

# Goals and Governance of the Firm

► **This book is** about how corporations make financial decisions. We start by explaining what these decisions are and what they are seeking to accomplish.

Corporations invest in real assets, which generate cash inflows and income. Some of the assets are tangible assets such as plant and machinery; others are intangible assets such as brand names and patents. Corporations finance these assets by borrowing, by retaining and reinvesting cash flow, and by selling additional shares of stock to the corporation's shareholders. Thus the corporation's financial manager faces two broad financial questions: First, what investments should the corporation make? Second, how should it pay for those investments? The investment decision involves spending money; the financing decision involves raising it.

A large corporation may have hundreds of thousands of shareholders. These shareholders differ in many ways, such as their wealth, risk tolerance, and investment horizon. Yet we will see that they usually endorse the same financial goal: they want the financial manager to increase the value of the corporation and its current stock price.

Thus the secret of success in financial management is to increase value. That is easy to say, but not very helpful. Instructing the financial manager to increase value is like advising an investor in the stock market to "buy low, sell high." The problem is how to do it.

There may be a few activities in which one can read a textbook and then just "do it," but financial management is not one of them. That is why finance is worth studying. Who wants to work in a field where there is no room for judgment, experience, creativity, and a pinch of luck? Although this book cannot guarantee any

of these things, it does cover the concepts that govern good financial decisions, and it shows you how to use the tools of the trade of modern finance.

We start this chapter by looking at a fundamental trade-off. The corporation can either invest in new assets or it can give the cash back to the shareholders, who can then invest that cash in the financial markets. Financial managers add value whenever the company can earn a higher return than shareholders can earn for themselves. The shareholders' investment opportunities *outside* the corporation set the standard for investments *inside* the corporation. Financial managers therefore refer to the *opportunity cost* of the capital that shareholders contribute to the firm.

The success of a corporation depends on how well it harnesses all its managers and employees to work to increase value. We therefore take a first look at how good systems of corporate governance, combined with appropriate incentives and compensation packages, encourage everyone to pull together to increase value.

Good governance and appropriate incentives also help block out temptations to increase stock price by illegal or unethical means. Thoughtful shareholders do not want the maximum possible stock price. They want the maximum honest stock price.

This chapter introduces three themes that return again and again, in various forms and circumstances, throughout the book:

1. Maximizing value.
2. The opportunity cost of capital.
3. The crucial importance of incentives and governance.



To carry on business, a corporation needs an almost endless variety of **real assets**. These assets do not drop free from a blue sky; they need to be paid for. To pay for real assets, the corporation sells claims on the assets and on the cash flow that they will generate. These claims are called **financial assets** or **securities**. Take a bank loan as an example. The bank provides the corporation with cash in exchange for a financial asset, which is the corporation's promise to repay the loan with interest. An ordinary bank loan is not a security, however, because it is held by the bank and not sold or traded in financial markets.

Take a corporate bond as a second example. The corporation sells the bond to investors in exchange for the promise to pay interest on the bond and to pay off the bond at its maturity. The bond is a financial asset, and also a security, because it can be held by and traded among many investors in financial markets. Securities include bonds, shares of stock, and a dizzying variety of specialized instruments. We describe bonds in Chapter 3 and stocks in Chapter 4.

This suggests the following definitions:

Investment decision = purchase of real assets

Financing decision = sale of financial assets

But these equations are too simple. The investment decision also involves managing assets already in place and deciding when to shut down and dispose of assets if profits decline. The corporation also has to manage and control the risks of its investments. The financing decision includes not just raising cash today but also meeting obligations to banks, bondholders, and stockholders that contributed financing in the past. For example, the corporation has to repay its debts when they become due. If it cannot do so, it ends up insolvent and bankrupt. Sooner or later the corporation will also want to pay out cash to its shareholders.<sup>1</sup>

Let's go to more specific examples. Table 1.1 lists nine corporations. Four are U.S. corporations. Five are foreign: GlaxoSmithKline's headquarters are in London, LVMH's in Paris,<sup>2</sup> Shell's in The Hague, Toyota's in Nagoya, and Lenovo's in Beijing. We have chosen very large public corporations that you are probably already familiar with. You probably have traveled on a Boeing jet, shopped at Wal-Mart, or used a Wells Fargo ATM, for example.

## Investment Decisions

The second column of Table 1.1 shows an important recent investment decision for each corporation. These investment decisions are often referred to as **capital budgeting** or **capital expenditure (CAPEX)** decisions, because most large corporations prepare an annual capital budget listing the major projects approved for investment. Some of the investments in Table 1.1, such as Wal-Mart's new stores or Union Pacific's new locomotives, involve the purchase of tangible assets—assets that you can touch and kick. Corporations also need to invest in intangible assets, however. These include research and development (R&D), advertising, and marketing. For example, GlaxoSmithKline and other major pharmaceutical companies invest billions every year on R&D for new drugs. These companies also invest to market their existing products.

<sup>1</sup> We have referred to the corporation's owners as "shareholders" and "stockholders." The two terms mean exactly the same thing and are used interchangeably. Corporations are also referred to casually as "companies," "firms," or "businesses." We also use these terms interchangeably.

<sup>2</sup> LVMH Moët Hennessy Louis Vuitton (usually abbreviated to LVMH) markets perfumes and cosmetics, wines and spirits, watches and other fashion and luxury goods. And, yes, we know what you are thinking, but LVMH really is short for Moët Hennessy Louis Vuitton.

Company (revenue in billions for 2008)	Recent Investment Decision	Recent Financing Decision
Boeing (\$61 billion)	Began production of its 787 Dreamliner aircraft, at a forecasted cost of more than \$10 billion.	The cash flow from Boeing's operations allowed it to repay some of its debt and repurchase \$2.8 billion of stock.
Royal Dutch Shell (\$458 billion)	Invested in a \$1.5 billion deepwater oil and gas field in the Gulf of Mexico.	In 2008 returned \$13.1 billion of cash to its stockholders by buying back their shares.
Toyota (¥26,289 billion)	In 2008 opened new engineering and safety testing facilities in Michigan.	Returned ¥431 billion to shareholders in the form of dividends.
GlaxoSmithKline (£24 billion)	Spent £3.7 billion in 2008 on research and development of new drugs.	Financed R&D expenditures largely with reinvested cash flow generated by sales of pharmaceutical products.
Wal-Mart (\$406 billion)	In 2008 announced plans to invest over a billion dollars in 90 new stores in Brazil.	In 2008 raised \$2.5 billion by an issue of 5-year and 30-year bonds.
Union Pacific (\$18 billion)	Acquired 315 new locomotives in 2007.	Largely financed its investment in locomotives by long-term leases.
Wells Fargo (\$52 billion)	Acquired Wachovia Bank in 2008 for \$15.1 billion.	Financed the acquisition by an exchange of shares.
LVMH (€17 billion)	Acquired the Spanish winery Bodega Numanthia Termes.	Issued a six-year bond in 2007, raising 300 million Swiss francs.
Lenovo (\$16 billion)	Expanded its chain of retail stores to cover over 2,000 cities.	Borrowed \$400 million for 5 years from a group of banks.

**TABLE 1.1** Examples of recent investment and financing decisions by major public corporations.

Today's capital investments generate future returns. Often the returns come in the distant future. Boeing committed over \$10 billion to design, test, and manufacture the Dreamliner. It did so because it expects that the plane will generate cash returns for 30 years or more after it first enters commercial service. Those cash returns must recover Boeing's huge initial investment and provide at least an adequate profit on that investment. The longer Boeing must wait for cash to flow back, the greater the profit that it requires. Thus the financial manager must pay attention to the timing of project returns, not just their cumulative amount. In addition, these returns are rarely certain. A new project could be a smashing success or a dismal failure.

Of course, not every investment has such distant payoffs as Boeing's Dreamliner. Some investments have only short-term consequences. For example, with the approach of the Christmas holidays, Wal-Mart spends about \$40 billion to stock up its warehouses and retail stores. As the goods are sold over the following months, the company recovers this investment in inventories.

Financial managers do not make major investment decisions in solitary confinement. They may work as part of a team of engineers and managers from manufacturing, marketing, and other business functions. Also, do not think of the financial manager as making billion-dollar investments on a daily basis. Most investment decisions are smaller and simpler, such as the purchase of a truck, machine tool, or computer system. Corporations make thousands of these smaller investment decisions every year. The cumulative amount of small investments can be just as large as that of the occasional big investments, such as those shown in Table 1.1.

## Financing Decisions

The third column of Table 1.1 lists a recent financing decision by each corporation. A corporation can raise money (cash) from lenders or from shareholders. If it borrows, the lenders contribute the cash, and the corporation promises to pay back the debt plus a fixed rate of interest. If the shareholders put up the cash, they get no fixed return, but they hold shares of stock and therefore get a fraction of future profits and cash flow. The shareholders are *equity investors*, who contribute *equity financing*. The choice between debt and equity financing is called the **capital structure** decision. *Capital* refers to the firm's sources of long-term financing.

The financing choices available to large corporations seem almost endless. Suppose the firm decides to borrow. Should it borrow from a bank or borrow by issuing bonds that can be traded by investors? Should it borrow for 1 year or 20 years? If it borrows for 20 years, should it reserve the right to pay off the debt early if interest rates fall? Should it borrow in Paris, receiving and promising to repay euros, or should it borrow dollars in New York? As Table 1.1 shows, the French company LVMH borrowed Swiss francs, but it could have borrowed dollars or euros instead.

Corporations raise equity financing in two ways. First, they can issue new shares of stock. The investors who buy the new shares put up cash in exchange for a fraction of the corporation's future cash flow and profits. Second, the corporation can take the cash flow generated by its existing assets and reinvest the cash in new assets. In this case the corporation is reinvesting on behalf of existing stockholders. No new shares are issued.

What happens when a corporation does not reinvest all of the cash flow generated by its existing assets? It may hold the cash in reserve for future investment, or it may pay the cash back to its shareholders. Table 1.1 shows that in 2008 Toyota paid cash dividends of ¥431 billion, equivalent to about \$4.3 billion. In the same year Shell paid back \$13.1 billion to its stockholders by repurchasing shares. This was in addition to \$9.8 billion paid out as cash dividends. The decision to pay dividends or repurchase shares is called the *payout decision*. We cover payout decisions in Chapter 12.

In some ways financing decisions are less important than investment decisions. Financial managers say that “value comes mainly from the asset side of the balance sheet.” In fact the most successful corporations sometimes have the simplest financing strategies. Take Microsoft as an example. It is one of the world's most valuable corporations. At the end of 2008, Microsoft shares traded for \$19.44 each. There were about 8.9 billion shares outstanding. Therefore Microsoft's overall market value—its *market capitalization* or *market cap*—was  $\$19.44 \times 8.9 = \$173$  billion. Where did this market value come from? It came from Microsoft's product development, from its brand name and worldwide customer base, from its research and development, and from its ability to make profitable future investments. The value did *not* come from sophisticated financing. Microsoft's financing strategy is very simple: it carries no debt to speak of and finances almost all investment by retaining and reinvesting cash flow.

Financing decisions may not add much value, compared with good investment decisions, but they can destroy value if they are stupid or if they are ambushed by bad news. For example, when real estate mogul Sam Zell led a buyout of the *Chicago Tribune* in 2007, the newspaper took on about \$8 billion of additional debt. This was not a stupid decision, but it did prove fatal. As advertising revenues fell away in the recession of 2008, the *Tribune* could no longer service its debt. In December 2008 it filed for bankruptcy with assets of \$7.6 billion and debts of \$12.9 billion.

Business is inherently risky. The financial manager needs to identify the risks and make sure they are managed properly. For example, debt has its advantages, but too much debt can land the company in bankruptcy, as the *Chicago Tribune* discovered. Companies can also be knocked off course by recessions, by changes in commodity prices, interest rates and exchange rates, or by adverse political developments. The financial manager needs to decide whether the firm should protect itself against these risks.

## What Is a Corporation?

We have been referring to “corporations.” Before going too far or too fast, we offer some basic definitions. Details follow as needed in later chapters.

A **corporation** is a legal entity. In the view of the law, it is a legal *person* that is owned by its shareholders. As a legal person, the corporation can make contracts, carry on a business, borrow or lend money, and sue or be sued. One corporation can make a takeover bid for another and then merge the two businesses. Corporations pay taxes—but cannot vote!

In the U.S., corporations are formed under state law, based on *articles of incorporation* that set out the purpose of the business and how it is to be governed and operated.<sup>3</sup> For example, the articles of incorporation specify the composition and role of the *board of directors*. A corporation’s directors choose and advise top management and are required to sign off on some corporate actions, such as mergers and the payment of dividends to shareholders.

A corporation is owned by its shareholders but is legally distinct from them. Therefore the shareholders have **limited liability**, which means that shareholders cannot be held personally responsible for the corporation’s debts. When the U.S. financial corporation Lehman Brothers failed in 2008, no one demanded that its stockholders put up more money to cover Lehman’s massive debts. Shareholders can lose their entire investment in a corporation, but no more.

Corporations do not have to be prominent, multinational businesses like those listed in Table 1.1. You can organize a local plumbing contractor or barber shop as a corporation if you want to take the trouble.<sup>4</sup> But usually corporations are larger businesses or businesses that aspire to grow.

When a corporation is first established, its shares may be privately held by a small group of investors, perhaps the company’s managers and a few backers. In this case the shares are not publicly traded and the company is *closely held*. Eventually, when the firm grows and new shares are issued to raise additional capital, its shares are traded in public markets such as the New York Stock Exchange. Such corporations are known as *public companies*. Most well-known corporations in the U.S. are public companies with widely dispersed shareholders. In other countries, it is more common for large corporations to remain in private hands, and many public companies may be controlled by just a handful of investors. The latter category includes such well-known names as Fiat, Porsche, Benetton, Bosch, IKEA, and the Swatch Group.

A large public corporation may have hundreds of thousands of shareholders, who own the business but cannot possibly manage or control it directly. This *separation of ownership and control* gives corporations permanence. Even if managers quit or are dismissed and replaced, the corporation survives. Today’s stockholders can sell all their shares to new investors without disrupting the operations of the business. Corporations can, in principle, live forever, and in practice they may survive many human lifetimes. One of the oldest corporations is the Hudson’s Bay Company, which was formed in 1670 to profit from the fur trade between northern Canada and England. The company still operates as one of Canada’s leading retail chains.

The separation of ownership and control can also have a downside, for it can open the door for managers and directors to act in their own interests rather than in the stockholders’ interest. We return to this problem later in the chapter.

<sup>3</sup> In the U.S., corporations are identified by the label “Corporation,” “Incorporated,” or “Inc.,” as in US Airways Group, Inc. The U.K. identifies public corporations by “plc” (short for “Public Limited Corporation”). French corporations have the suffix “SA” (“Société Anonyme”). The corresponding labels in Germany are “GmbH” (“Gesellschaft mit beschränkter Haftung”) or “AG” (“Aktiengesellschaft”).

<sup>4</sup> Single individuals doing business on their own behalf are called sole proprietorships. Smaller, local businesses can also be organized as partnerships or professional corporations (PCs).

What do financial managers do for a living? That simple question can be answered in several ways. We can start with financial managers' job titles. Most large corporations have a **chief financial officer (CFO)**, who oversees the work of all financial staff. The CFO is deeply involved in financial policy and financial planning and is in constant contact with the Chief Executive Officer (CEO) and other top management. The CFO is the most important financial voice of the corporation, and explains earnings results and forecasts to investors and the media.

Below the CFO are usually a **treasurer** and a **controller**. The treasurer is responsible for short-term cash management, currency trading, financing transactions, and bank relationships. The controller manages the company's internal accounting systems and oversees preparation of its financial statements and tax returns. The largest corporations have dozens of more specialized financial managers, including tax lawyers and accountants, experts in planning and forecasting, and managers responsible for investing the money set aside for employee retirement plans.

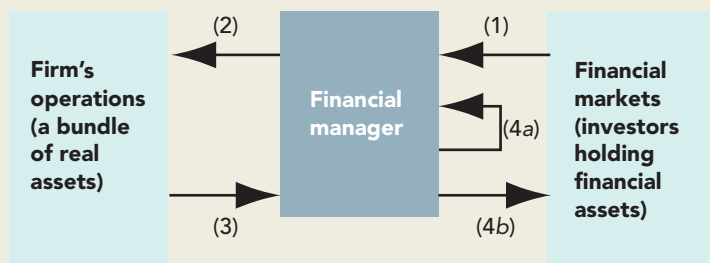
Financial decisions are not restricted to financial specialists. Top management must sign off on major investment projects, for example. But the engineer who designs a new production line is also involved, because the design determines the real assets that the corporation holds. The engineer also rejects many designs before proposing what he or she thinks is the best one. Those rejections are also investment decisions, because they amount to decisions *not* to invest in other types of real assets.

In this book we use the term *financial manager* to refer to anyone responsible for an investment or financing decision. Often we use the term collectively for all the managers drawn into such decisions.

Let's go beyond job titles. What is the essential role of the financial manager? Figure 1.1 gives one answer. The figure traces how money flows from investors to the corporation and back to investors again. The flow starts when cash is raised from investors (arrow 1 in the figure). The cash could come from banks or from securities sold to investors in financial markets. The cash is then used to pay for the real assets (investment projects) needed for the corporation's business (arrow 2). Later, as the business operates, the assets generate cash inflows (arrow 3). That cash is either reinvested (arrow 4a) or returned to the investors who furnished the money in the first place (arrow 4b). Of course, the choice between arrows 4a and 4b is constrained by the promises made when cash was raised at arrow 1. For example, if the firm borrows money from a bank at arrow 1, it must repay this money plus interest at arrow 4b.

**FIGURE 1.1**

Flow of cash between financial markets and the firm's operations. Key: (1) Cash raised by selling financial assets to investors; (2) cash invested in the firm's operations and used to purchase real assets; (3) cash generated by the firm's operations; (4a) cash reinvested; (4b) cash returned to investors.





You can see examples of arrows 4*a* and 4*b* in Table 1.1. GlaxoSmithKline financed its drug research and development by reinvesting earnings (arrow 4*a*). Shell decided to return cash to shareholders by buying back its stock (arrow 4*b*). Shell could have chosen instead to pay the money out as additional cash dividends.

Notice how the financial manager stands between the firm and outside investors. On the one hand, the financial manager helps manage the firm's operations, particularly by helping to make good investment decisions. On the other hand, the financial manager deals with investors—not just with shareholders but also with financial institutions such as banks and with financial markets such as the New York Stock Exchange.

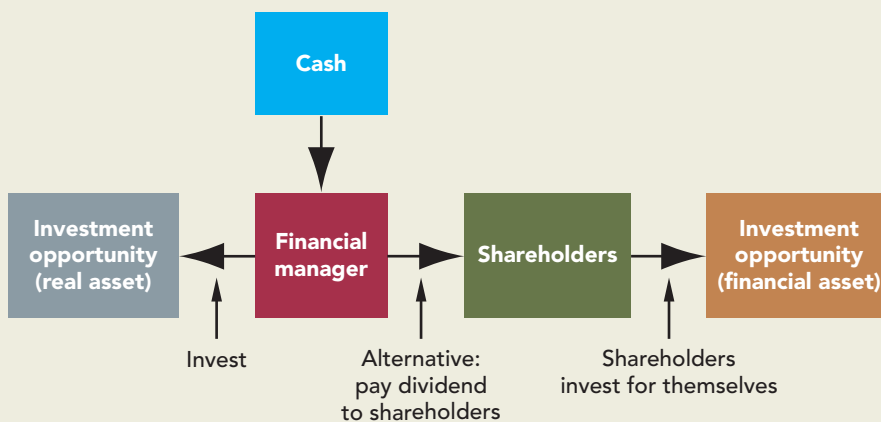
## The Investment Trade-off

Now look at Figure 1.2, which sets out the fundamental trade-off for corporate investment decisions. The corporation has a proposed investment project (a real asset). Suppose it has cash on hand sufficient to finance the project. The financial manager is trying to decide whether to invest in the project. If the financial manager decides not to invest, the corporation can pay out the cash to shareholders, say as an extra dividend. (The investment and dividend arrows in Figure 1.2 are arrows 2 and 4*b* in Figure 1.1.)

Assume that the financial manager is acting in the interests of the corporation's owners, its stockholders. What do these stockholders want the financial manager to do? The answer depends on the rate of return on the investment project and on the rate of return that the stockholders can earn by investing in financial markets. If the return offered by the investment project is higher than the rate of return that shareholders can get by investing on their own, then the shareholders would vote for the investment project. If the investment project offers a lower return than shareholders can achieve on their own, the shareholders would vote to cancel the project and take the cash instead.

Figure 1.2 could apply to Wal-Mart's decisions to invest in new retail stores, for example. Suppose Wal-Mart has cash set aside to build 10 new stores in 2012. It could go ahead with the new stores, or it could choose to cancel the investment project and instead pay the cash out to its stockholders. If it pays out the cash, the stockholders could then invest for themselves.

Suppose that Wal-Mart's new-stores project is just about as risky as the U.S. stock market and that investment in the stock market offers a 10% expected rate of return. If the new stores offer a superior rate of return, say 20%, then Wal-Mart's stockholders would be



**FIGURE 1.2**

The firm can either keep and reinvest cash or return it to investors. (Arrows represent possible cash flows or transfers.) If cash is reinvested, the opportunity cost is the expected rate of return that shareholders could have obtained by investing in financial assets.

happy to let Wal-Mart keep the cash and invest it in the new stores. If the new stores offer only a 5% return, then the stockholders are better off with the cash and without the new stores; in that case, the financial manager should turn down the investment project.

As long as a corporation's proposed investments offer higher rates of return than its shareholders can earn for themselves in the stock market (or in other financial markets), its shareholders will applaud the investments and its stock price will increase. But if the company earns an inferior return, shareholders boo, stock price falls, and stockholders demand their money back so that they can invest on their own.

In our example, the minimum acceptable rate of return on Wal-Mart's new stores is 10%. This minimum rate of return is called a *hurdle rate* or *cost of capital*. It is really an **opportunity cost of capital**, because it depends on the investment *opportunities* available to investors in financial markets. Whenever a corporation invests cash in a new project, its shareholders lose the opportunity to invest the cash on their own. Corporations increase value by accepting all investment projects that earn more than the opportunity cost of capital.

Notice that the opportunity cost of capital depends on the risk of the proposed investment project. Why? It's not just because shareholders are risk-averse. It's also because shareholders have to trade off risk against return when they invest on their own. The safest investments, such as U.S. government debt, offer low rates of return. Investments with higher expected rates of return—the stock market, for example—are riskier and sometimes deliver painful losses. (The U.S. stock market was down 38% in 2008, for example.) Other investments are riskier still. For example, high-tech growth stocks offer the prospect of higher rates of return, but are even more volatile.

Notice too that the opportunity cost of capital is generally *not* the interest rate that the company pays on a loan from a bank or on a bond. If the company is making a risky investment, the opportunity cost is the expected return that investors can achieve in financial markets at the same level of risk. The expected return on risky securities is normally well above the interest rate on corporate borrowing.

Managers look to the financial markets to measure the opportunity cost of capital for the firm's investment projects. They can observe the opportunity cost of capital for safe investments by looking up current interest rates on safe debt securities. For risky investments, the opportunity cost of capital has to be estimated. We start to tackle this task in Chapter 7.

Estimating the opportunity cost of capital is one of the hardest tasks in financial management, even when the stock, bond, and other financial markets are behaving normally. When these markets are misbehaving, precise estimates of the cost of capital can be temporarily out of the question.

Financial markets in the U.S. and most developed countries work well most of the time but just like the little girl in the poem, "When they are good, they are very good indeed, but when they are bad they are horrid."<sup>5</sup> In 2008 financial markets were horrid. Security prices bounced around like Tigger on stimulants, and for some types of investment the market temporarily disappeared. Financial markets no longer offered a good yardstick for a project's value or the opportunity cost of capital. That was a year in which financial managers really earned their keep.

We give more specific examples of investment decisions and the opportunity cost of capital at the start of the next chapter.

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<sup>5</sup>The poem is attributed to Longfellow:

There was a little girl,  
Who had a little curl,  
Right in the middle of her forehead.  
When she was good,  
She was very good indeed,  
But when she was bad she was horrid.



## 1-3 Goals of the Corporation

**Shareholders Want Managers to Maximize Market Value**

Wal-Mart has over 300,000 shareholders. There is no way that Wal-Mart's shareholders can be actively involved in management; it would be like trying to run New York City by town meetings. Authority has to be delegated to professional managers. But how can Wal-Mart's managers make decisions that satisfy all the shareholders? No two shareholders are exactly the same. They differ in age, tastes, wealth, time horizon, risk tolerance, and investment strategy. Delegating the operation of the firm to professional managers can work only if the shareholders have a common objective. Fortunately there is a natural financial objective on which almost all shareholders agree: Maximize the current market value of shareholders' investment in the firm.

A smart and effective manager makes decisions that increase the current value of the company's shares and the wealth of its stockholders. This increased wealth can then be put to whatever purposes the shareholders want. They can give their money to charity or spend it in glitzy nightclubs; they can save it or spend it now. Whatever their personal tastes or objectives, they can all do more when their shares are worth more.

Maximizing shareholder wealth is a sensible goal when the shareholders have access to well-functioning financial markets.<sup>6</sup> Financial markets allow them to share risks and transport savings across time. Financial markets give them the flexibility to manage their own savings and investment plans, leaving the corporation's financial managers with only one task: to increase market value.

A corporation's roster of shareholders usually includes both risk-averse and risk-tolerant investors. You might expect the risk-averse to say, "Sure, maximize value, but don't touch too many high-risk projects." Instead, they say, "Risky projects are OK, *provided* that expected profits are more than enough to offset the risks. If this firm ends up too risky for my taste, I'll adjust my investment portfolio to make it safer." For example, the risk-averse shareholders can shift more of their portfolios to safe assets, such as U.S. government bonds. They can also just say good-bye, selling shares of the risky firm and buying shares in a safer one. If the risky investments increase market value, the departing shareholders are better off than if the risky investments were turned down.

**A Fundamental Result**

The goal of maximizing shareholder value is widely accepted in both theory and practice. It's important to understand why. Let's walk through the argument step by step, assuming that the financial manager should act in the interests of the firm's owners, its stockholders.

1. Each stockholder wants three things:
  - a. To be as rich as possible, that is, to maximize his or her current wealth.
  - b. To transform that wealth into the most desirable time pattern of consumption either by borrowing to spend now or investing to spend later.
  - c. To manage the risk characteristics of that consumption plan.
2. But stockholders do not need the financial manager's help to achieve the best time pattern of consumption. They can do that on their own, provided they have free

<sup>6</sup> Here we use "financial markets" as shorthand for the financial sector of the economy. Strictly speaking, we should say "access to well-functioning financial markets and institutions." Many investors deal mostly with financial institutions, for example, banks, insurance companies, or mutual funds. The financial institutions then engage in financial markets, including the stock and bond markets. The institutions act as financial intermediaries on behalf of individual investors.

access to competitive financial markets. They can also choose the risk characteristics of their consumption plan by investing in more- or less-risky securities.

3. How then can the financial manager help the firm's stockholders? There is only one way: by increasing their wealth. That means increasing the market value of the firm and the current price of its shares.

Economists have proved this value-maximization principle with great rigor and generality. After you have absorbed this chapter, take a look at its Appendix, which contains a further example. The example, though simple, illustrates how the principle of value maximization follows from formal economic reasoning.

We have suggested that shareholders want to be richer rather than poorer. But sometimes you hear managers speak as if shareholders have different goals. For example, managers may say that their job is to "maximize profits." That sounds reasonable. After all, don't shareholders want their company to be profitable? But taken literally, profit maximization is not a well-defined financial objective for at least two reasons:

1. Maximize profits? Which year's profits? A corporation may be able to increase current profits by cutting back on outlays for maintenance or staff training, but those outlays may have added long-term value. Shareholders will not welcome higher short-term profits if long-term profits are damaged.
2. A company may be able to increase future profits by cutting this year's dividend and investing the freed-up cash in the firm. That is not in the shareholders' best interest if the company earns less than the opportunity cost of capital.

### **Should Managers Look After the Interests of Their Shareholders?**

We have described managers as the agent of shareholders, who want them to maximize their wealth. But perhaps this begs the question, Is it *desirable* for managers to act in the selfish interests of their shareholders? Does a focus on enriching the shareholders mean that managers must act as greedy mercenaries riding roughshod over the weak and helpless?

Most of this book is devoted to financial policies that increase value. None of these policies requires gallops over the weak and helpless. In most instances, there is little conflict between doing well (maximizing value) and doing good. Profitable firms are those with satisfied customers and loyal employees; firms with dissatisfied customers and a disgruntled workforce will probably end up with declining profits and a low stock price.

Most established corporations can add value by building long-term relationships with their customers and establishing a reputation for fair dealing and financial integrity. When something happens to undermine that reputation, the costs can be enormous. Here is an example.

**The Market-Timing Scandal** In 2003 the mutual fund industry confronted a market-timing scandal. Market timing exploits the fact that stock markets in different parts of the world close at different times. For example, if there is a strong surge in U.S. stock prices while the Japanese market is closed, it is likely that Japanese prices will increase when markets open in Asia the next day. Traders who can buy mutual funds invested in Japanese stocks while their prices are frozen will be able to make substantial profits. U.S. mutual funds were not supposed to allow such trading, but some did. After it was disclosed that managers at Putnam Investments had allowed market-timing trades for some of its investors, the company was fined \$100 million and obliged to pay \$10 million in compensation. But the larger cost by far was Putnam's loss of reputation. When the scandal came to light, Putnam suffered huge withdrawals of funds. Putnam mutual funds suffered outflows of \$30 billion in just two

months. If Putnam's funds charged roughly 1% of invested assets as an annual management fee (about the industry average), this loss of assets cost the company \$300 million of revenue per year.

When we say that the objective of the firm is to maximize shareholder wealth, we do not mean that anything goes. The law deters managers from making blatantly dishonest decisions, but most managers are not simply concerned with observing the letter of the law or with keeping to written contracts. In business and finance, as in other day-to-day affairs, there are unwritten rules of behavior. These rules make routine financial transactions feasible, because each party to the transaction has to trust the other to keep to his or her side of the bargain.<sup>7</sup>

Of course trust is sometimes misplaced. Charlatans and swindlers are often able to hide behind booming markets. It is only "when the tide goes out that you learn who's been swimming naked."<sup>8</sup> The tide went out in 2008 and a number of frauds were exposed. One notorious example was the Ponzi scheme run by the New York financier Bernard Madoff.<sup>9</sup> Individuals and institutions put about \$65 billion in the scheme before it collapsed in 2008. (It's not clear what Madoff did with all this money, but much of it was apparently paid out to early investors in the scheme to create an impression of superior investment performance.) With hindsight, the investors should not have trusted Madoff or the financial advisers who steered money to Madoff.

Madoff's Ponzi scheme was (we hope) a once-in-a-lifetime event.<sup>10</sup> Most of the money lost by investors in the crisis of '08 was lost honestly. Few investors or investment managers saw the crisis coming. When it arrived, there was little they could do to get out of the way.

## Should Firms Be Managed for Shareholders or All Stakeholders?

It is often suggested that companies should be managed on behalf of all *stakeholders*, not just shareholders. Other stakeholders include employees, customers, suppliers, and the communities where the firm's plants and offices are located.

Different countries take very different views on this question. In the U.S., U.K, and other "Anglo-Saxon" economies, the idea of maximizing shareholder value is widely accepted as the chief financial goal of the firm.

In other countries, workers' interests are put forward much more strongly. In Germany, for example, workers in large companies have the right to elect up to half the directors to the companies' supervisory boards. As a result they have a significant role in the governance of the firm and less attention is paid to the shareholders.<sup>11</sup> In Japan managers usually put the interests of employees and customers on a par with, or even ahead of, the interests of shareholders. For example, Toyota's business philosophy is "to realize stable, long-term growth by working hard to strike a balance between the requirements of people and society, the global environment and the world economy . . . to grow with all of our stakeholders, including our customers, shareholders, employees, and business partners."<sup>12</sup>

<sup>7</sup> See L. Guiso, L. Zingales, and P. Sapienza, "Trusting the Stock Market," *Journal of Finance* 63 (December 2008), pp. 2557–600. The authors show that an individual's lack of trust is a significant impediment to participation in the stock market. "Lack of trust" means a subjective fear of being cheated.

<sup>8</sup> The quotation is from Warren Buffett's annual letter to the shareholders of Berkshire Hathaway, March 2008.

<sup>9</sup> Ponzi schemes are named after Charles Ponzi who founded an investment company in 1920 that promised investors unbelievably high returns. He was soon deluged with funds from investors in New England, taking in \$1 million during one three-hour period. Ponzi invested only about \$30 of the money that he raised, but used part of the cash provided by later investors to pay generous dividends to the original investors. Within months the scheme collapsed and Ponzi started a five-year prison sentence.

<sup>10</sup> Ponzi schemes pop up frequently, but none has approached the scope and duration of Madoff's.

<sup>11</sup> The following quote from the German banker Carl Fürstenberg (1850–1933) offers an extreme version of how shareholders were once regarded by German managers: "Shareholders are stupid and impertinent—stupid because they give their money to somebody else without any effective control over what the person is doing with it and impertinent because they ask for a dividend as a reward for their stupidity." Quoted by M. Hellwig, "On the Economics and Politics of Corporate Finance and Corporate Control," in *Corporate Governance*, ed. X. Vives (Cambridge, U.K.: Cambridge University Press, 2000), p. 109.

<sup>12</sup> Toyota *Annual Report*, 2003, p. 10.

**FIGURE 1.3**

(a) Whose company is it? The views of 378 managers from five countries.

(b) Which is more important—job security for employees or shareholder dividends? The views of 399 managers from five countries.

Source: M. Yoshimori, "Whose Company Is It? The Concept of the Corporation in Japan and the West," *Long Range Planning*, 28 (August 1995), pp. 33–44. Copyright © 1995 with permission from Elsevier Science.

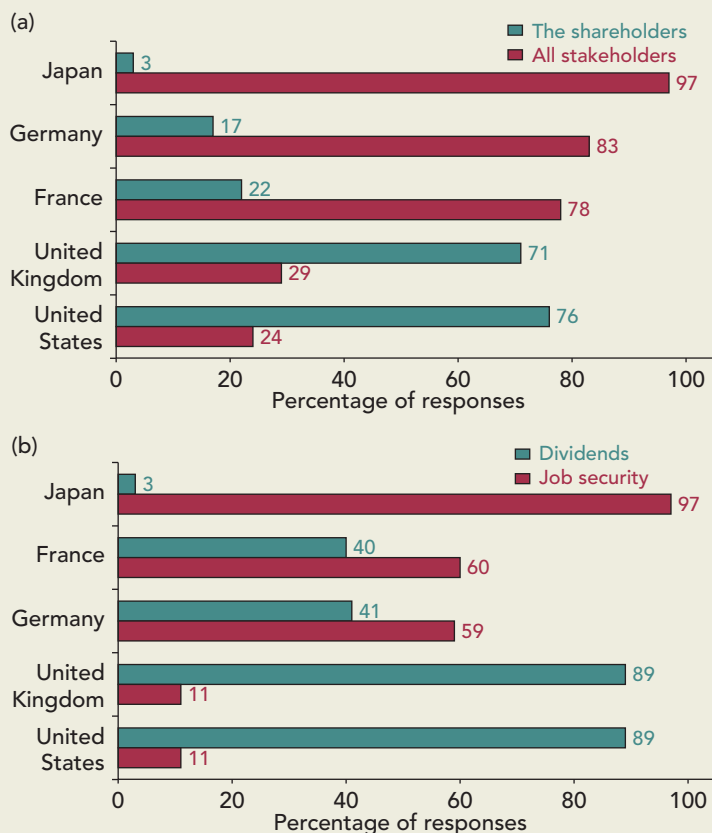


Figure 1.3 summarizes the results of interviews with executives from large companies in five countries. Japanese, German, and French executives think that their firms should be run for all stakeholders, while U.S. and U.K. executives say that shareholders come first. When asked about the trade-off between job security and dividends, most U.S. and U.K. executives believe dividends should come first. By contrast, almost all Japanese executives and the majority of German and French executives believe that job security should come first.

As capital markets have become more global, there has been greater pressure for companies in all countries to adopt wealth creation for shareholders as a primary goal. Some German companies, including Daimler and Deutsche Bank, have announced their primary goal as wealth creation for shareholders. In Japan there has been less movement in this direction. For example, the chairman of Toyota has suggested that it would be irresponsible to pursue shareholders' interests. On the other hand, the aggregate market value of Toyota's shares is significantly greater than the market values of GM's and Ford's. So perhaps there is not too much conflict between these goals in practice.

## 1-4 Agency Problems and Corporate Governance

We have emphasized the *separation of ownership and control* in public corporations. The owners (shareholders) cannot control what the managers do, except indirectly through the board of directors. This separation is necessary but also dangerous. You can see the dangers. Managers may be tempted to buy sumptuous corporate jets or to schedule business meetings at tony resorts. They may shy away from attractive but risky projects because they

are worried more about the safety of their jobs than about maximizing shareholder value. They may work just to maximize their own bonuses, and therefore redouble their efforts to make and resell flawed subprime mortgages.

Conflicts between shareholders' and managers' objectives create *agency problems*. Agency problems arise when *agents* work for *principals*. The shareholders are the principals; the managers are their agents. **Agency costs** are incurred when (1) managers do not attempt to maximize firm value and (2) shareholders incur costs to monitor the managers and constrain their actions.

Agency problems can sometimes lead to outrageous behavior. For example, when Dennis Kozlowski, the CEO of Tyco, threw a \$2 million 40th birthday bash for his wife, he charged half of the cost to the company. This of course was an extreme conflict of interest, as well as illegal. But more subtle and moderate agency problems arise whenever managers think just a little less hard about spending money when it is not their own.

### Pushing Subprime Mortgages: Value Maximization Run Amok, or an Agency Problem?

The economic crisis of 2007–2009<sup>13</sup> started as a *subprime* crisis. “Subprime” refers to mortgage loans made to home buyers with weak credit. Some of these loans were made to naïve buyers who faced severe difficulties in making interest and principal payments. Some loans were made to opportunistic buyers who were willing to gamble that real estate prices would keep increasing. But real estate prices declined sharply, and many of these buyers were forced to default.

Why did many banks and mortgage companies make these loans in the first place? One reason is that they could repackage the loans as mortgage-backed securities and sell them at a profit to other banks and to institutional investors. It's clear with hindsight that buyers of these subprime mortgage-backed securities were in turn naïve and paid too much. When housing prices fell and defaults increased in 2007, the prices of these securities fell drastically. Merrill Lynch wrote off \$50 billion of losses on mortgage-backed securities, and the company had to be sold under duress to Bank of America. Other major financial institutions, such as Citigroup and Wachovia Bank, also recorded enormous losses.

Think about the banks and mortgage companies that originated the subprime loans and made a profit by reselling them. With hindsight we see that they were selling defective products that would generate painful losses for their customers. Were these companies really pursuing value maximization? Perhaps they were trying to maximize value and just made a disastrous misjudgment about the course of house prices. But we think it is more likely that the companies were aware that a strategy of originating massive amounts of subprime was likely to end badly. Washington Mutual, one of the most aggressive players in the subprime market, quickly failed when the true risks of the subprime loans were revealed. Washington Mutual's shareholders would surely not have endorsed the company's strategy if they had understood it.

Although there is plenty of blame to pass around in the subprime crisis, some of it must go to the managers who actually promoted and resold the subprime mortgages. Were they acting in shareholders' interests, or were they acting in their own interests, trying to squeeze in one more, fat bonus before the game ended? We think that the managers would have thought much harder about their actions if they had not had a short-term selfish interest in promoting subprime mortgages. If so, the mess was largely an *agency problem*, not value maximization run amok. Agency problems occur when managers do *not* act in shareholders' interests, but in their own interests.

<sup>13</sup> We write this chapter in early 2009. We hope that the next edition of this book does *not* refer to the financial crisis of 2007–2010 or 2007–2011.

## Agency Problems Are Mitigated by Good Systems of Corporate Governance

A good system of **corporate governance** ensures that the shareholders' pockets are close to the managers' hearts. Here are some of the characteristics of such a system.

**Legal and Regulatory Requirements** Managers have a legal duty to act responsibly and in the interests of investors. For example, the U.S. Securities and Exchange Commission (SEC) sets accounting and reporting standards for public companies to ensure consistency and transparency. The SEC also prohibits insider trading, that is, the purchase or sale of shares based on information that is not available to public investors.

**Compensation Plans** Managers are spurred on by incentive schemes that produce big returns if shareholders gain but are valueless if they do not. For example, Larry Ellison, CEO of the business software giant Oracle Corporation, received total compensation for 2007 estimated at between \$60 and \$70 million. Only a small fraction (a mere \$1 million) of that amount was salary. A larger amount, a bit more than \$6 million, was bonus and incentive pay, and the lion's share was in the form of stock and option grants. Those options will be worthless if Oracle's share price falls below its 2007 level, but will be highly valuable if the price rises. Moreover, as founder of Oracle, Ellison holds over 1 *billion* shares in the firm. No one can say for certain how hard Ellison would have worked with a different compensation package. But one thing is clear: He has a huge personal stake in the success of the firm—and in increasing its market value.

**Board of Directors** A company's board of directors is elected by the shareholders and has a duty to represent them. Boards of directors are sometimes portrayed as passive stooges who always champion the incumbent management. But response to past corporate scandals has tipped the balance toward greater independence. The Sarbanes-Oxley Act (commonly known as "SOX") requires that corporations place more independent directors on the board, that is, more directors who are not managers or are not affiliated with management. More than half of all directors are now independent. Boards also now meet in sessions without the CEO present. In addition, institutional shareholders, particularly pension funds and hedge funds, have become more active in monitoring firm performance and proposing changes to corporate governance.

Not surprisingly, more chief executives have been forced out in recent years, among them the CEOs of General Motors, Merrill Lynch, Starbucks, Yahoo!, AIG, Fannie Mae, and Motorola. Boards outside the United States, which traditionally have been more management-friendly, have also become more willing to replace underperforming managers. The list of recent departures includes the heads of Royal Bank of Scotland, UBS, PSA Peugeot Citroen, Lenovo, Samsung, Old Mutual, and Swiss Re.

**Monitoring** The company's directors are not the only ones to be scrutinizing management's actions. Managers are also monitored by security analysts, who advise investors to buy, hold, or sell the company's shares, and by banks, which keep an eagle eye on the safety of their loans.

**Takeovers** Companies that consistently fail to maximize value are natural targets for takeovers by another company or by corporate raiders. "Raiders" are private investment funds that specialize in buying out and reforming poorly performing companies.

Takeovers are common in industries with slow growth and excess capacity. For example, at the end of the Cold War in 1990, it was clear that the defense industry would have to shrink drastically. A wave of consolidating mergers followed.



**Shareholder Pressure** If shareholders believe that the corporation is underperforming and that the board of directors is not holding managers to task, they can attempt to elect representatives to the board to make their voices heard. For example, in 2008 billionaire shareholder activist Carl Icahn felt that the directors of Yahoo! were not acting in shareholders' interest when they rejected a bid from Microsoft. He therefore invested \$67 million in Yahoo! stock, and muscled himself and two like-minded friends onto the Yahoo! board.

Disgruntled stockholders also take the "Wall Street Walk" by selling out and moving on to other investments. The Wall Street Walk can send a powerful message. If enough shareholders bail out, the stock price tumbles. This damages top management's reputation and compensation. A large part of top managers' paychecks comes from stock options, which pay off if the stock price rises but are worthless if the price falls below a stated threshold. Thus a falling stock price has a direct impact on managers' personal wealth. A rising stock price is good for managers as well as stockholders.

We do not want to leave the impression that corporate life is a series of squabbles and endless micromanagement. It isn't, because practical corporate finance has evolved to reconcile personal and corporate interests—to keep everyone working together to increase the value of the whole pie, not merely the size of each person's slice. Few managers at the top of major U.S. corporations are lazy or inattentive to stockholders' interests. On the contrary, the pressure to perform can be intense. We will return to agency problems and governance many times in intermediate chapters, however.

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Corporations face two principal financial decisions. First, what investments should the corporation make? Second, how should it pay for the investments? The first decision is the investment decision; the second is the financing decision.

The stockholders who own the corporation want its managers to maximize its overall value and the current price of its shares. The stockholders can all agree on the goal of value maximization, so long as financial markets give them the flexibility to manage their own savings and investment plans. Of course, the objective of wealth maximization does not justify unethical behavior. Shareholders do not want the maximum possible stock price. They want the maximum honest share price.

How can financial managers increase the value of the firm? Mostly by making good investment decisions. Financing decisions can also add value, and they can surely destroy value if you screw them up. But it's usually the profitability of corporate investments that separates value winners from the rest of the pack.

Investment decisions force a trade-off. The firm can either invest cash or return it to shareholders, for example, as an extra dividend. When the firm invests cash rather than paying it out, shareholders forgo the opportunity to invest it for themselves in financial markets. The return that they are giving up is therefore called the opportunity cost of capital. If the firm's investments can earn a return higher than the opportunity cost of capital, shareholders cheer and stock price increases. If the firm invests at a return lower than the opportunity cost of capital, shareholders boo and stock price falls.

Managers are not endowed with a special value-maximizing gene. They will consider their own personal interests, which creates a potential conflict of interest with outside shareholders. This conflict is called a principal-agent problem. Any loss of value that results is called an agency cost.



## SUMMARY

Corporate governance helps to align managers' and shareholders' interests, so that managers pay close attention to the value of the firm. For example, managers are appointed by, and sometimes fired by, the board of directors, who are supposed to represent shareholders. The managers are spurred on by incentive schemes, such as grants of stock options, which pay off big only if the stock price increases. If the company performs poorly, it is more likely to be taken over. The takeover typically brings in a fresh management team.

Remember the following three themes, for you will see them again and again throughout this book:

1. Maximizing value.
2. The opportunity cost of capital.
3. The crucial importance of incentives and governance.



## PROBLEM SETS

### BASIC

1. Read the following passage: "Companies usually buy (*a*) assets. These include both tangible assets such as (*b*) and intangible assets such as (*c*). To pay for these assets, they sell (*d*) assets such as (*e*). The decision about which assets to buy is usually termed the (*f*) or (*g*) decision. The decision about how to raise the money is usually termed the (*h*) decision." Now fit each of the following terms into the most appropriate space: *financing, real, bonds, investment, executive airplanes, financial, capital budgeting, brand names*.
2. Which of the following are real assets, and which are financial?
  - a. A share of stock.
  - b. A personal IOU.
  - c. A trademark.
  - d. A factory.
  - e. Undeveloped land.
  - f. The balance in the firm's checking account.
  - g. An experienced and hardworking sales force.
  - h. A corporate bond.
3. Vocabulary test. Explain the differences between:
  - a. Real and financial assets.
  - b. Capital budgeting and financing decisions.
  - c. Closely held and public corporations.
  - d. Limited and unlimited liability.
4. Which of the following statements always apply to corporations?
  - a. Unlimited liability.
  - b. Limited life.
  - c. Ownership can be transferred without affecting operations.
  - d. Managers can be fired with no effect on ownership.
5. Which of the following statements more accurately describe the treasurer than the controller?
  - a. Responsible for investing the firm's spare cash.
  - b. Responsible for arranging any issue of common stock.
  - c. Responsible for the company's tax affairs.

## INTERMEDIATE

6. In most large corporations, ownership and management are separated. What are the main implications of this separation?
7. F&H Corp. continues to invest heavily in a declining industry. Here is an excerpt from a recent speech by F&H's CFO:

We at F&H have of course noted the complaints of a few spineless investors and uninformed security analysts about the slow growth of profits and dividends. Unlike those confirmed doubters, we have confidence in the long-run demand for mechanical encabulators, despite competing digital products. We are therefore determined to invest to maintain our share of the overall encabulator market. F&H has a rigorous CAPEX approval process, and we are confident of returns around 8% on investment. That's a far better return than F&H earns on its cash holdings.

The CFO went on to explain that F&H invested excess cash in short-term U.S. government securities, which are almost entirely risk-free but offered only a 4% rate of return.

- a. Is a forecasted 8% return in the encabulator business necessarily better than a 4% safe return on short-term U.S. government securities? Why or why not?
  - b. Is F&H's opportunity cost of capital 4%? How in principle should the CFO determine the cost of capital?
8. We can imagine the financial manager doing several things on behalf of the firm's stockholders. For example, the manager might:
    - a. Make shareholders as wealthy as possible by investing in real assets.
    - b. Modify the firm's investment plan to help shareholders achieve a particular time pattern of consumption.
    - c. Choose high- or low-risk assets to match shareholders' risk preferences.
    - d. Help balance shareholders' checkbooks.

But in well-functioning capital markets, shareholders will vote for *only one* of these goals. Which one? Why?

9. Ms. Espinoza is retired and depends on her investments for her income. Mr. Liu is a young executive who wants to save for the future. Both are stockholders in Scaled Composites, LLC, which is building *SpaceShipOne* to take commercial passengers into space. This investment's payoff is many years away. Assume it has a positive NPV for Mr. Liu. Explain why this investment also makes sense for Ms. Espinoza.
10. If a financial institution is caught up in a financial scandal, would you expect its value to fall by more or less than the amount of any fines and settlement payments? Explain.
11. Why might one expect managers to act in shareholders' interests? Give some reasons.
12. Many firms have devised defenses that make it more difficult or costly for other firms to take them over. How might such defenses affect the firm's agency problems? Are managers of firms with formidable takeover defenses more or less likely to act in the shareholders' interests rather than their own? What would you expect to happen to the share price when management proposes to institute such defenses?

## APPENDIX

### Foundations of the Net Present Value Rule

We have suggested that well-functioning financial markets allow different investors to agree on the objective of maximizing value. This idea is sufficiently important that we need to pause and examine it more carefully.

**How Financial Markets Reconcile Preferences for Current vs. Future Consumption** Suppose that there are two possible investors with entirely different preferences. Think of A as an ant, who wishes to save for the future, and of G as a grasshopper, who would prefer to spend all his wealth on some ephemeral frolic, taking no heed of tomorrow. Suppose that each has a nest egg of exactly \$100,000 in cash. G chooses to spend all of it today, while A prefers to invest it in the financial market. If the interest rate is 10%, A would then have  $1.10 \times \$100,000 = \$110,000$  to spend a year from now. Of course, there are many possible intermediate strategies. For example, A or G could choose to split the difference, spending \$50,000 now and putting the remaining \$50,000 to work at 10% to provide  $1.10 \times \$50,000 = \$55,000$  next year. The entire range of possibilities is shown by the green line in Figure 1A.1.

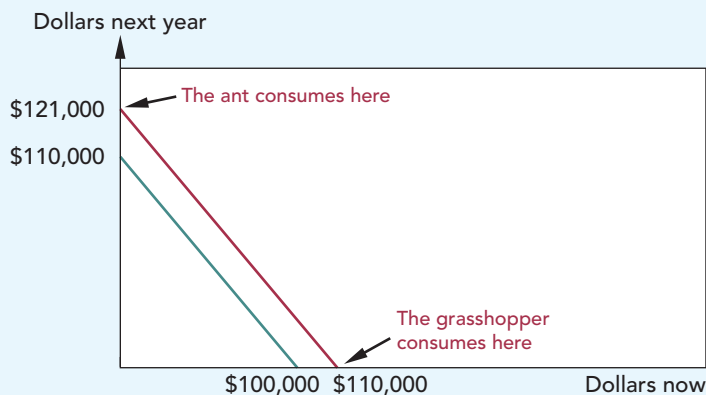
In our example, A used the financial market to postpone consumption. But the market can also be used to bring consumption forward in time. Let's illustrate by assuming that instead of having cash on hand of \$100,000, our two friends are due to receive \$110,000 each at the end of the year. In this case A will be happy to wait and spend the income when it arrives. G will prefer to borrow against his future income and party it away today. With an interest rate of 10%, G can borrow and spend  $\$110,000/1.10 = \$100,000$ . Thus the financial market provides a kind of time machine that allows people to separate the timing of their income from that of their spending. Notice that with an interest rate of 10%, A and G are equally happy with cash on hand of \$100,000 or an income of \$110,000 at the end of the year. They do not care about the timing of the cash flow; they just prefer the cash flow that has the highest value today (\$100,000 in our example).

**Investing in Real Assets** In practice individuals are not limited to investing in financial markets; they may also acquire plant, machinery, and other real assets. For example, suppose that A and G are offered the opportunity to invest their \$100,000 in a new business that a friend is founding. This will produce a one-off sure fire payment of \$121,000 next year. A would clearly be happy to invest in the business. It will provide her with \$121,000 to spend at the end of the year, rather than the \$110,000 that she gets by investing her \$100,000 in the financial market. But what about G, who wants money now, not in one year's time? He too is happy to invest, as long as he can borrow against the future payoff of the investment project. At an interest rate of 10%, G can borrow \$110,000 and so will have an extra \$10,000 to spend today. Both A and G are better off investing in their friend's venture. The investment increases their wealth. It moves them up from the green to the maroon line in Figure 1A.1.

**A Crucial Assumption** The key condition that allows A and G to agree to invest in the new venture is that both have access to a well-functioning, competitive capital market, in which they can borrow and lend at the same rate. Whenever the corporation's shareholders have equal access to competitive capital markets, the goal of maximizing market value makes sense.

**FIGURE 1A.1**

The green line shows the possible spending patterns for the ant and grasshopper if they invest \$100,000 in the capital market. The maroon line shows the possible spending patterns if they invest in their friend's business. Both are better off by investing in the business as long as the grasshopper can borrow against the future income.



It is easy to see how this rule would be damaged if we did *not* have such a well-functioning capital market. For example, suppose that G could not easily borrow against future income. In that case he might well prefer to spend his cash today rather than invest it in the new venture. If A and G were shareholders in the same enterprise, A would be happy for the firm to invest, while G would be clamoring for higher current dividends.

No one believes unreservedly that capital markets function perfectly. Later in this book we discuss several cases in which differences in taxation, transaction costs, and other imperfections must be taken into account in financial decision making. However, we also discuss research indicating that, in general, capital markets function fairly well. In this case maximizing shareholder value is a sensible corporate objective. But for now, having glimpsed the problems of imperfect markets, we shall, like an economist in a shipwreck, simply *assume* our life jacket and swim safely to shore.

## QUESTIONS

1. Look back to the numerical example graphed in Figure 1A.1. Suppose the interest rate is 20%. What would the ant (A) and grasshopper (G) do if they both start with \$100,000? Would they invest in their friend's business? Would they borrow or lend? How much and when would each consume?
2. Answer this question by drawing graphs like Figure 1A.1. Casper Milktoast has \$200,000 available to support consumption in periods 0 (now) and 1 (next year). He wants to consume *exactly* the same amount in each period. The interest rate is 8%. There is no risk.
  - a. How much should he invest, and how much can he consume in each period?
  - b. Suppose Casper is given an opportunity to invest up to \$200,000 at 10% risk-free. The interest rate stays at 8%. What should he do, and how much can he consume in each period?