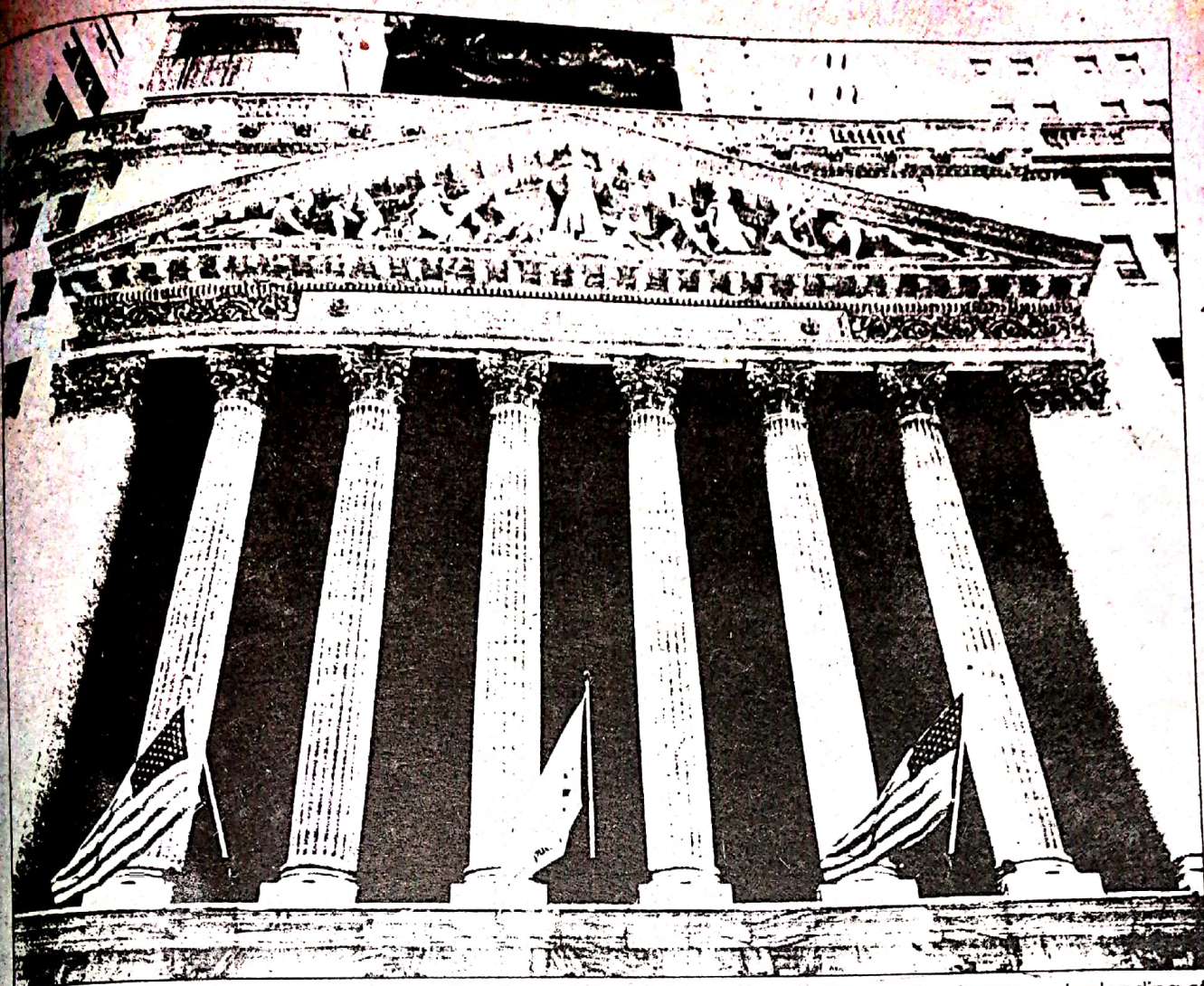


Financial Markets and Institutions

LEARNING OBJECTIVES

After studying this chapter, you should be able to:

- 1 Understand how financial markets and institutions channel savings to corporate investment.
- 2 Understand the basic structure of mutual funds, pension funds, banks, and insurance companies.
- 3 Explain the functions of financial markets and institutions.
- 4 Understand the main events behind the financial crisis of 2007–2009.



The façade of the New York Stock Exchange is imposing. But financial managers need a deeper understanding of how financial markets work.

If a corporation needs to issue more shares of stock, then its financial manager had better understand how the stock market works. If it wants to take out a bank loan, the financial manager had better understand how banks and other financial institutions work. If the firm wants to commit to a capital investment, for example, a factory expansion or a new product launch, the financial manager needs to think clearly about the cost of the capital that the firm raises from outside investors. As we pointed out in Chapter 1, the opportunity cost of capital for the firm is the rate of return that its stockholders could expect to get by investing on their own in financial markets. This means that the financial manager needs to understand how prices are determined in the financial markets in order to make wise investment decisions.

Financial markets and institutions are the firm's financial environment. You don't have to

understand everything about that environment to begin the study of financial management, but a general understanding provides useful context for the work ahead. For example, it will help you to understand why you are calculating the yield to maturity of a bond in Chapter 6, the net present value of a capital investment in Chapter 9, or the weighted-average cost of capital for a company in Chapter 13.

This chapter does three things. First, it surveys financial markets and institutions. We will cover the stock and bond markets, mutual and pension funds, and banks and insurance companies. Second, we will set out the functions of financial markets and institutions and look at how they help corporations and the economy. Third, we will discuss the financial crisis of 2007–2009. An understanding of what happens when financial markets do *not* function well is important for understanding why and how financial markets and institutions matter.

2.1 The Importance of Financial Markets and Institutions

In the previous chapter, we explained why corporations have to be good at finance in order to survive and prosper. All corporations face important investment and financing decisions. But of course those decisions are not made in a vacuum. They are made in a financial environment. That environment has two main segments: financial markets and financial institutions.

Large corporations have to go to financial markets and institutions for the financing they need to grow. When they have a surplus of cash, and no need for immediate financing, they have to invest the cash, for example, in bank accounts or in securities. Let's take Apple Computer, Inc., as an example.

Table 2.1 presents a timeline for Apple and examples of the sources of financing tapped by Apple from its start-up in a California garage in 1976 to its cash-rich status in 2010. The initial investment in Apple stock was \$250,000. Apple was also able to get short-term financing from parts suppliers who did not demand immediate payment. Apple was able to get the parts, assemble and sell the computers, and then pay off its accounts payable to the suppliers. (We discuss accounts payable in Chapter 19.) Then, as Apple grew, it was able to obtain several rounds of financing by selling Apple shares to private venture capital investors. (We discuss venture capital in Chapter 15.)

TABLE 2.1 Examples of financing decisions by Apple Computer

<i>April 1976:</i> Apple Computer, Inc., founded	Mike Makkula, Apple's first chairman, invests \$250,000 in Apple shares.
<i>1976:</i> First 200 computers sold	Parts suppliers give Apple 30 days to pay. (Financing from accounts payable.)
<i>1978–79</i>	Apple raises \$3.5 million from venture capital investors.
<i>December 1980:</i> Initial public offering	Apple raises \$91 million, after fees and expenses, by selling shares to public investors.
<i>May 1981</i>	Apple sells 2.6 million additional shares at \$31.25 per share.
<i>April 1987</i>	Apple pays its first dividend at an annual rate of \$.12 per share
<i>Early 1990s</i>	Apple carries out several share repurchase programs.
<i>1994</i>	Apple issues \$300 million of debt at an interest rate of 6.5%.
<i>1996–97:</i> Apple reports a \$740 million loss in the second quarter of 1996. Lays off 2,700 employees in 1997.	Dividend is suspended in February 1996. Apple sells \$661 million of debt to private investors in June 1996. The borrowing provides "sufficient liquidity" to execute Apple's strategic plans and to "return the company to profitability."
<i>September 1997:</i> Acquires assets of Power Computing Corp.	Acquisition is financed with \$100 million of Apple stock.
<i>2004:</i> Apple is healthy and profitable, thanks to iMac, iPod, and other products.	Apple pays off the \$300 million in long-term debt issued in 1994, leaving the company with no long-term debt outstanding.
<i>2005–10</i>	Apple's profits grow rapidly, but it pays no cash dividends. Instead it invests in short-term marketable securities, which accumulate to \$25.6 billion by 2010.
<i>From start-up to 2010</i>	Apple stockholders reinvest \$37.2 billion of earnings. Thus Apple's 2010 balance sheet shows cumulative retained earnings of \$37.2 billion.

In December 1980, it raised \$91 million in an initial public offering (IPO) of its shares to public investors. There was also a follow-up share issue in May 1981.¹

Once Apple was a public company, it could raise financing from many sources, and it was able to pay for acquisitions by issuing more shares. We show a few examples in Table 2.1.

Apple started paying cash dividends to shareholders in 1987, and it also distributed cash to investors by stock repurchases in the early 1990s. But Apple hit a rough patch in 1996 and 1997, and regular dividends were eliminated. The company had to borrow \$660 million from a group of private investors in order to cover its losses and finance its recovery plan. Apple was generally profitable, despite the rough years, and it financed growth by plowing back earnings into its operations. These retained earnings had cumulated to \$37.2 billion by 2010.

Apple is well known for its product innovations, including the Macintosh computer, the iPod, and the iPad. Apple is not special because of financing. In fact, the story of its financing is not too different from that of many other successful companies. But access to financing was vital to Apple's growth and profitability. Would we have iMac computers, iPods, or iPads if Apple had been forced to operate in a country with a primitive financial system? Definitely not.

A modern financial system offers financing in many different forms, depending on the company's age, its growth rate, and the nature of its business. For example, Apple relied on venture capital financing in its early years and only later floated its shares in public stock markets. Still later, as the company matured, it turned to other forms of financing, including the examples given in Table 2.1. But the table does not begin to cover the range of financing channels open to modern corporations. We will encounter many other channels later in the book, and new channels are opening up regularly. The nearby box describes one recent financial innovation, micro-lending funds that make small loans to businesspeople in the poorer parts of the world.

2.2 The Flow of Savings to Corporations

The money that corporations invest in real assets comes ultimately from savings by investors. But there can be many stops on the road between savings and corporate investment. The road can pass through financial markets, financial intermediaries, or both.)

Let's start with the simplest case of a small, closely held corporation, like Apple in its earliest years. The orange arrows in Figure 2.1 show the flow of savings from shareholders in this simple setting. (There are two possible paths: The firm can sell new shares, or it can reinvest cash back into the firm's operations. Reinvestment means additional savings by existing shareholders. The reinvested cash could have been paid out to those shareholders and spent by them on personal consumption. By *not* taking and spending the cash, shareholders have reinvested their savings in the corporation. Cash retained and reinvested in the firm's operations is cash saved and invested on behalf of the firm's shareholders.)

Of course, this small corporation has other financing choices. It could take out a bank loan, for example. The bank in turn may have raised money by attracting savings accounts. In this case investors' savings flow through the bank to the firm.

Now consider a large, public corporation, for example, Apple Computer in 2010. What's different? Scale, for one thing: Apple's annual revenues in 2010 were \$65 billion, and its balance sheet showed total assets of \$75 billion. The scope of Apple's activities

¹ Many of the shares sold in the 1981 issue were previously held by Apple employees. Sale of these shares allowed the employees to cash out and diversify some of their Apple holdings but did not raise additional financing for Apple.

Micro Loans

A few years ago, Chheang Leang and her husband were earning just 25 cents a day from rice farming and palm juice production in her Cambodian village. But then she took out a loan for \$25 to buy fertilizer for the rice fields and to improve palm oil production. The following year, she borrowed \$125 to buy a motorcycle and cart to sell ice cream and fruit juice. Next she took out a loan of \$200 to buy six piglets. She used additional loans of \$125 and \$200 over the next two years to buy supplies for her ice cream and juice business. The investment in livestock and in the ice cream and fruit juice business allowed Chheang Leang to increase her income tenfold.

Five thousand miles to the west in a village in Malawi, Funny Mbewe opened a grocery store to supplement the family income. However, with almost no money to buy stock, she struggled to make the venture pay. The breakthrough came when Funny was able to borrow \$70 to buy

new stock. The grocery store is now the biggest in the area, selling everything from food and stationery to pain medication.

Micro loans, such as those to Chheang Leang and Funny Mbewe, are made by microfinance institutions that specialize in lending small amounts of money to help poor people launch small enterprises. Some of these microfinance companies are run as businesses and some as charities. They raise capital from individual and institutional investors, vet would-be borrowers, offer management assistance, and administer the loans. Most of the loans are for small amounts and are short-term. The borrowers who take out these micro loans pay relatively high rates of interest because the loans are generally made in countries with weak currencies, and the administrative cost is relatively large. Even so, these loans can extend a lifeline to people who may not otherwise be able to gain credit.

has also expanded: It now has dozens of products and operates worldwide. Because of this scale and scope, Apple attracts investors' savings by a variety of different routes. It can do so because it is a large, profitable, public firm.

The flow of savings to large public corporations is shown in Figure 2.2. Notice two key differences from Figure 2.1. First, public corporations can draw savings from investors worldwide. Second, the savings flow through financial markets, financial intermediaries,

FIGURE 2.1 Flow of savings to investment in a closely held corporation. Investors use savings to buy additional shares. Investors also save when the corporation reinvests on their behalf.

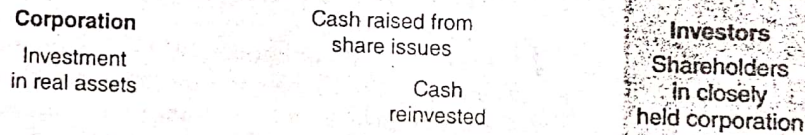
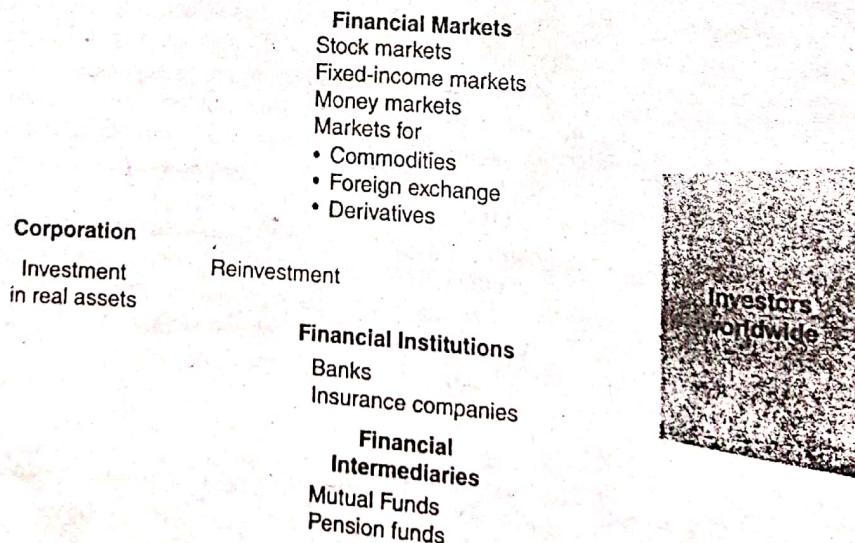


FIGURE 2.2 Flow of savings to investment for a large, public corporation. Savings come from investors worldwide. The savings may flow through financial markets or financial intermediaries. The corporation also reinvests on shareholders' behalf.



It's Not Your Grandfather's NYSE

The business of trading stocks has changed fundamentally in the last decade. In the old days, most trading was done on the crowded floor of the New York Stock Exchange (NYSE) or on the much smaller American Stock Exchange (AMEX). But by the turn of this century, most trades were routed through the NYSE's computer systems or through NASDAQ, a competing system that ties together a network of security dealers.

The trend toward electronic trading, plus rapid expansion in trading volumes, set off a wave of takeovers and consolidation. The NYSE, which used to be owned by a "club" of NYSE members, changed to a for-profit corporation and merged with Archipelago, which had developed an efficient electronic trading system. In 2006 the NYSE bought the European trading system Euronext, beating out the rival bidder Deutsche Börse, the German exchange. In 2008 NYSE Euronext took over AMEX.

Other exchanges joined the party. The London Stock Exchange was a perennial target of (unsuccessful) bids by the Swedish exchange OMX, Euronext (before it was

acquired by the NYSE), Deutsche Börse, Macquarie Bank from Australia, and NASDAQ. NASDAQ later purchased OMX (Sweden).

"There's an obvious advantage of centralizing exchanges," says Wharton Finance Professor Richard J. Herring. Bigger exchanges have lower trading costs, which attracts more traders and listing companies. As trading volume increases, liquidity improves.

Consolidation is not limited to stock markets. Euronext was attractive to the NYSE partly because of its markets for options and commodities. The two largest Chicago commodities exchanges, the Chicago Mercantile Exchange and the Chicago Board of Trade, merged in 2007 as the CME Group. In March 2008, the CME Group announced that it would acquire the New York Mercantile Exchange in a deal to join the two largest U.S. futures exchanges.

Source: Hal Weitzman and Anuj Gangahar, "CME casts its eye in Nymex's direction," *Financial Times*, January 28, 2008. Used with permission of *Financial Times*.

or both. Suppose, for example, that Bank of America raises \$300 million by a new issue of shares. An Italian investor buys 4,000 of the new shares for \$15 per share. Now Bank of America takes that \$60,000, along with money raised by the rest of the issue, and makes a \$300 million loan to Apple. The Italian investor's savings end up flowing through financial markets (the stock market), to a financial intermediary (Bank of America), and finally to Apple.

Of course our Italian friend's \$60,000 doesn't literally arrive at Apple in an envelope marked "From L. DaVinci." Investments by the purchasers of the Bank of America's stock issue are pooled, not segregated. Sr. DaVinci would own a share of all of Bank of America's assets, not just one loan to Apple. Nevertheless, investors' savings are flowing through the financial markets and the bank to finance Apple's capital investments.

The Stock Market

A **financial market** is a market where securities are issued and traded. A security is just a traded financial asset, such as a share of stock. For a corporation, the stock market is probably the most important financial market.

As corporations grow, their requirements for outside capital can expand dramatically. At some point the firm will decide to "go public" by issuing shares on an organized exchange such as the New York Stock Exchange (NYSE); that first issue is called an *initial public offering* or *IPO*. The buyers of the IPO are helping to finance the firm's investment in real assets. In return, the buyers become part-owners of the firm and share in its future success or failure. (Most investors in the Internet IPOs of 1999 and 2000 are by now sorely disappointed, but many IPOs pay off handsomely. If only we had bought Apple shares on their IPO day in 1980 . . .) Of course a corporation's IPO is not its last chance to issue shares. For example, Bank of America went public in the 1930s, but it could make a new issue of shares tomorrow.

A new issue of shares increases both the amount of cash held by the company and the number of shares held by the public. Such an issue is known as a *primary issue*, and it is sold in the **primary market**. But in addition to helping companies raise new cash, financial markets also allow investors to trade securities among themselves. For example, Smith might decide to raise some cash by selling her Apple stock at the same time that Jones invests his spare cash in Apple. The result is simply a transfer

financial market
Market where securities
are issued and traded.

primary market
Market for the sale of
new securities by
corporations.

secondary market
Market in which
previously issued
securities are traded
among investors.

of ownership from Smith to Jones, which has no effect on the company itself. Such purchases and sales of existing securities are known as *secondary transactions*, and they take place in the **secondary market**. Notice that Smith and Jones are happy for Apple to raise new capital and invest in long-term projects, as long as they can sell their stock in the secondary market when they need the cash.

Stock markets are also called *equity markets*, since stockholders are said to own the common equity of the firm. You will hear financial managers refer to the capital structure decision as "the choice between debt and equity financing."

Most trading in the shares of U.S. corporations takes place on the NYSE and on NASDAQ, which tends to attract listings from smaller, high-tech companies. The business of trading is changing rapidly, however, as the box on page 35 explains.

Now may be a good time to stress that the financial manager plays on a global stage and needs to be familiar with markets around the world. For example, Apple's stock is traded on the NASDAQ market and also in Germany on the Deutsche Börse. China Telecom, Deutsche Bank, Nokia, Novartis, Petrobras (Brazil), Sony, Toyota, Unilever, and over 400 other overseas firms have listed their shares on the NYSE. We return to the trading and pricing of shares in Chapter 7.

Other Financial Markets

Debt securities as well as equities are traded in financial markets. The Apple bond issue in 1994 was a public issue (see Table 2.1). Table 1.1 in the previous chapter also gives examples, including the debt issues by Honda and LVMH.

A few corporate debt securities are traded on the NYSE and other exchanges, but most corporate debt securities are traded *over the counter*, through a network of banks and securities dealers. Government debt is also traded over the counter.

A bond is a more complex security than a share of stock. A share is just a proportional ownership claim on the firm, with no definite maturity. Bonds and other debt securities can vary in maturity, in the degree of protection or collateral offered by the issuer, and in the level and timing of interest payments. Some bonds make "floating" interest payments tied to the future level of interest rates. Many can be "called" (repurchased and retired) by the issuing company before the bonds' stated maturity date. Some bonds can be converted into other securities, usually the stock of the issuing company. You don't need to master these distinctions now; just be aware that the debt or **fixed-income market** is a complicated and challenging place. A corporation must not only decide between debt and equity finance. It must also consider the design of debt. We return to the trading and pricing of debt securities in Chapter 6. |

The markets for *long-term* debt and equity are called **capital markets**. A firm's *capital* is its long-run financing. Short-term securities are traded in the **money markets**. "Short term" means less than 1 year. For example, large, creditworthy corporations raise short-term financing by issues of *commercial paper*, which are debt issues with maturities of at most 270 days. Commercial paper is issued in the **money market**.

fixed-income market
Market for debt securities.

capital market
Market for long-term
financing.

money market
Market for short-term
financing (less than
1 year).

Self-Test 2.1

Do you understand the following distinctions? Briefly explain in each case.

- Primary market vs. secondary market.
- Capital market vs. money market.
- Stock market vs. fixed-income market.



Prediction Markets

Stock markets allow investors to bet on their favorite stocks. Prediction markets allow them to bet on almost anything else. These markets reveal the collective guess of traders on issues as diverse as New York City snowfall, an avian flu outbreak, and the occurrence of a major earthquake.

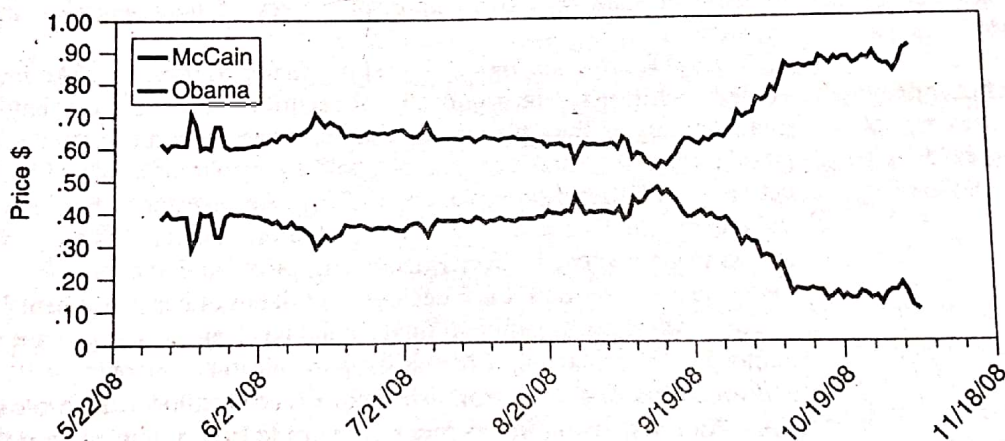
Prediction markets are conducted on the major futures exchanges and on a number of smaller online exchanges such as Intrade (www.intrade.com) and Iowa Electronic Markets (www.biz.uiowa.edu/iem). Take the 2008 presidential race as an example. On the Iowa Electronic Markets you could have bet that Barack Obama would win by buying one of his contracts. Each Obama contract promised to pay \$1 if he won the presidency and nothing if he lost. If you thought that the probability of an Obama victory was 55% (say), you would have been prepared to pay up to \$.55 for his contract. Someone who was relatively pessimistic about Obama's chances would have been happy to sell you such a contract, for that sale would turn a profit if Obama were to lose. With many participants buying and selling, the market price of a contract revealed the collective wisdom of the crowd.

Take a look at the accompanying figure from the Iowa Electronic Markets. It shows the contract prices for the two contenders for the White House between June and November 2008. Following the Republican convention at the start of September, the price of a McCain contract reached a maximum of \$.47. From then on the market suggested a steady fall in the probability of a McCain victory.

Participants in prediction markets are putting their money where their mouth is. So the forecasting accuracy of these markets compares favorably with that of major polls. Some businesses have formed internal prediction markets to survey the views of their staff. For example, Google operates an internal market to forecast product launch dates, the number of Gmail users, and other strategic questions.*

* Google's experience is analyzed in B. Cowgill, J. Wolfers, and E. Zitzewitz, "Using Prediction Markets to Track Information Flows: Evidence from Google," working paper, Dartmouth College, January 2009.

Presidential futures prices, 2008 election



Source: Iowa Electronic Markets, www.biz.uiowa.edu/iem

The financial manager regularly encounters other financial markets. Here are three examples, with references to the chapters where they are discussed:

- *Foreign-exchange markets* (Chapter 22). Any corporation engaged in international trade must be able to transfer money back and forth between dollars and other currencies. Foreign exchange is traded over the counter through a network of the largest international banks.
- *Commodities markets* (Chapter 24). Dozens of commodities are traded on organized exchanges, such as the New York Mercantile Exchange or the Chicago Board of Trade. You can buy or sell corn, wheat, cotton, fuel oil, natural gas, copper, silver, platinum, and so on.
- *Markets for options and other derivatives* (Chapters 23 and 24). Derivatives are securities whose payoffs depend on the prices of other securities or commodities. For example, you can buy an option to purchase IBM shares at a fixed price on a fixed future date. The option's payoff depends on the price of IBM shares on that date. Commodities can be traded by a different kind of derivative security called a futures contract.

Commodity and derivative markets are not sources of financing but markets where the financial manager can adjust the firm's exposure to various business risks. For example, an electric generating company may wish to lock in the future price of natural gas or fuel coal by trading in commodity markets, thus eliminating the risk of a sudden jump in the price of its raw materials.

Wherever there is uncertainty, investors may be interested in trading, either to speculate or to lay off their risks, and a market may arise to meet that trading demand. In recent years several new markets have been created that allow punters to bet on a single event. The nearby box discusses how prices in these markets can reveal people's predictions about the future.

Financial Intermediaries

A **financial intermediary** is an organization that raises money from investors and provides financing for individuals, companies, and other organizations. For corporations, intermediaries are important sources of financing. Intermediaries are a stop on the road between savings and real investment.

Why is a financial intermediary different from a manufacturing corporation? First, it may raise money in different ways, for example, by taking deposits or selling insurance policies. Second, it invests that money in *financial* assets, for example, in stocks, bonds, or loans to businesses or individuals. In contrast, a manufacturing company's main investments are in plant, equipment, or other *real* assets.

We will start with two important classes of intermediaries, mutual funds and pension funds.

(**Mutual funds** raise money by selling shares to investors. The investors' money is pooled and invested in a portfolio of securities. Investors can buy or sell shares in mutual funds as they please, and initial investments are often \$3,000 or less.) Vanguard's Explorer Fund, for example, held a portfolio of nearly 600 stocks with a market value of \$10 billion at the end of 2010. An investor in Explorer can increase her stake in the fund's portfolio by buying additional shares, and so gain a higher share of the portfolio's subsequent dividends and price appreciation.² She can also sell her shares back to the fund if she decides to cash out of her investment.³

The advantages of a mutual fund should be clear: Unless you are very wealthy, you cannot buy and manage a 600-stock portfolio on your own, at least not efficiently. **Mutual funds offer investors low-cost diversification and professional management. For most investors, it's more efficient to buy a mutual fund than to assemble a diversified portfolio of stocks and bonds.**

Mutual fund managers also try their best to "beat the market," that is, to generate superior performance by finding the stocks with better-than-average returns. Whether they can pick winners consistently is another question, which we will address in Chapter 7.

In exchange for their services, the fund's managers take out a management fee. There are also the expenses of running the fund. For Explorer, fees and expenses absorb about .5% of portfolio value each year. This seems reasonable, but watch out: The typical mutual fund charges more than Explorer does. In some cases fees and expenses add up to 2% per year. That's a big bite out of your investment return.

² Mutual funds are not corporations but investment companies. They pay no tax, providing that all income from dividends and price appreciation is passed on to the funds' shareholders. The shareholders pay personal tax on this income.

³ Explorer, like most mutual funds, is an *open-end* fund. It stands ready to issue shares to new investors in the fund and to buy back existing shares when its shareholders decide to cash out. The purchase and sale prices depend on the fund's net asset value (NAV) on the day of purchase or redemption. *Closed-end* funds have a fixed number of shares traded on an exchange. If you want to invest in a closed-end fund, you must buy shares from another stockholder in the fund.

financial intermediary
An organization that raises money from investors and provides financing for individuals, corporations, or other organizations.

mutual fund
An investment company that pools the savings of many investors and invests in a portfolio of securities.

2.3 Functions of Financial Markets and Intermediaries

Financial markets and intermediaries provide financing for business. They channel savings to real investment. That much should be loud and clear from Sections 2.1 and 2.2 of this chapter. But there are other functions that may not be quite so obvious.

Transporting Cash across Time

Individuals need to transport expenditures in time. If you have money now that you wish to save for a rainy day, you can (for example) put the money in a savings account at a bank and withdraw it with interest later. If you don't have money today, say to buy a car, you can borrow money from the bank and pay off the loan later. Modern finance provides a kind of time machine. Lenders transport money forward in time; borrowers transport it back. Both are happier than if they were forced to spend income as it arrives. Of course, individuals are not alone in needing to raise cash from time to time. Firms with good investment opportunities, but a shortage of internally generated cash, raise cash by borrowing or selling new shares. Many governments run deficits and finance current outlays by issuing debt.

Young people saving for retirement may transport their current earnings 30 or 40 years into the future by means of a pension fund. They may even transport income to their heirs by purchase of a life insurance policy.

In principle, individuals or firms with cash surpluses could take out newspaper advertisements or surf the Web looking for counterparties with cash shortages. But it is usually cheaper and more convenient to use financial markets and intermediaries. It is not just a matter of avoiding the cost of searching for the right counterparty. Follow-up is needed. For example, banks don't just loan money and walk away. They monitor the borrower to make sure that the loan is used for its intended purpose and that the borrower's credit stays solid.

Risk Transfer and Diversification

Financial markets and intermediaries allow investors and businesses to reduce and reallocate risk. Insurance companies are an obvious example. When you buy homeowner's insurance, you greatly reduce the risk of loss from fire, theft, or accidents. But your policy is not a very risky bet for the insurance company. It diversifies by issuing thousands of policies, and it expects losses to average out over the policies.¹² The insurance company allows you to pool risk with thousands of other homeowners.

Investors should diversify too. For example, you can buy shares in a mutual fund that holds hundreds of stocks. In fact, you can buy *index funds* that invest in all the stocks in the popular market indexes. For example, the Vanguard 500 Index fund holds the stocks in the Standard & Poor's Composite stock market index. (The "S&P 500" tracks the performance of the largest U.S. stocks. It is the index most used by professional investors.) If you buy this fund, you are insulated from the company-specific risks of the 500 companies in the index. These risks are averaged out by diversification. Of course you are still left with the risk that the level of the stock market as a whole will fall. In fact, we will see in Chapter 11 that investors are mostly concerned with *market risk*, not the specific risks of individual companies.

Index mutual funds are one way to invest in widely diversified portfolios at low cost. Another route is provided by exchange traded funds (ETFs), which are portfolios of stocks that can be bought or sold in a single trade. These include Standard & Poor's

¹² Unfortunately for insurance companies, the losses don't always average out. Hurricanes and earthquakes can damage thousands of homes at once. The potential losses are so great that property insurance companies buy *reinsurance* against such catastrophes.

Depository Receipts (SPDRs, or "spiders"), which are portfolios matching Standard & Poor's stock market indexes. The total amount invested in the spider tracking the benchmark S&P 500 index was about \$94 billion by early-2011. You can also buy DIAMONDS, which track the Dow Jones Industrial Average; QUBES or QQQs, which track the NASDAQ 100 index; and Vanguard ETFs that track the Vanguard Total Stock Market index, which is a basket of almost all the stocks traded in the United States. You can also buy ETFs that track foreign stock markets, bonds, or commodities.

ETFs are in some ways more efficient than mutual funds. To buy or sell an ETF, you simply make a trade, just as if you bought or sold shares of stock.¹³ To invest in an open-ended mutual fund, you have to send money to the fund in exchange for newly issued shares. If you want to withdraw the investment, you have to notify the fund, which redeems your shares and sends you a check or credits your account with the fund. Also, many of the larger ETFs charge lower fees than mutual funds. Vanguard's fee for managing its Total Stock Market ETF is .07% per year. For a \$100,000 investment, the fee is only $.0007 \times 100,000 = \$70$.

Financial markets provide other mechanisms for sharing risks. For example, a wheat farmer and a baking company are each exposed to fluctuations in the price of wheat after the harvest. The farmer worries about low prices, the baker about high prices. They can both rest easier if the baker can agree with the farmer to buy wheat in the future at a fixed price. Of course, it would be difficult, to say the least, if the baker and the farmer had to contact an Internet dating service to get together to make a deal. Fortunately no dating service is needed: Each can trade in commodity markets, the farmer as a seller and the baker as a buyer.

Liquidity

liquidity

The ability to sell an asset on short notice at close to the market price.

Markets and intermediaries also provide **liquidity**, that is, the ability to turn an investment back into cash when needed. Suppose you deposit \$5,000 in a savings bank on February 1. During that month, the bank uses your deposit and other new deposits to make a 6-month construction loan to a real estate developer. On March 1, you realize that you need your \$5,000 back. The bank can give it to you. Because the bank has thousands of depositors, and other sources of financing if necessary, it can make an illiquid loan to the developer financed by liquid deposits made by you and other customers. If you lend out your money for 6 months directly to the real estate developer, you will have a hard time retrieving it 1 month later.¹⁴

The shares of public companies are liquid because they are traded more or less continuously in the stock market. An Italian investor who puts \$60,000 into Bank of America shares can recover that money on short notice. (A \$60,000 sell order is a drop in the bucket, compared with the normal trading volume of Bank of America shares.) Mutual funds can redeem their shares for cash on short notice because the funds invest in traded securities, which can be sold as necessary.

Of course, liquidity is a matter of degree. Foreign exchange markets for major currencies are exceptionally liquid. Bank of America or Deutsche Bank could buy \$200 million worth of yen or euros in the blink of an eye, with hardly any effect on foreign exchange rates. U.S. Treasury securities are also very liquid, and the shares of the largest companies on the major international stock exchanges are only slightly less so.

¹³ ETFs are in this respect like closed-end mutual funds (see footnote 3 above). But ETFs do not have managers with the discretion to try to "pick winners." ETF portfolios are tied down to indexes or fixed baskets of securities. ETF issuers make sure that the ETF price tracks the price of the underlying index or basket.

¹⁴ Of course, the bank can't repay all depositors simultaneously. To do so, it would have to sell off its loans to the real estate developer and other borrowers. These loans are *not* liquid. This raises the specter of bank runs, where doubts about a bank's ability to pay off its depositors cause a rush of withdrawals, with each depositor trying to get his or her money out first. Bank runs are rare, because bank deposits are backed up by the U.S. Federal Deposit Insurance Corporation, which insures bank accounts up to \$250,000 per account.

Liquidity is most important when you're in a hurry. If you try to sell \$500,000 worth of the shares of a small, thinly traded company all at once, you will probably knock down the price to some extent. If you're patient and don't surprise other investors with a large, sudden sell order, you may be able to unload your shares on better terms. It's the same problem you may face in selling real estate. A house or condominium is not a liquid asset in a panic sale. If you're determined to sell in an afternoon, you're not going to get full value.

The Payment Mechanism

Think how inconvenient life would be if you had to pay for every purchase in cash or if Boeing had to ship truckloads of hundred-dollar bills around the country to pay its suppliers. Checking accounts, credit cards, and electronic transfers allow individuals and firms to send and receive payments quickly and safely over long distances. Banks are the obvious providers of payment services, but they are not alone. For example, if you buy shares in a money market mutual fund, your money is pooled with that of other investors and used to buy safe, short-term securities. You can then write checks on this mutual fund investment, just as if you had a bank deposit.

Information Provided by Financial Markets

In well-functioning financial markets, you can *see* what securities and commodities are worth, and you can *see*—or at least estimate—the rates of return that investors can expect on their savings. The information provided by financial markets is often essential to a financial manager's job. Here are three examples of how this information can be used.

Commodity Prices Catalytic converters are used in the exhaust systems of cars and light trucks to reduce pollution. The catalysts include platinum, which is traded on the New York Mercantile Exchange.

In February a manufacturer of catalytic converters is planning production for July. How much per ounce should the company budget for purchases of platinum in that month? Easy: The company's CFO looks up the market price of platinum on the New York Mercantile Exchange—\$1,795 per ounce for delivery in July (This was the closing price for platinum in late February 2011, for delivery in July.) The CFO can lock in that price if she wishes. The details of such a trade are covered in Chapter 24.

Interest Rates The CFO of Catalytic Concepts has to raise \$400 million in new financing. She considers an issue of 30-year bonds. What will the interest rate on the bonds be? To find out, the CFO looks up interest rates on existing bonds traded in financial markets.

The results are shown in Table 2.2. Notice how the interest rate climbs as credit quality deteriorates: The largest, safest companies, which are rated Aaa ("triple-A"), can raise long-term debt at a 5.11% interest rate. The interest rates for Aa, A, and Baa climb to 5.70%, 5.98%, and 6.32%, respectively. Baa companies are still regarded as *investment grade*, that is, good quality, but the next step down takes the investor into

TABLE 2.2 Interest rates on long-term corporate bonds, May 2010. The interest rate is lowest for top-quality (Aaa) issuers. The rate rises as credit quality declines.

Credit Rating	Interest Rate
Aaa	5.11%
Aa	5.70
A	5.98
Baa	6.32
Ba	7.34
B	8.49

Source: Barclays corporate bond indexes

junk bond territory. The interest rate for Ba debt climbs to 7.34%. Single-B companies are riskier still, so investors demand 8.49%.

There will be more on bond ratings and interest rates in Chapter 6. But you can see how a financial manager can use information from fixed-income markets to forecast the interest rate on new debt financing. For example, if Catalytic Concepts can qualify as a Baa-rated company, and interest rates are as shown in Table 2.2, it should be able to raise new debt financing for approximately 6.3%.

Company Values How much was Alaska Air Group worth in February 2011? How about Bob Evans Farms, Callaway Golf, Estée Lauder, or GE? Table 2.3 shows the answers. We simply multiply the number of shares outstanding by the price per share in the stock market. Investors valued Alaska Air Group at \$2,155 million, GE at \$222 billion.

Stock prices and company values summarize investors' collective assessment of how well a company is doing, both its current performance and its future prospects. Thus an increase in stock price sends a positive signal from investors to managers.¹⁵ That is why top management's compensation is linked to stock prices. A manager who owns shares in his or her company will be motivated to increase the company's market value. This reduces agency costs by aligning the interests of managers and stockholders.

This is one important advantage of going public. A private company can't use its stock price as a measure of performance. It can still compensate managers with shares, but the shares will not be valued in a financial market.

Cost of Capital Financial managers look to financial markets to measure, or at least estimate, the cost of capital for the firm's investment projects. The cost of capital is the minimal acceptable rate of return on the project. Investment projects offering rates of return higher than their cost of capital are worthwhile, because they add value; they make both the firm and its shareholders better off financially. Projects offering rates of return less than the cost of capital subtract value and should not be undertaken.¹⁶

Thus the hurdle rate for investments inside the corporation is actually set outside the corporation. The expected rate of return on investments in financial markets determines the cost of capital.

The opportunity cost of capital is generally *not* the interest rate that the firm pays on a loan from a bank or insurance company. If the company is making a risky

cost of capital
Minimum acceptable
rate of return on capital
investment.

TABLE 2.3 Calculating the total market values of Alaska Air Group and other companies in February 2011. (Shares and market values in millions. Ticker symbols in parentheses.)

	Number of Shares	×	Stock Price	=	Market Value
Alaska Air Group (ALK)	35.92	×	\$60	=	\$2,155
Bob Evans Farms (BOBE)	30.24	×	\$31.39	=	\$949
Callaway Golf (ELY)	64.11	×	\$7.80	=	\$500
Estée Lauder (EL)	197.43	×	\$90.86	=	\$17,938
General Electric (GE)	10,640	×	\$20.82	=	\$221,525

Source: Yahoo! Finance, finance.yahoo.com

¹⁵ We can't claim that investors' assessments of value are always correct. Finance can be a risky and dangerous business—dangerous for your wealth, that is. With hindsight we see horrible mistakes by investors, for example the gross overvaluation of Internet and telecom companies in 2000. On average, however, it appears that financial markets collect and assess information quickly and accurately. We'll discuss this issue again in Chapter 7.

¹⁶ Of course, the firm may invest for other reasons. For example, it may invest in pollution control equipment for a factory. The equipment may not generate a cash return, but may still be worth investing in to meet legal and ethical obligations.

investment, the opportunity cost of capital is the expected rate of return that investors can achieve in financial markets at the same level of risk. The expected rate of return on risky securities is normally well above the interest rate on corporate borrowing.

We introduced the cost of capital in Chapter 1, but this brief reminder may help to fix the idea. We cover the cost of capital in detail in Chapters 11 and 12.

Self-Test 2.4

Which of the functions described in this section require financial markets? Explain briefly.

2.4 The Crisis of 2007–2009

The financial crisis of 2007–2009 raised many questions, but it settled one question conclusively: Yes, *financial markets and institutions are important*. When financial markets and institutions ceased to operate properly, the world was pushed into a global recession.

The financial crisis had its roots in the easy-money policies that were pursued by the U.S. Federal Reserve and other central banks following the collapse of the Internet and telecom stock bubble in 2000. At the same time, large balance-of-payments surpluses in Asian economies were invested back into U.S. debt securities. This also helped to push down interest rates and contribute to the lax credit.

Banks took advantage of this cheap money to expand the supply of *subprime mortgages* to low-income borrowers. Many banks tempted would-be homeowners with low initial payments, offset by significantly higher payments later.¹⁷ (Some home buyers were betting on escalating housing prices so that they could resell or refinance before the higher payments kicked in.) One lender is even said to have advertised what it dubbed its “NINJA” loan—*NINJA* standing for “No Income, No Job and No Assets.” Most subprime mortgages were then packaged together into *mortgage-backed securities* that could be resold. But, instead of selling these securities to investors who could best bear the risk, many banks kept large quantities of the loans on their own books or sold them to other banks.

The widespread availability of mortgage finance fueled a dramatic increase in house prices, which doubled in the 5 years ending June 2006. At that point prices started to slide and homeowners began to default on their mortgages. A year later Bear Stearns, a large investment bank, announced huge losses on the mortgage investments that were held in two of its hedge funds. By the spring of 2008 Bear Stearns was on the verge of bankruptcy, and the U.S. Federal Reserve arranged for it to be acquired by JPMorgan Chase.

The crisis peaked in September 2008, when the U.S. government was obliged to take over the giant federal mortgage agencies Fannie Mae and Freddie Mac, both of which had invested several hundred billion dollars in subprime mortgage-backed securities. Over the next few days the financial system started to melt down. Both Merrill Lynch and Lehman Brothers were in danger of failing. On September 14, the government arranged for Bank of America to take over Merrill in return for financial guarantees. However, it did nothing to rescue Lehman Brothers, which filed for bankruptcy protection the next day. Two days later the government reluctantly lent \$85 billion to the giant insurance company AIG, which had insured huge volumes of mortgage-backed

¹⁷ With a so-called *option ARM loan* the minimum mortgage payment was often not even sufficient to cover that month's interest on the loan. The unpaid interest was then added to the amount of the mortgage, so the homeowner was burdened by an ever-increasing mortgage that one day would need to be paid off.

securities and other bonds against default. The following day, the Treasury unveiled its first proposal to spend \$700 billion to purchase "toxic" mortgage-backed securities.

Uncertainty about which domino would be next to fall made banks reluctant to lend to one another, and the interest rate that they charged for such loans rose to 4.6% above the rate on U.S. Treasury debt. (Normally this spread above Treasuries is less than .5%.) This had an immediate knock-on effect on the supply of credit to industry, and the economy suffered one of its worst setbacks since the Great Depression. Unemployment rose rapidly, and business bankruptcies tripled.

Few developed economies escaped the crisis. As well as suffering from a collapse in their own housing markets, many foreign banks had made large investments in U.S. subprime mortgages. A roll call of all the banks that had to be bailed out by their governments would fill several pages, but here are just a few members of that unhappy band: the Royal Bank of Scotland in the United Kingdom, UBS in Switzerland, Allied Irish Bank in Ireland, Fortis in Belgium, ING in Holland, Hypo Group in Austria, and West Lb in Germany.

Who was responsible for the financial crisis? In part, the U.S. Federal Reserve for its policy of easy money. The U.S. government also must take some of the blame for encouraging banks to expand credit for low-income housing. The rating agencies were at fault for providing triple-A ratings for many mortgage bonds that shortly afterward went into default. Last but not least, the bankers themselves were guilty of promoting and reselling the subprime mortgages. As we suggested in the last chapter, managers were probably aware that a strategy of originating massive amounts of subprime debt was likely to end badly. Perhaps they were trying to squeeze in one more fat bonus before the game ended. That is why we described the mess as largely an *agency* problem—a failure to incentivize managers to act in shareholders' interests.

The banking crisis and subsequent recession left many governments with huge mountains of debt. By 2010 investors were becoming increasingly concerned about the position of Greece, where for many years government spending had been running well ahead of revenues. Greece's position was complicated by its membership in the single-currency euro club. Although much of the country's borrowing was in euros, the government had no control over its currency and could not simply print more euros to service its debt. Investors began to contemplate the possibility of a Greek government default and became increasingly reluctant to lend to the country. As we write this, Greece is still afloat, thanks partly to a rescue package from the International Monetary Fund, the European Commission, and the European Central Bank. Attention has shifted to Ireland, where in the midst of a brutal recession, the government put up 34 billion euros to take over the Anglo Irish bank.

SUMMARY

Where does the financing for corporations come from? (LO1)

Why do nonfinancial corporations need modern financial markets and institutions? (LO1)

The ultimate source of financing is individuals' savings. The savings may flow through financial markets and intermediaries. The intermediaries include mutual funds, pension funds, and financial institutions, such as banks and insurance companies.

It's simple: Corporations need access to financing in order to innovate and grow. A modern financial system offers different types of financing, depending on a corporation's age and the nature of its business. A high-tech start-up will seek venture capital financing, for example. A mature firm will rely more on bond markets.