Chapter 2

An Overview of the Financial System

PREVIEW

Inez the Inventor has designed a low-cost robot that cleans house (even does windows), washes the car, and mows the lawn, but she has no funds to put her wonderful invention into production. Walter the Widower has plenty of savings, which he and his wife accumulated over the years. If we could get Inez and Walter together so that Walter could provide funds to Inez, Inez's robot would see the light of day, and the economy would be better off: We would have cleaner houses, shinier cars, and more beautiful lawns.

Financial markets (bond and stock markets) and financial intermediaries (banks, insurance companies, pension funds) have the basic function of getting people like Inez and Walter together by moving funds from those who have a surplus of funds (Walter) to those who have a shortage of funds (Inez). More realistically, when IBM invents a better computer, it may need funds to bring it to market. Similarly, when a local government needs to build a road or a school, it may need more funds than local property taxes provide. Well-functioning financial markets and financial intermediaries are crucial to economic health.

To study the effects of financial markets and financial intermediaries on the economy, we need to acquire an understanding of their general structure and operation. In this chapter, we learn about the major financial intermediaries and the instruments that are traded in financial markets as well as how these markets are regulated.

This chapter presents an overview of the fascinating study of financial markets and institutions. We return to a more detailed treatment of the regulation, structure, and evolution of the financial system in Chapters 8 through 13.

Function of Financial Markets

Financial markets perform the essential economic function of channeling funds from households, firms, and governments that have saved surplus funds by spending less than their income to those that have a shortage of funds because they wish to spend more than their income. This function is shown schematically in Figure 1. Those who have saved and are lending funds, the lender-savers, are at the left, and those who must borrow funds to finance their spending, the borrower-spenders, are at the right. The principal lender-savers are households, but business enterprises and the government (particularly state and local government), as well as foreigners and their governments, sometimes also find themselves with excess funds and so lend them out.

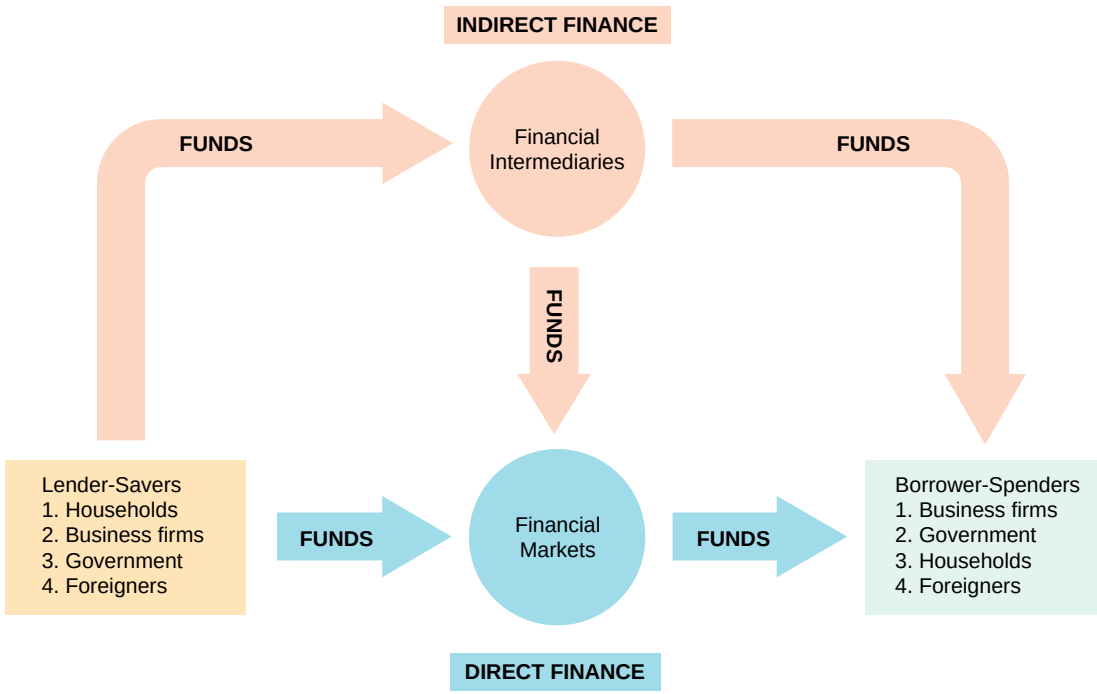


FIGURE 1 Flows of Funds Through the Financial System

The most important borrower-spenders are businesses and the government (particularly the federal government), but households and foreigners also borrow to finance their purchases of cars, furniture, and houses. The arrows show that funds flow from lender-savers to borrower-spenders via two routes.

In *direct finance* (the route at the bottom of Figure 1), borrowers borrow funds directly from lenders in financial markets by selling them *securities* (also called *financial instruments*), which are claims on the borrower's future income or assets. Securities are assets for the person who buys them but **liabilities** (IOUs or debts) for the individual or firm that sells (issues) them. For example, if General Motors needs to borrow funds to pay for a new factory to manufacture electric cars, it might borrow the funds from savers by selling them *bonds*, debt securities that promise to make payments periodically for a specified period of time.

Why is this channeling of funds from savers to spenders so important to the economy? The answer is that the people who save are frequently not the same people who have profitable investment opportunities available to them, the entrepreneurs. Let's first think about this on a personal level. Suppose that you have saved $1,000 this year, but no borrowing or lending is possible because there are no financial markets. If you do not have an investment opportunity that will permit you to earn income with your savings, you will just hold on to the $1,000 and will earn no interest. However, Carl the Carpenter has a productive use for your $1,000: He can use it to

purchase a new tool that will shorten the time it takes him to build a house, thereby earning an extra $200 per year. If you could get in touch with Carl, you could lend him the $1,000 at a rental fee (interest) of $100 per year, and both of you would be better off. You would earn $100 per year on your $1,000, instead of the zero amount that you would earn otherwise, while Carl would earn $100 more income per year (the $200 extra earnings per year minus the $100 rental fee for the use of the funds).

In the absence of financial markets, you and Carl the Carpenter might never get together. Without financial markets, it is hard to transfer funds from a person who has no investment opportunities to one who has them; you would both be stuck with the status quo, and both of you would be worse off. Financial markets are thus essential to promoting economic efficiency.

The existence of financial markets is also beneficial even if someone borrows for a purpose other than increasing production in a business. Say that you are recently married, have a good job, and want to buy a house. You earn a good salary, but because you have just started to work, you have not yet saved much. Over time, you would have no problem saving enough to buy the house of your dreams, but by then you would be too old to get full enjoyment from it. Without financial markets, you are stuck; you cannot buy the house and must continue to live in your tiny apartment.

If a financial market were set up so that people who had built up savings could lend you the funds to buy the house, you would be more than happy to pay them some interest in order to own a home while you are still young enough to enjoy it. Then, over time, you would pay back your loan. The overall outcome would be such that you would be better off, as would the persons who made you the loan. They would now earn some interest, whereas they would not if the financial market did not exist.

Now we can see why financial markets have such an important function in the economy. They allow funds to move from people who lack productive investment opportunities to people who have such opportunities. Thus financial markets are critical for producing an efficient allocation of capital, which contributes to higher production and efficiency for the overall economy. Indeed, as we will explore in Chapter 8, when financial markets break down during financial crises, as they have in Mexico, East Asia, and Argentina in recent years, severe economic hardship results, which can even lead to dangerous political instability.

Well-functioning financial markets also directly improve the well-being of consumers by allowing them to time their purchases better. They provide funds to young people to buy what they need and can eventually afford without forcing them to wait until they have saved up the entire purchase price. Financial markets that are operating efficiently improve the economic welfare of everyone in the society.

Structure of Financial Markets

Now that we understand the basic function of financial markets, let's look at their structure. The following descriptions of several categorizations of financial markets illustrate essential features of these markets.

Debt and Equity Markets

A firm or an individual can obtain funds in a financial market in two ways. The most common method is to issue a debt instrument, such as a bond or a mortgage, which is a contractual agreement by the borrower to pay the holder of the instrument fixed

dollar amounts at regular intervals (interest and principal payments) until a specified date (the maturity date), when a final payment is made. The **maturity** of a debt instrument is the number of years (term) until that instrument's expiration date. A debt instrument is **short-term** if its maturity is less than a year and **long-term** if its maturity is ten years or longer. Debt instruments with a maturity between one and ten years are said to be **intermediate-term**.

http://stockcharts.com/def/servlet/Favorites.CServlet?obj=msummary&cmd=show&disp=SXA

This site contains historical stock market index charts for many countries around the world.

The second method of raising funds is by issuing **equities**, such as common stock, which are claims to share in the net income (income after expenses and taxes) and the assets of a business. If you own one share of common stock in a company that has issued one million shares, you are entitled to 1 one-millionth of the firm's net income and 1 one-millionth of the firm's assets. Equities often make periodic payments (**dividends**) to their holders and are considered long-term securities because they have no maturity date. In addition, owning stock means that you own a portion of the firm and thus have the right to vote on issues important to the firm and to elect its directors.

The main disadvantage of owning a corporation's equities rather than its debt is that an equity holder is a *residual claimant*; that is, the corporation must pay all its debt holders before it pays its equity holders. The advantage of holding equities is that equity holders benefit directly from any increases in the corporation's profitability or asset value because equities confer ownership rights on the equity holders. Debt holders do not share in this benefit, because their dollar payments are fixed. We examine the pros and cons of debt versus equity instruments in more detail in Chapter 8, which provides an economic analysis of financial structure.

The total value of equities in the United States has typically fluctuated between $1 and $20 trillion since the early 1970s, depending on the prices of shares. Although the average person is more aware of the stock market than any other financial market, the size of the debt market is often larger than the size of the equities market: The value of debt instruments was $20 trillion at the end of 2002 while the value of equities was $11 trillion at the end of 2002.

Primary and Secondary Markets

A **primary market** is a financial market in which new issues of a security, such as a bond or a stock, are sold to initial buyers by the corporation or government agency borrowing the funds. A **secondary market** is a financial market in which securities that have been previously issued (and are thus secondhand) can be resold.

The primary markets for securities are not well known to the public because the selling of securities to initial buyers often takes place behind closed doors. An important financial institution that assists in the initial sale of securities in the primary market is the **investment bank**. It does this by **underwriting** securities: It guarantees a price for a corporation's securities and then sells them to the public.

www.nyse.com

New York Stock Exchange. Find listed companies, quotes, company historical data, real-time market indices, and more.

The New York and American stock exchanges and NASDAQ, in which previously issued stocks are traded, are the best-known examples of secondary markets, although the bond markets, in which previously issued bonds of major corporations and the U.S. government are bought and sold, actually have a larger trading volume. Other examples of secondary markets are foreign exchange markets, futures markets, and options markets. Securities brokers and dealers are crucial to a well-functioning secondary market. **Brokers** are agents of investors who match buyers with sellers of securities; **dealers** link buyers and sellers by buying and selling securities at stated prices.

When an individual buys a security in the secondary market, the person who has sold the security receives money in exchange for the security, but the corporation that

issued the security acquires no new funds. A corporation acquires new funds only when its securities are first sold in the primary market. Nonetheless, secondary markets serve two important functions. First, they make it easier and quicker to sell these financial instruments to raise cash; that is, they make the financial instruments more **liquid**. The increased liquidity of these instruments then makes them more desirable and thus easier for the issuing firm to sell in the primary market. Second, they determine the price of the security that the issuing firm sells in the primary market. The investors that buy securities in the primary market will pay the issuing corporation no more than the price they think the secondary market will set for this security. The higher the security's price in the secondary market, the higher will be the price that the issuing firm will receive for a new security in the primary market, and hence the greater the amount of financial capital it can raise. Conditions in the secondary market are therefore the most relevant to corporations issuing securities. It is for this reason that books like this one, that deal with financial markets, focus on the behavior of secondary markets rather than primary markets.

Exchanges and Over-the-Counter Markets

Secondary markets can be organized in two ways. One is to organize **exchanges**, where buyers and sellers of securities (or their agents or brokers) meet in one central location to conduct trades. The New York and American stock exchanges for stocks and the Chicago Board of Trade for commodities (wheat, corn, silver, and other raw materials) are examples of organized exchanges.

www.nasdaq.com
Detailed market and security information for the NASDAQ OTC stock exchange.

The other method of organizing a secondary market is to have an **over-the-counter (OTC) market**, in which dealers at different locations who have an inventory of securities stand ready to buy and sell securities "over the counter" to anyone who comes to them and is willing to accept their prices. Because over-the-counter dealers are in computer contact and know the prices set by one another, the OTC market is very competitive and not very different from a market with an organized exchange.

Many common stocks are traded over-the-counter, although a majority of the largest corporations have their shares traded at organized stock exchanges such as the New York Stock Exchange. The U.S. government bond market, with a larger trading volume than the New York Stock Exchange, is set up as an over-the-counter market. Forty or so dealers establish a "market" in these securities by standing ready to buy and sell U.S. government bonds. Other over-the-counter markets include those that trade other types of financial instruments such as negotiable certificates of deposit, federal funds, banker's acceptances, and foreign exchange.

Money and Capital Markets

Another way of distinguishing between markets is on the basis of the maturity of the securities traded in each market. The **money market** is a financial market in which only short-term debt instruments (generally those with original maturity of less than one year) are traded; the **capital market** is the market in which longer-term debt (generally those with original maturity of one year or greater) and equity instruments are traded. Money market securities are usually more widely traded than longer-term securities and so tend to be more liquid. In addition, as we will see in Chapter 4, short-term securities have smaller fluctuations in prices than long-term securities, making them safer investments. As a result, corporations and banks actively use the money market to earn interest on surplus funds that they expect to have only temporarily. Capital market securities, such as stocks and long-term bonds, are often

held by financial intermediaries such as insurance companies and pension funds, which have little uncertainty about the amount of funds they will have available in the future.[1]

Internationalization of Financial Markets

The growing internationalization of financial markets has become an important trend. Before the 1980s, U.S. financial markets were much larger than financial markets outside the United States, but in recent years the dominance of U.S. markets has been disappearing. The extraordinary growth of foreign financial markets has been the result of both large increases in the pool of savings in foreign countries such as Japan and the deregulation of foreign financial markets, which has enabled them to expand their activities. American corporations and banks are now more likely to tap international capital markets to raise needed funds, and American investors often seek investment opportunities abroad. Similarly, foreign corporations and banks raise funds from Americans, and foreigners have become important investors in the United States. A look at international bond markets and world stock markets will give us a picture of how this globalization of financial markets is taking place.

International Bond Market, Eurobonds, and Eurocurrencies

The traditional instruments in the international bond market are known as **foreign bonds**. Foreign bonds are sold in a foreign country and are denominated in that country's currency. For example, if the German automaker Porsche sells a bond in the United States denominated in U.S. dollars, it is classified as a foreign bond. Foreign bonds have been an important instrument in the international capital market for centuries. In fact, a large percentage of U.S. railroads built in the nineteenth century were financed by sales of foreign bonds in Britain.

A more recent innovation in the international bond market is the **Eurobond**, a bond denominated in a currency other than that of the country in which it is sold—for example, a bond denominated in U.S. dollars sold in London. Currently, over 80 percent of the new issues in the international bond market are Eurobonds, and the market for these securities has grown very rapidly. As a result, the Eurobond market is now larger than the U.S. corporate bond market.

A variant of the Eurobond is **Eurocurrencies**, which are foreign currencies deposited in banks outside the home country. The most important of the Eurocurrencies are **Eurodollars**, which are U.S. dollars deposited in foreign banks outside the United States or in foreign branches of U.S. banks. Because these short-term deposits earn interest, they are similar to short-term Eurobonds. American banks borrow Eurodollar deposits from other banks or from their own foreign branches, and Eurodollars are now an important source of funds for American banks (over $190 billion outstanding).

Note that the new currency, the euro, can create some confusion about the terms Eurobond, Eurocurrencies, and Eurodollars. A bond denominated in euros is called a

[1] If you would like more detail about the different types of money and capital market instruments, you can find this information in an appendix to this chapter, which can be found on this book's web site at www.aw.com/mishkin.

Eurobond only *if it is sold outside the countries that have adopted the euro.* In fact, most Eurobonds are not denominated in euros but are instead denominated in U.S. dollars. Similarly, Eurodollars have nothing to do with euros, but are instead U.S. dollars deposited in banks outside the United States.

World Stock Markets

Until recently, the U.S. stock market was by far the largest in the world, but foreign stock markets have been growing in importance. Now the United States is not always number one: In the mid-1980s, the value of stocks traded in Japan at times exceeded the value of stocks traded in the United States. The increased interest in foreign stocks has prompted the development in the United States of mutual funds specializing in trading in foreign stock markets. American investors now pay attention not only to the Dow Jones Industrial Average but also to stock price indexes for foreign stock markets such as the Nikkei 225 Average (Tokyo) and the Financial Times–Stock Exchange 100-Share Index (London).

http://quote.yahoo.com/m2?u
Major world stock indices, with charts, news, and components.

The internationalization of financial markets is having profound effects on the United States. Foreigners, particularly the Japanese, are not only providing funds to corporations in the United States, but are also helping finance the federal government. Without these foreign funds, the U.S. economy would have grown far less rapidly in the last twenty years. The internationalization of financial markets is also leading the way to a more integrated world economy in which flows of goods and technology between countries are more commonplace. In later chapters, we will encounter many examples of the important roles that international factors play in our economy.

Function of Financial Intermediaries

As shown in Figure 1 (p. 24), funds can move from lenders to borrowers by a second route, called *indirect finance* because it involves a financial intermediary that stands between the lender-savers and the borrower-spenders and helps transfer funds from one to the other. A financial intermediary does this by borrowing funds from the lender-savers and then using these funds to make loans to borrower-spenders. For example, a bank might acquire funds by issuing a liability to the public (an asset for the public) in the form of savings deposits. It might then use the funds to acquire an asset by making a loan to General Motors or by buying a GM bond in the financial market. The ultimate result is that funds have been transferred from the public (the lender-savers) to GM (the borrower-spender) with the help of the financial intermediary (the bank).

The process of indirect finance using financial intermediaries, called **financial intermediation**, is the primary route for moving funds from lenders to borrowers. Indeed, although the media focus much of their attention on securities markets, particularly the stock market, financial intermediaries are a far more important source of financing for corporations than securities markets are. This is true not only for the United States but for other industrialized countries as well (see Box 1). Why are financial intermediaries and indirect finance so important in financial markets? To answer this question, we need to understand the role of transaction costs, risk sharing, and information costs in financial markets.

Transaction Costs

Transaction costs, the time and money spent in carrying out financial transactions, are a major problem for people who have excess funds to lend. As we have seen, Carl the Carpenter needs $1,000 for his new tool, and you know that it is an excellent

Following the Financial News

Foreign Stock Market Indexes

Foreign stock market indexes are published daily in the *Wall Street Journal* next to the "World Markets" column, which reports developments in foreign stock markets.

The first column identifies the country of the foreign stock exchange followed by the market index; for example, the circled entry is for the Nikkei 225 Average in Japan. The second column, "CLOSE," gives the closing value of the index, which was 8558.82 for the Nikkei 225 Average on January 20, 2003. The "NET CHG" column indicates the change in the index from the previous trading day, −131.43, and the "% CHG" column indicates the percentage change in the index, −1.51%. The "YTD NET CHG" column indicates the change in the index from the beginning of the year (year to date), −20.13, and the "YTD % CHG" column indicates the percentage change in the index from the beginning of the year, −0.23%.

International Stock Market Indexes

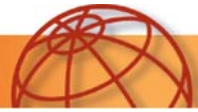
COUNTRY	INDEX	1/20/03 CLOSE	NET CHG	% CHG	YTD NET CHG	YTD % CHG
Argentina	Merval	575.74	− 1.46	− 0.25	+ 50.79	+ 9.68
Australia	All Ordinaries	3028.20	+ 3.50	+ 0.12	+ 52.70	+ 1.77
Belgium	Bel-20	1944.77	− 14.75	− 0.75	− 80.27	− 3.96
Brazil	Sao Paulo Bovespa	11648.38	− 27.32	− 0.23	+ 379.91	+ 3.37
Canada	Toronto 300 Composite	6740.37	− 15.55	− 0.23	+ 125.83	+ 1.90
Chile	Santiago IPSA	1017.96	+ 5.05	+ 0.50	+ 17.96	+ 1.80
China	Dow Jones China 88	127.54	+ 0.09	+ 0.07	+ 9.33	+ 7.89
China	Dow Jones Shanghai	181.24	+ 0.26	+ 0.14	+ 13.30	+ 7.92
China	Dow Jones Shenzhen	170.61	+ 0.68	+ 0.40	+ 13.16	+ 8.36
Europe	DJ STOXX (Euro)	198.30	− 2.63	− 1.31	− 3.42	− 1.70
Europe	DJ STOXX 50	2337.76	− 44.76	− 1.88	− 69.75	− 2.90
Euro Zone	DJ Euro STOXX	205.29	− 2.39	− 1.15	− 0.65	− 0.32
Euro Zone	DJ Euro STOXX 50	2352.81	− 37.55	− 1.57	− 33.60	− 1.41
France	Paris CAC 40	3020.07	− 36.86	− 1.21	− 43.84	− 1.43
Germany	Frankfurt Xetra DAX	2893.55	− 25.27	− 0.87	+ 0.92	+ 0.03
Hong Kong	Hang Seng	9552.02	− 62.57	− 0.65	+ 230.73	+ 2.48
India	Bombay Sensex	3341.89	− 28.50	− 0.85	− 35.39	− 1.05
Israel	Tel Aviv 25	311.62	− 1.87	− 0.60	− 22.29	− 6.68
Italy	Milan MIBtel	17339.00	− 199.00	− 1.13	− 146.00	− 0.84
Japan	Tokyo Nikkei 225	8558.82	− 131.43	− 1.51	− 20.13	− 0.23
Japan	Tokyo Nikkei 300	166.81	− 1.58	− 0.94	+ 1.36	+ 0.82
Japan	Tokyo Topix Index	853.90	− 5.35	− 0.62	+ 10.61	+ 1.26
Mexico	I.P.C. All-Share	6161.12	− 43.34	− 0.70	+ 34.03	+ 0.56
Netherlands	Amsterdam AEX	313.04	− 5.55	− 1.74	− 9.69	− 3.00
Singapore	Straits Times	1363.19	− 3.64	− 0.27	+ 22.16	+ 1.65
South Africa	Johannesburg All Share	9485.48	− 2.94	− 0.03	+ 208.26	+ 2.24
South Korea	KOSPI	634.50	− 1.96	− 0.31	+ 6.95	+ 1.11
Spain	IBEX 35	6390.80	− 67.40	− 1.04	+ 353.90	+ 5.86
Sweden	SX All Share	155.40	+ 1.56	+ 1.01	+ 5.83	+ 3.90
Switzerland	Zurich Swiss Market	4679.70	− 73.90	− 1.55	+ 48.90	+ 1.06
Taiwan	Weighted	4951.03	+ 43.25	+ 0.88	+ 498.58	+ 11.20
U.K.	London FTSE 100-share	3778.60	− 42.00	− 1.10	− 161.80	− 4.11
U.K.	London FTSE 250-share	4312.50	− 9.20	− 0.21	− 6.80	− 0.16

Source: Wall Street Journal, Tuesday, January 21, 2003, p. C6.

investment opportunity. You have the cash and would like to lend him the money, but to protect your investment, you have to hire a lawyer to write up the loan contract that specifies how much interest Carl will pay you, when he will make these interest payments, and when he will repay you the $1,000. Obtaining the contract will cost you $500. When you figure in this transaction cost for making the loan, you realize that you can't earn enough from the deal (you spend $500 to make perhaps $100) and reluctantly tell Carl that he will have to look elsewhere.

This example illustrates that small savers like you or potential borrowers like Carl might be frozen out of financial markets and thus be unable to benefit from them. Can anyone come to the rescue? Financial intermediaries can.

Financial intermediaries can substantially reduce transaction costs because they have developed expertise in lowering them; because their large size allows them to take advantage of **economies of scale**, the reduction in transaction costs per dollar of transactions as the size (scale) of transactions increases. For example, a bank knows



Box 1: Global

The Importance of Financial Intermediaries to Securities Markets: An International Comparison

Patterns of financing corporations differ across countries, but one key fact emerges. Studies of the major developed countries, including the United States, Canada, Great Britain, Japan, Italy, Germany, and France, show that when businesses go looking for funds to finance their activities, they usually obtain them indirectly through financial intermediaries and not directly from securities markets.* Even in the United States and Canada, which have the most developed securities markets in the world, loans from financial intermediaries are far more important for corporate finance than securities markets are. The countries that have made the least use of securities markets are Germany and Japan; in these two countries, financing from financial intermediaries has been almost ten times greater than that from securities markets. However, with the deregulation of Japanese securities markets in recent years, the share of corporate financing by financial intermediaries has been declining relative to the use of securities markets.

Although the dominance of financial intermediaries over securities markets is clear in all countries, the relative importance of bond versus stock markets differs widely across countries. In the United States, the bond market is far more important as a source of corporate finance: On average, the amount of new financing raised using bonds is ten times the amount using stocks. By contrast, countries such as France and Italy make use of equities markets more than the bond market to raise capital.

*See, for example, Colin Mayer, "Financial Systems, Corporate Finance, and Economic Development," in *Asymmetric Information, Corporate Finance, and Investment*, ed. R. Glenn Hubbard (Chicago: University of Chicago Press, 1990), pp. 307–332.

how to find a good lawyer to produce an airtight loan contract, and this contract can be used over and over again in its loan transactions, thus lowering the legal cost per transaction. Instead of a loan contract (which may not be all that well written) costing $500, a bank can hire a topflight lawyer for $5,000 to draw up an airtight loan contract that can be used for 2,000 loans at a cost of $2.50 per loan. At a cost of $2.50 per loan, it now becomes profitable for the financial intermediary to lend Carl the $1,000.

Because financial intermediaries are able to reduce transaction costs substantially, they make it possible for you to provide funds indirectly to people like Carl with productive investment opportunities. In addition, a financial intermediary's low transaction costs mean that it can provide its customers with **liquidity services**, services that make it easier for customers to conduct transactions. For example, banks provide depositors with checking accounts that enable them to pay their bills easily. In addition, depositors can earn interest on checking and savings accounts and yet still convert them into goods and services whenever necessary.

Risk Sharing

Another benefit made possible by the low transaction costs of financial institutions is that they can help reduce the exposure of investors to **risk**; that is, uncertainty about the returns investors will earn on assets. Financial intermediaries do this through the process known as **risk sharing**: they create and sell assets with risk characteristics that people are comfortable with, and the intermediaries then use the funds they acquire by selling these assets to purchase other assets that may have far more risk.

Low transaction costs allow financial intermediaries to do risk sharing at low cost, enabling them to earn a profit on the spread between the returns they earn on risky assets and the payments they make on the assets they have sold. This process of risk sharing is also sometimes referred to as **asset transformation**, because in a sense, risky assets are turned into safer assets for investors.

Financial intermediaries also promote risk sharing by helping individuals to diversify and thereby lower the amount of risk to which they are exposed. **Diversification** entails investing in a collection (**portfolio**) of assets whose returns do not always move together, with the result that overall risk is lower than for individual assets. (Diversification is just another name for the old adage that "you shouldn't put all your eggs in one basket.") Low transaction costs allow financial intermediaries to do this by pooling a collection of assets into a new asset and then selling it to individuals.

Asymmetric Information: Adverse Selection and Moral Hazard

The presence of transaction costs in financial markets explains, in part, why financial intermediaries and indirect finance play such an important role in financial markets. An additional reason is that in financial markets, one party often does not know enough about the other party to make accurate decisions. This inequality is called **asymmetric information**. For example, a borrower who takes out a loan usually has better information about the potential returns and risk associated with the investment projects for which the funds are earmarked than the lender does. Lack of information creates problems in the financial system on two fronts: before the transaction is entered into and after.[2]

Adverse selection is the problem created by asymmetric information *before* the transaction occurs. Adverse selection in financial markets occurs when the potential borrowers who are the most likely to produce an undesirable (*adverse*) outcome—the bad credit risks—are the ones who most actively seek out a loan and are thus most likely to be selected. Because adverse selection makes it more likely that loans might be made to bad credit risks, lenders may decide not to make any loans even though there are good credit risks in the marketplace.

To understand why adverse selection occurs, suppose that you have two aunts to whom you might make a loan—Aunt Louise and Aunt Sheila. Aunt Louise is a conservative type who borrows only when she has an investment she is quite sure will pay off. Aunt Sheila, by contrast, is an inveterate gambler who has just come across a get-rich-quick scheme that will make her a millionaire if she can just borrow $1,000 to invest in it. Unfortunately, as with most get-rich-quick schemes, there is a high probability that the investment won't pay off and that Aunt Sheila will lose the $1,000.

Which of your aunts is more likely to call you to ask for a loan? Aunt Sheila, of course, because she has so much to gain if the investment pays off. You, however, would not want to make a loan to her because there is a high probability that her investment will turn sour and she will be unable to pay you back.

If you knew both your aunts very well—that is, if your information were not asymmetric—you wouldn't have a problem, because you would know that Aunt Sheila is a bad risk and so you would not lend to her. Suppose, though, that you don't

[2]Asymmetric information and the adverse selection and moral hazard concepts are also crucial problems for the insurance industry (see Chapter 12).

know your aunts well. You are more likely to lend to Aunt Sheila than to Aunt Louise because Aunt Sheila would be hounding you for the loan. Because of the possibility of adverse selection, you might decide not to lend to either of your aunts, even though there are times when Aunt Louise, who is an excellent credit risk, might need a loan for a worthwhile investment.

Moral hazard is the problem created by asymmetric information *after* the transaction occurs. Moral hazard in financial markets is the risk (*hazard*) that the borrower might engage in activities that are undesirable (*immoral*) from the lender's point of view, because they make it less likely that the loan will be paid back. Because moral hazard lowers the probability that the loan will be repaid, lenders may decide that they would rather not make a loan.

As an example of moral hazard, suppose that you made a $1,000 loan to another relative, Uncle Melvin, who needs the money to purchase a word processor so he can set up a business typing students' term papers. Once you have made the loan, however, Uncle Melvin is more likely to slip off to the track and play the horses. If he bets on a 20-to-1 long shot and wins with your money, he is able to pay you back your $1,000 and live high off the hog with the remaining $19,000. But if he loses, as is likely, you don't get paid back, and all he has lost is his reputation as a reliable, upstanding uncle. Uncle Melvin therefore has an incentive to go to the track because his gains ($19,000) if he bets correctly are much greater than the cost to him (his reputation) if he bets incorrectly. If you knew what Uncle Melvin was up to, you would prevent him from going to the track, and he would not be able to increase the moral hazard. However, because it is hard for you to keep informed about his whereabouts—that is, because information is asymmetric—there is a good chance that Uncle Melvin will go to the track and you will not get paid back. The risk of moral hazard might therefore discourage you from making the $1,000 loan to Uncle Melvin, even if you were sure that you would be paid back if he used it to set up his business.

Study Guide

Because the concepts of adverse selection and moral hazard are extremely useful in understanding the behavior we examine in this and many of the later chapters (and in life in general), you must understand them fully. One way to distinguish between them is to remember that adverse selection is a problem of asymmetric information *before* entering into a transaction, whereas moral hazard is a problem of asymmetric information *after* the transaction has occurred. A helpful way to nail down these concepts is to think of other examples, for financial or other types of transactions, in which adverse selection or moral hazard plays a role. Several problems at the end of the chapter provide additional examples of situations involving adverse selection and moral hazard.

The problems created by adverse selection and moral hazard are an important impediment to well-functioning financial markets. Again, financial intermediaries can alleviate these problems.

With financial intermediaries in the economy, small savers can provide their funds to the financial markets by lending these funds to a trustworthy intermediary—say, the Honest John Bank—which in turn lends the funds out either by making loans or by buying securities such as stocks or bonds. Successful financial intermediaries have higher earnings on their investments than small savers, because they are better

equipped than individuals to screen out bad credit risks from good ones, thereby reducing losses due to adverse selection. In addition, financial intermediaries have high earnings because they develop expertise in monitoring the parties they lend to, thus reducing losses due to moral hazard. The result is that financial intermediaries can afford to pay lender-savers interest or provide substantial services and still earn a profit.

As we have seen, financial intermediaries play an important role in the economy because they provide liquidity services, promote risk sharing, and solve information problems. The success of financial intermediaries in performing this role is evidenced by the fact that most Americans invest their savings with them and obtain loans from them. Financial intermediaries play a key role in improving economic efficiency because they help financial markets channel funds from lender-savers to people with productive investment opportunities. Without a well-functioning set of financial intermediaries, it is very hard for an economy to reach its full potential. We will explore further the role of financial intermediaries in the economy in Part III.

Financial Intermediaries

We have seen why financial intermediaries play such an important role in the economy. Now we look at the principal financial intermediaries themselves and how they perform the intermediation function. They fall into three categories: depository institutions (banks), contractual savings institutions, and investment intermediaries. Table 1 provides a guide to the discussion of the financial intermediaries that fit into these three categories by describing their primary liabilities (sources of funds) and assets (uses of funds). The relative size of these intermediaries in the United States is indicated in Table 2, which lists the amount of their assets at the end of 1970, 1980, 1990, and 2002.

Depository Institutions

Depository institutions (for simplicity, we refer to these as *banks* throughout this text) are financial intermediaries that accept deposits from individuals and institutions and make loans. The study of money and banking focuses special attention on this group of financial institutions, because they are involved in the creation of deposits, an important component of the money supply. These institutions include commercial banks and the so-called **thrift institutions (thrifts)**: savings and loan associations, mutual savings banks, and credit unions.

Commercial Banks. These financial intermediaries raise funds primarily by issuing checkable deposits (deposits on which checks can be written), savings deposits (deposits that are payable on demand but do not allow their owner to write checks), and time deposits (deposits with fixed terms to maturity). They then use these funds to make commercial, consumer, and mortgage loans and to buy U.S. government securities and municipal bonds. There are slightly fewer than 8,000 commercial banks in the United States, and as a group, they are the largest financial intermediary and have the most diversified portfolios (collections) of assets.

Savings and Loan Associations (S&Ls) and Mutual Savings Banks. These depository institutions, of which there are approximately 1,500, obtain funds primarily through savings deposits (often called *shares*) and time and checkable deposits. In the past, these insti-

Table 1 Primary Assets and Liabilities of Financial Intermediaries

Type of Intermediary	Primary Liabilities (Sources of Funds)	Primary Assets (Uses of Funds)
Depository institutions (banks)		
Commercial banks	Deposits	Business and consumer loans, mortgages, U.S. government securities and municipal bonds
Savings and loan associations	Deposits	Mortgages
Mutual savings banks	Deposits	Mortgages
Credit unions	Deposits	Consumer loans
Contractual savings institutions		
Life insurance companies	Premiums from policies	Corporate bonds and mortgages
Fire and casualty insurance companies	Premiums from policies	Municipal bonds, corporate bonds and stock, U.S. government securities
Pension funds, government retirement funds	Employer and employee contributions	Corporate bonds and stock
Investment intermediaries		
Finance companies	Commercial paper, stocks, bonds	Consumer and business loans
Mutual funds	Shares	Stocks, bonds
Money market mutual funds	Shares	Money market instruments

tutions were constrained in their activities and mostly made mortgage loans for residential housing. Over time, these restrictions have been loosened so that the distinction between these depository institutions and commercial banks has blurred. These intermediaries have become more alike and are now more competitive with each other.

Credit Unions. These financial institutions, numbering about 9,500, are very small cooperative lending institutions organized around a particular group: union members, employees of a particular firm, and so forth. They acquire funds from deposits called *shares* and primarily make consumer loans.

Contractual Savings Institutions

Contractual savings institutions, such as insurance companies and pension funds, are financial intermediaries that acquire funds at periodic intervals on a contractual basis. Because they can predict with reasonable accuracy how much they will have to pay

Table 2 Principal Financial Intermediaries and Value of Their Assets

Type of Intermediary	Value of Assets ($ billions, end of year) 1970	1980	1990	2002
Depository institutions (banks)				
Commercial banks	517	1,481	3,334	7,161
Savings and loan associations and mutual savings banks	250	792	1,365	1,338
Credit unions	18	67	215	553
Contractual savings institutions				
Life insurance companies	201	464	1,367	3,269
Fire and casualty insurance companies	50	182	533	894
Pension funds (private)	112	504	1,629	3,531
State and local government retirement funds	60	197	737	1,895
Investment intermediaries				
Finance companies	64	205	610	1,165
Mutual funds	47	70	654	3,419
Money market mutual funds	0	76	498	2,106

Source: Federal Reserve Flow of Funds Accounts: www.federalreserve.gov/releases/Z1/LevelTables.

out in benefits in the coming years, they do not have to worry as much as depository institutions about losing funds. As a result, the liquidity of assets is not as important a consideration for them as it is for depository institutions, and they tend to invest their funds primarily in long-term securities such as corporate bonds, stocks, and mortgages.

Life Insurance Companies. Life insurance companies insure people against financial hazards following a death and sell annuities (annual income payments upon retirement). They acquire funds from the premiums that people pay to keep their policies in force and use them mainly to buy corporate bonds and mortgages. They also purchase stocks, but are restricted in the amount that they can hold. Currently, with $3.3 trillion in assets, they are among the largest of the contractual savings institutions.

Fire and Casualty Insurance Companies. These companies insure their policyholders against loss from theft, fire, and accidents. They are very much like life insurance companies, receiving funds through premiums for their policies, but they have a greater possibility of loss of funds if major disasters occur. For this reason, they use their funds to buy more liquid assets than life insurance companies do. Their largest holding of assets is municipal bonds; they also hold corporate bonds and stocks and U.S. government securities.

Pension Funds and Government Retirement Funds. Private pension funds and state and local retirement funds provide retirement income in the form of annuities to employees who are covered by a pension plan. Funds are acquired by contributions from employers or from employees, who either have a contribution automatically deducted from their paychecks or contribute voluntarily. The largest asset holdings of pension funds are corporate bonds and stocks. The establishment of pension funds has been actively encouraged by the federal government, both through legislation requiring pension plans and through tax incentives to encourage contributions.

Investment Intermediaries

This category of financial intermediaries includes finance companies, mutual funds, and money market mutual funds.

Finance Companies. Finance companies raise funds by selling commercial paper (a short-term debt instrument) and by issuing stocks and bonds. They lend these funds to consumers, who make purchases of such items as furniture, automobiles, and home improvements, and to small businesses. Some finance companies are organized by a parent corporation to help sell its product. For example, Ford Motor Credit Company makes loans to consumers who purchase Ford automobiles.

Mutual Funds. These financial intermediaries acquire funds by selling shares to many individuals and use the proceeds to purchase diversified portfolios of stocks and bonds. Mutual funds allow shareholders to pool their resources so that they can take advantage of lower transaction costs when buying large blocks of stocks or bonds. In addition, mutual funds allow shareholders to hold more diversified portfolios than they otherwise would. Shareholders can sell (redeem) shares at any time, but the value of these shares will be determined by the value of the mutual fund's holdings of securities. Because these fluctuate greatly, the value of mutual fund shares will too; therefore, investments in mutual funds can be risky.

Money Market Mutual Funds. These relatively new financial institutions have the characteristics of a mutual fund but also function to some extent as a depository institution because they offer deposit-type accounts. Like most mutual funds, they sell shares to acquire funds that are then used to buy money market instruments that are both safe and very liquid. The interest on these assets is then paid out to the shareholders.

A key feature of these funds is that shareholders can write checks against the value of their shareholdings. In effect, shares in a money market mutual fund function like checking account deposits that pay interest. Money market mutual funds have experienced extraordinary growth since 1971, when they first appeared. By 2002, their assets had climbed to nearly $2.1 trillion.

Regulation of the Financial System

The financial system is among the most heavily regulated sectors of the American economy. The government regulates financial markets for two main reasons: to increase the information available to investors and to ensure the soundness of the financial system. We will examine how these two reasons have led to the present regulatory environment. As a study aid, the principal regulatory agencies of the U.S. financial system are listed in Table 3.

Table 3 Principal Regulatory Agencies of the U.S. Financial System

Regulatory Agency	Subject of Regulation	Nature of Regulations
Securities and Exchange Commission (SEC)	Organized exchanges and financial markets	Requires disclosure of information, restricts insider trading
Commodities Futures Trading Commission (CFTC)	Futures market exchanges	Regulates procedures for trading in futures markets
Office of the Comptroller of the Currency	Federally chartered commercial banks	Charters and examines the books of federally chartered commercial banks and imposes restrictions on assets they can hold
National Credit Union Administration (NCUA)	Federally chartered credit unions	Charters and examines the books of federally chartered credit unions and imposes restrictions on assets they can hold
State banking and insurance commissions	State-chartered depository institutions	Charters and examines the books of state-chartered banks and insurance companies, imposes restrictions on assets they can hold, and imposes restrictions on branching
Federal Deposit Insurance Corporation (FDIC)	Commercial banks, mutual savings banks, savings and loan associations	Provides insurance of up to $100,000 for each depositor at a bank, examines the books of insured banks, and imposes restrictions on assets they can hold
Federal Reserve System	All depository institutions	Examines the books of commercial banks that are members of the system, sets reserve requirements for all banks
Office of Thrift Supervision	Savings and loan associations	Examines the books of savings and loan associations, imposes restrictions on assets they can hold

Increasing Information Available to Investors

Asymmetric information in financial markets means that investors may be subject to adverse selection and moral hazard problems that may hinder the efficient operation of financial markets. Risky firms or outright crooks may be the most eager to sell securities to unwary investors, and the resulting adverse selection problem may keep investors out of financial markets. Furthermore, once an investor has bought a security, thereby lending money to a firm, the borrower may have incentives to engage in risky activities or to commit outright fraud. The presence of this moral hazard problem may also keep investors away from financial markets. Government regulation can reduce adverse selection and moral hazard problems in financial markets and increase their efficiency by increasing the amount of information available to investors.

As a result of the stock market crash in 1929 and revelations of widespread fraud in the aftermath, political demands for regulation culminated in the Securities Act of 1933 and the establishment of the Securities and Exchange Commission (SEC). The SEC requires corporations issuing securities to disclose certain information about their sales, assets, and earnings to the public and restricts trading by the largest stockholders (known as *insiders*) in the corporation. By requiring disclosure of this information and by discouraging insider trading, which could be used to manipulate security prices, the SEC hopes that investors will be better informed and be protected from some of the abuses in financial markets that occurred before 1933. Indeed, in recent years, the SEC has been particularly active in prosecuting people involved in insider trading.

www.sec.gov

The United States Securities and Exchange Commission home page. It contains vast SEC resources, laws and regulations, investor information, and litigation.

Ensuring the Soundness of Financial Intermediaries

Asymmetric information can also lead to widespread collapse of financial intermediaries, referred to as a **financial panic**. Because providers of funds to financial intermediaries may not be able to assess whether the institutions holding their funds are sound, if they have doubts about the overall health of financial intermediaries, they may want to pull their funds out of both sound and unsound institutions. The possible outcome is a financial panic that produces large losses for the public and causes serious damage to the economy. To protect the public and the economy from financial panics, the government has implemented six types of regulations.

Restrictions on Entry. State banking and insurance commissions, as well as the Office of the Comptroller of the Currency (an agency of the federal government), have created very tight regulations governing who is allowed to set up a financial intermediary. Individuals or groups that want to establish a financial intermediary, such as a bank or an insurance company, must obtain a charter from the state or the federal government. Only if they are upstanding citizens with impeccable credentials and a large amount of initial funds will they be given a charter.

Disclosure. There are stringent reporting requirements for financial intermediaries. Their bookkeeping must follow certain strict principles, their books are subject to periodic inspection, and they must make certain information available to the public.

Restrictions on Assets and Activities. There are restrictions on what financial intermediaries are allowed to do and what assets they can hold. Before you put your funds into a bank or some other such institution, you would want to know that your funds are safe and that the bank or other financial intermediary will be able to meet its obligations to you. One way of doing this is to restrict the financial intermediary from engaging in certain risky activities. Legislation passed in 1933 (repealed in 1999) separated commercial banking from the securities industry so that banks could not engage in risky ventures associated with this industry. Another way is to restrict financial

intermediaries from holding certain risky assets, or at least from holding a greater quantity of these risky assets than is prudent. For example, commercial banks and other depository institutions are not allowed to hold common stock because stock prices experience substantial fluctuations. Insurance companies are allowed to hold common stock, but their holdings cannot exceed a certain fraction of their total assets.

Deposit Insurance. The government can insure people's deposits so that they do not suffer any financial loss if the financial intermediary that holds these deposits should fail. The most important government agency that provides this type of insurance is the Federal Deposit Insurance Corporation (FDIC), which insures each depositor at a commercial bank or mutual savings bank up to a loss of $100,000 per account. All commercial and mutual savings banks, with a few minor exceptions, are contributers to the FDIC's Bank Insurance Fund, which is used to pay off depositors in the case of a bank's failure. The FDIC was created in 1934 after the massive bank failures of 1930–1933, in which the savings of many depositors at commercial banks were wiped out. Similar government agencies exist for other depository institutions: The Savings Association Insurance Fund (part of the FDIC) provides deposit insurance for savings and loan associations, and the National Credit Union Share Insurance Fund (NCUSIF) does the same for credit unions.

Limits on Competition. Politicians have often declared that unbridled competition among financial intermediaries promotes failures that will harm the public. Although the evidence that competition does this is extremely weak, it has not stopped the state and federal governments from imposing many restrictive regulations. First are the restrictions on the opening of additional locations (branches). In the past, banks were not allowed to open up branches in other states, and in some states, banks were restricted from opening additional locations.

Restrictions on Interest Rates. Competition has also been inhibited by regulations that impose restrictions on interest rates that can be paid on deposits. For decades after 1933, banks were prohibited from paying interest on checking accounts. In addition, until 1986, the Federal Reserve System had the power under *Regulation Q* to set maximum interest rates that banks could pay on savings deposits. These regulations were instituted because of the widespread belief that unrestricted interest-rate competition helped encourage bank failures during the Great Depression. Later evidence does not seem to support this view, and restrictions like Regulation Q have been abolished.

In later chapters, we will look more closely at government regulation of financial markets and will see whether it has improved the functioning of financial markets.

Financial Regulation Abroad

Not surprisingly, given the similarity of the economic system here and in Japan, Canada, and the nations of Western Europe, financial regulation in these countries is similar to financial regulation in the United States. The provision of information is improved by requiring corporations issuing securities to report details about assets and liabilities, earnings, and sales of stock, and by prohibiting insider trading. The soundness of intermediaries is ensured by licensing, periodic inspection of financial intermediaries' books, and the provision of deposit insurance (although its coverage is smaller than in the United States and its existence is often intentionally not advertised).

The major differences between financial regulation in the United States and abroad relate to bank regulation. In the past, the United States was the only industrialized country to subject banks to restrictions on branching, which limited banks' size

and restricted them to certain geographic regions. (These restrictions were abolished by legislation in 1994.) U.S. banks are also the most restricted in the range of assets they may hold. Banks abroad frequently hold shares in commercial firms; in Japan and Germany, those stakes can be sizable.

Summary

1. The basic function of financial markets is to channel funds from savers who have an excess of funds to spenders who have a shortage of funds. Financial markets can do this either through direct finance, in which borrowers borrow funds directly from lenders by selling them securities, or through indirect finance, which involves a financial intermediary that stands between the lender-savers and the borrower-spenders and helps transfer funds from one to the other. This channeling of funds improves the economic welfare of everyone in the society, because it allows funds to move from people who have no productive investment opportunities to those who have such opportunities, thereby contributing to increased efficiency in the economy. In addition, channeling of funds directly benefits consumers by allowing them to make purchases when they need them most.
2. Financial markets can be classified as debt and equity markets, primary and secondary markets, exchanges and over-the-counter markets, and money and capital markets.
3. An important trend in recent years is the growing internationalization of financial markets. Eurobonds, which are denominated in a currency other than that of the country in which they are sold, are now the dominant security in the international bond market and have surpassed U.S. corporate bonds as a source of new funds. Eurodollars, which are U.S. dollars deposited in foreign banks, are an important source of funds for American banks.
4. Financial intermediaries are financial institutions that acquire funds by issuing liabilities and in turn use those funds to acquire assets by purchasing securities or making loans. Financial intermediaries play an important role in the financial system, because they reduce transaction costs, allow risk sharing, and solve problems created by adverse selection and moral hazard. As a result, financial intermediaries allow small savers and borrowers to benefit from the existence of financial markets, thereby increasing the efficiency of the economy.
5. The principal financial intermediaries fall into three categories: (a) banks—commercial banks, savings and loan associations, mutual savings banks, and credit unions; (b) contractual savings institutions—life insurance companies, fire and casualty insurance companies, and pension funds; and (c) investment intermediaries—finance companies, mutual funds, and money market mutual funds.
6. The government regulates financial markets and financial intermediaries for two main reasons: to increase the information available to investors and to ensure the soundness of the financial system. Regulations include requiring disclosure of information to the public, restrictions on who can set up a financial intermediary, restrictions on what assets financial intermediaries can hold, the provision of deposit insurance, reserve requirements, and the setting of maximum interest rates that can be paid on checking accounts and savings deposits.

Key Terms

asset transformation, p. 32
adverse selection, p. 32
asymmetric information, p. 32
brokers, p. 26
capital market, p. 27
dealers, p. 26
diversification, p. 32
dividends, p. 26
economies of scale, p. 30

equities, p. 26
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Questions and Problems

Questions marked with an asterisk are answered at the end of the book in an appendix, "Answers to Selected Questions and Problems."

*1. Why is a share of IBM common stock an asset for its owner and a liability for IBM?

2. If I can buy a car today for $5,000 and it is worth $10,000 in extra income next year to me because it enables me to get a job as a traveling anvil seller, should I take out a loan from Larry the Loan Shark at a 90% interest rate if no one else will give me a loan? Will I be better or worse off as a result of taking out this loan? Can you make a case for legalizing loan-sharking?

*3. Some economists suspect that one of the reasons that economies in developing countries grow so slowly is that they do not have well-developed financial markets. Does this argument make sense?

4. The U.S. economy borrowed heavily from the British in the nineteenth century to build a railroad system. What was the principal debt instrument used? Why did this make both countries better off?

*5. "Because corporations do not actually raise any funds in secondary markets, they are less important to the economy than primary markets." Comment.

6. If you suspect that a company will go bankrupt next year, which would you rather hold, bonds issued by the company or equities issued by the company? Why?

*7. How can the adverse selection problem explain why you are more likely to make a loan to a family member than to a stranger?

8. Think of one example in which you have had to deal with the adverse selection problem.

*9. Why do loan sharks worry less about moral hazard in connection with their borrowers than some other lenders do?

10. If you are an employer, what kinds of moral hazard problems might you worry about with your employees?

*11. If there were no asymmetry in the information that a borrower and a lender had, could there still be a moral hazard problem?

12. "In a world without information and transaction costs, financial intermediaries would not exist." Is this statement true, false, or uncertain? Explain your answer.

*13. Why might you be willing to make a loan to your neighbor by putting funds in a savings account earning a 5% interest rate at the bank and having the bank lend her the funds at a 10% interest rate rather than lend her the funds yourself?

14. How does risk sharing benefit both financial intermediaries and private investors?

*15. Discuss some of the manifestations of the globalization of world capital markets.

Web Exercises

1. One of the single best sources of information about financial institutions is the U.S. Flow of Funds report produced by the Federal Reserve. This document contains data on most financial intermediaries. Go to www.federalreserve.gov/releases/Z1/. Go to the most current release. You may have to load Acrobat Reader if your computer does not already have it. The site has a link for a free patch. Go to the Level Tables and answer the following.
   a. What percent of assets do commercial banks hold in loans? What percent of assets are held in mortgage loans?
   b. What percent of assets do Savings and Loans hold in mortgage loans?
   c. What percent of assets do credit unions hold in mortgage loans and in consumer loans?

2. The most famous financial market in the world is the New York Stock Exchange. Go to www.nyse.com.
   a. What is the mission of the NYSE?
   b. Firms must pay a fee to list their shares for sale on the NYSE. What would be the fee for a firm with 5 million shares common outstanding?

appendix to chapter 2

Financial Market Instruments

Here we examine the securities (instruments) traded in financial markets. We first focus on the instruments traded in the money market and then turn to those traded in the capital market.

Money Market Instruments

Because of their short terms to maturity, the debt instruments traded in the money market undergo the least price fluctuations and so are the least risky investments. The money market has undergone great changes in the past three decades, with the amount of some financial instruments growing at a far more rapid rate than others.

The principal money market instruments are listed in Table 1 along with the amount outstanding at the end of 1970, 1980, 1990, and 2002.

United States Treasury Bills. These short-term debt instruments of the U.S. government are issued in 3-, 6-, and 12-month maturities to finance the federal government. They pay a set amount at maturity and have no interest payments, but they effectively pay interest by initially selling at a discount, that is, at a price lower than the set amount paid at maturity. For instance, you might pay $9,000 in May 2004 for a one-year Treasury Bill that can be redeemed in May 2005 for $10,000.

U.S. Treasury bills are the most liquid of all the money market instruments, because they are the most actively traded. They are also the safest of all money market instruments, because there is almost no possibility of *default*, a situation in which the party issuing the debt instrument (the federal government, in this case) is unable to make interest payments or pay off the amount owed when the instrument matures. The federal government is always able to meet its debt obligations, because it can raise taxes or issue *currency* (paper money or coins) to pay off its debts. Treasury bills are held mainly by banks, although small amounts are held by households, corporations, and other financial intermediaries.

Negotiable Bank Certificates of Deposit. A *certificate of deposit* (*CD*) is a debt instrument, sold by a bank to depositors, that pays annual interest of a given amount and at maturity, pays back the original purchase price. Before 1961, CDs were nonnegotiable; that is, they could not be sold to someone else and could not be redeemed from the bank before maturity without paying a substantial penalty. In 1961, to make CDs more liquid and more attractive to investors, Citibank introduced the first negotiable CD in large denominations (over $100,000) that could be resold in a secondary market. This instrument is now issued by almost all the major commercial banks and has been extremely successful, with the amount outstanding currently around $1.2 trillion. CDs

Table 1 Principal Money Market Instruments

Type of Instrument	Amount Outstanding ($ billions, end of year) 1970	1980	1990	2002
U.S. Treasury bills	81	216	527	888
Negotiable bank certificates of deposit (large denominations)	55	317	543	1,177
Commercial paper	33	122	557	1,321
Banker's acceptances	7	42	52	9
Repurchase agreements	3	57	144	470
Federal funds*	16	18	61	29
Eurodollars	2	55	92	213

*Figures after 1970 are for large banks only.

Sources: Federal Reserve Flow of Funds Accounts; Federal Reserve *Bulletin*; *Banking and Monetary Statistics, 1945–1970*; *Annual Statistical Digest, 1971–1975*; *Economic Report of the President.* www.federalreserve.gov/releases/z1

are an extremely important source of funds for commercial banks, from corporations, money market mutual funds, charitable institutions, and government agencies.

Commercial Paper. *Commercial paper* is a short-term debt instrument issued by large banks and well-known corporations, such as General Motors and AT&T. Before the 1960s, corporations usually borrowed their short-term funds from banks, but since then they have come to rely more heavily on selling commercial paper to other financial intermediaries and corporations for their immediate borrowing needs; in other words, they engage in direct finance. Growth of the commercial paper market has been substantial: The amount of commercial paper outstanding has increased by over 3,900% (from $33 billion to $1.3 trillion) in the period 1970–2002. We discuss why the commercial paper market has had such tremendous growth in Chapter 10.

Banker's Acceptances. These money market instruments are created in the course of carrying out international trade and have been in use for hundreds of years. A *banker's acceptance* is a bank draft (a promise of payment similar to a check) issued by a firm, payable at some future date, and guaranteed for a fee by the bank that stamps it "accepted." The firm issuing the instrument is required to deposit the required funds into its account to cover the draft. If the firm fails to do so, the bank's guarantee means that it is obligated to make good on the draft. The advantage to the firm is that the draft is more likely to be accepted when purchasing goods abroad, because the foreign exporter knows that even if the company purchasing the goods goes bankrupt, the bank draft will still be paid off. These "accepted" drafts are often resold in a secondary market at a discount and are therefore similar in function to Treasury bills. Typically, they are held by many of the same parties that hold Treasury bills, and the amount outstanding has experienced limited growth, rising by 28% ($7 billion to $9 billion) from 1970 to 2002.

Following the Financial News

Money Market Rates

The *Wall Street Journal* publishes daily a listing of interest rates on many different financial instruments in its "Money Rates" column. (See "Today's Contents" on page 1 of the *Journal* for the location.)

The four interest rates in the "Money Rates" column that are discussed most frequently in the media are these:

- *Prime rate:* The base interest rate on corporate bank loans, an indicator of the cost of business borrowing from banks
- *Federal funds rate:* The interest rate charged on overnight loans in the federal funds market, a sensitive indicator of the cost to banks of borrowing funds from other banks and the stance of monetary policy
- *Treasury bill rate:* The interest rate on U.S. Treasury bills, an indicator of general interest-rate movements
- *Federal Home Loan Mortgage Corporation rates:* Interest rates on "Freddie Mac"–guaranteed mortgages, an indicator of the cost of financing residential housing purchases

MONEY RATES

Wednesday, June 3, 2003

The key U.S., and foreign annual interest rates below are a guide to general levels but don't always represent actual transactions.

PRIME RATE: 4.25% (effective 11/07/02).

DISCOUNT RATE: 2.25% (effective 01/09/03).

FEDERAL FUNDS: 1.250% high, 1.000% low, 1.125% near closing bid, 1.188% offered. Effective rate: 1.22%. Source: Prebon Yamane (USA) Inc. Federal-funds target rate: 1.250% (effective 11/06/02).

CALL MONEY: 3.00% (effective 11/07/02).

COMMERCIAL PAPER: Placed directly by General Electric Capital Corp.: 1.05% 30 to 35 days; 1.24% 36 to 43 days; 1.23% 44 to 70 days; 1.21% 71 to 99 days; 1.19% 100 to 113 days; 1.05% 114 to 122 days; 1.19% 123 to 143 days; 1.17% 144 to 270 days.

EURO COMMERCIAL PAPER: Placed directly by General Electric Capital Corp.: 2.25% 30 days; 2.20% two months; 2.19% three months; 2.15% four months; 2.14% five months; 2.13% six months.

DEALER COMMERCIAL PAPER: High-grade unsecured notes sold through dealers by major corporations: 1.21% 30 days; 1.20% 60 days; 1.19% 90 days.

CERTIFICATES OF DEPOSIT: 1.26% one month; 1.21% three months; 1.18% six months.

BANKERS ACCEPTANCE: 1.25% 30 days; 1.22% 60 days; 1.19% 90 days; 1.17% 120 days; 1.16% 150 days; 1.14% 180 days; Source: Prebon Yamane (USA) Inc.

LONDON INTERBANK OFFERED RATES (LIBOR): 1.31875% one month; 1.2800% three months; 1.2300% six months; 1.2300% one year. Effective rate for contracts entered into two days from date appearing at top of this column.

EURO INTERBANK OFFERED RATES (EURIBOR): 2.319% one month; 2.235% three months; 2.179% six months; 2.122% one year. Source: Reuters.

FOREIGN PRIME RATES: Canada 5.00%; European Central Bank 2.50%; Japan 1.375%; Switzerland 2.25%; Britain 3.75%

TREASURY BILLS: Results of the Monday, June 2, 2003, auction of short-term U.S. government bills, sold at a discount from face value in units of $1,000 to $1 million: 1.110% 13 weeks; 1.095% 26 weeks. Tuesday, June 3, 2003 auction: 1.140% 4 weeks.

OVERNIGHT REPURCHASE RATE: 1.22%. Source: Garban Intercapital

FREDDIE MAC: Posted yields on 30-year mortgage commitments. Delivery within 30 days 4.68%, 60 days 4.80%, standard conventional fixed-rate mortgages: 2.875%, 2% rate capped one-year adjustable rate mortgages.

FANNIE MAE: Posted yields on 30 year mortgage commitments (priced at par) for delivery within 30 days 4.78%, 60 days 4.87% standard conventional fixed-rate mortgages; 3.00% 6/2 rate capped one-year adjustable rate mortgages. Constant Maturity Debt Index: 1.193% three months; 1.119% six months; 1.187% one year

MERRILL LYNCH READY ASSETS TRUST: 0.78%.

CONSUMER PRICE INDEX: April 183.8, up 2.2% from a year ago. Bureau of Labor Statistics.

Source: Wall Street Journal, Wednesday, June 4, 2003, p. C14.

Repurchase Agreements. *Repurchase agreements*, or *repos*, are effectively short-term loans (usually with a maturity of less than two weeks) in which Treasury bills serve as *collateral*, an asset that the lender receives if the borrower does not pay back the loan. Repos are made as follows: A large corporation, such as General Motors, may have some idle funds in its bank account, say $1 million, which it would like to lend for a week. GM uses this excess $1 million to buy Treasury bills from a bank, which agrees

to repurchase them the next week at a price slightly above GM's purchase price. The effect of this agreement is that GM makes a loan of $1 million to the bank and holds $1 million of the bank's Treasury bills until the bank repurchases the bills to pay off the loan. Repurchase agreements are a fairly recent innovation in financial markets, having been introduced in 1969. They are now an important source of bank funds (over $400 billion). The most important lenders in this market are large corporations.

Federal (Fed) Funds. These are typically overnight loans between banks of their deposits at the Federal Reserve. The *federal funds* designation is somewhat confusing, because these loans are not made by the federal government or by the Federal Reserve, but rather by banks to other banks. One reason why a bank might borrow in the federal funds market is that it might find it does not have enough deposits at the Fed to meet the amount required by regulators. It can then borrow these deposits from another bank, which transfers them to the borrowing bank using the Fed's wire transfer system. This market is very sensitive to the credit needs of the banks, so the interest rate on these loans, called the federal funds rate, is a closely watched barometer of the tightness of credit market conditions in the banking system and the stance of monetary policy; when it is high, it indicates that the banks are strapped for funds, whereas when it is low, banks' credit needs are low.

Capital Market Instruments

Capital market instruments are debt and equity instruments with maturities of greater than one year. They have far wider price fluctuations than money market instruments and are considered to be fairly risky investments. The principal capital market instruments are listed in Table 2, which shows the amount outstanding at the end of 1970, 1980, 1990, and 2002.

Table 2 Principal Capital Market Instruments

Type of Instrument	Amount Outstanding ($ billions, end of year) 1970	1980	1990	2002
Corporate stocks (market value)	906	1,601	4,146	11,734
Residential mortgages	355	1,106	2,886	6,930
Corporate bonds	167	366	1,008	2,699
U.S. government securities (marketable long-term)	160	407	1,653	2,169
U.S. government agency securities	51	193	435	2,305
State and local government bonds	146	310	870	1,442
Bank commercial loans	152	459	818	1,345
Consumer loans	134	355	813	1,757
Commercial and farm mortgages	116	352	829	1,461

Sources: Federal Reserve Flow of Funds Accounts; Federal Reserve *Bulletin*; *Banking and Monetary Statistics, 1941–1970*. http://www.federalreserve.gov/releases/z1

Stocks. *Stocks* are equity claims on the net income and assets of a corporation. Their value of $11 trillion at the end of 2002 exceeds that of any other type of security in the capital market. The amount of new stock issues in any given year is typically quite small—less than 1% of the total value of shares outstanding. Individuals hold around half of the value of stocks; the rest are held by pension funds, mutual funds, and insurance companies.

Mortgages. *Mortgages* are loans to households or firms to purchase housing, land, or other real structures, where the structure or land itself serves as collateral for the loans. The mortgage market is the largest debt market in the United States, with the amount of residential mortgages (used to purchase residential housing) outstanding more than quadruple the amount of commercial and farm mortgages. Savings and loan associations and mutual savings banks have been the primary lenders in the residential mortgage market, although commercial banks have started to enter this market more aggressively. The majority of commercial and farm mortgages are made by commercial banks and life insurance companies. The federal government plays an active role in the mortgage market via the three government agencies—the Federal National Mortgage Association (FNMA, "Fannie Mae"), the Government National Mortgage Association (GNMA, "Ginnie Mae"), and the Federal Home Loan Mortgage Corporation (FHLMC, "Freddie Mac")—that provide funds to the mortgage market by selling bonds and using the proceeds to buy mortgages. An important development in the residential mortgage market in recent years is the mortgage-backed security (see Box 1).

Box 1

Mortgage-Backed Securities

A major change in the residential mortgage market in recent years has been the creation of an active secondary market for mortgages. Because mortgages have different terms and interest rates, they were not sufficiently liquid to trade as securities on secondary markets. To stimulate mortgage lending, in 1970 the Government National Mortgage Association (GNMA, called "Ginnie Mae") developed the concept of a pass-through *mortgage-backed security* when it began a program in which it guaranteed interest and principal payments on bundles of standardized mortgages. Under this program, private financial institutions such as savings and loans and commercial banks were now able to gather a group of GNMA-guaranteed mortgages into a bundle of, say, $1 million and then sell this bundle as a security to a third party (usually a large institutional investor such as a pension fund). When individuals make their mortgage payments on the GNMA-guaranteed mortgage to the financial institution, the financial institution passes the payments through to the owner of the security by sending a check for the total of all the payments. Because GNMA guarantees the payments, these pass-through securities have a very low default risk and are very popular, with amounts outstanding exceeding $500 billion.

Mortgage-backed securities are issued not only by the government agencies, but also by private financial institutions. Indeed, mortgage-backed securities have been so successful that they have completely transformed the residential mortgage market. Throughout the 1970s, over 80% of residential mortgages were owned outright by savings and loans, mutual savings banks, and commercial banks. Now only one-third are owned outright by these institutions, with two-thirds held as mortgage-backed securities.

Corporate Bonds. These are long-term bonds issued by corporations with very strong credit ratings. The typical *corporate bond* sends the holder an interest payment twice a year and pays off the face value when the bond matures. Some corporate bonds, called *convertible bonds*, have the additional feature of allowing the holder to convert them into a specified number of shares of stock at any time up to the maturity date. This feature makes these convertible bonds more desirable to prospective purchasers than bonds without it, and allows the corporation to reduce its interest payments, because these bonds can increase in value if the price of the stock appreciates sufficiently. Because the outstanding amount of both convertible and nonconvertible bonds for any given corporation is small, they are not nearly as liquid as other securities such as U.S. government bonds.

Although the size of the corporate bond market is substantially smaller than that of the stock market, with the amount of corporate bonds outstanding less than one-fourth that of stocks, the volume of new corporate bonds issued each year is substantially greater than the volume of new stock issues. Thus the behavior of the corporate bond market is probably far more important to a firm's financing decisions than the behavior of the stock market. The principal buyers of corporate bonds are life insurance companies; pension funds and households are other large holders.

U.S. Government Securities. These long-term debt instruments are issued by the U.S. Treasury to finance the deficits of the federal government. Because they are the most widely traded bonds in the United States (the volume of transactions on average exceeds $100 billion daily), they are the most liquid security traded in the capital market. They are held by the Federal Reserve, banks, households, and foreigners.

U.S. Government Agency Securities. These are long-term bonds issued by various government agencies such as Ginnie Mae, the Federal Farm Credit Bank, and the Tennessee Valley Authority to finance such items as mortgages, farm loans, or power-generating equipment. Many of these securities are guaranteed by the federal government. They function much like U.S. government bonds and are held by similar parties.

State and Local Government Bonds. State and local bonds, also called *municipal bonds*, are long-term debt instruments issued by state and local governments to finance expenditures on schools, roads, and other large programs. An important feature of these bonds is that their interest payments are exempt from federal income tax and generally from state taxes in the issuing state. Commercial banks, with their high income tax rate, are the biggest buyers of these securities, owning over half the total amount outstanding. The next biggest group of holders consists of wealthy individuals in high income brackets, followed by insurance companies.

Consumer and Bank Commercial Loans. These are loans to consumers and businesses made principally by banks, but—in the case of consumer loans—also by finance companies. There are often no secondary markets in these loans, which makes them the least liquid of the capital market instruments listed in Table 2. However, secondary markets have been rapidly developing.