Using Resources

As you know, businesses produce the goods or services they sell using a variety of resources or productive inputs. Many kinds of labor services and capital equipment inputs may be employed along with land, buildings, raw materials, energy, financial resources, and managerial talent. The economic cost of using resources to produce a good or service is the *opportunity cost* to the owners of the firm using those resources. The **opportunity cost** of using any kind of resource is what the owners of a business must give up to use the resource.

The method of measuring opportunity costs differs for various kinds of inputs used by businesses. Businesses utilize two kinds of inputs or resources. One of these categories is **market-supplied resources**, which are resources owned by others

机会成本 企业所有者由于使用资源生产产品和服务而放弃的收益。

市场资源 由他人所有的资源，可以在市场上雇用、租用和融资租赁的资源。

自有资源 企业自有并投入使用的资源。

总经济成本 市场资源和自有资源的机会成本之和。

显性成本 使用市场资源的机会成本。

隐性成本 使用自有资源的机会成本。

权益资本 企业所有者向企业提供的资金。

and hired, rented, or leased by the firm. Examples of resources purchased from others include labor services of skilled and unskilled workers, raw materials purchased in resource markets from commercial suppliers, and capital equipment rented or leased from equipment suppliers. The other category of resources is **owner-supplied resources**. The three most important types of owner-supplied resources are money provided to the business by its owners, time and labor services provided by the firm's owners, and any land, buildings, or capital equipment owned and used by the firm.

Businesses incur opportunity costs for *both* categories of resources used. Thus, the **total economic cost** of resources used in production is the sum of the opportunity costs of market-supplied resources and the opportunity costs of owner-supplied resources. Total economic cost, then, represents the opportunity cost of all resources used by a firm to produce goods or services.

The opportunity costs of using *market-supplied* resources are the out-of-pocket monetary payments made to the owners of resources. The monetary payments made for market-supplied inputs are also known as **explicit costs**. For example, one of the resources Apple Inc. needs to manufacture its iMac computer is an Intel Core 2 Duo microprocessor chip. This chip is manufactured by Intel Corp., and Apple can purchase one for \$110. Thus Apple's opportunity cost to obtain the computer chip is \$110, the monetary payment to the owner of the input. We want to emphasize here that explicit costs are indeed opportunity costs; specifically, it's the amount of money sacrificed by firm owners to get market-supplied resources.

In contrast to explicit costs of using market-supplied resources, there are no out-of-pocket monetary or cash payments made for using owner-supplied resources. The opportunity cost of using an *owner-supplied* resource is the best return the owners of the firm could have received had they taken their own resource to market instead of using it themselves. These nonmonetary opportunity costs of using a firm's own resources are called **implicit costs** because the firm makes no monetary payment to use its own resources. Even though firms do not make explicit monetary payments for using owner-supplied inputs, the opportunity costs of using such inputs are not zero. The opportunity cost is only equal to zero if the market value of the resource is zero, that is, if no other firm would be willing to pay anything for the use of the resource.

Even though businesses incur numerous kinds of implicit costs, we will focus our attention here on the three most important types of implicit costs mentioned earlier: (1) the opportunity cost of cash provided to a firm by its owners, which accountants refer to as **equity capital**; (2) the opportunity cost of using land or capital owned by the firm; and (3) the opportunity cost of the owner's time spent managing the firm or working for the firm in some other capacity. For more than 70 years, these implicit costs have been the center of controversy over how accountants should measure the costs of using owner-supplied resources. We will have more to say about this issue in our later discussion of measuring business profit, as well as in Illustration 1.2. Let's first look at examples of each of these implicit costs.

ILLUSTRATION 1.2

The Sarbanes-Oxley Act
Will It Close the GAAP between Economic and Accounting Profit?

The spectacular crash of Enron in the fall of 2001 was the largest scandal in a recent series of corporate scandals that included such large firms as WorldCom, Sunbeam, Waste Management, Xerox, and Global Crossing, all of which involved executive malfeasance and manipulation of financial statements. Congress reacted during the summer of 2002 by passing the Sarbanes-Oxley Act, which gave the federal government substantial new authority to regulate the auditing of corporate financial statements with the aim of reducing fraudulent reports of accounting profits. While Sarbanes-Oxley primarily focuses on detecting and preventing fraud via improved auditing, the act has also rekindled interest in a long-standing conceptual disagreement between economists and accountants concerning how to properly measure profits. As we have emphasized in this chapter, accountants follow reporting rules known as generally accepted accounting principles, or GAAP, which do not allow most kinds of implicit costs of owner-supplied resources to be deducted from revenues. Failure to deduct these implicit costs causes accounting measures of profit—

variously called net earnings, earnings after tax, net income, operating profit, and net profit on financial statements—to overstate economic profit, which subtracts all costs of resources used by businesses.

A number of authorities in the fields of finance and accounting believe Sarbanes-Oxley focuses too much attention and regulatory effort on reducing fraud. They believe the real problem stems from accounting rules that poorly measure the profitability of businesses. Robert Bartley, one of several experts who have recently contributed their opinions on the subject, offers the following observation:

For while there has been some cheating and corner-cutting, the real problem with corporate reporting is conceptual. EPS, the familiar earnings per share [accounting profit divided by the number of outstanding shares of common stock], is supposed to measure corporate profit, as determined by GAAP, or generally accepted accounting principles. But economists have long recognized that profit is . . . by no means the same thing as accounting profit.^a

This same concern is amplified by G. Bennett Stewart in his commentary on the Sarbanes-Oxley Act:

The real problem [causing the recent accounting scandals] is that earnings and earnings per share (EPS), as

Initially, and then later as firms grow and mature, owners of businesses—single proprietorships, partnerships, and corporations alike—usually provide some amount of money or cash to get their businesses going and to keep them running. This equity capital is an owner-supplied resource and entails an opportunity cost equal to the best return this money could earn for its owner in some other investment of comparable risk. Suppose, for example, investors use \$20 million of their own money to start a firm of their own. Further suppose this group could take the \$20 million to the venture capital market and earn a return of 12 percent annually at approximately the same level of risk incurred by using the money in its own business. Thus the owners sacrifice \$2.4 million ($= 0.12 \times \20 million) annually by providing equity capital to the firm they own. If you don't think this is a real cost, then be sure to read Illustration 1.2.

Now let's illustrate the implicit cost of using land or capital owned by the firm. Consider Alpha Corporation and Beta Corporation, two manufacturing firms that produce a particular good. They are in every way identical, with one exception: The owner of Alpha Corp. rents the building in which the good is produced; the

measured according to GAAP, are unreliable measures of corporate performance and stock-market value. Accountants simply are not counting what counts or measuring what matters.^b

We have discussed in this chapter how to measure the implicit costs of several kinds of owner-supplied resources not presently treated as costs under GAAP: owners' financial capital (i.e., equity capital), physical capital, land, and time spent managing their firms. While all of these types of implicit costs must be treated as costs to bring accounting earnings in line with economic profits, it is the opportunity cost of equity capital, according to Stewart, that generates the greatest single distortion in computing accounting profit:

The most noteworthy flaw in GAAP is that no charge is deducted from [revenues] for the cost of providing . . . shareholders with a . . . return on their investment . . . The most significant proposed adjustment of GAAP is to deduct the cost of equity capital from net income [i.e., accounting profit]. Failure to deduct it is a stupendous earnings distortion.^c

He goes on to explain that in 2002 the 500 firms that comprise the Standard and Poor's (S&P) stock index employed about \$3 trillion of equity capital, which, at

a 10 percent annual opportunity cost of equity capital, represents a resource cost to businesses of \$300 billion ($0.10 \times \3 trillion). To put this cost, which GAAP completely ignores, into perspective, Stewart notes that the sum total of all accounting profit for the S&P 500 firms in 2002 was just \$118 billion. After subtracting this opportunity cost of equity capital from aggregate accounting profit, the resulting measure of economic profit reveals that these 500 businesses experienced a loss of \$182 billion in 2002. As you can now more fully appreciate, the GAAP between economic and accounting profit creates a sizable distortion that, if corrected, can turn a seemingly profitable business, along with its CEO, into a big loser!

^aRobert L. Bartley, "Thinking Things Over: Economic vs. Accounting Profit," *The Wall Street Journal*, June 2, 2003, p. A23.

^bG. Bennett Stewart III, "Commentary: Why Smart Managers Do Dumb Things," *The Wall Street Journal*, June 2, 2003, p. A18.

^cIbid.

owner of Beta Corp. inherited the building the firm uses and therefore pays no rent. Which firm has the higher costs of production? The costs are the same, even though Beta makes no explicit payment for rent. The reason the costs are the same is that using the building to produce goods costs the owner of Beta the amount of income that could have been earned had the building been leased at the prevailing rent. Since these two buildings are the same, presumably the market rentals would be the same. In other words, Alpha incurred an explicit cost for the use of its building, whereas Beta incurred an implicit cost for the use of its building.² Regardless of whether the payment is explicit or implicit, the opportunity cost of using the building resource is the same for both firms.

²Alternatively, Beta's sacrificed return can be measured as the amount the owner could earn if the resource (the building) were sold and the payment invested at the market rate of interest. The sacrificed interest is the implicit cost when a resource is sold and the proceeds invested. This measure of implicit cost is frequently the same as the forgone rental or lease income, but if they are not equal, the true opportunity cost is the *best* alternative return.

We should note that the opportunity cost of using owner-supplied inputs may not bear any relation to the amount the firm paid to acquire the input. The opportunity cost reflects the current market value of the resource. If the firm paid \$1 million for a plot of land two years ago but the market value of the land has since fallen to \$500,000, the implicit cost now is the best return that could be earned if the land is sold for \$500,000, not \$1 million (which would be impossible under the circumstances), and the proceeds are invested. If the \$500,000 could be invested at 6 percent annually, the implicit cost is \$30,000 ($= 0.06 \times \$500,000$) per year. You should be careful to note that the implicit cost is *not* what the resource could be sold for (\$500,000) but rather it is the best return sacrificed each year (\$30,000).

Finally, consider the value of firm owners' time spent managing their own businesses. Presumably, if firm owners aren't managing their businesses or working for their firms in other capacities, they could obtain jobs with some other firms, possibly as managers. The salary that could be earned in an alternative occupation is an implicit cost that should be considered as part of the total cost of production because it is an opportunity cost to these owners. The implicit cost of an owner's time spent managing a firm or working for the firm in some other capacity is frequently, though not always, the same as the payment that would be necessary to hire an equivalent manager or worker if the owner does not work for the firm.

We wish to stress again that, even though no explicit monetary payment is made for the use of owner-supplied resources, \$1 worth of implicit costs is no less (and no more) of an opportunity cost of using resources than \$1 worth of explicit costs. Consequently, both kinds of opportunity costs, explicit and implicit opportunity costs, are added together to get the total economic cost of resource use. We now summarize this important discussion on measuring the economic costs of using resources in a principle:

- **Principle** The opportunity cost of using resources is the amount the firm gives up by using these resources. Opportunity costs can be either explicit costs or implicit costs. Explicit costs are the costs of using market-supplied resources, which are the monetary payments to hire, rent, or lease resources owned by others. Implicit costs are the costs of using owner-supplied resources, which are the greatest earnings forgone from using resources owned by the firm in the firm's own production process. Total economic cost is the sum of explicit and implicit costs.



Figure 1.2 illustrates the relations set forth in this principle. Now that we have shown you how to measure the cost of using resources, we can explain the difference between economic profit and accounting profit.

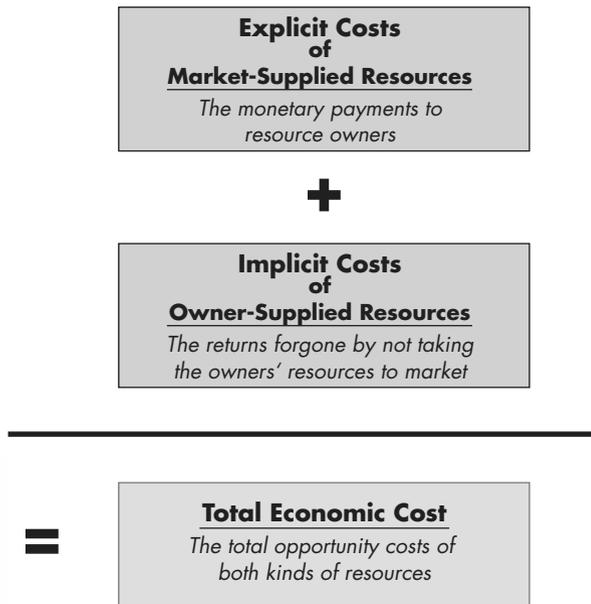
Economic Profit versus Accounting Profit

Economic profit is the difference between total revenue and total economic cost. Recall from our previous discussion that total economic cost measures the opportunity costs of *all* the resources used by the business, both market-supplied and owner-supplied resources, and thus:

$$\begin{aligned} \text{Economic profit} &= \text{Total revenue} - \text{Total economic cost} \\ &= \text{Total revenue} - \text{Explicit costs} - \text{Implicit costs} \end{aligned}$$

经济利润 总收益和总
经济成本之差。

FIGURE 1.2
Economic Cost of Using Resources



Economic profit, when it arises, belongs to the owners of the firm and will increase the wealth of the owners. When revenues fail to cover total economic cost, economic profit is negative, and the loss must be paid for out of the wealth of the owners.

When accountants calculate business profitability for financial reports, they follow a set of rules known as “generally accepted accounting principles” or GAAP. If you have taken courses in accounting, you know that GAAP provides accountants with detailed measurement rules for developing accounting information presented in financial statements, such as balance sheets, cash flow statements, and income statements. The Securities and Exchange Commission (SEC) along with the Financial Accounting Standards Board (FASB), a professional accounting organization, work together to construct the detailed rules of GAAP. To understand the importance of GAAP for our present discussion, you only need to know that GAAP rules do not allow accountants to deduct most types of implicit costs for the purposes of calculating taxable accounting profit.

Accounting profit, then, differs from economic profit because accounting profit does not subtract from total revenue the implicit costs of using resources. **Accounting profit** is the difference between total revenue and explicit costs:

$$\text{Accounting profit} = \text{Total revenue} - \text{Explicit costs}$$

Depending on the type of financial statement and where it appears in a statement, accounting profit goes by a variety of names such as income, net income, operating income, net profit, earnings, or net earnings.

会计利润 总收益与显
性成本之差。

As you can see, when firms employ owner-supplied resources, the resulting implicit costs are not subtracted from total revenue and the accounting profits reported in financial statements overstate business profitability. All three types of implicit costs discussed earlier are ignored by accountants.³ We want to stress, however, that when financial accountants omit these implicit costs from financial reports, they are following generally accepted rules set forth by the FASB and SEC. The practice of omitting most kinds of implicit costs, which can be quite large for many firms, is widely recognized by managers, shareholders, government officials, and financial analysts, who make lucrative careers converting the information in financial accounting statements into measures more closely resembling economic profit (see Illustration 1.2).

Business owners, of course, must bear all costs of using resources, both explicit and implicit, regardless of which costs may be deducted for accounting purposes. Since all costs matter to owners of a firm, you should now clearly understand why maximizing economic profit, rather than accounting profit, is the objective of the firm's owners. And, as we explain in the following section, the value of a firm is determined by the amount of economic profit, rather than accounting profit the firm is expected to earn in the current period and all future periods. As you now see, it is economic profit that matters in business decision making, so in the rest of this chapter and in later chapters whenever we refer to "profit," we will mean *economic* profit. We will now summarize the relation between economic and accounting profits in a principle:

- **Principle** Economic profit is the difference between total revenue and total economic cost:

$$\begin{aligned}\text{Economic profit} &= \text{Total revenue} - \text{Total economic cost} \\ &= \text{Total revenue} - \text{Explicit costs} - \text{Implicit costs}\end{aligned}$$

Accounting profit differs from economic profit because accounting profit does not subtract from total revenue the implicit costs of using resources:

$$\text{Accounting profit} = \text{Total revenue} - \text{Explicit costs}$$



Since the owners of firms must cover the costs of all resources used by the firm, maximizing economic profit, rather than accounting profit, is the objective of the firm's owners.

Notice to students: The arrows in the left margin throughout this text are directing you to work the enumerated Technical Problems at the end of the chapter. Be sure to check the answers provided for you at the end of the book *before* proceeding to the next section of a chapter. We have carefully designed the Technical Problems to guide your learning in a step-by-step process.

³One of the implicit costs that accountants do deduct when computing accounting profit is the cost of depreciation of capital assets, which is the reduction in the value of capital equipment from the ordinary wear and tear of usage. As you may know from taking accounting courses, businesses have several methods to choose from when computing depreciation costs, and some of these methods tend to overstate the actual value of depreciation in the early years of equipment ownership.

Maximizing the Value of the Firm

As we stressed in the preceding discussion and principle, owners of a firm, whether the shareholders of a corporation or the owner of a single proprietorship, are best served by management decisions that seek to maximize the profit of the firm. In general, when managers maximize economic profit, they are also maximizing the value of the firm, which is the price someone will pay for the firm. How much will someone pay for a firm? Suppose you are going to buy a business on January 1 and sell it on December 31. If the firm is going to make an economic profit of \$50,000 during the year, you are willing to pay no more than \$50,000 (in monthly payments matching the flow of profit) to own the firm for that year. Since other potential buyers are *also* willing to pay up to \$50,000, the firm likely sells for very nearly or exactly the amount of the economic profit earned in a year.

When a firm earns a stream of economic profit for a number of years in the future, the **value of a firm**—the price for which it can be sold—is the present value of the future economic profits expected to be generated by the firm:

$$\text{Value of a firm} = \frac{\pi_1}{(1+r)} + \frac{\pi_2}{(1+r)^2} + \dots + \frac{\pi_T}{(1+r)^T} = \sum_{t=1}^T \frac{\pi_t}{(1+r)^t}$$

where π_t is the economic profit expected in period t , r is the risk-adjusted discount rate, and T is the number of years in the life of a firm.⁴ Since future profit is not known with certainty, the value of a firm is calculated using the profit *expected* to be earned in future periods. The greater the variation in possible future profits, the less a buyer is willing to pay for those risky future profits. The risk associated with not knowing future profits of a firm is accounted for by adding a **risk premium** to the (riskless) discount rate. A risk premium increases the discount rate, thereby decreasing the present value of profit received in the future, in order to compensate investors for the risk of not knowing with certainty the future value of profits. The more uncertain the future profits, the higher the risk-adjusted discount rate used by investors in valuing a firm, and the more heavily future profits will be discounted.

企业的价值 企业能够出售的价格，它等于将来利润的现值。

风险升水 为补偿投资者对于将来利润的不确定性，所承担风险而增加的贴现率。



- **Principle** The value of a firm is the price for which it can be sold, and that price is equal to the present value of the expected future profits of the firm. The larger (smaller) the risk associated with future profits, the higher (lower) the risk-adjusted discount rate used to compute the value of the firm, and the lower (higher) will be the value of the firm.

⁴Since a dollar of profit received in the future is worth less than a dollar received now, multi-period decision making employs the concept of present value. Present value is the value at the present time of a payment or stream of payments to be received (or paid) some time in the future. The appendix at the end of this chapter reviews the mathematics of present value computations, a topic usually covered in an introductory course in finance or accounting.

ILLUSTRATION 1.3

Is Baseball Going Broke?
Accounting Profits vs. Market Values

During the summer of 2000, a “Blue Ribbon Panel” commissioned by Major League Baseball issued its final report on the financial health of the league’s 30 baseball teams. The panel reached the bleak conclusion that Major League Baseball is going broke because teams located in large, profitable geographic markets attract and keep top players while teams located in small, unprofitable markets cannot attract and keep the best players. According to the panel, the resulting lopsided distribution of talented players makes baseball games less competitive and less exciting for baseball fans. The panel concluded that only a significant increase in revenue sharing—baseball’s arrangement requiring rich, successful teams to give some of their revenue to financially troubled, losing teams—will prevent fans from losing interest in the sport.

Two statistics editors at *Forbes* magazine, Michael Ozanian and Kurt Badenhausen, criticized the Blue Ribbon Panel’s conclusion that baseball is going broke.

In a commentary in *The Wall Street Journal*, they argued that the panel’s concern about the future profitability of baseball teams is misleading for two reasons. First, the panel based their analysis on accounting profits of the major league teams. Ozanian and Badenhausen worried that accounting profit can be manipulated too easily. They quoted baseball’s current president Paul Beeston, who said, “Under generally accepted accounting principles, I can turn a \$4 million profit into a \$2 million loss and I can get every national accounting firm to agree with me.” Second, the baseball panel should have examined the trend in the *market values* of Major League Baseball teams rather than *past* accounting profits in order to get an accurate picture of the financial *prospects* for major league team owners.

Ozanian and Badenhausen noted that team values increased from an average value of \$115 million per team in 1995 to \$233 million per team in 2000. According to their calculations, not a single team decreased in market value. They attributed rising team values to new stadiums and escalating fees for television broadcast privileges. As an example of this trend, they noted

The Equivalence of Value Maximization and Profit Maximization

Owners of a firm want the managers to make business decisions that will maximize the value of the firm, which, as we discussed in the previous subsection, is the sum of the discounted expected profits in current and future periods. As a general rule, then, a manager maximizes the value of the firm by making decisions that maximize expected profit in each period. That is, single-period profit maximization and maximizing the value of the firm are usually equivalent means to the same end: Maximizing profit in each period will result in the maximum value of the firm, and maximizing the value of the firm requires maximizing profit in each period.

- ☐ **Principle** If cost and revenue conditions in any period are independent of decisions made in other time periods, a manager will maximize the value of a firm (the present value of the firm) by making decisions that maximize profit in every single time period.

The equivalence of single-period profit maximization and maximizing the value of the firm holds only when the revenue and cost conditions in one time period are independent of revenue and costs in future time periods. When today’s decisions affect profits in future time periods, price or output decisions that maximize profit

that the owners of the San Francisco Giants, who suffered \$94 million in negative accounting profits over the 1995–2000 period, saw the team’s value increase by 12 percent going into the 2000 season—the season in which the team began playing in its new Pacific Bell Park. “Based on asset appreciations, the national pastime resembles a growth industry, not one in dire straits,” asserted Ozanian and Badenhausem.

As we explain in this chapter, the market value of a firm—the price for which it can be sold—is the present value of the *future* economic profits buyers expect the firm to generate. You can be sure that buyers of baseball teams pay careful attention to all factors that might affect future economic profits of baseball teams. If the prices of teams are rising (falling), then buyers’ expectations about future economic profits in baseball are also rising (falling).^a Thus the current market value of a baseball team is unrelated to the team’s accounting (or economic) profit in past years.

Baseball is no different from any other industry. The prospect of declining economic profits in the future will cause market values of firms to decrease (for a

given risk-adjusted discount rate). If reports that team values increased during the five-year period 1995–2000 are correct, it would be difficult to believe Major League Baseball is going broke. In short, one should be suspicious of gloomy forecasts for an industry if many of the firms in the industry are experiencing rising market values. Baseball’s Blue Ribbon Panel seems to have struck out swinging at an accounting profit curve ball.

^aThe market value of a baseball team can also change if buyers change the discount rate they use to compute the present value of future profits. In the present situation, the sources of higher profits—new stadiums and rising television broadcast fees—might also reduce the risk associated with future profits, so that buyers would likely use a *lower* risk-adjusted discount rate to compute the value of baseball teams. Lower risk-adjusted discount rates would then further increase team values.

Source: Michael K. Ozanian and Kurt Badenhausem, “Commentary: Baseball Going Broke? Don’t Believe It,” *The Wall Street Journal*, July 27, 2000, p. A24.

in each (single) time period will not maximize the value of the firm. Two examples of these kinds of situations occur when (1) a firm’s employees become more productive in future periods by producing more output in earlier periods—a case of learning by doing—and (2) current production has the effect of increasing cost in the future—as in extractive industries such as mining and oil production. Thus, if increasing current output has a positive effect on future revenue and profit, a value-maximizing manager selects an output level that is *greater* than the level that maximizes profit in a single time period. Alternatively, if current production has the effect of increasing cost in the future, maximizing the value of the firm requires a *lower* current output than maximizing single-period profit.

Despite these examples of inconsistencies between the two types of maximization, it is generally the case that there is little difference between the conclusions of single-period profit maximization (the topic of most of this text) and present value maximization. Thus single-period profit maximization is generally the rule for managers to follow when trying to maximize the value of a firm.



Some Common Mistakes Managers Make

Taking a course in managerial economics is certainly not a requirement for making successful business decisions. Everyone can name some extraordinarily astute

business managers who succeeded in creating and running very profitable firms with little or no formal education in business or economics. Taking this course will not guarantee your success either. Plenty of managers with M.B.A. degrees took courses in managerial economics but nonetheless failed sensationally and ended up getting fired or replaced in hostile takeovers by more profitably managed firms. We firmly believe, however, that a course in managerial economics helps you avoid some of the more common mistakes that have led other managers to fail. As you progress through this book, we will draw your attention at various points along the way to a number of common pitfalls, misconceptions, and even mistakes that real-world managers would do well to avoid.

Although it is too soon for us to demonstrate or prove that certain practices can reduce profit and possibly create losses in some cases—this is only Chapter 1!—we can nonetheless give you a preview of several of the more common mistakes that you will learn to avoid in later chapters. Some of the terms in this brief preview might be unclear to you now, but you can be sure that we will carefully explain things later in the text.

Never increase output simply to reduce average costs

Sometimes managers get confused about the role of average or unit cost in decision making. For example, a firm incurs total costs of \$100 to produce 20 units. The average or unit cost is \$5 for each of the 20 units. Managers may believe, incorrectly, if they can increase output and cause average cost to fall, then profit *must* rise by expanding production. Profit might rise, fall, or stay the same, and the actual change in profit has nothing to do with falling average costs.

As you will learn in Chapter 8, producing and selling more units in the short run can indeed cause unit or average costs to fall as fixed costs of production are spread over a greater number of units. As you will learn in Chapter 9, increasing output in the long run causes average cost to fall when economies of scale are present. However, profit-maximizing firms should never increase production levels simply because average costs can be reduced. As we will show you, it is the *marginal* cost of production—the increment to total cost of producing an extra unit—that matters in decision making. Consequently, a manager who increases or decreases production to reduce unit costs will usually miss the profit-maximizing output level. Quite simply, output or sales expansion decisions should never be made on the basis of what happens to average costs.

Pursuit of market share usually reduces profit

Many managers misunderstand the role market share plays in determining profitability. Simply gaining market share does *not* create higher profits. In many situations, if managers add market share by cutting price, the firm's profit actually falls. Illustration 1.4 examines some empirical studies of managers who pursued market share while ignoring profit. You will learn in Chapters 11 and 12 that the best general advice is to ignore market share in business decision making.

We should mention here an important, although rather rare, exception to this rule that will be examined more carefully in Chapter 12: the value of market share

when “network effects” are present. Network effects arise when the value each consumer places on your product depends on the number of *other* consumers who also buy your product. Suppose consumers highly value your good because a large number of *other* consumers also buy your good. Under these circumstances, grabbing market share faster than your rivals could give you a dominant position in the market, as consumers switch to your product away from sellers with small market shares. Failing to capture substantial market share might even threaten your long-run survival in the market. As we will explain fully in Chapter 12, your best move when network effects exist may be to charge a low initial price so that you can dominate the market and charge higher prices in later periods. Again, we must stress that pursuing market share is consistent with profit-maximization only when network effects are present.

Focusing on profit margin won't maximize total profit

Profit margin is the difference between the price you charge for each unit and the average cost of producing the units. Suppose you charge \$15 per unit, and average or unit cost is \$9 per unit. Your profit margin, or average profit per unit, is \$6 ($\$15 - \9) per unit. As we will demonstrate later in Chapters 11 and 12, managers should not make decisions with the primary objective of increasing profit margin, because total profit is *not* maximized at the output and price level where profit margin or unit profit is greatest. In later chapters you will learn to ignore profit margin when making pricing and output decisions. As you will see, profit margin is handy for computing the amount of profit a business makes, but profit margin plays no role in making profit-maximizing decisions. This subtle distinction in the proper use of profit margin is not well understood in the business community.

Maximizing total revenue reduces profit

You might think if managers have an opportunity to change price or quantity in a way that increases total revenue, they will always wish to do so. As it turns out, increasing revenue does not necessarily increase profit and may even lower profit. You will see that the demand curve facing a firm tells a manager the maximum price a firm can charge to sell various quantities of its product. At any chosen point on demand, total revenue is computed by multiplying price times the quantity demanded. Choosing different points on a firm's demand curve will alter the amount of revenue the firm generates, as well as production costs and the amount of profit left over for the owners. We will show you in Chapters 11 and 12 that the point on a firm's demand curve that maximizes profit will *not* be the price and quantity that maximizes total revenue.⁵ General managers have learned that, when the salaries of sales managers are tied to the number of units sold or the dollar amount of revenue generated, sales managers may try to persuade general managers to produce and sell too much product. The result: Revenue goes up, but profit goes down!

⁵In theory, one exception to this rule exists, but it arises very rarely in practice. When a price-setting firm faces marginal costs that are zero, it will maximize profit by maximizing total revenue. We will explain this exception in Chapter 12.

Cost-plus pricing formulas don't produce profit-maximizing prices. Pricing decisions are probably the most difficult and risky of all the business decisions managers must make. To make matters worse, prices for the same product must routinely be set over and over again as market conditions change month after month and year after year. Of course, some firms produce hundreds, even thousands, of products. So, it's hard to blame managers for trying to find a simple pricing formula requiring nothing more than readily available spreadsheet data. One such pricing formula, cost-plus pricing, is still widely used even though everyone trained in economics and marketing knows that setting prices higher than unit cost by some fixed, arbitrarily determined portion of unit cost almost never works. The unfortunate truth is that cost-plus pricing does not deliver profit-maximizing prices, except by sheer luck.⁶ In Chapter 12, we will show you how to set the most profitable prices when everyone pays the same price for the same good—a method known as uniform pricing. In Chapter 14, we will show you several advanced pricing techniques, which charge different buyers different prices and generate even more revenue than with uniform prices.

These are just a few of the many mistakes we will teach you how to avoid. Don't be concerned at this point if you're not sure you understand these mistakes—we guarantee you will by the end of the text!

1.3 SEPARATION OF OWNERSHIP AND CONTROL

When the manager of a firm is also the owner of a business, what is good for the owner is, of course, good for the manager. But most large business organizations are run by professional management teams that possess little or no equity ownership in the business. When the owners and managers are not the same people, conflicts can arise between the firm's owners and its managers.

These conflicts arise because of differences between the objectives of the owners and the managers. As already explained, owners want managers to maximize the value of the firm, which is usually accomplished by maximizing profit. Managers, when they have little or no ownership in a business, may pursue objectives that are not compatible with earning the maximum possible amount of profit for the owners. One profit-reducing objective managers are thought to pursue is the consumption of excessive or lavish perquisites. It is an unusual manager indeed who would not like to have the company pay for a lavish office, memberships in the most exclusive country clubs, extraordinary levels of life and health insurance, a limousine and chauffeur, and, if possible, a Challenger corporate jet. Another profit-reducing objective of managers is the pursuit of market share. Some managers are driven to have the firm be the largest, rather than the most profitable, firm in its industry. While maximizing the growth rate of a firm might be consistent

⁶Only when businesses face constant costs can a formula for choosing a profit-maximizing markup on unit cost be contrived. But, this pricing formula is so complicated to apply that it offers no practical advantage over the "marginal revenue equals marginal cost" approach to optimal pricing that you will learn in Chapter 12. We consider this contrived formula to be worthless and do not cover it anywhere in this text.

with maximizing profit in some situations, as a general rule, pricing and output decisions that create the biggest, fastest-growing companies do not also maximize the value of the firm. In many industries, the most profitable firms are not the largest or fastest-growing ones, as Illustration 1.4 shows.

The Principal-Agent Problem

A principal in an agreement contracts with an agent to perform tasks designed to further the principal's objectives. A **principal-agent problem** arises when the agent has objectives different from those of the principal, and the principal either has difficulty enforcing the contract with the agent or finds it too difficult and costly to monitor the agent to verify that he or she is furthering the principal's objectives. Although there are a multitude of examples of the principal-agent problem in society, we are concerned here with the owner-manager problem, particularly as it applies to the corporate form of business organization. In corporations, shareholders are obviously the principals, and the managers are the agents.

The agency problem occurs because of moral hazard. **Moral hazard** exists when either party to an agreement has an incentive not to abide by all the provisions of the agreement *and* one party cannot cost effectively find out if the other party is abiding by the agreement or cannot enforce the agreement even when that information is available. Although moral hazard arises in a large number of principal-agent agreements in business, we are concerned here only with moral hazard in the case of the firm's management working for shareholders.

You may be wondering why the shareholders don't simply tell the managers to maximize the value of the firm and, if they don't comply, replace them with new managers. This process is a lot more complex and difficult than it appears at first glance. A large, modern corporation is an extremely complicated institution. The upper management of such a firm is much more familiar with the functioning of the corporation than most or even all of the stockholders. Stockholders would not even know, in many cases, whether management is or is not attempting to maximize the value of the firm or its profits, especially when business is good and the price of the stock is rising. Stockholders get most of their information about the performance of the firm from the managers themselves.

In the case of large corporations, any given shareholder typically holds a relatively small proportion of the total outstanding stock. Stockholders are generally broadly diversified and would have difficulty organizing into a group that could actually affect the firm's policies. Furthermore, an individual stockholder would probably not have the incentive to find the necessary information about the firm and then attempt to monitor management. The cost of obtaining and processing the required information would be huge, while the benefits to an individual shareholder would be small, even if the monitoring were successful. Shareholders usually have diversified portfolios in which no individual stock looms particularly large, relative to their total holdings. They frequently don't have much of an interest in one particular stock. Therefore, the owners of large corporations have a difficult time policing the managers.

委托—代理问题 当管理层（代理人）的目标与企业所有者目标不一致时产生的冲突。

败德 当合同的一方有不遵守合同所有条款的动机，而使另一方不能在有效成本内实施监视时存在的风险。

ILLUSTRATION 1.4

Managerial Strategy

Maximize Profit or Maximize Market Share?

Although sports and war metaphors are common in business conversation and management seminars, managers may be reducing the value of their firms by placing too much emphasis on beating their competitors out of market share rather than focusing on making the most profit for their shareholders. In a provocative study of managerial strategy, Professors J. Scott Armstrong at the University of Pennsylvania's Wharton School and Fred Collopy at Case Western Reserve University advise CEOs to "keep their eyes on profits, not market share." Armstrong and Collopy discovered that, instead of maximizing profit, many managers make decisions with an eye toward performing well relative to their competitors—a decision-making point of view they refer to as "competitor-oriented."

In their nine-year study of more than 1,000 experienced managers, Armstrong and Collopy found that managers are more likely to abandon the goal of profit maximization when they have greater amounts of information about the performance of their rivals. In the study, managers were asked to choose between two pricing plans for a new product—a low-price and a high-price strategy—and were told the five-year present value of expected profits associated with each strategy. The table in the next column presents two of the "treatments" that were administered to different groups of subjects.

The "base" treatment gives the manager no information about how a rival firm will fare under the two plans, while the "beat" treatment allows the manager to know how a decision will affect a rival. In the base treatment, almost all managers, as expected, chose the most profitable strategy (high price). When given information about the rival firm's profit, subjects could see the impact of their decision on their rival, and many managers abandoned profit maximization. In the beat treatment, 60 percent chose not to maximize profit (low price). To address the

Net Present Value of Expected Profit over Five Years

	Low-price strategy	High-price strategy
Base treatment:		
Your firm	\$40 million	\$ 80 million
Beat treatment:		
Your firm	40 million	80 million
Rival firm	20 million	160 million

possibility that the subjects were considering longer-term profits, Armstrong and Collopy changed the payoffs to 20-year present values. The results were the same.

Armstrong and Collopy believe the abandonment of profit as the firm's objective is a consequence of managers having information about a competitor's performance. They discovered that exposing managers to techniques that focus on gaining market share increased the proportion of subjects who abandoned profit maximization. They also found that "executives who had taken strategic-management courses were more likely to make decisions that harmed profitability." These results are impressive because they have been repeated in more than 40 experiments with more than 1,000 subjects.

To see if firms that seek to maximize market share (competitor-oriented firms) tend to be less profitable *over the long run* than firms that pursue profit without concern for market share, Armstrong and Collopy tracked the performance of two groups of firms over a 54-year period. The group of firms that made pricing decisions based on competitor-oriented goals, such as increasing market share, were consistently less profitable over the 54-year period than the group that made pricing decisions to increase profit without regard to market share. Furthermore, companies pursuing market share were found to be less likely to survive: "Four of the six companies that focused strictly on market share (Gulf, American Can, Swift,

and National Steel) did not survive. All four profit-oriented companies (DuPont, General Electric, Union Carbide, and Alcoa) did.”

Armstrong and Collopy conclude that the use of competitor-oriented objectives is detrimental to profitability: “We believe that microeconomic theory, with its emphasis on profit maximization, is the most sensible course of action for firms; that is, managers should focus directly on profits.” To encourage managers to keep their focus on profit and *not* on market share, they offer the following specific advice:

- Do not use market share as an objective.
- Avoid using sports and military analogies because they foster a competitor orientation.
- Do not use management science techniques that are oriented to maximizing market share, such as portfolio planning matrices and experience curve analysis.
- Design information systems to focus attention on the firm’s performance, as measured by profits.
- Beware that improvements in the ability to measure market share—specifically through scanner data collected at checkouts—may lead to a stronger focus on market share and less focus on profitability.

In a book about the business strategies of Southwest Airlines, the authors examine the decisions made by the airline’s CEO, Herb Kelleher. In a section titled “Say Nuts to Market Share,” Kelleher explains the role that market share plays at Southwest Airlines. Kelleher says:

Market share has nothing to do with profitability . . . Market share says we just want to be big; we don’t care if we make money doing it . . . That is really incongruous if profitability is your purpose.

The book goes on to say that Kelleher believes “confusing the two concepts (increasing profit and increasing market share) has derailed many firms that were otherwise on track in fulfilling their fundamental

purpose (maximizing profit and firm value).” Perhaps it was only a coincidence, but we should mention that the value of Southwest Airlines tripled during the early to mid-1990s.

As we emphasize in this chapter, shareholders wish to see the value of their firms maximized. A manager bent on being the biggest airline or biggest auto rental agency may fail to be the most profitable airline or auto rental agency. As mentioned in our discussion of common management errors, the presence of network effects can make the pursuit of market share a profitable strategy, as we will explain more fully in Chapter 12. In his recent book on market share, Richard Minter offers this warning on the exceptional case of network effects:

Every rule has an exception (network effects)—and everyone wants to believe that they are it. Their business is special and unique and therefore profits are not primary for them, but market share is. Too many managers believe that the myth of market share is not myth—for them. In a handful of cases, they’re right: Market share is what matters . . . (In) the majority of cases . . . profit alone should sit on the throne.

We will show you in Chapter 12 how to identify those special few industries when market share matters. As this Illustration stresses, most managers should ignore market share. Between advances in shareholders’ willingness and ability to fire CEOs and the active market for corporate control (mergers, acquisitions, and takeovers), a manager who fails to pursue primarily the maximization of profit may have a short career.

Sources: J. Scott Armstrong and Fred Collopy, “Competitor Orientation: Effects of Objectives and Information on Managerial Decisions and Profitability,” *Journal of Marketing Research*, May 1996, pp. 188–99; “The Profitability of Winning,” *Chief Executive*, June 1, 1994, p. 60; Kevin Freiberg and Jackie Freiberg, *Nuts!: Southwest Airlines’ Crazy Recipe for Business and Personal Success* (New York: Broadway Books, 1995), p. 49; Richard Minter, *The Myth of Market Share* (New York: Crown Business, 2002), p. 139.

Corporate Control Mechanisms

The discussion of agency problems is not meant to imply that shareholders are completely helpless in the face of managers who aren't doing what the shareholders expect them to do. Rules of corporate governance give shareholders rights that allow them to control managers directly through control measures and indirectly through the board of directors, whose responsibility it is to monitor management. Shareholders themselves, and in partnership with the board of directors, may choose from a variety of mechanisms for controlling agency problems. In addition to the governance methods available to shareholders, several forces outside the firm can also force managers to pursue maximization of the firm's value. We will review only briefly a few of the most important types of mechanisms that can intensify a manager's desire to maximize profit.

Stockholders often try to solve the agency problem by tying managers' compensation to fulfilling the goals of the shareholders. Managers have a greater incentive to make decisions that further the goals of shareholders when managers themselves are shareholders. Equity ownership is considered one of the most effective mechanisms for corporate control, so much so that some professional money managers and large institutional investors refuse to invest in firms whose managers hold little or no equity stake in the firms they manage.

The members of the board of directors are agents of the shareholders charged with monitoring the decisions of executive managers. But just as managers are agents for owners, so too are directors, and agency problems can arise between directors and shareholders. Many observers believe that the value of the board's monitoring services is enhanced by appointing outsiders—directors not serving on the firm's management team—and by linking directors' compensation to the value of the firm. The effectiveness of a board of directors is undermined when business decisions are so complex that the board cannot reliably judge whether a decision furthers shareholder interests and when the CEO plays a strong role in selection of the board members.

Another method of creating incentives for managers to make value-maximizing decisions involves corporate policy on debt financing. A policy that emphasizes financing corporate investments with debt rather than equity—selling shares of common stock to raise financial capital—can further the interests of shareholders in several ways. First, debt financing makes bankruptcy possible, since firms cannot go bankrupt if they have no debt. Thus managers who value their employment have an additional incentive to increase profitability in order to lower the probability of bankruptcy. Second, managers face less pressure to generate revenues to cover the cost of investments if the payments are dividends to shareholders, which they can choose to defer or neglect altogether, rather than if the payments are installments on a loan. Finally, lenders have an incentive to monitor managers of firms that borrow money from them. Thus banks and other lenders may make it difficult for managers to consume excessive perks or make unprofitable investments.

Corporate takeovers are also an important possible solution to the conflict between shareholders and managers who do not maximize the value of the firm.

If the value of the firm is less with the present set of managers than it would be with another, there is a profit incentive for others to acquire the firm and replace the management team with a new set of managers. For example, if the firm has a poorly designed compensation scheme that fails to motivate managers to maximize profits, another company, or group of corporate raiders, believing its management could do a better job, might take over the firm by purchasing enough shares to take control. Even though most of the media, many politicians, and certainly the managers of the takeover targets dislike takeovers, frequently called “hostile,” takeovers act as a check on the power of incompetent managers to create inefficiency and also on the power of managers who are less interested in maximizing profits, since they are not major owners, than they are in expanding their corporate domain. Thus takeovers can sometimes resolve to some extent the conflict between managers and shareholders.

1.4 MARKET STRUCTURE AND MANAGERIAL DECISION MAKING

As we mentioned earlier, managers cannot expect to succeed without understanding how market forces shape the firm’s ability to earn profit. A particularly important aspect of managerial decision making is the pricing decision. The structure of the market in which the firm operates can limit the ability of a manager to raise the price of the firm’s product without losing a substantial amount, possibly even all, of its sales.

Not all managers have the power to set the price of the firm’s product. In some industries, each firm in the industry makes up a relatively small portion of total sales and produces a product that is identical to the output produced by all the rest of the firms in the industry. The price of the good in such a situation is not determined by any one firm or manager but, rather, by the impersonal forces of the marketplace—the intersection of market demand and supply, as you will see in the next chapter. If a manager attempts to raise the price above the market-determined price, the firm loses all its sales to the other firms in the industry. After all, buyers do not care from whom they buy this identical product, and they would be unwilling to pay more than the going market price for the product. In such a situation, the firm is a **price-taker** and cannot set the price of the product it sells. We will discuss price-taking firms in detail in Chapter 11, and you will see that the demand curve facing a price-taking firm is horizontal at the price determined by market forces.

In contrast to managers of price-taking firms, the manager of a **price-setting firm** does set the price of the product. A price-setting firm has the ability to raise its price without losing all sales because the product is somehow differentiated from rivals’ products or perhaps because the geographic market area in which the product is sold has only one, or just a few, sellers of the product. At higher prices the firm sells less of its product, and at lower prices the firm sells more of its product. The ability to raise price without losing all sales is called **market power**, a subject we will examine more thoroughly in Chapters 13 and 14. Before we discuss some of the differing market structures to be analyzed in later chapters of this text, we first want you to consider the fundamental nature and purpose of a market.

价格接受者 由于价格严格受市场供给和需求决定，而不能设置它所出售产品价格的企业。

价格设置型企业 能够在不全部损失销售量的情况下提高价格的企业。

市场力 企业在不全部损失销售量的情况下提高价格的能力。

What Is a Market?

市场 买方和卖方可以实现任何有价值东西交换的场所。

A **market** is any arrangement through which buyers and sellers exchange final goods or services, resources used for production, or, in general, anything of value. The arrangement may be a location and time, such as a commercial bank from 9 A.M. until 6 P.M. on weekdays only, an agricultural produce market every first Tuesday of the month, a trading “pit” at a commodity exchange during trading hours, or even the parking lot of a stadium an hour before game time when ticket scalpers sometimes show up to sell tickets to sporting events. An arrangement may also be something other than a physical location and time, such as a classified ad in a newspaper or a Web site on the Internet. You should view the concept of a market quite broadly, particularly since advances in technology create new ways of bringing buyers and sellers together.

交易成本 使交易发生的成本（而不是商品或服务本身的价格）。

Markets are arrangements that reduce the cost of making transactions. Buyers wishing to purchase something must spend valuable time and other resources finding sellers, gathering information about prices and qualities, and ultimately making the purchase itself. Sellers wishing to sell something must spend valuable resources locating buyers (or pay a fee to sales agents to do so), gathering information about potential buyers (e.g., verifying creditworthiness or legal entitlement to buy), and finally closing the deal. These costs of making a transaction happen, which are additional costs of doing business over and above the price paid, are known as **transaction costs**. Buyers and sellers use markets to facilitate exchange because markets lower the transaction costs for both parties. To understand the meaning of this seemingly abstract point, consider two alternative ways of selling a used car that you own. One way to find a buyer for your car is to canvass your neighborhood, knocking on doors until you find a person willing to pay a price you are willing to accept. This will likely require a lot of your time and perhaps even involve buying a new pair of shoes. Alternatively, you could run an advertisement in the local newspaper describing your car and stating the price you are willing to accept for it. This method of selling the car involves a market—the newspaper ad. Even though you must pay a fee to run the ad, you choose to use this market because the transaction costs will be lower by advertising in the newspaper than by searching door to door.

Different Market Structures

市场结构 决定企业经营所处经济环境的特征。

Market structure is a set of market characteristics that determines the economic environment in which a firm operates. As we now explain, the structure of a market governs the degree of pricing power possessed by a manager, both in the short run and in the long run. The list of economic characteristics needed to describe a market is actually rather short:

- *The number and size of the firms operating in the market:* A manager’s ability to raise the price of the firm’s product without losing most, if not all, of its buyers depends in part on the number and size of sellers in a market. If there are a large number of sellers with each producing just a small fraction of the total sales in a

market, no single firm can influence market price by changing its production level. Alternatively, when the total output of a market is produced by one or a few firms with relatively large market shares, a single firm can cause the price to rise by restricting its output and to fall by increasing its output, as long as no other firm in the market decides to prevent the price from changing by suitably adjusting its own output level.

- *The degree of product differentiation among competing producers:* If sellers all produce products that consumers perceive to be identical, then buyers will never need to pay even a penny more for a particular firm's product than the price charged by the rest of the firms. By differentiating a product either through real differences in product design or through advertised image, a firm may be able to raise its price above its rivals' prices if consumers find the product differences sufficiently desirable to pay the higher price.
- *The likelihood of new firms entering a market when incumbent firms are earning economic profits:* When firms in a market earn economic profits, other firms will learn of this return in excess of opportunity costs and will try to enter the market. Once enough firms enter a market, price will be bid down sufficiently to eliminate any economic profit. Even firms with some degree of market power cannot keep prices higher than opportunity costs for long periods when entry is relatively easy.

Microeconomists have analyzed firms operating in a number of different market structures. Not surprisingly, economists have names for these market structures: perfect competition, monopoly, monopolistic competition, and oligopoly. Although each of these market structures is examined in detail later in this text, we briefly discuss each one now to show you how market structure shapes a manager's pricing decisions.

In *perfect competition*, a large number of relatively small firms sell an undifferentiated product in a market with no barriers to the entry of new firms. Managers of firms operating in perfectly competitive markets are price-takers with no market power. At the price determined entirely by the market forces of demand and supply, they decide how much to produce in order to maximize profit. In the absence of entry barriers, any economic profit earned at the market-determined price will vanish as new firms enter and drive the price down to the average cost of production. Many of the markets for agricultural goods and other commodities traded on national and international exchanges closely match the characteristics of perfect competition.

In a *monopoly* market, a single firm, protected by some kind of barrier to entry, produces a product for which no close substitutes are available. A monopoly is a price-setting firm. The degree of market power enjoyed by the monopoly is determined by the ability of consumers to find imperfect substitutes for the monopolist's product. The higher the price charged by the monopolist, the more willing are consumers to buy other products. The existence of a barrier to entry allows a monopolist to raise its price without concern that economic profit will attract new firms. As you will see in Chapter 12, examples of true monopolies are rare.

In markets characterized by *monopolistic competition*, a large number of firms that are small relative to the total size of the market produce differentiated products without the protection of barriers to entry. The only difference between perfect competition and monopolistic competition is the product differentiation that gives monopolistic competitors some degree of market power; they are price-setters rather than price-takers. As in perfectly competitive markets, the absence of entry barriers ensures that any economic profit will eventually be bid away by new entrants. The toothpaste market provides one example of monopolistic competition. The many brands and kinds of toothpaste are close, but not perfect, substitutes. Toothpaste manufacturers differentiate their toothpastes by using different flavorings, abrasives, whiteners, fluoride levels, and other ingredients, along with a substantial amount of advertising designed to create brand loyalty.

In each of the three market structures discussed here, managers do not need to consider the reaction of rival firms to a price change. A monopolist has no rivals; a monopolistic competitor is small enough relative to the total market that its price changes will not usually cause rival firms to retaliate with price changes of their own; and, of course, a perfectly competitive firm is a price-taker and would not change its price from the market-determined price. In contrast, in the case of an *oligopoly* market, just a few firms produce most or all of the market output, so any one firm's pricing policy will have a significant effect on the sales of other firms in the market. This interdependence of oligopoly firms means that actions by any one firm in the market will have an effect on the sales and profits of the other firms. As you will see in Chapter 13, the strategic decision making in oligopoly markets is the most complex of all decision-making situations.

Globalization of Markets

Beginning in the 1990s, businesses around the world experienced a surge in the **globalization of markets**, a phrase that generally refers to increasing economic integration of markets located in nations throughout the world. Market integration takes place when goods, services, and resources (particularly people and money) flow freely across national borders. Despite the current excitement in the business press over the present wave of globalization, the process of integrating markets is not unique to the 1990s, but rather it is an ongoing process that may advance for some period of time and then suffer setbacks. The last significant wave of globalization lasted from the late 1800s to the start of World War I. During that period, expansion of railroads and the emergence of steamships enabled both a great migration of labor resources from Europe to the United States as well as a surge in the flow of goods between regional and international markets. Even though some governments and some citizens oppose international economic integration, as evidenced by a number of antiglobalization protests, most economists believe the freer flow of resources and products can raise standards of living in rich and poor nations alike.

The movement toward global markets in the last decade can be traced to several developments. During this period North American, European, and Latin American nations successfully negotiated numerous bilateral and multilateral trade agreements, eliminating many restrictions to trade flows among those nations. And,

市场国际化 全世界
范围内各国市场的经济一
体化。

ILLUSTRATION 1.5

Internet Spurs Globalization of Services

Antiglobalization protestors in Seattle, Washington, D.C., Quebec, and Genoa have criticized multinational corporations—as well as their governments, the World Trade Organization, the International Monetary Fund, and the World Bank—for moving manufacturing operations to countries with low wages. While the protestors express deep concern that workers in poorer countries will be “exploited” by multinational corporations and be forced to work in sweatshops for “unfair” wages, the more basic fear among protestors seems to be an understandable concern that they will lose their jobs as manufacturing moves to other countries. In the next chapter, Illustration 2.3 takes a closer look at how globalization has affected manufacturing industries in the United States.

In a recent article in *The Wall Street Journal*, Douglas Lavin explains that antiglobalization protestors have overlooked a more significant shift in services: “Thanks largely to the fact that a decent education, *Microsoft Office*, and the Internet are all as useful in Manila as in Minneapolis, the service sector has gone (global).”^a The worldwide Internet now makes possible for services what railroads and steamships made possible for manufactured goods: Services can be produced anywhere in the world and “delivered” digitally via terrestrial, broadband, fiber-optic cables, or high-capacity satellites in geosynchronous orbits to end-users most anywhere in the world. Every imaginable kind of service is now experiencing globalization: from accounting services, claims processing, credit evaluation, and answering customer service questions on 1-800 telephone numbers to data entry, software coding, and even gambling. Businesses in the United States, Britain, Spain, China Hong Kong, and France currently lead the way in out-

sourcing services to workers in other countries, such as India, the Philippines, Jamaica, Ghana, Hungary, and the Czech Republic.

As Lavin emphasizes in his article, the Internet “explosion” coupled with vast improvements in telecommunications technology enabled the service sector to join the process of globalization. Because many Third World nations can afford the infrastructure investments required to access the Internet—even when better roads and bridges may be too costly—Lavin predicts globalization of the service sector could create a significant improvement in living standards in poorer nations. Furthermore, by providing multinational corporations with the ability to buy inexpensive services, globalization tends to increase productivity, which tends to push wages up in the home countries of these corporations. We think Lavin’s message for the antiglobalization protestors is worth repeating:

Protestors argue that globalization exploits the poorest of the poor. Tell that to the thousands of well-paid accountants working for Arthur Andersen in the Philippines or engineers working for Cisco in India . . . Tell that to people in Manila or New Delhi who for the first time, independent of their choice of residence, can trade internationally what’s long been untradeable: education, skill and dedication.

Economists have long recognized that when two parties voluntarily engage in trade, both parties gain. Globalization of services made possible by the Internet provides an opportunity for such trades: Businesses can reduce their costs, and hundreds of thousands of workers in low-income nations can earn higher wages.

^aThis Illustration draws heavily from the article by Douglas Lavin, “Globalization Goes Upscale,” in *The Wall Street Journal*, Feb. 1, 2002, p. A 21.

during the late 1990s, 11 European nations agreed to adopt a single currency—the euro—to stimulate trade on the continent by eliminating the use of assorted currencies that tends to impede cross-border flows of resources, goods, and services. Adding to the momentum for globalization, the Information Age rapidly revolutionized electronic communication, making it possible to buy and sell goods and services over a worldwide Internet. As noted in Illustration 1.5, *Microsoft Office* software has become something of an international language for businesses, as companies around the world communicate using *Excel* spreadsheets and documents

created in *Word* and *PowerPoint*. All of these developments contributed to reducing the transaction costs of bringing buyers and sellers in different nations together for the purpose of doing business.

As you can see from this discussion, globalization of markets provides managers with both an opportunity to sell more goods and services to foreign buyers as well as a threat from increased competition by foreign producers. This trend toward economic integration of markets changes the way managers must view the structure of the markets in which they sell their products or services, as well as the ways they choose to organize production. Throughout the text, we will point out some of the opportunities and challenges of globalization of markets.

1.5 SUMMARY

Managerial economics provides a systematic, logical way of analyzing business decisions that focuses on the economic forces that shape both day-to-day decisions and long-run planning decisions. Managerial economics applies microeconomic theory—the study of the behavior of individual economic agents—to business problems in order to teach business decision makers how to use economic analysis to make decisions that will achieve the firm’s goal: the maximization of profit. Economic theory helps managers better understand real-world business problems by reducing business decisions to their most essential

components and then applying economic reasoning to reach profit-enhancing conclusions. In this introductory chapter, we set forth the meaning and importance of economic profit both as a measure of managerial performance and as the primary objective for all managerial decision making. One of the most powerful tools in microeconomics and managerial economics is marginal analysis. The central goal of this textbook is to show you how to use this methodology to make optimal decisions concerning nearly every decision managers must make in order to maximize the profit of their firms.

TECHNICAL PROBLEMS

1. For each one of the costs below, explain whether the resource cost is explicit or implicit, and give the annual opportunity cost for each one. Assume the owner of the business can invest money and earn 10 percent annually.
 - a. A computer server to run the firm’s network is leased for \$6,000 per year.
 - b. The owner starts the business using \$50,000 of cash from a personal savings account.
 - c. A building for the business was purchased for \$18 million three years ago but is now worth \$30 million.
 - d. Computer programmers cost \$50 per hour. The firm will hire 100,000 hours of programmer services this year.
 - e. The firm owns a 1955 model Clarke-Owens garbage incinerator, which it uses to dispose of paper and cardboard waste. Even though this type of incinerator is now illegal to use for environmental reasons, the firm can continue to use it because it’s exempt under a “grandfather” clause in the law. However, the exemption only applies to the current owner for use until it wears out or is replaced. (*Note:* The owner offered to give the incinerator to the Smithsonian Institute as a charitable gift, but managers at the Smithsonian turned it down.)
2. During a year of operation, a firm collects \$175,000 in revenue and spends \$80,000 on raw materials, labor expense, utilities, and rent. The owners of the firm have provided

- \$500,000 of their own money to the firm instead of investing the money and earning a 14 percent annual rate of return.
- The explicit costs of the firm are \$_____. The implicit costs are \$_____. Total economic cost is \$_____.
 - The firm earns economic profit of \$_____.
 - The firm's accounting profit is \$_____.
 - If the owners could earn 20 percent annually on the money they have invested in the firm, the economic profit of the firm would be _____ (when revenue is \$175,000).
- Over the next three years, a firm is expected to earn economic profits of \$120,000 in the first year, \$140,000 in the second year, and \$100,000 in the third year. After the end of the third year, the firm will go out of business.
 - If the risk-adjusted discount rate is 10 percent for each of the next three years, the value of the firm is \$_____. The firm can be sold today for a price of \$_____.
 - If the risk-adjusted discount rate is 8 percent for each of the next three years, the value of the firm is \$_____. The firm can be sold today for a price of \$_____.
 - Fill in the blanks:
 - Managers will maximize the values of firms by making decisions that maximize _____ in every single time period, so long as cost and revenue conditions in each period are _____.
 - When current output has the effect of increasing future costs, the level of output that maximizes the value of the firm will be _____ (smaller, larger) than the level of output that maximizes profit in a single period.
 - When current output has a positive effect on future profit, the level of output that maximizes the value of the firm will be _____ (smaller, larger) than the level of output that maximizes profit in the current period.

APPLIED PROBLEMS

- At the beginning of the year, an audio engineer quit his job and gave up a salary of \$175,000 per year in order to start his own business, Sound Devices, Inc. The new company builds, installs, and maintains custom audio equipment for businesses that require high-quality audio systems. A partial income statement for Sound Devices, Inc., is shown below:

	2010
Revenues	
Revenue from sales of product and services	\$970,000
Operating costs and expenses	
Cost of products and services sold	355,000
Selling expenses	155,000
Administrative expenses	45,000
Total operating costs and expenses	<u>\$555,000</u>
Income from operations	\$415,000
Interest expense (bank loan)	45,000
Legal expenses to start business	28,000
Income taxes	<u>165,000</u>
Net income	<u><u>\$177,000</u></u>

- To get started, the owner of Sound Devices spent \$100,000 of his personal savings to pay for some of the capital equipment used in the business. In 2010, the owner of Sound Devices could have earned a 15 percent return by investing in stocks of other new businesses with risk levels similar to the risk level at Sound Devices.
- What are the total explicit, total implicit, and total economic costs in 2010?
 - What is accounting profit in 2010?
 - What is economic profit in 2010?
 - Given your answer in part *c*, evaluate the owner's decision to leave his job to start Sound Devices.
- A doctor spent two weeks doing charity medical work in Mexico. In calculating her taxable income for the year, her accountant deducted as business expenses her round-trip airline ticket, meals, and a hotel bill for the two-week stay. She was surprised to learn that the accountant, following IRS rules, could not deduct as a cost of the trip the \$8,000 of income she lost by being absent from her medical practice for two weeks. She asked the accountant, "Since lost income is not deductible as an expense, should I ignore it when I make my decision next year to go to Mexico for charity work?" Can you give the doctor some advice on decision making?
 - When Burton Cummings graduated with honors from the Canadian Trucking Academy, his father gave him a \$350,000 tractor-trailer rig. Recently, Burton was boasting to some fellow truckers that his revenues were typically \$25,000 per month, while his operating costs (fuel, maintenance, and depreciation) amounted to only \$18,000 per month. Tractor-trailer rigs identical to Burton's rig rent for \$15,000 per month. If Burton was driving trucks for one of the competing trucking firms, he would earn \$5,000 per month.
 - How much are Burton Cummings's explicit costs per month? How much are his implicit costs per month?
 - What is the dollar amount of the opportunity cost of the resources used by Burton Cummings each month?
 - Burton is proud of the fact that he is generating a net cash flow of \$7,000 (= \$25,000 - \$18,000) per month, since he would be earning only \$5,000 per month if he were working for a trucking firm. What advice would you give Burton Cummings?
 - Explain why it would cost Rafael Nadal or Venus Williams more to leave the professional tennis tour and open a tennis shop than it would for the coach of a university tennis team to do so.
 - An article in *The Wall Street Journal* discusses a trend among some large U.S. corporations to base the compensation of outside members of their boards of directors partly on the performance of the corporation. "This growing practice more closely aligns the director to the company. [Some] companies link certain stock or stock-option grants for directors to improved financial performance, using a measure such as annual return on equity."

How would such a linkage tend to reduce the agency problem between managers and shareholders as a whole? Why could directors be more efficient than shareholders at improving managerial performance and changing their incentives?
 - An article in *The Wall Street Journal* reported that large hotel chains, such as Marriott, are tending to reduce the number of hotels that they franchise to outside owners and increase the number the chain owns and manages itself. Some chains are requiring private owners or franchisees to make upgrades in their hotels, but they are having a

difficult time enforcing the policy. Marriott says this upgrading is important because “we’ve built our name on quality.”

- a. What type of agency problem is involved here?
 - b. Why would Marriott worry about the quality of the hotels it doesn’t own but franchises?
 - c. Why would a chain such as Marriott tend to own its hotels in resort areas, such as national parks, where there is little repeat business, and franchise hotels in downtown areas, where there is a lot of repeat business? Think of the reputation effect and the incentive of franchises to maintain quality.
7. *Fortune* magazine reported that SkyWest, an independent regional airline, negotiated a financial arrangement with Delta and United to provide regional jet service for the two major airlines. For its part of the deal, SkyWest agreed to paint its jets the colors of Delta Connection and United Express and to fly routes specified by the two airlines. In return, Delta and United agreed to pay SkyWest a predetermined profit margin and to cover most of the regional airline’s costs. *Fortune* explained that while the deal limited the amount of profit SkyWest could earn, it also insulated the smaller airline from volatility in earnings since Delta and United covered SkyWest’s fuel costs, increased its load factor (the percentage of seats occupied), and managed its ticket prices.

Fortune suggested that Wall Street liked the deal because SkyWest’s market valuation increased from \$143 million to \$1.1 billion after it began its service with the two major airlines. Explain carefully how this arrangement with Delta and United could have caused the value of SkyWest to increase dramatically even though it limited the amount of profit SkyWest could earn.

▣ MATHEMATICAL APPENDIX Review of Present Value Calculations

The concept of present value is a tool used to determine the value of a firm, which is the present value of expected future profits to be earned. In Chapters 1 and 13 of this text, you will find it useful to be able to calculate present values. Even if you have not already studied present value analysis in your finance or accounting classes, this short presentation will provide you with the basic computational skills needed to calculate the present value of a stream of expected profit to be received in future periods.

Present Value of a Single Payment in the Future

The payment you would accept today rather than wait for a payment (or stream of payments) to be received in the future is called the *present value (PV)* of that future payment (or stream of payments). Suppose, for example, that a trustworthy person promises to pay you \$100 a year from now. Even though you are sure you will get the \$100 in a year, a dollar now is worth more than a

dollar a year from now. How much money would you accept now rather than wait one year for a guaranteed payment of \$100? Because of the time value of money, you will be willing to accept less than \$100; that is, the present value of a \$100 payment one year from now is *less* than \$100. The process of calculating present value is sometimes referred to as *discounting* since the present value of a payment is less than the dollar amount of the future payment.

To properly discount the \$100 future payment, you must first determine the opportunity cost of waiting for your money. Suppose that, at no risk, you could earn a return of 6 percent by investing the money over a one-year period. This 6 percent return is called the *risk-free discount rate* since it determines the rate at which you will discount future dollars to determine their present value, assuming you bear no risk of receiving less than the promised amount. In Chapter 18, we will show you how to determine the appropriate risk premium to add to the risk-free discount rate

when the future payment involves a degree of risk. For now, you need not be concerned about adjusting for risk.

Given that you can earn 6 percent (with no risk) on your money, how much money do you need now—let's denote this amount as $\$X$ —in order to have exactly \$100 a year from now? Since $\$X(1.06)$ is the value of $\$X$ in one year, set this future value equal to \$100:

$$\$X(1.06) = \$100$$

It follows that the amount you must invest today ($\$X$) is \$94.34 ($= \$100/1.06$) in order to have \$100 in a year. Thus the present value of \$100 to be received in one year is \$94.34 now. In other words, you would accept \$94.34 now, which will grow to \$100 in one year (at a 6 percent annual discount rate).

Now suppose that the \$100 payment comes not in one year but after two years. Investing $\$X$ at 6 percent would yield $\$X(1.06)$ at the end of year 1 and $[\$X(1.06)](1.06) = \$X(1.06)^2$ at the end of year 2. For an investment to be worth \$100 in two years,

$$\$X(1.06)^2 = \$100$$

The amount you must invest today in order to have \$100 at the end of two years is \$89 [$= \$100/(1.06)^2$]. Thus the present value of \$100 in two years with a discount rate of 6 percent is \$89.

Clearly a pattern is emerging: The present value of \$100 in one year at 6 percent is

$$PV = \frac{\$100}{(1.06)} = \$94.34$$

The present value of \$100 in two years at 6 percent is

$$PV = \frac{\$100}{(1.06)^2} = \$89$$

Therefore, the present value of \$100 to be received in t years (t being any number of years) with a discount rate of 6 percent is

$$PV = \frac{\$100}{(1.06)^t}$$

This relation can be made even more general to determine the present value of some net cash flow (NCF) to be received in t years at a discount rate of r . Net cash flow is the cash received in time period t , net of any costs or expenses that must be paid out of the cash inflow. Also note that if the discount rate is 6 percent, for example, r is expressed as 0.06, the decimal equivalent of 6 percent.

Relation The present value (PV) of $\$NCF$ to be received in t years at a discount rate of r is

$$PV = \frac{\$NCF}{(1+r)^t}$$

As illustrated above, the present value of a cash flow declines the further in the future it is to be received—for example, the present value of \$100 at 6 percent was \$94.34 in one year and only \$89 in two years. As should be evident from the more general statement of present value, the present value of a cash flow is inversely related to the discount rate—for example, the present value of \$100 to be received in two years is \$89 with a discount rate of 6 percent but only \$85.73 [$= \$100/(1.08)^2$] with a discount rate of 8 percent.

Relation There is an inverse relation between the present value of a cash flow and the time to maturity: The present value of a cash flow to be received in t years is greater than that for the same cash flow to be received in $t + i$ years. There is an inverse relation between the present value of a cash flow and the discount rate.

Present Value of a Stream of Payments

So far we have considered the present value of a single payment. We now extend present value analysis to consider the value of a stream of payments in the future. Suppose your trustworthy friend promises to pay you \$100 in one year and \$100 in two years. Using 6 percent as the risk-free discount rate for the first year, the present value of the first payment would be

$$PV = \frac{\$100}{(1.06)} = \$94.34$$

At the 6 percent discount rate, the present value of the second payment would be

$$PV = \frac{\$100}{(1.06)^2} = \$89$$

Thus the present value of the two-period stream of cash flows is

$$PV = \frac{\$100}{(1.06)} + \frac{\$100}{(1.06)^2} = \$94.34 + \$89 = \$183.34$$

From the preceding, you should be able to see that the present value of a stream of net cash flows is equal to the

sum of the present values of the net cash flows. We can state this more precisely in the following:

Relation The present value of a stream of cash flows, where $\$NCF_t$ is the cash flow received or paid in period t , is given by

$$\begin{aligned} PV &= \frac{\$NCF_1}{(1+r)} + \frac{\$NCF_2}{(1+r)^2} + \frac{\$NCF_3}{(1+r)^3} + \cdots + \frac{\$NCF_T}{(1+r)^T} \\ &= \sum_{t=1}^T \frac{\$NCF_t}{(1+r)^t} \end{aligned}$$

where r is the discount rate, and T is the life span of the stream of cash flows.

MATHEMATICAL EXERCISES

- Using a discount rate of 6.5 percent, calculate the present value of a \$1,000 payment to be received at the end of
 - One year
 - Two years
 - Three years
- What is the present value of a firm with a five-year life span that earns the following stream of expected profit? (Treat all profits as being received at year-end.) Use a risk-adjusted discount rate of 12 percent.

Year	Expected profit
1	\$10,000
2	20,000
3	50,000
4	75,000
5	50,000

- The *National Enquirer* reported that, in their divorce settlement, Burt Reynolds offered Loni Anderson \$10 million spread evenly over 10 years but she instead demanded \$5 million now. If the appropriate discount rate is 8 percent, which alternative is better for Burt and which for Loni? What if the discount rate is 20 percent?