

Financial Markets and Institutions

LEARNING OBJECTIVES

After studying this chapter, you should be able to:

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

RELATED WEBSITES FOR THIS CHAPTER CAN BE FOUND IN CONNECT.



Read this chapter before you visit the New York Stock Exchange. Alexander Baxevanis/Flickr/CC BY 2.0

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 contemplates a capital investment, such as 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 expect to get by investing on their own in financial markets. This means that the financial manager must 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 know 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, banks and insurance companies, and mutual and pension funds. 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 and the eurozone crisis that followed. 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 need 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.

Businesses 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 time line 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 2016. 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 got the parts, assembled and sold the computers, and afterward paid off its accounts payable to the suppliers. (We discuss accounts payable in Chapter 19.) Then,

TABLE 2.1 Examples of financing decisions by Apple Computer

April 1976: Apple Computer Inc. founded	Mike Makkula, Apple's first chairman, invests \$250,000 in Apple shares.
1976: First 200 computers sold	Parts suppliers give Apple 30 days to pay. (Financing from accounts payable.)
1978-79	Apple raises \$3.5 million from venture capital investors.
December 1980: Initial public offering	Apple raises \$91 million, after fees and expenses, by selling shares to public investors.
May 1981	Apple sells 2.6 million additional shares at \$31.25 per share.
April 1987	Apple pays its first dividend at an annual rate of \$.12 per share.
Early 1990s	Apple carries out several share repurchase programs.
1994	Apple issues \$300 million of debt at an interest rate of 6.5%.
1996-97: 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."
September 1997: Acquires assets of Power Computing Corp.	Acquisition is financed with \$100 million of Apple stock.
2004: 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.
2005-13	Apple's profits grow rapidly. It invests in marketable securities, which accumulate to \$147 billion by June 2013.
2012-13	Apple announces plans to pay out \$100 billion to shareholders over the next 3 years. It also borrows a record \$17 billion.
2013-15	Apple's Capital Return Program distributes cash to shareholders by paying dividends and repurchasing shares. The planned total distribution is \$200 billion by 2017.
2015	Apple issues \$14.5 billion in dollar-denominated debt, €4.8 billion in euro debt, as well as debt issued in U.K. pounds, Swiss francs, and Japanese yen.
February 2016	Apple's market capitalization, the total market value of all its outstanding shares, is \$521 billion, far in excess of the \$119 billion cumulative investment by Apple's shareholders. The cumulative investment includes \$92 billion of retained earnings.

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.) 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

After Apple became 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 \$661 million from a group of private investors in order to cover its losses and finance its recovery plan. However, the rough patch ended with the release of the iMac in 1998 and the iPod in 2001. Apple's profitability increased rapidly, and it was able to finance its growth by plowing back earnings into operations. These retained earnings had grown to \$92 billion by September 2015.

As the twenty-first century progressed, Apple's profits grew so fast that it piled up a cash mountain, which grew to more than \$200 billion by 2016. It resumed cash dividends and started a massive program of share repurchases. Its Capital Return Program, which began in 2012, will distribute \$200 billion in cash to its shareholders by 2017.

Apple is well known for its product innovations, including the Macintosh computer, the iPhone, 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, iPhones, or iPads if Apple had been forced to operate in a country with a primitive financial system? Definitely not. A prosperous economy requires a well-functioning financial system.

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.

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.

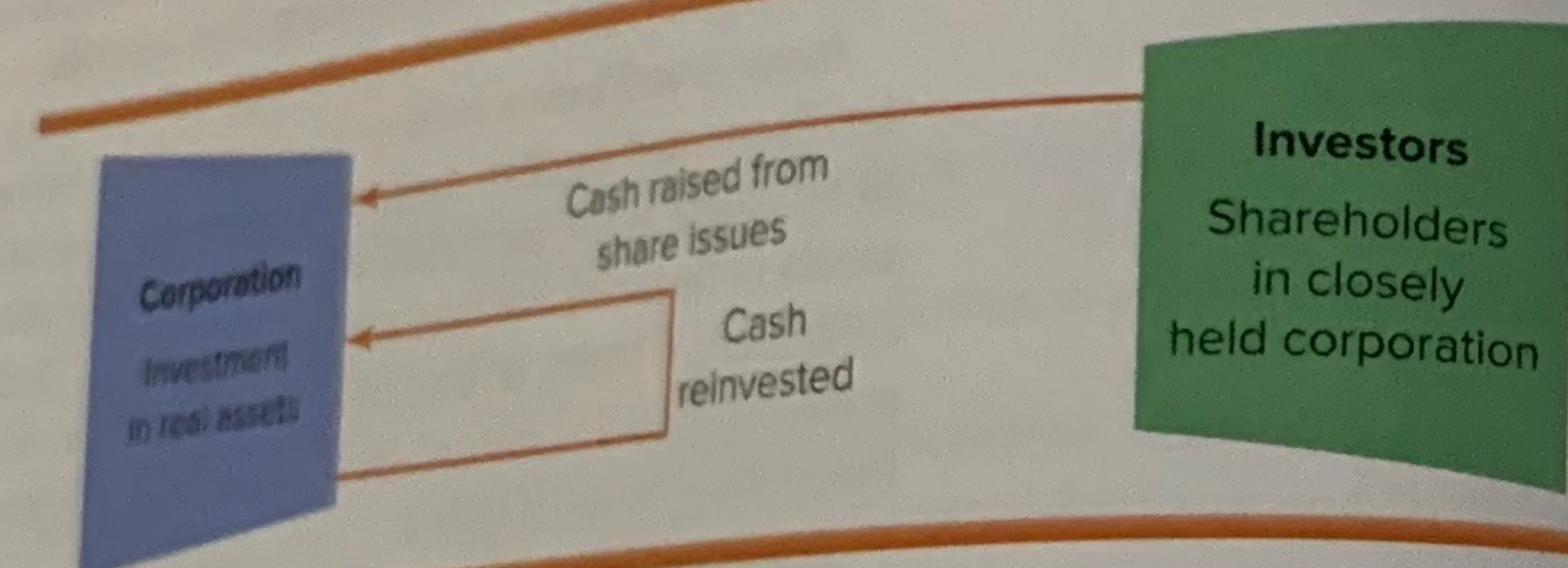
Finance in Practice Micro Loans, Solid Returns

Vahid Hujdur had dreams of opening his own business. With about \$200 of his own money and a \$1,500 loan, he was able to rent space in the old section of Sarajevo, and he began repairing and selling discarded industrial sewing machines. After just 8 years, Hujdur has 10 employees building, installing, and fixing this industrial machinery. Hujdur didn't get his initial loan from a local bank. "They were asking for guarantees that were impossible to get," he recalls. Instead, the capital came from LOKmicro, a local financial institution specializing in microfinance—the lending of small amounts to the poor in developing nations to help them launch small enterprises. Microfinance institutions get capital from individual and institutional investors via microfinance funds, which collect the investors' money, vet the local lenders, offer them management assistance, and administer investors' accounts.

The interest rates on these micro loans are relatively high; this is because the cost of writing and administering such small loans is high and the loans are made in nations with weak currencies. However, default rates on the loans are only about 4%. "There is a deep pride in keeping up with payments," says Deidre Wagner, an executive vice president of Starbucks, who invested \$100,000 in a microfinance fund in 2003. "In some instances, when an individual is behind on payments, others in the village may make up the difference." Investors and borrowers know that when the micro loans are repaid, the money gets recycled into new loans, giving still more borrowers a chance to move up the economic ladder.

Source: Adapted from Eric Uhlfelder, "Micro Loans, Solid Returns," *BusinessWeek*, May 9, 2005, pp. 100–102.

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.



Cash retained and reinvested in the firm's operations is cash saved and invested on behalf of the firm's shareholders.

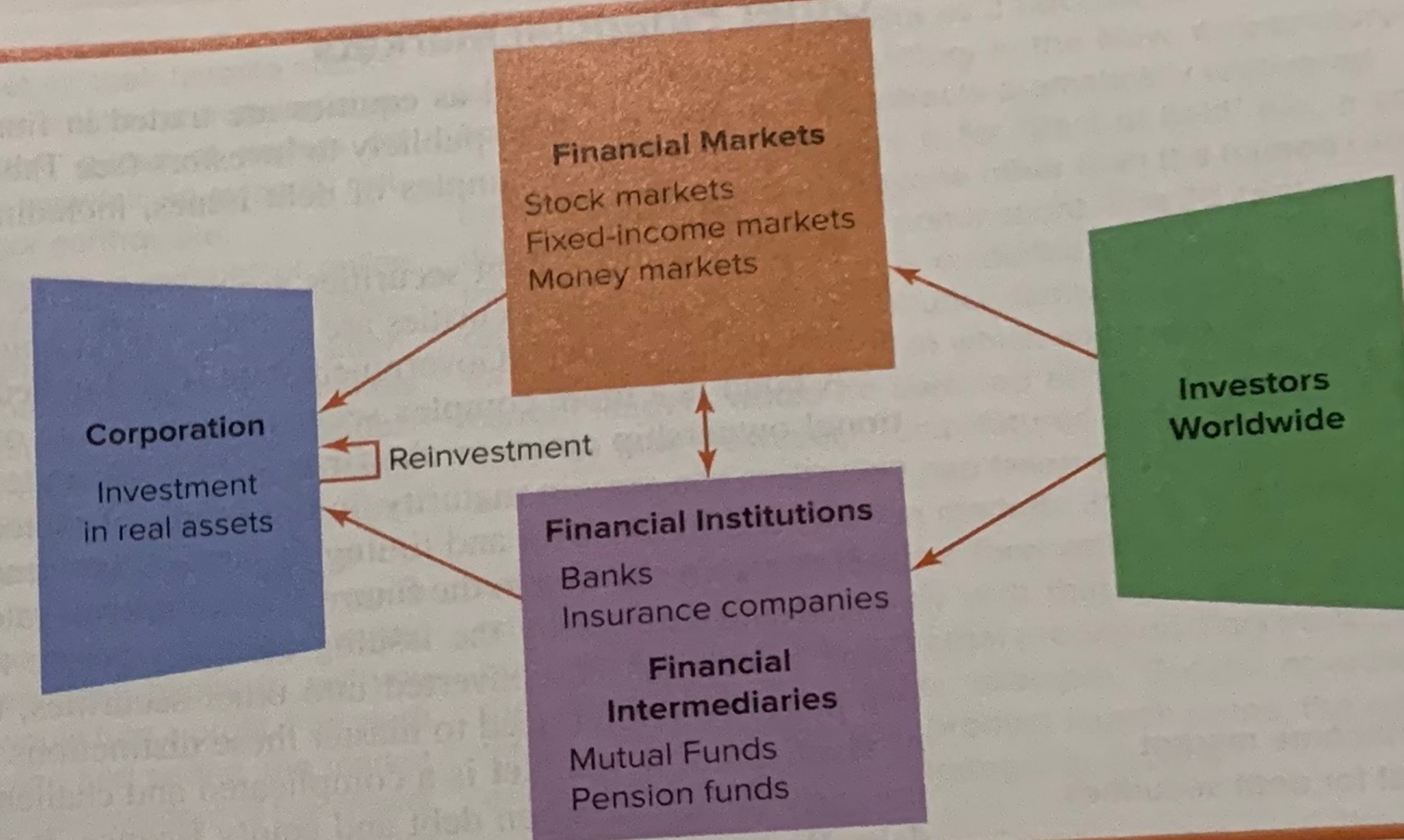
Of course, a small corporation has other financing choices. It could take out a bank loan, for example. The bank in turn may have raised money by attracting savings accounts. In this case, investors' savings flow through the bank to the firm.

Now consider a large, public corporation, for example, Apple Computer in September 2015. What's different? Scale, for one thing: Apple's annual revenues for the previous 12 months were \$234 billion, and its balance sheet showed total assets of \$290 billion. The scope of Apple's activities has also expanded: It now has dozens of product lines 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, or both. Suppose, for example, that Bank of America raises \$900 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. Signor 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.

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.



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) or NASDAQ; 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 participate 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 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 might be less happy for Apple to raise new capital and invest in long-term projects if they could not sell their stock in the secondary market when they needed the cash for personal use.

Stock markets are also called *equity markets* because 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."

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, Ferrari, Novartis, Petrobras (Brazil), Sony, Unilever, Manchester United football club, and more than 500 other overseas firms have listed their shares on the NYSE. We return to the trading and pricing of shares in Chapter 7.

financial market
Market where securities are issued and traded.

BEYOND THE PAGE



Stock exchanges: From clubs to commercial businesses

mhhe.com/brealey9e

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

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

Other Financial Markets

Debt securities as well as equities are traded in financial markets. The Apple bond issue in 1994 was sold publicly to investors (see Table 2.1). Table 1.1 in the previous chapter also gives examples of debt issues, including issues by Virgin Atlantic and Energy Arkansas.

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 no more than 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 financial assets.

2.1 Self-Test

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.

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 Chicago Mercantile Exchange (CME) or the Intercontinental Exchange. 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.

Finance in Practice 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 a number of online exchanges such as PredictIt (www.predictit.org) and Iowa Electronic Markets (tippie.uiowa.edu/iem). Take the 2016 presidential primaries as an example. On the Iowa Electronic Markets you could have bet that Donald Trump would win the Republican nomination by buying one of his contracts. Each Trump contract promised to pay \$1 if he won the nomination and nothing if he lost. If you thought that the probability of a Trump victory was 55% (say), you would have been prepared to pay up to \$.55 for his contract. Someone who was relatively pessimistic about Trump's chances would have been happy to sell you such a contract because that sale would turn a profit if he 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 various contenders for the Republican nomination between January and May 2016. You can see that as Ted Cruz beat Trump in a series of primaries and caucuses during March, the price of

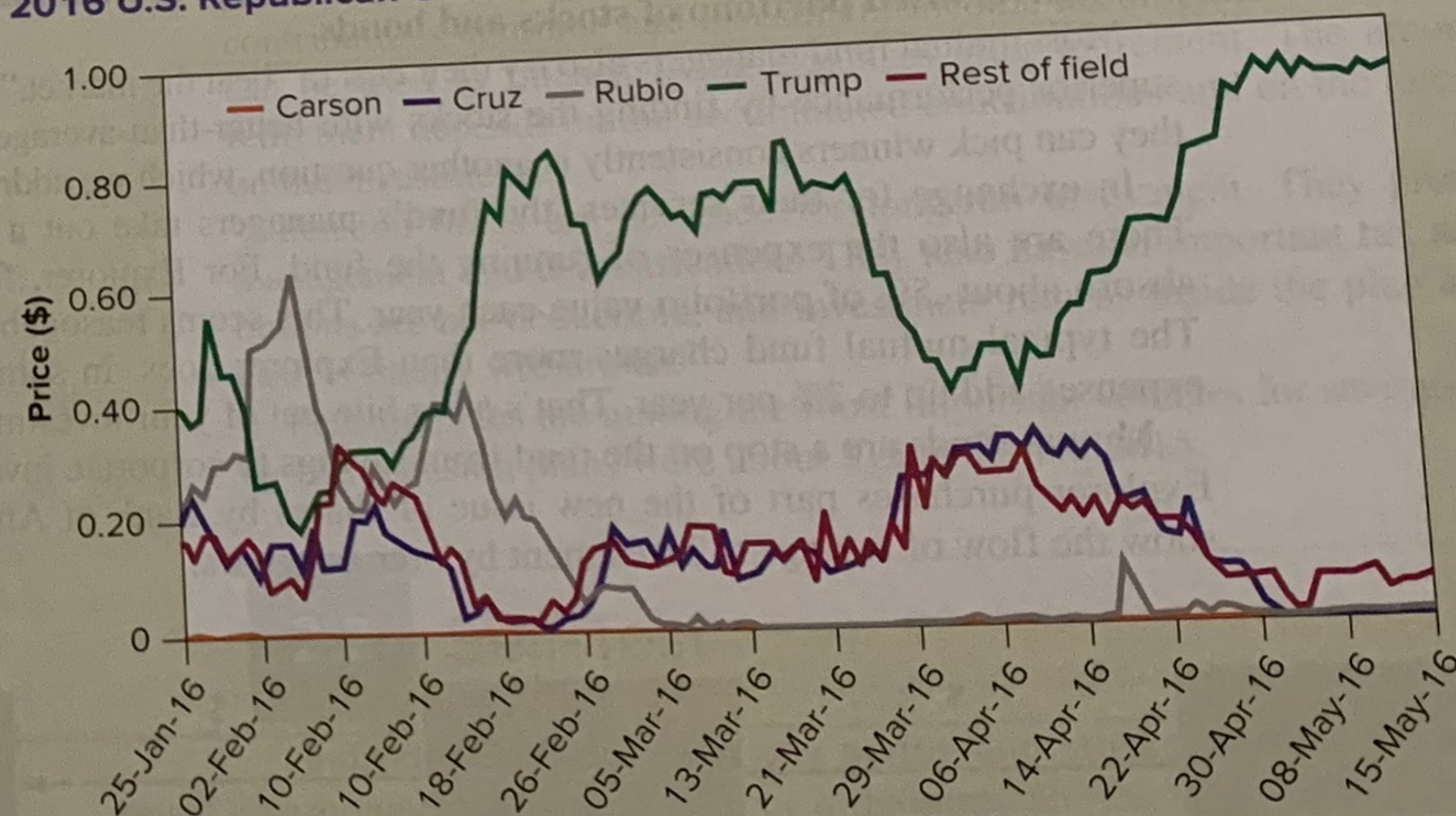
Trump contracts declined. But as it became clear that Trump was headed toward a big victory in the New York primary in April, the price of Trump contracts dramatically recovered.

The red line in the figure is for "Rest of field" (i.e., a contract that will pay off \$1 if anyone other than the named candidate in the figure wins the nomination). The 20 cent price for this contract in early April is evidence that even at this late date, there was meaningful uncertainty about the prospects for a contested convention in which someone other than the current leaders would be selected as the Republican candidate. By May, however, Trump futures were selling for \$.92, and the "Rest of field" price had fallen to \$.06.

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.

2016 U.S. Republican Convention Nomination Market



Source: Iowa Electronic Markets, www.tippie.uiowa.edu/iem/, May 16, 2016.

Commodity and derivative markets are not sources of financing but markets where the financial manager can adjust the firm's exposure to business risks. For example, an electric generating company may wish to lock in the future price of natural gas 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 smaller 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 intermediary
An organization that raises money from investors and provides financing for individuals, corporations, or other organizations.

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.

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

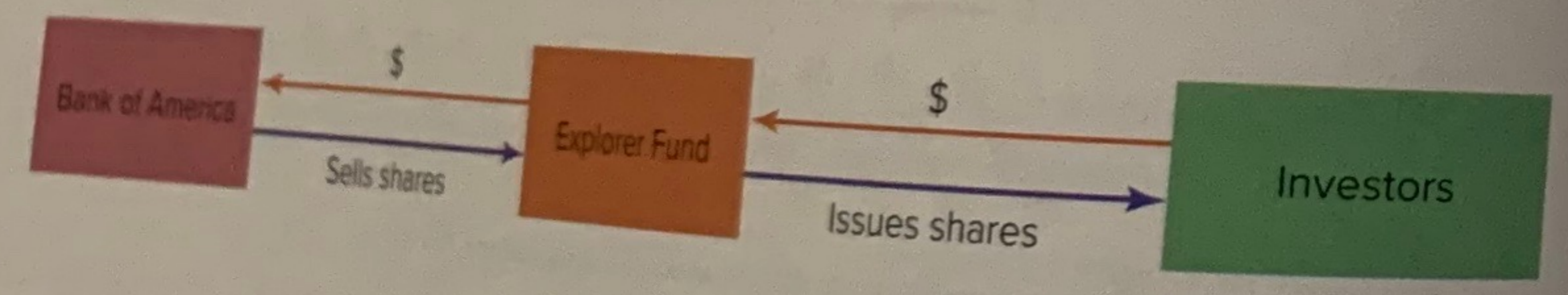
We will start with two important classes of intermediaries, mutual funds and pension funds. **Mutual funds** raise money by selling shares to investors. The investors' money is pooled and invested in a portfolio of securities. Investors can buy or sell shares in mutual funds as they please, and initial investments are often \$3,000 or less. Vanguard's Explorer Fund, for example, held a portfolio of more than 700 stocks with a market value of about \$10 billion in early 2016. 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

BEYOND THE PAGE
U.S. mutual funds
mhhe.com/brealey9e

The advantages of a mutual fund should be clear: Unless you are very wealthy, you cannot buy and manage a 700-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.**

Most 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 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.

Mutual funds are a stop on the road from savings to corporate investment. Suppose Explorer purchases part of the new issue of shares by Bank of America. Again we show the flow of savings to investment by orange arrows:



There are about 8,000 mutual funds in the United States. In fact, there are more mutual funds than public companies! The funds pursue a wide variety of investment strategies. Some funds specialize in safe stocks with generous dividend payouts. Some specialize in high-tech growth stocks. Some "balanced" funds offer mixtures of stocks and bonds. Some specialize in particular countries or regions. For example, the Fidelity Investments mutual fund group sponsors funds for Canada, Japan, China, Europe, and Latin America.

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.

hedge funds
Private investment fund that pursues complex, high-risk investment strategies.

Like mutual funds, **hedge funds** also pool the savings of different investors and invest on their behalf. But they differ from mutual funds in at least two ways. First, because hedge funds usually follow complex, high-risk investment strategies, access is usually restricted to knowledgeable investors such as pension funds, endowment funds, and wealthy individuals. Don't try to send a check for \$3,000 or \$5,000 to a hedge fund; most hedge funds are not in the "retail" investment business. Second, hedge funds try to attract the most talented managers by compensating them with potentially lucrative, performance-related fees.⁴ In contrast, mutual funds usually charge a fixed percentage of assets under management.

Hedge funds follow many different investment strategies. Some try to make a profit by identifying overvalued stocks or markets and selling short. (We will not go into procedures for short-selling here. Just remember that short-sellers profit when prices fall.)⁵ "Vulture funds" specialize in the securities of distressed corporations. Some hedge funds take bets on firms involved in merger negotiations, others look for mispriced convertible bonds, and some take positions in currencies and interest rates. Hedge funds manage less money than mutual funds, but they sometimes take very big positions and have a large impact on the market.

pension fund
Fund set up by an employer to provide for employees' retirement.

There are other ways of pooling and investing savings. Consider a pension plan set up by a corporation or other organization on behalf of its employees. There are several types of pension plan. The most common type of plan is the *defined-contribution* plan. In this case, a percentage of the employee's monthly paycheck is contributed to a **pension fund**. (The employer and employee may each contribute 5%, for example.) Contributions from all participating employees are pooled and invested in securities or mutual funds. (Usually the employees can choose from a menu of funds with different investment strategies.) Each employee's balance in the plan grows over the years as contributions continue and investment income accumulates. The balance in the plan can be used to finance living expenses after retirement. The amount available for retirement depends on the accumulated contributions and on the rate of return earned on the investments.⁶

Pension funds are designed for long-run investment. They provide professional management and diversification. They also have an important tax advantage: Contributions are tax-deductible, and investment returns inside the plan are not taxed until cash is finally withdrawn.⁷

Pension plans are among the most important vehicles for savings. Total assets held by U.S. pension plans were about \$15 trillion in 2015.

2.2 Self-Test

Individual investors can buy bonds and stocks directly, or they can put their money in a mutual fund or a defined-contribution pension fund. What are the advantages of the second strategy?

⁴ Sometimes these fees can be very large indeed. For example, *Forbes* estimated that the top hedge fund manager in 2012 earned \$2.2 billion in fees.

⁵ A short-seller borrows a security from another investor and sells it. Of course, the seller must sooner or later buy the security back and return it to its original owner. The short-seller earns a profit if the security can be bought back at a lower price than it was sold for.

⁶ In a *defined-benefit* plan, the employer promises a certain level of retirement benefits (set by a formula) and the employer invests in the pension plan. The plan's accumulated investment value has to be large enough to cover the promised benefits. If not, the employer must put in more money. Defined-benefit plans are gradually giving way to defined-contribution plans.

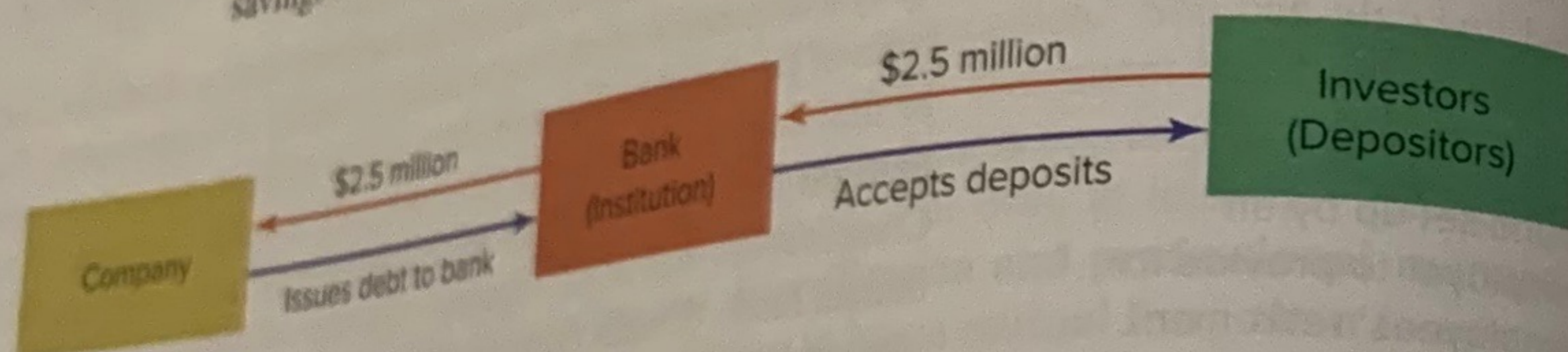
⁷ Defined-benefit pension plans share these same advantages, except that the employer invests rather than the employees. In a defined-benefit plan, the advantage of tax deferral on investment income accrues to the employer. This deferral reduces the cost of funding the plan.

financial institutions
A bank, insurance company, or similar financial intermediary

Financial Institutions Banks and insurance companies are **financial institutions**.⁸ A financial institution is an intermediary that does more than just pool and invest savings. Institutions raise financing in special ways, for example, by accepting deposits or selling insurance policies, and they provide additional financial services. Unlike a mutual fund, they not only invest in securities but also lend money directly to individuals, businesses, or other organizations.

Commercial Banks There are about 5,400 commercial banks in the United States.⁹ They vary from giants such as JPMorgan Chase with \$2.6 trillion of assets to relative dwarfs like Cambridge Bancorp with assets of \$1.7 billion. Commercial banks are major sources of loans for corporations. (In the United States, they are generally not allowed to make equity investments in corporations, although banks in most other countries can do so.) Suppose that a local forest products company negotiates a 9-month bank loan for \$2.5 million. The flow of savings is:

BEYOND THE PAGE
The world's largest banks
mhhe.com/bresley9e



The bank provides debt financing for the company and, at the same time, provides a place for depositors to park their money safely and withdraw it as needed.

Investment Banks We have discussed commercial banks, which raise money from depositors and other investors and then make loans to businesses and individuals. *Investment banks* are different. Investment banks do not generally take deposits or make loans to companies.¹⁰ Instead, they advise and assist companies in obtaining finance. For example, investment banks *underwrite* stock offerings by purchasing the new shares from the issuing company at a negotiated price and reselling the shares to investors. Thus the issuing company gets a fixed price for the new shares, and the investment bank takes responsibility for distributing the shares to investors. We discuss share issues in more detail in Chapter 15.

Investment banks also advise on takeovers, mergers, and acquisitions. They offer investment advice and manage investment portfolios for individual and institutional investors. They run trading desks for foreign exchange, commodities, bonds, options, and other derivatives.

Investment banks can invest their own money in start-ups and other ventures. For example, the Australian Macquarie Bank has invested in airports, toll highways, electric transmission and generation, and other infrastructure projects around the world.

⁸ We may be drawing too fine a distinction between financial intermediaries and institutions. A mutual fund could be considered a financial institution. But "financial institution" usually suggests a more complicated intermediary, such as a bank.

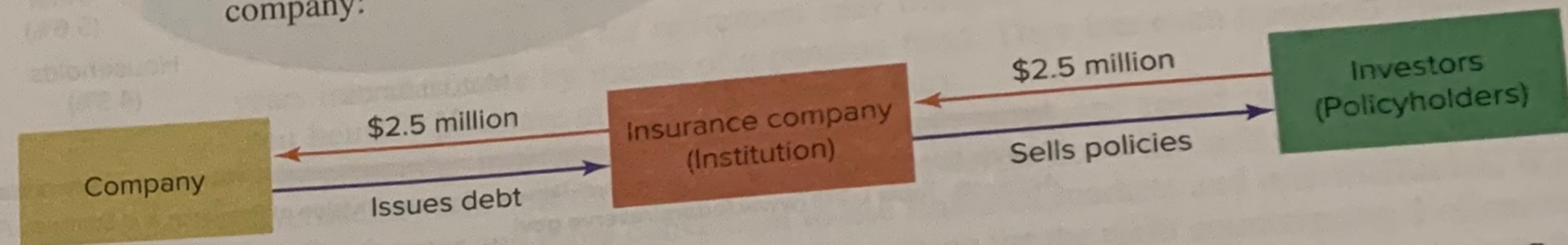
⁹ Banks that accept deposits and provide financing mostly to businesses are called commercial banks. Savings banks and savings & loans (S&Ls) accept deposits and lend mostly to individuals, for example, as mortgage loans to home buyers.

¹⁰ Investment banks do not take deposits and do not lend money to businesses or individuals, except as *bridge loans* made as temporary financing for takeovers or other transactions. Investment banks are sometimes called *merchant banks*.

Investment banks are sometimes called *merchant banks*.

The largest investment banks are financial powerhouses. They include Goldman Sachs, Morgan Stanley, Lazard, Nomura (Japan), and Macquarie Bank.¹¹ In addition, the major commercial banks, including Bank of America and Citigroup, all have investment banking operations.¹²

Insurance Companies Insurance companies are more important than banks for the *long-term* financing of business. They are massive investors in corporate stocks and bonds, and they often make long-term loans directly to corporations. Suppose a company needs a loan of \$2.5 million for 9 years, not 9 months. It could issue a bond directly to investors, or it could negotiate a 9-year loan with an insurance company:



The money to make the loan comes mainly from the sale of insurance policies. Say you buy a fire insurance policy on your home. You pay cash to the insurance company and get a financial asset (the policy) in exchange. You receive no interest payments on this financial asset, but if a fire does strike, the company is obliged to cover the damages up to the policy limit. This is the return on your investment. (Of course, a fire is a sad and dangerous event that you hope to avoid. But if a fire does occur, you are better off getting a payoff on your insurance policy than not having insurance at all.)

The company will issue not just one policy but thousands. Normally the incidence of fires "averages out," leaving the company with a predictable obligation to its policyholders as a group. Of course, the insurance company must charge enough for its policies to cover selling and administrative costs, pay policyholders' claims, and generate a profit for its stockholders.

2.3 Self-Test

What are the key differences between a mutual fund and a bank or an insurance company?

Total Financing of U.S. Corporations

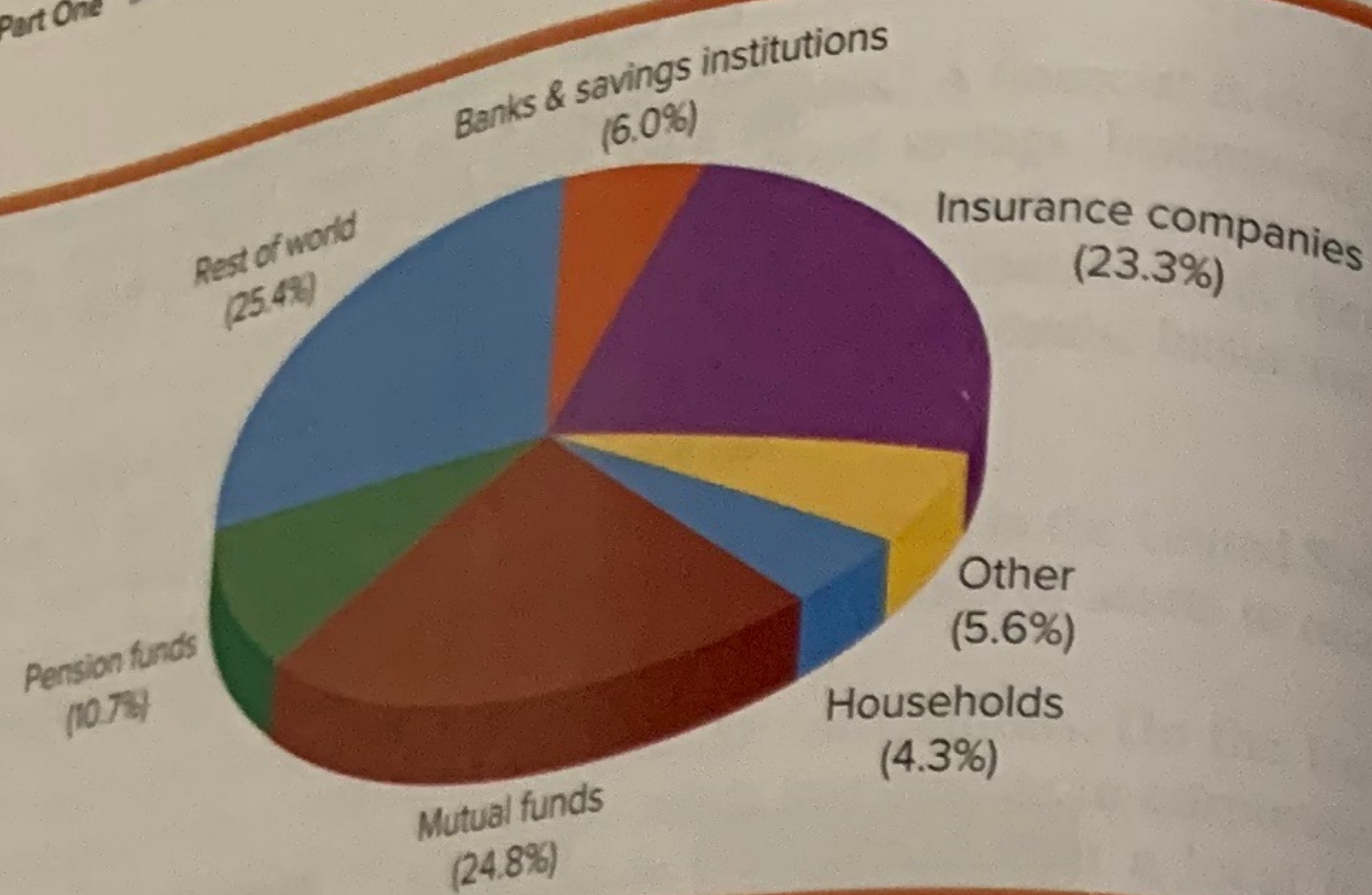
The pie chart in Figure 2.3 shows the investors in bonds and other debt securities. Notice the importance of institutional investors—mutual funds, pension funds, insurance companies, and banks. Households (individual investors) hold less than 5% of the debt pie. The other slices represent the rest of the world (investors from outside the United States) and other, smaller categories of investors.

The pie chart in Figure 2.4 shows holdings of the shares issued by U.S. corporations. Here, households make a stronger showing, with 37.2% of the total. Pension

¹¹ The distinction between investment and commercial banks is not a legal one. Since 2008 both Goldman Sachs and Morgan Stanley have held banking licenses and are supervised by the Federal Reserve. However, they are not in the business of taking retail deposits or providing loans.

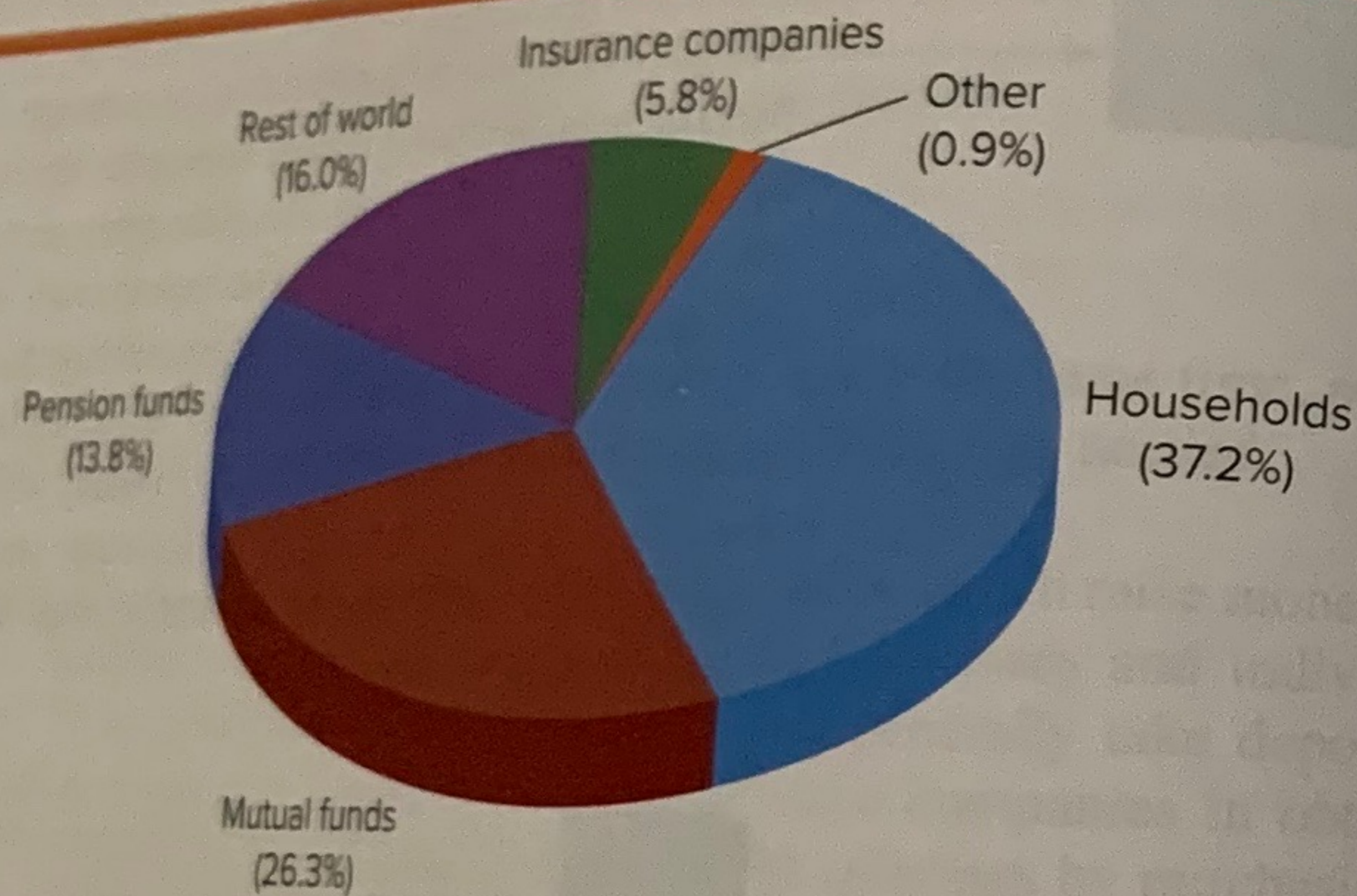
¹² Bank of America owns Merrill Lynch, one of the largest investment banks. Merrill was rescued by Bank of America in 2009 after making huge losses from mortgage-related investments.

FIGURE 2.3 Holdings of corporate and foreign bonds, September 30, 2015. The total amount is \$11.9 trillion.



Source: Board of Governors of the Federal Reserve System, Division of Research and Statistics, *Flow of Funds Accounts*, Table L.213 (www.federalreserve.gov).

FIGURE 2.4 Holdings of corporate equities, September 30, 2015. The total amount is \$34.1 trillion.



Source: Board of Governors of the Federal Reserve System, Division of Research and Statistics, *Flow of Funds Accounts*, Table L.223 (www.federalreserve.gov).

funds, insurance companies, and mutual funds add up to 45.9% of the total. Remember, banks in the United States do not usually hold stock in other companies. The rest-of-the-world slice is 16.0%.

The aggregate amounts represented in these figures are enormous. There is \$11.9 trillion of debt behind Figure 2.3 and \$34.1 trillion of equity behind Figure 2.4 (\$34,100,000,000,000).

Chapter 14 reviews corporate financing patterns in more detail.

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 can 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 lend 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.¹³ 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. For example, Standard & Poor's Depository Receipts (SPDRs, or "spiders") invest in portfolios that match Standard & Poor's stock market indexes. The total amount invested in the spider that tracks the benchmark S&P 500 index was \$134 billion in early 2016.

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.¹⁴ This is

BEYOND THE PAGE



How ETFs work

mhhe.com/brealey9e

¹³ 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.

¹⁴ ETFs are in this respect like closed-end mutual funds (see footnote 3). 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.

different from investing in an open-end mutual fund. In that case you have to send money to the fund in exchange for newly issued shares. And, if you want to withdraw the investment, you have to notify the fund, which redeems your shares and sends you a check. Also, many of the larger ETFs charge lower fees than mutual funds. State Street Global Advisors charges just .11% a year for managing the Standard & Poor's 500 Index Spider. For a \$100,000 investment, the fee is only $.0011 \times 100,000 = \$110$.

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 value.

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 your money for 6 months directly to the real estate developer, you will have a hard time retrieving it 1 month later.¹⁵

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.

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 that 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

¹⁵ 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.

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 (NYMEX).

In March a manufacturer of catalytic converters is planning production for October. How much per ounce should the company budget for purchases of platinum in that month? Easy: The company's CFO looks up the futures price of platinum on the New York Mercantile Exchange—\$972 per ounce for delivery in October (this was the closing price for platinum in March 2016, for delivery in October). 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 long-term 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 2.59% interest rate. The interest rates for AA, A, and BBB rise to 2.62%, 3.03%, and 4.32%, respectively. BBB companies are still regarded as *investment grade*, that is, good quality, but the next step down takes the investor into *junk bond* territory. The interest rate for BB debt climbs to 5.62%. Single-B companies are riskier still, so investors demand 8.32%.

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 BBB-rated company, and interest rates are as shown in Table 2.2, it should be able to raise new debt financing for approximately 4.32%.

Company Values How much was Callaway Golf worth in March 2016? How about Alaska Air Group, Entergy, Yum! Brands, or GE? Table 2.3 shows the *market capitalization* of each company. We simply multiply the number of shares outstanding by the price per share in the stock market. Investors valued Callaway Golf at \$821 million and GE at \$283 billion.

TABLE 2.2 Interest rates on long-term corporate bonds, March 2016. The interest rate is lowest for top-quality (AAA) issuers. The rate rises as credit quality declines.

Credit Rating	Interest Rate
AAA	2.59%
AA	2.62
A	3.03
BBB	4.32
BB	5.62
B	8.32

Source: Thomson Reuters.

TABLE 2.3 Calculating the market capitalization of Callaway Golf and other companies in March 2016. (Shares and market values in millions. Ticker symbols in parentheses.)

	Number of Shares	x	Stock Price	=	Market Capitalization (\$ millions)
Callaway Golf (ELY)	93.8	x	\$8.76	=	\$821
Alaska Air Group (ALK)	124.7	x	\$80.77	=	\$10,074
Entergy (ETR)	178.5	x	\$75.92	=	\$13,551
Yum! Brands (YUM)	408.7	x	\$77.77	=	\$31,875
General Electric (GE)	9,331.0	x	\$30.34	=	\$283,091

Source: Yahoo! Finance, finance.yahoo.com.

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.¹⁶ 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 minimum 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.¹⁷

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 opportunity 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 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.

2.4 Self-Test

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

¹⁶ 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.

¹⁷ 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.

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 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.¹⁸ (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 (MBSs)* 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 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.

After the failure of Lehman and the forced rescues of Bear Stearns, Fannie Mae, Freddie Mac, Merrill Lynch, and AIG, investors and financial institutions had to ask, “Who will be next? Do I dare trade with or lend money to Bank X?” In many situations, the cautious answer was “No.” Customary day-to-day financial transactions were canceled or completed on onerous terms.¹⁹ At the same time, trading in MBSs and other hard-to-value securities dried up; it therefore became even harder to know what these securities were worth. As banks and other financial institutions became reluctant to trade securities or lend to one another, the supply of credit to the economy contracted and business investment was cut back. The U.S. economy suffered one of its worst setbacks since the Great Depression. Unemployment rose rapidly and business bankruptcies tripled.

¹⁸ 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.

¹⁹ The interest rate on interbank loans rose in 2008 to 4.6% above the rate on U.S. Treasury debt. The normal spread over Treasuries is less than .5%.

BEYOND THE PAGE



Housing prices in the financial crisis

mhhe.com/brealey9e

BEYOND THE PAGE



Time line of the financial crisis

mhhe.com/brealey9e

BEYOND THE PAGE



The rise and fall of Lehman Brothers

mhhe.com/brealey9e

Finance in Practice Mortgage-Backed Securities

Mortgage-backed securities (MBSs) provide another example of how financial markets convey savings to finance investment in real assets. In this case, the real assets are homes, which homeowners finance in part with mortgage loans.

In the old days—the 1960s, for example—most mortgage loans were made by local banks, savings banks, and savings and loan institutions (S&Ls), which accepted deposits and savings accounts and made mortgage and other local loans. We will use an S&L as the example. The flow of savings would be as described by the figure in Panel a, at the bottom of this box.

The typical mortgage was long term, up to 30 years maturity, with a fixed interest rate. The S&Ls' liabilities—chiefly savings accounts—had much shorter maturities, perhaps a year or two on average. The S&Ls were therefore "borrowing short, lending long," a dangerous investment strategy. When interest rates rose in the 1970s and 1980s, the S&Ls' interest costs on savings accounts rose, too, but their interest income was locked up in long-term, fixed-rate mortgages. Losses mounted. The S&L crisis of the 1980s followed.¹

The invention of the MBS allowed S&Ls to eliminate the risks of borrowing short and lending long. You can still get a mortgage from your local S&L, but now the S&L does not have to keep it. The S&L originates the mortgage, but will probably resell it to an MBS issuer—for example, Fannie Mae (Federal National Mortgage Association or FNMA) or Bank of America. The issuer combines your mortgage with hundreds or thousands of others and issues an MBS backed by the combined portfolio. The MBS is sold to investors such as life insurance companies that want to hold long-term, fixed-rate obligations. Cash flows from the mortgage portfolio are passed through to investors.¹

Suppose a life insurance company purchases an MBS. The flow of savings would now match the figure in Panel b.

The invention of MBSs also made mortgages liquid. They are actively traded among banks, insurance companies, mutual funds, pension funds, and endowments.

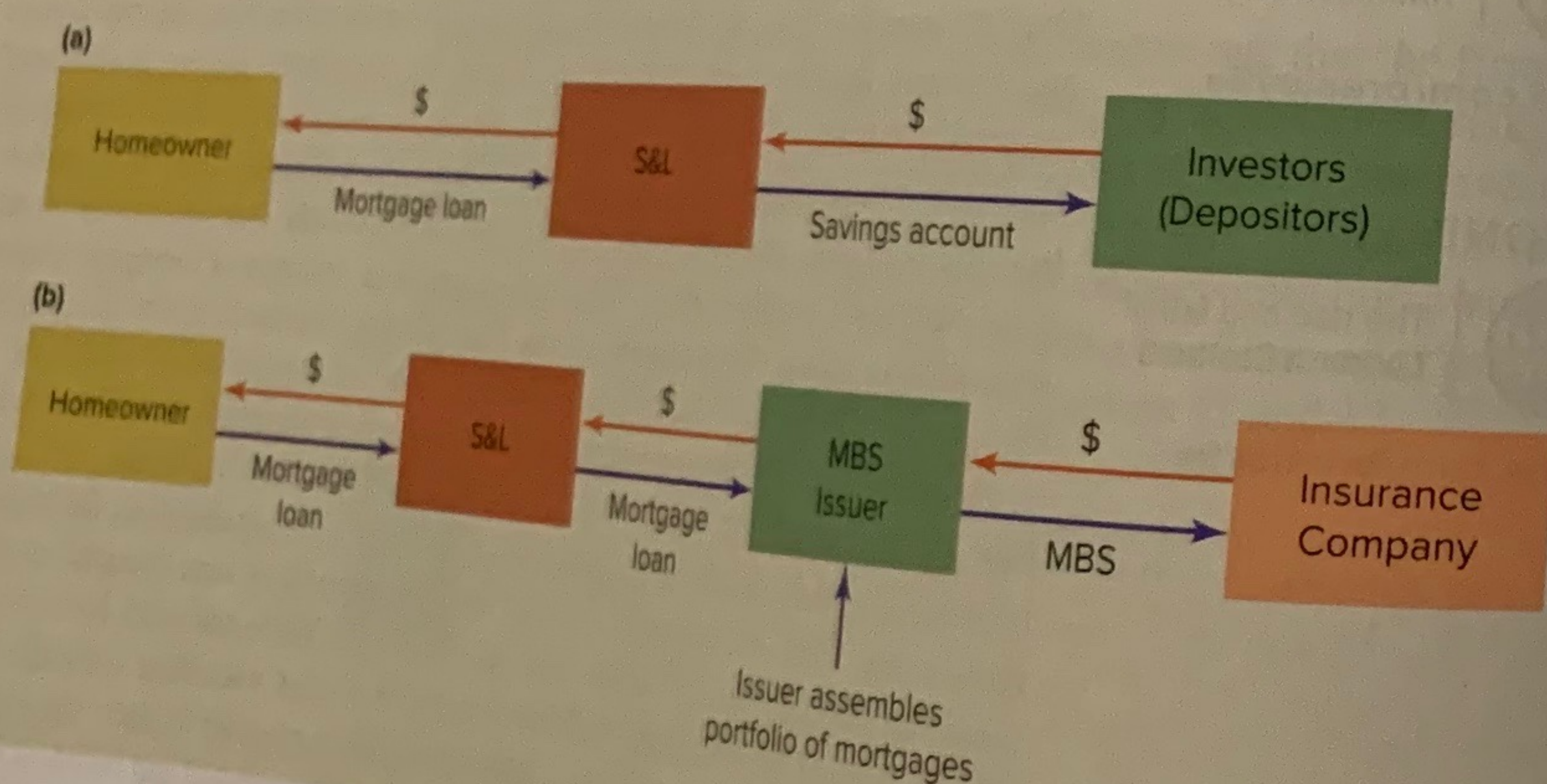
The MBS market has grown explosively. With the growth came more and more complexity. Issuers were not content with the simple pass-through MBS described earlier. They issued complicated packages of securities called tranches. The most senior tranches were given first call on all cash flows from the mortgage portfolio and were viewed as almost risk-free. Bond-rating agencies gave their highest, triple-A ratings to the senior tranches, even for MBSs based on subprime mortgages for homeowners with weak credit. Many investors in triple-A tranches lost a lot of money in the crisis of 2007–2009. We discuss bond ratings in Chapter 6.

The MBS market survived. It is still by far the largest source of mortgage financing. By 2015, the aggregate MBSs outstanding exceeded \$2 trillion. MBSs are part of a broader market for asset-backed securities, which include securities that work like MBSs but are based on portfolios of other types of assets, including car loans, bank loans to businesses, and financing for commercial real estate.

¹For a history of the crisis, see Edward J. Kane, *The S&L Insurance Mess: How Did It Happen?* (Washington, D.C.: Urban Institute Press, 1989).

²Fannie Mae and Freddie Mac (Federal Home Loan Mortgage Corp.) are government-sponsored entities (GSEs) charged with increasing the availability of mortgage credit. The GSEs purchase "conforming loans" and package and resell them as MBSs. Nonconforming loans—for example, large, "jumbo" mortgages—are packaged by banks such as Citigroup or Bank of America.

³You still send monthly payments to your local S&L. The S&L extracts a small servicing fee and sends your payments along to the MBS issuer, which also extracts a small servicing fee. Net cash flows from the portfolio of mortgages then go to the MBS investors.



Few developed economies escaped the crisis. As well as suffering from a collapse in their own housing markets, a number of foreign banks had made large investments in U.S. subprime mortgages and had to be rescued by their governments. Many European governments were already heavily in debt and, as the cost of the bank bailouts mounted, investors began to worry about the ability of the governments to repay their debts. Thus in Europe, the banking crisis became entwined with a sovereign debt crisis.

BEYOND THE PAGE



The Dodd-Frank Act

mhhe.com/brealey9e

SUMMARY

Where does the financing for corporations come from? (LO2-1)

Why do nonfinancial corporations need modern financial markets and institutions? (LO2-1)

What if a corporation finances investment by retaining and reinvesting cash generated from its operations? (LO2-1)

What are the key advantages of mutual funds and pension funds? (LO2-2)

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.

In that case, the corporation is saving on behalf of its shareholders.

Mutual and pension funds allow investors to diversify in professionally managed portfolios. Pension funds offer an additional tax advantage, because the returns on pension investments are not taxed until withdrawn from the plan.

Greece was in the worst shape. It had accumulated €350 billion (about \$460 billion) of government debt. Greece is a member of the single-currency euro club, so it had no control over its currency and could not just print more euros to service its debts. In 2011 it defaulted on debts totaling €100 billion.

Greece was still on shaky ground in early 2016, despite a series of rescue packages from the European Union, the European Central Bank, and the International Monetary Fund. Spain, Portugal, Ireland, and other European countries that had also worried investors avoided default and seemed to be recovering. But unemployment in many European countries remained stubbornly high and economic growth anemic.

What lessons can you, as a student of finance, draw from these financial crises? Here are three. First, note the sorry consequences for the economy when financial markets and institutions do not carry out the functions described in this chapter. For example, the crisis was amplified by the sudden disappearance of liquidity in many markets, including the market for MBSs. That meant that potential buyers of the illiquid assets could not know for sure what they were worth. Thus, the informational function of financial markets was also compromised.

Second, why were Bear Stearns, Lehman, Merrill Lynch, and the other distressed firms so fragile? One reason is that they were mostly financed with borrowed money, much of it short-term debt that had to be refinanced frequently. Investment banks like Lehman typically were financed with more than 95% debt and less than 5% equity capital. Thus a 5% fall in their asset values could wipe out their equity "cushions" and leave the banks insolvent. Regulators since the crisis have therefore required banks to finance with much more equity. This requirement has also affected payout to shareholders. A U.S. bank's dividend payments can be stopped by regulators if the bank's equity capital ratio is not up to snuff. We cover decisions about debt versus equity financing and payout in Chapters 16 and 17.

Third, some causes of the crisis can be traced back to agency problems noted in Chapter 1. Managers in the mortgage business were probably at least dimly aware that promoting and selling massive amounts of subprime MBSs was likely to end badly. They didn't wake up in the morning thinking, "Hey, maybe I can cause a financial crisis," but their incentives did call for trying to squeeze out one more fat bonus before the game ended. Their incentives were not aligned with shareholders'. The value of their firms suffered accordingly.

What are the functions of financial markets? (LO2-3)

Do financial institutions have different functions? (LO2-3)

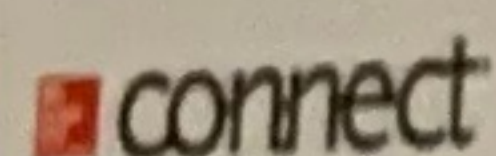
What happens when financial markets and institutions no longer function well? (LO2-4)

Financial markets help channel savings to corporate investment, and they help match up borrowers and lenders. They provide liquidity and diversification opportunities for investors. Trading in financial markets provides a wealth of useful information for the financial manager.

Financial institutions carry out a number of similar functions to financial markets but in different ways. They channel savings to corporate investment, and they serve as financial intermediaries between borrowers and lenders. Banks also provide liquidity for depositors and, of course, play a special role in the economy's payment systems. Insurance companies allow policyholders to pool risks.

The financial crisis of 2007–2009 provided a dramatic illustration. The huge expansion in subprime mortgage lending in the United States led to a collapse of the banking system. The government was forced into costly bailouts of banks and other financial institutions. As the credit markets seized up, the country suffered a deep recession. In much of Europe, the financial crisis did not end in 2009. As governments struggled to reduce their debt mountains and to strengthen their banking systems, many countries suffered sharp falls in economic activity and severe unemployment.

QUESTIONS AND PROBLEMS



- Corporate Financing.** How can a small, private firm finance its capital investments? Give two or three examples of financing sources. (LO2-1)
- Financial Markets.** The stock and bond markets are not the only financial markets. Give two or three additional examples. (LO2-1)
- Financial Markets and Institutions.** True or false? (LO2-1)
 - Financing for public corporations must flow through financial markets.
 - Financing for private corporations must flow through financial intermediaries.
 - Almost all foreign exchange trading occurs on the floors of the FOREX exchanges in New York and London.
 - Derivative markets are a major source of finance for many corporations.
 - The opportunity cost of capital is the capital outlay required to undertake a real investment opportunity.
 - The cost of capital is the interest rate paid on borrowing from a bank or other financial institution.
- Corporate Financing.** Financial markets and intermediaries channel savings from investors to corporate investment. The savings make this journey by many different routes. Give a specific example for each of the following routes: (LO2-1)
 - Investor to financial intermediary, to financial markets, and to the corporation
 - Investor to financial markets, to a financial intermediary, and to the corporation
 - Investor to financial markets, to a financial intermediary, back to financial markets, and to the corporation
- Financial Intermediaries.** You are a beginning investor with only \$5,000 in savings. How can you achieve a widely diversified portfolio at reasonable cost? (LO2-2)
- Financial Intermediaries.** Is an insurance company also a financial intermediary? How does the insurance company channel savings to corporate investment? (LO2-2)
- Corporate Financing.** Choose the most appropriate term to complete each sentence. (LO2-2)
 - Households hold a greater percentage of (corporate equities / corporate bonds).
 - (Pension funds / Banks) are major investors in corporate equities.
 - (Investment banks / Commercial banks) raise money from depositors and make loans to individuals and businesses.

- Financial Markets.** Which of the following are financial markets? (LO2-2)
 - NASDAQ
 - Vanguard Explorer Fund
 - JPMorgan Chase
 - Chicago Mercantile Exchange
- Financial Intermediaries.** True or false? (LO2-2)
 - Exchange traded funds are hedge funds that can be bought and sold on the stock exchange.
 - Hedge funds provide small investors with low-cost diversification.
 - The sale of insurance policies is a source of financing for insurance companies.
 - In defined-contribution pension plans, the pension pot depends on the rate of return earned on the contributions by the employer and employee.
- Liquidity.** Securities traded in active financial markets are liquid assets. Explain why liquidity is important to individual investors and to mutual funds. (LO2-2)
- Liquidity.** Bank deposits are liquid; you can withdraw money on demand. How can the bank provide this liquidity and at the same time make illiquid loans to businesses? (LO2-2)
- Financial Institutions.** Summarize the differences between a commercial bank and an investment bank. (LO2-2)
- Mutual Funds.** Why are mutual funds called financial intermediaries? Why does it make sense for an individual to invest her savings in a mutual fund rather than directly in financial markets? (LO2-2)
- Functions of Financial Markets.** Fill in the blanks in the following passage by choosing the most appropriate term from the following list: *CFO, save, financial intermediaries, stock market, savings, real investment, bonds, commodity markets, mutual funds, shares, liquid, ETFs, banks*. Each term should be used once only. (LO2-3)

Financial markets and _____ channel _____ to _____. They also channel money from individuals who want to _____ for the future to those who need cash to spend today. A third function of financial markets is to allow individuals and businesses to adjust their risk. For example, _____, such as the Vanguard Index fund, and _____, such as SPDRs or "spiders," allow individuals to spread their risk across a large number of stocks. Financial markets provide other mechanisms for sharing risks. For example, a wheat farmer and a baker may use the _____ to reduce their exposure to wheat prices. Financial markets and intermediaries allow investors to turn an investment into cash when needed. For example, the _____ of public companies are _____ because they are traded in huge volumes on the _____. _____ are the main providers of payment services by offering checking accounts and electronic transfers. Finally, financial markets provide information. For example, the _____ of a company that is contemplating an issue of debt can look at the yields on existing _____ to gauge how much interest the company will need to pay.

- Financial Markets and Intermediaries.** List the major functions of financial markets and intermediaries in a modern financial system. (LO2-3)
- Functions of Financial Markets.** On a mountain trek, you discover a 6-ounce gold nugget. A friend offers to pay you \$2,500 for it. How do you check whether this is a fair price? (LO2-3)
- Functions of Financial Markets.** What kinds of useful information can a financial manager obtain from financial markets? Give examples. (LO2-3)
- Functions of Financial Markets.** Look back at Section 2.3 and then answer the following questions: (LO2-3)
 - The price of Entergy stock has risen to \$90. What is the market value of the firm's equity if the number of outstanding shares does not change?
 - The rating agency has revised Catalytic Concepts' bond rating to A. What interest rate, approximately, would the company now need to pay on its bonds?
 - A farmer and a meatpacker use the commodity markets to reduce their risk. One agrees to buy live cattle in the future at a fixed price, and the other agrees to sell. Which one sells?
- The Financial Crisis.** True or false? (LO2-4)
 - The financial crisis was largely caused by banks taking large positions in the options and futures markets.
 - The prime cause of the financial crisis was an expansion in bank lending for the overheated commercial real estate market.

- c. Many subprime mortgages were packaged together by banks for resale as mortgage-backed securities (MBSs).
- d. The crisis could have been much more serious if the government had not stepped in to rescue Merrill Lynch and Lehman Brothers.
- e. The crisis in the eurozone finally ended when other eurozone countries and the IMF provided a massive bailout package to stop Greece from defaulting on its debts.

WEB EXERCISES

1. Log on to finance.yahoo.com and use the website to update Table 2.3. How have market values of these companies changed?
2. Find the websites for the Vanguard Group, Fidelity Investments, and Putnam Investments. Pick three or four funds from these sites and compare their investment objectives, risks, past returns, fund fees, and so on. Read the prospectuses for each fund. Who do you think should, or should not, invest in each fund?
3. Morningstar provides data on mutual fund performance. Log on to its website. Which category of funds has performed unusually well or badly?

SOLUTIONS TO SELF-TEST QUESTIONS

- 2.1
 - a. Corporations sell securities in the primary market. The securities are later traded in the secondary market.
 - b. The capital market is for long-term financing; the money market, for short-term financing.
 - c. The market for stocks versus the market for bonds and other debt securities.
- 2.2 Efficient diversification and professional management. Pension funds offer an additional advantage, because investment returns are not taxed until withdrawn from the fund.
- 2.3 Mutual funds pool investor savings and invest in portfolios of traded securities. Financial institutions such as banks or insurance companies raise money in special ways, for example, by accepting deposits or selling insurance policies. They not only invest in securities but also lend directly to businesses. They provide various other financial services.
- 2.4 Liquidity, risk reduction by investment in diversified portfolios of securities (through a mutual fund, for example), information provided by trading.