CHAPTER 5

The Financial System, Corporate Governance, and Interest

CHAPTER OUTLINE

In Chapter 1 we touched on the nature of the financial system when we described financial assets and markets. In this chapter we'll expand on those ideas. We'll have a closer look at the money flows in the economy and gain a better understanding of the manner in which investors, companies, and securities come together in stock and bond markets. Finally, we'll take an in-depth look at interest, the price of money.

THE FINANCIAL SYSTEM

An industrialized economy consists of three sectors: consumption, production, and government. The consumption sector is made up of households buying and consuming products and services that are created in the production sector. The government sector produces services that are used by both consumers and producers, and collects taxes from both.

It's important to understand that the sectors are conceptual, and that individual people are generally in at least two sectors at the same time. For example, when workers are on the job they're in the production sector, but when they go home they become part of the consumption sector.

With respect to the issues we'll be illustrating here, the government sector acts a great deal like the production sector. It pays its employees wages and creates services that are "purchased" with tax dollars. It also issues debt securities that function much like those of corporations. Therefore, we'll lump government and production together and talk about just two sectors, production and consumption.

http://

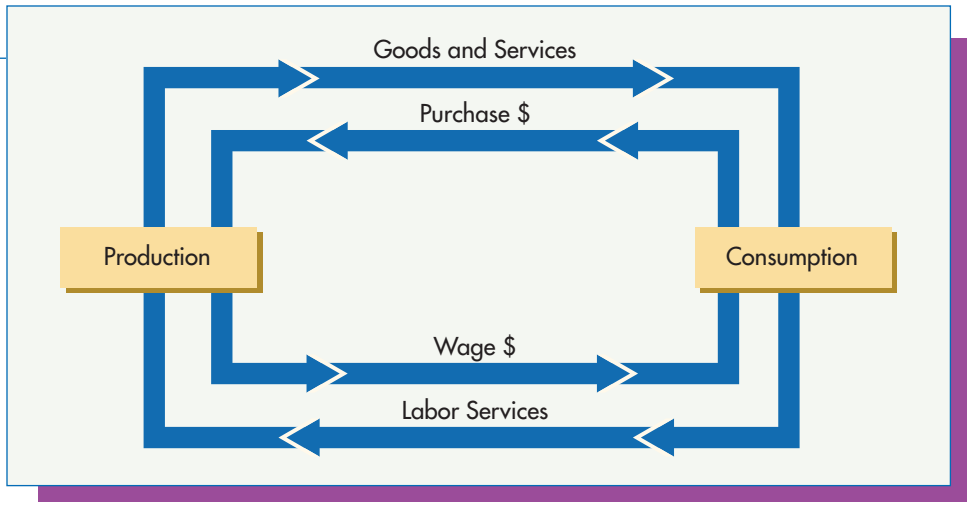
Check the Economic Statistics Briefing Room for data on production and consumption at **http://www.whitehouse.gov/fsbr/esbr.html**

CASH FLOWS BETWEEN THE SECTORS

Money flows back and forth between the production and consumption sectors every day. The wages workers receive for their roles in the production process represent income to the consumption sector. The money consumers spend on products and services in turn becomes income to the production sector. Producers spend their income on inputs used to produce more product, including wages that flow back to the consumption sector, and so on, creating a cyclical flow of money. These normal, everyday flows are illustrated in Figure 5.1.

Figure 5.1

Everyday Money Flows between Sectors



SAVINGS AND INVESTMENT

Two important features of the system are not included in Figure 5.1. The first involves the consumption sector. People generally don't spend their entire incomes on consumption. Most save at least a little and need a place to put savings in which a return[1] can be earned.

The second missing feature involves the production sector. In addition to doing everyday business, companies occasionally spend large sums of money on projects such as new factories, additional equipment, and starting new enterprises.

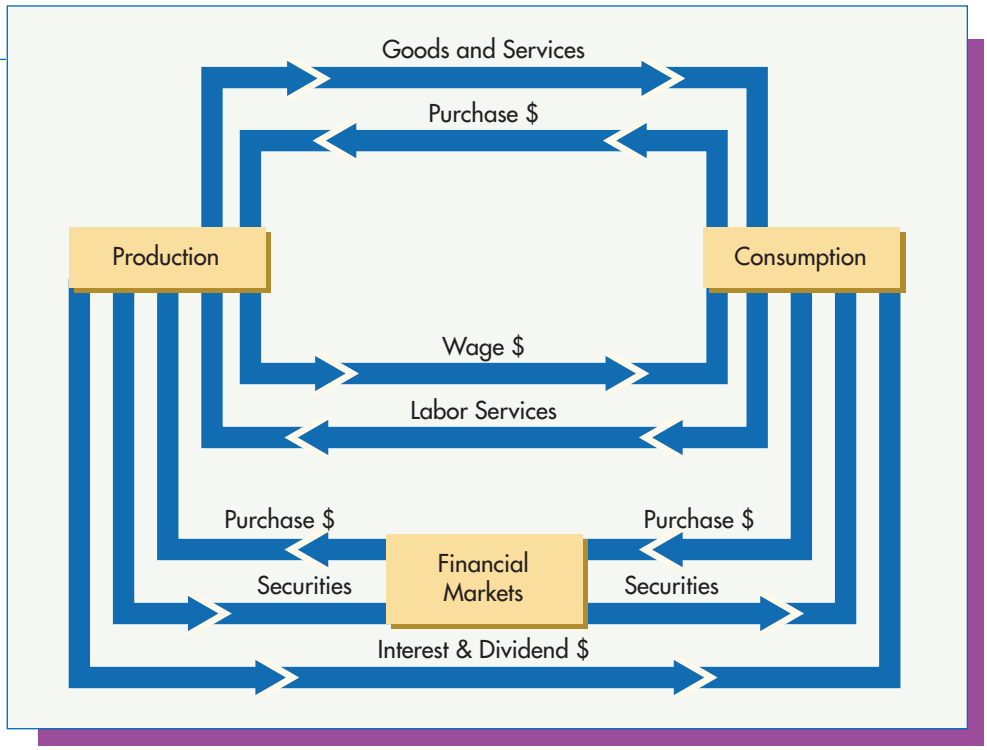
In other words, each sector has a need that isn't pictured in Figure 5.1. Consumers need a way to save the income they don't spend, and companies need a way to obtain extra money for occasional major projects.

These needs are happily coincidental. The economic system contains a source of money in consumer savings and a use for it in funding business projects. All that's lacking is a way to connect the two. That is, we have to put companies' needs for extra money together with the availability of money saved by consumers.

1. A return is extra income we receive for letting someone else use our money. Interest, for example, is the return lenders receive for letting borrowers use their money.

Figure 5.2

Flows between Sectors



Financial markets connect production's need for money with consumption's available savings.

The connection is provided by *financial markets* in which buyers and sellers of financial assets meet. Companies that need money issue securities, usually stocks or bonds, which are sold to individuals. Consumers buy the securities with their savings, and companies use the proceeds to do their projects.

Consumers are said to *invest* in the securities, which are expected to generate a *return* on the money invested in their purchase. That return comes in the form of interest on bonds or dividends and price appreciation in the case of stock.

Figure 5.2 shows the financial system redrawn to include the previously omitted features. In short, financial markets provide a conduit for the transfer of savings from the consumption sector to the production sector. When the production sector uses this money it is said to be *investing* in projects, enterprises, and assets. Hence, economists say that *savings equals investment* in the economy.[2]

Consumer **savings equals** industrial **investment.**

Financial markets are extremely important to the health of an economy. Their role and function will be a major focus of our study in this book.

Raising and Spending Money in Business

Here's another way to think about the system shown in Figure 5.2. We can think of a company as spending two kinds of money. One kind is the day-to-day funds that come from normal profits and are used to support routine activities. The other kind is the

2. Notice that the term "invest" seems to have two slightly different meanings. Individuals are said to invest in financial assets, while firms invest in production facilities and equipment. What economists actually mean when they say savings equals investment is that investment by consumers in financial assets (savings) equals investment by companies in the means of production.

large sums occasionally needed to support major projects and get businesses started. These funds are raised by selling financial assets.

The money flows at the top of Figure 5.2 represent the routine day-to-day activities. The second kind of money, which supports large projects and investments in equipment, generally doesn't come from operating funds. Firms more frequently raise that money as needed through financial markets. This money-raising process is represented in the bottom portion of Figure 5.2.

When money for a project is raised by borrowing, we say the project is *debt financed*. When the money comes from the sale of stock or from the company's earnings, we say the project is *equity financed*.

Term

The word "term" refers to the length of time between the present and the end or *termination* of something. Both financial investments and physical projects have terms. A long-term project is one that will take a long time to complete. A long-term loan is one that doesn't have to be repaid for several years. The word "maturity" is also used to indicate the term of a loan. Debt *matures* on the day it is to be repaid.

Debt financing is said to be either long or short term depending on the length of time allowed until it has to be paid back. Short term generally means less than a year, intermediate term is one to five years, and long term is more than five years. People frequently leave out the intermediate-term concept and just think of long- and short-term debt as being more or less than one year.

Stocks have an indefinite term in that they have no specified repayment date. Therefore, they're thought of as very long-term financing.

The projects we talked about in the last section tend to be long term, like getting businesses started or buying fixed assets. It's common practice to match the term of a project or asset with the term of the financing that pays for it. For example, funding for a project expected to take 10 years shouldn't need to be repaid in much less than 10 years. The practice is called **maturity matching**.

Maturity matching: A project's duration should match the term of the financing that supports it.

FINANCIAL MARKETS

Financial markets are classified in several ways. We'll discuss classifications with respect to term and purpose.

Capital Markets

Money acquired for long periods is referred to as **capital**, and the financial markets that deal with it are known as **capital markets**. They trade in stocks and in debt securities having terms longer than one year.[3]

Capital markets deal in long-term debt and stock.

Money Markets

Markets in which short-term debt is traded are called **money markets**. They play an important role in setting interest rates for the rest of the economy, which we'll get into later in the chapter.

In business, most of the money that supports day-to-day operations is generated by sales. However, companies do borrow short term to cover temporary operating shortages. Most of the time, short-term corporate borrowing is done from banks, but there

Money markets deal in short-term debt.

3. The word **capital** (assets) also refer to the long-lived assets generally purchased with capital funds.

are financial markets that deal in short-term debt instruments[4] known as *notes*, *bills*, and *commercial paper*.

Federal borrowing supports yearly **deficit spending** and the **national debt**.

The federal government is especially active in issuing short-term debt. In the last 50 years, the government consistently spent more than it took in, creating a *federal budget deficit* in nearly every year. The accumulated sum of the annual deficits is the **national debt**. The government borrows to fund yearly deficits and to replace old debt as it matures. More than half of the national debt is short term, so there's a very active market in short-term federal debt.

Primary and Secondary Markets

The basic purpose of financial markets is to facilitate the flow of funds from the saving public to the production sector for investment in business projects. However, most of what goes on in the largest and best known markets has little to do with that transfer.

Funds are actually transferred from individual investors to companies only when securities are issued and purchased for the first time. Immediately after that first sale, securities belong to individual investors who may or may not choose to retain them permanently. In most cases, investors hold onto securities for a while but eventually sell them to others. Security sales subsequent to the first one are *between investors* and don't involve the issuing company at all.

The initial sale of a security is a **primary market** transaction. Subsequent sales between investors are in the **secondary market**.

The first sale of a security, in which the money proceeds go to the issuing company, is called a **primary market** transaction. Subsequent sales of the security, between investors, are called **secondary market** transactions. The vast majority of transactions in traditional financial markets like the stock market are secondary.

from the **CFO**

Corporate financial managers are concerned about secondary stock market transactions even though there's no immediate cash impact on their companies. The secondary market sets the level of a stock's price and therefore influences how much can be raised in future issues. *In addition, senior managers' compensation is usually tied to the company's stock price, and that tends to generate an intense interest in the secondary market.*

Direct and Indirect Transfers, Financial Intermediaries

Primary market transactions, which transfer money from individual investors to companies, can occur directly or indirectly through a financial intermediary. Let's consider the direct method first.

In a direct transfer, an investor simply buys the security of a company. That kind of transfer is shown in Figure 5.3a, but it's a rare occurrence as illustrated. Companies don't usually market new securities to the public by themselves. Rather, they use the services of an **investment bank**, an organization that helps market new securities.

An **investment bank** helps companies market their securities.

The investment bank typically lines up investors interested in buying a new issue beforehand, and functions as a broker bringing buyers and sellers together. A direct transfer through such an organization is illustrated in Figure 5.3b. The transfer is direct because, even though the investment bank may take temporary possession of the securities, it actually just passes them through to the buyer.

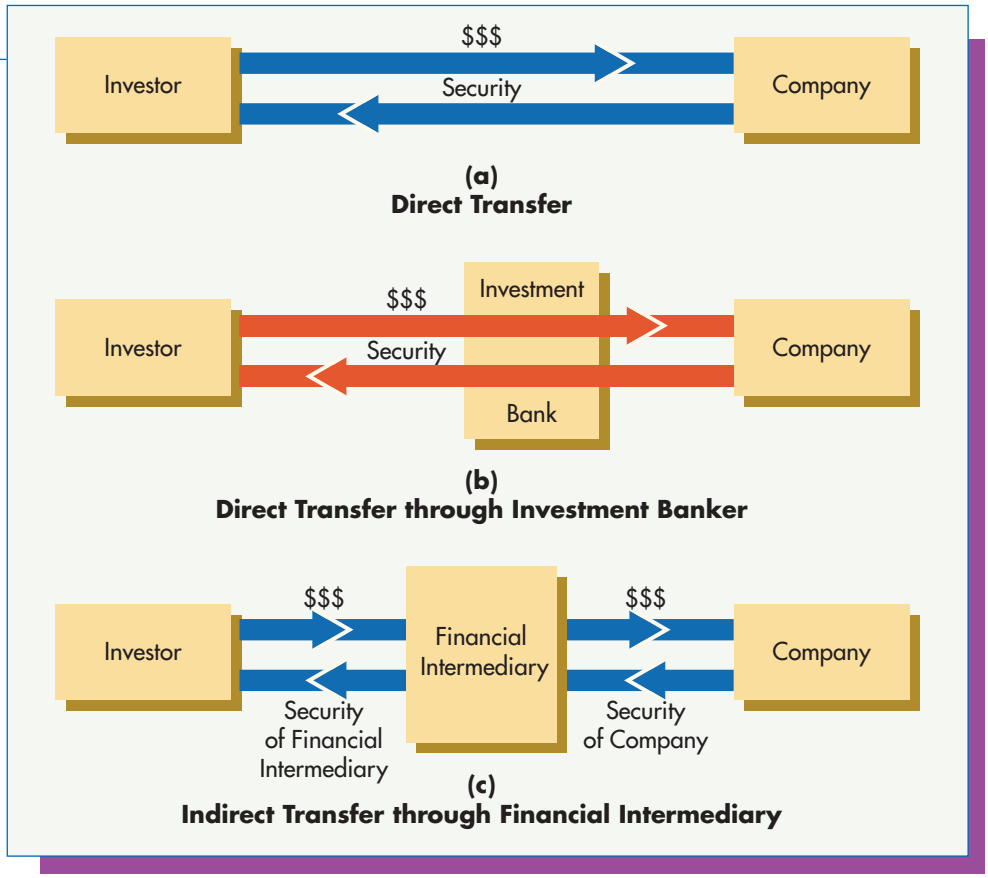
A financial intermediary sells shares in itself and invests the funds collectively on behalf of its investors.

The indirect transfer is illustrated in Figure 5.3c. Although the diagram looks similar to 5.3b, something very different is taking place. In an indirect transfer, a **financial intermediary** collects money from many individuals, pools it, and then makes investments with it. The securities purchased are not passed through to the individual investors. Instead, the financial intermediary holds on to those securities and gives the individual investors a *security of its own*. That is, it gives them some kind of claim upon itself.

4. The term **financial instrument** is another expression for a security or a document evidencing a debt.

Figure 5.3

Transfer of Funds from Investors to Businesses



A *mutual fund* is a good example. It takes money from many individual investors and uses it to buy a portfolio of stocks and bonds. (A portfolio is a collection of financial assets.) Each investor receives a number of *shares in the fund* proportionate to the size of his or her investment, but none of the individual stocks and bonds from the portfolio.

The important point is that the portfolio is owned *collectively* by individuals who have invested in the fund, but no one can identify any particular stock or bond as his or her own. An important result of this arrangement is that the fund's management controls the pooled resources of many people, which often amounts to a vast sum of money. As a result, funds have a great deal of influence in stock and bond markets.

Financial intermediaries are **institutional investors.**

Mutual funds and similar financial intermediaries are called **institutional investors** and play a major role in today's financial markets. They own about one quarter of the stocks listed on the major exchanges but make about three quarters of the trades. That makes them very influential in setting prices and trends in the secondary market.

VIDEO

Here are some other kinds of financial intermediaries.

Pension funds receive the retirement contributions of workers and employers, and invest the money in stocks, bonds, and real estate. Employees own pension accounts representing their proportionate share of the fund assets.

Insurance companies collect premiums from customers and invest the money to provide a pool of assets from which to pay claims.

Banks receive deposits from individuals and make loans to companies. The bank's portfolio of financial assets is its loan portfolio, while depositors' accounts represent claims on those assets.

THE STOCK MARKET AND STOCK EXCHANGES

We briefly described the stock market in Chapter 1. In this section we'll amplify that description and develop an understanding of the market's workings.

OVERVIEW

http://

Visit the Education site at the NYSE at **http://www.nyse.com.** *Select "About the NYSE," and then click on "Education."*

The stock market is a financial system or organization embedded within the larger economic system of the nation. It isn't a single place where people go to buy and sell stocks, although many people associate it with the New York Stock Exchange (NYSE).

Rather, the stock market is a network of **exchanges** and **brokers**. An exchange is actually a company that provides a physical marketplace and the administrative capability of transferring stocks from one owner to another. **Brokerage firms**, or **houses**, are also companies. They employ individuals (the brokers) who are licensed by the government to assist people in buying and selling securities. Both the exchanges and the brokers earn a living from commissions and fees charged on transactions made by people who buy and sell securities.

The government grants the exchange the basic right to make a market in securities. Brokers are *members* of stock exchanges. Each exchange has a limited number of *seats* that are purchased by brokerage firms. Owning a seat makes one a member and confers the right to do business on the exchange.

TRADING—THE ROLE OF BROKERS

To buy or sell stocks, an individual investor must have an account with a broker. The investor is said to be the broker's customer or client. When customers want to trade in stocks, they place orders with their brokers to buy or sell. It's common practice to do this by telephone. Major brokerage houses have offices located throughout the country, and people usually deal with individual brokers located in a nearby office.

Floor brokers trade on the floor of the exchange.

Brokerage firms also have representatives at the exchange. Upon receiving orders from customers, local brokers submit them to representatives known as **floor brokers** on the trading floor of the exchange.

Specialists make markets in designated securities.

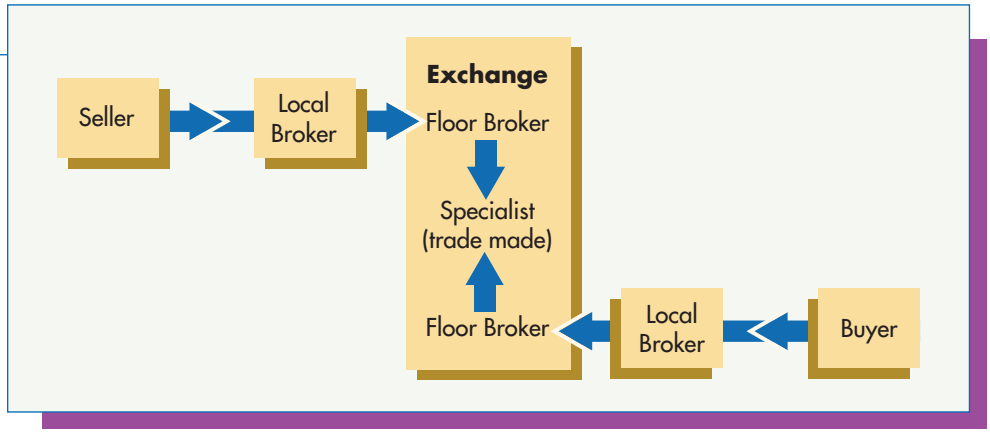
Each stock is traded in a particular spot on the exchange floor in an auction-like process, which is supervised by an individual called a **specialist** in that stock. Specialists are responsible for conducting an orderly market in the stocks they are assigned.

Floor brokers take their orders to the spots where representatives of buyers and sellers meet and execute transactions. Once trades are made, confirmations are passed back to the local brokers and their clients. Actual settlement of the sale and transfer of the stock doesn't happen until a few days later. Figure 5.4 is a representation of the process.

Figure 5.5 is a photograph of the trading floor of the New York Stock Exchange. Notice that people are doing business while standing in groups at various places around the floor. Trading between floor brokers and specialists goes on in such groups continually while the exchange is open. Figure 5.6 shows the imposing exterior of the exchange.

Figure 5.4

Schematic Representation of a Stock Market Transaction



EXCHANGES

There are several stock exchanges in the United States. By far the largest is the New York Stock Exchange (NYSE) in the downtown financial district of New York City, the area collectively referred to as Wall Street. The NYSE deals in the securities of about 2,800 American and 460 foreign companies. Those stocks are said to be *listed* on the exchange. The NYSE handles most of the stock trading activity in the nation. The American Stock Exchange (AMEX) is located a few blocks away. The companies

Image not available due to copyright restrictions

it lists are also relatively large but not quite as large or as old as those listed on the NYSE. A third major exchange is called NASDAQ. We'll discuss it shortly.

In addition to the NYSE, the AMEX, and NASDAQ, there are several regional exchanges located in other major cities. They generally list companies of local interest.

Today the exchanges are linked electronically, which makes them function like one big exchange for many purposes.

The Market

All the activity we've just described and more make up the *stock market*. Although the exchange represents a physical center for much of what goes on, the term "market" refers to the entire interconnected set of places, organizations, and processes.

Image not available due to copyright restrictions

Regulation

Securities markets are regulated under both state and federal laws, but the most important rules are federal. The Securities Act of 1933 required companies to disclose certain information to potential investors when promoting new securities in the primary market. The Securities Exchange Act of 1934 extended the disclosure requirements to existing stocks and set up the **Securities and Exchange Commission (SEC)** to oversee financial market activities.

http://

The AMEX site contains market information and other features at **http://www.amex.com**

The laws are primarily aimed at disclosure and the prevention of certain kinds of manipulative and deceptive behavior. Disclosure means that investors must be given full and accurate information about the companies and people behind stocks that are offered for sale. Manipulation means taking advantage of an official or privileged position to make profits on fluctuations in the prices of securities.

The sale of securities is regulated by the federal government through the **Securities and Exchange Commission (SEC).**

For example, it's illegal to make short-term profits on **insider information**, which is information available to an executive of a company but not to the general public.[5] Suppose a drug company is about to release information about a powerful new cancer treatment that is expected to be a big money maker in the future. That information release could be expected to drive the stock's price up considerably. It would be illegal for an insider to buy stock just before the announcement and sell it just after, making a short-term profit on the price increase.

Securities law is primarily aimed at **disclosure**.

Securities law is a large and complex field. For now all we need to do is be aware that it exists and understand its basic direction.

PRIVATE, PUBLIC, AND LISTED COMPANIES, AND THE NASDAQ MARKET

Suppose you notice a small company in your neighborhood that seems to be doing well and decide to buy some of its stock. Could you do this as easily as you could buy shares of IBM or General Motors, with a simple call to your broker?

If a company is small, buying its stock might not be easy and you might not be able to get any at all. That's because all companies aren't traded on exchanges, and many aren't for sale to the public. Let's trace the life of a typical business enterprise to see how and when its stock becomes available for investment.

Suppose an entrepreneur starts a small unincorporated business. Because the firm isn't a corporation, it has no stock for outsiders to buy, and ownership is entirely

5. People like accountants and lawyers who have access to privileged information but are not employees are also insiders.

vested in the entrepreneur. If the business is successful and the owner wants to raise money for expansion, he can incorporate in order to sell stock to others. We'll assume he does that.

Privately Held Companies

Privately held companies can't sell securities to the general public.

At this point the firm is said to be a **privately held**, or **closely held**, **company**. The stock of privately held companies can be sold to other people, but those sales are severely restricted by federal regulations. Generally there can't be a large number of stockholders, and sales solicitations can't be made across state lines. These regulations are aimed at limiting fraudulent investment schemes in which confidence artists offer bogus securities to unwary and unsophisticated investors.

Suppose our entrepreneur raises money by selling stock to a few people he knows and continues to expand the company. We'll assume that things continue to go well and, after some time, more and bigger growth opportunities present themselves. Taking advantage of such opportunities requires a lot more funding, but the business owner has run out of friends and relatives. To sell a substantial amount of stock he has to make an offering to a large number of people.

Public Companies

A publicly traded company can sell securities broadly after a **prospectus** is approved by the SEC.

Offering securities for sale to the general public requires the approval of the SEC and the registration of each security offered with the commission. A firm that has received such approval is known as a *public company* or a **publicly traded company**. The process of obtaining approval and registration is known as *going public*.

Going public requires the assistance of an investment bank. The bank determines whether a market can be expected to exist for the company's stock and the likely price at which a block of stock can be sold. If the estimated price is acceptable to the firm's owners, the registration procedure begins with the preparation of a document known as a **prospectus**.

The prospectus gives detailed information about the firm's business, its financing, and the background of its principal officers. When securities are eventually offered for sale, a copy of the prospectus must be provided to potential investors. However, the prospectus must be submitted to the SEC and approved before anything can be sold.

The purpose of the prospectus is *disclosure*. That is, the document must truly and accurately inform potential investors of the nature of the business and the risks involved. If the president was recently in jail for securities fraud, for example, that fact must be disclosed. Similarly, if the company is depending on the success of some new technological process or the granting of a patent, those facts must be revealed.

The law provides severe penalties for fraud on the part of *anyone* involved in the preparation of a prospectus—not only owners and officers of the company but accountants, lawyers, and bankers who might have been hired to assist in the process.

An unapproved prospectus is called a **red herring**.

While the SEC is reviewing a prospectus, the firm may not offer its securities for sale to the public. However, it may circulate the prospectus stamped with the word "PRELIMINARY" in red letters. Such a document is known as a **red herring**, indicating it does not yet represent an actual offering.

It's important to understand that approval of a prospectus by the SEC doesn't represent an endorsement of the security as a good investment opportunity. That is, a firm could be in an absolutely terrible business, one almost guaranteed to fail (like selling saltwater at the beach!) and still receive SEC approval because all the appropriate information was disclosed. In fact, SEC approval doesn't even guarantee that

everything relevant is disclosed, because the commission doesn't have the resources to check much of the information that's submitted.

The IPO

The market for **initial public offerings (IPOs)** is very volatile and risky.

When a prospectus is approved by the SEC, the securities described may be sold to the public. This initial sale is called an *initial public offering*, abbreviated **IPO**.

IPOs constitute a subdivision of the general stock market and are considered quite risky. The prices of newly traded companies sometimes advance very rapidly after their IPOs, but can drop dramatically as well.

Investment bankers generally line up buyers for IPOs before the securities are actually released, so the general public doesn't usually get involved right away. Institutional investors such as mutual funds are frequent buyers.

Notice that the initial public offering is a primary market transaction. Once the securities are placed with investors, further trading will involve secondary market transactions.

If our entrepreneur went through all this, he would probably have retained a majority of the firm's stock for himself. The IPO would have placed a value on the shares of the stock that were sold and thereby would have implicitly valued the shares still held by the entrepreneur. In a successful IPO that value is far in excess of book value and the entrepreneur can become a millionaire overnight, at least on paper!

The Nasdaq Market

http://

See which companies have IPOs at **http://www.hoovers.com**

At this point the company is partially owned by investors who purchased shares in its IPO, and partially owned by the entrepreneur and anyone who bought in before the firm went public. Now suppose any of these investors want to sell some or all of their holdings. How can that be accomplished?

Notice that we haven't as yet said anything about a stock exchange in this scenario. Also recall that stock exchanges trade only in certain stocks that are *listed* on those exchanges. In other words, our firm's securities aren't listed on an exchange, so investors can't buy or sell shares there. A vast number of companies fit this description. They're public and therefore available to be generally traded, but they're not listed on an exchange.

Smaller public companies are traded on the Nasdaq market.

Such unlisted securities can be traded in the **Nasdaq**[6] market. Nasdaq is an exchange that lists stocks meeting certain requirements in much the same manner as the NYSE. But it operates more than one system. It lists larger, more frequently traded stocks, but also serves as a bulletin board posting price quotes on new, very small, or infrequently traded issues. That information enables brokers and dealers to buy and sell those stock on behalf of clients. This is the route through which our entrepreneur's stock would be marketed.

The big difference between Nasdaq and the exchanges we've already discussed is that they are "physical location" exchanges. Trading on the NYSE or AMEX takes place on the floors of those exchanges and brokers have to be there to participate. Trading on the Nasdaq is electronic, and participants can be anywhere. Nasdaq is the largest electronic exchange in the world.

Nasdaq was originally organized by the National Association of Securities Dealers and derives its name from their computer system, the National Association of

6. The Nasdaq market has traditionally been called the "over the counter" market, abbreviated OTC. That term is now falling into disuse.

Securities Dealers Automated Quotation (NASDAQ) System. Since its beginning in the early 1970s Nasdaq has grown steadily in size and importance and today is an arch rival of NYSE for securities trading business.

It's generally more expensive to trade in the smaller firms handled by the Nasdaq market than in stocks listed on exchanges. Because few investors tend to be interested in any particular small company, brokers have to work hard to match buyers and sellers. For that service they receive higher commissions and fees than those paid for trades in stocks listed on exchanges where there is an active market all the time.

Listing on an Exchange

Companies **list** themselves on an exchange to make trading their securities easier.

Now suppose the company we've been talking about continues to grow and becomes popular among investors. It's in the company's interest to make it easy for those investors to trade in the secondary market for the firm's stock even though no money from those trades goes to the company itself. That's because a smoothly operating secondary market in the stock will make further new issues of the firm's securities easier to sell in the future.

So, if the trading volume warrants, the company can *list* its stock on an exchange. This is a relatively easy process if the exchange's requirements for size and length of time in business are met. After that the firm is a **listed company**.

READING STOCK QUOTATIONS

http://

Select a company from the NYSE list at **http://www.nyse.com/listed/listed.html** *Select "Listed Companies," use the "Alphabet" tab to find the company, and then check on its stock quotes and its market data.*

Stock prices are reported every day in a variety of newspapers. The leading source of daily quotations is *The Wall Street Journal*, published by Dow Jones & Company, Inc. Quotations summarize the trading activity of the previous business day on the New York Stock Exchange, the American Stock Exchange, and the Nasdaq market. The New York Stock Exchange listing shows "composite transactions," meaning it includes transactions in the stocks shown that may have been made on other exchanges.

The format in which stock market information is presented requires a little explanation. We'll illustrate with the listing for General Motors Corporation (GM) shown in Figure 5.7. This listing is from Wednesday, February 22, 2006, so the information reflects trading on Tuesday, February 21, 2006.

It is important that you read the footnotes as you study the remainder of this section.

Let's look at each column starting with the third. (The column numbers don't appear in the newspaper.) The third column, labeled STOCK(DIV) gives the

Figure 5.7

Stock Market Quotation for General Motors Corporation for Trading on Tuesday, February 21, 2006

Column Numbers							
1	2	3	4	5	6	7	8
52-WEEK HI	52-WEEK LO	STOCK(DIV)	YLD %	PE	VOL 100s	CLOSE	NET CHG
37.70	18.33	GenMotor1.00m	4.7	dd	111451	21.41	−0.51

abbreviated[7] name of the company followed by its annual dividend stated with the $ omitted.[8] In this case the listing tells us that General Motors is paying its shareholders dividends of $1 per share per year.

The letter m following the dividend is a note. Several notes are defined at the beginning of the NYSE listings indicating unusual or changed circumstances about the listed firms or the printed figures. On this date the General Motors listing carries two notes, m after the dividend and dd in column 5 which we'll get to shortly.

The m tells readers that the $1 figure is indeed an annual rate but that it represents a recently announced reduction from the rate the company was previously paying.[9] We'll study dividend policy in Chapter 15 and learn that such a reduction is a drastic move generally undertaken only when companies are in dire financial straights or facing dramatically changed conditions.

Columns 1 and 2 show the highest and lowest prices at which the stock was traded during the past year. Notice the size of the range. The lowest price was in the neighborhood of 50% of the highest. In this case there was a definite downward trend in the company's valuation due to market problems faced by the American automotive industry. However, it isn't extremely unusual for the prices of even fairly stable stocks to vary that much.

The **dividend yield** gives an indication of the current income an investor can expect.

Column 4 shows the **dividend yield**, also known as the **current yield**,[10] which is simply the dividend in column 3 divided by the stock's current price, expressed as a percentage.

The dividend yield gives an immediate indication of how much an investor can expect to make on his or her investment without depending on stock price increases. It's important because it shows how much income can be expected while the stock is held.

Column 5 gives the price earnings or P/E ratio we discussed in Chapter 3 (see page 91). Most of the time listed P/Es are simply numbers reflecting the fact that the reported stocks are selling at prices that are several times the firms' most recent earnings per share figures. P/Es of 10 to 30 are common. In this case, however, the listing carries the note dd. Checking the note definitions we find that dd means that the firm experienced a loss over the last four quarters. That means a calculated P/E would be a negative number, which of course, isn't meaningful. It is therefore omitted.

Column 6 gives the trading volume in lots of 100 shares. We see that 11,145,100 shares of GM stock were traded on February 21.

The **closing price** records the last trade of the day.

Column 7 reports the **closing price**; that's the price of the day's last trade. Notice that the closing price was near the bottom of the range shown in columns 1 and 2 reflecting the fact that the stock had been declining for some time. Finally, column 8 shows the net change up or down from the previous day's close. On this date the stock's price was down $0.51 from the day before. It's worth remphasizing that GM was in serious financial trouble at this time.

Serious investors check the financial press several times a week for the progress of stocks they've purchased. Local newspapers often carry some stock market information, but the format isn't necessarily the same as that of the *The Wall Street Journal*.

7. The securities industry uses a still shorter abbreviation of company names called the *tickertape* symbol when displaying and transmitting trading information from the exchange floor. General Motor's tickertape symbol is GM. It's unusual that the firm happens to be referred to that way in everyday language.
8. The annual figure is *usually* calculated by multiplying the most recent quarterly dividend by four.
9. The previous rate of $2 isn't shown in the listing.
10. "Yield" is another word for return, which is similar to an interest rate.

INSIGHTS

PRACTICAL **FINANCE**

Efficient Financial Markets

In an effort to explain certain characteristics of the behavior of stock prices theorists have hypothesized that U.S. financial markets are *efficient*. In this context efficiency means information travels around the market so fast that it's virtually impossible to find a bargain.

The idea is that there's an army of analysts working in the securities industry, and that analysts, brokers, and investors are wired together electronically by phone and computer. When some new piece of information comes out that suggests a stock may be worth more or less than its current price, it's disseminated with lightning speed and investors bid the price up or down within hours if not minutes.

The implication of efficiency is that an investor can't *consistently* beat the market by studying up on stocks, because all available information is already reflected in stock prices. Beating the market means earning above-average returns by consistently finding bargains.

Don't be discouraged. Not everyone agrees that the **efficient market hypothesis** is correct. We'll have more to say about the idea in Chapter 8.

CORPORATE GOVERNANCE AND THE SARBANES-OXLEY ACT OF 2002[11]

Corporate governance refers to the practices top managements and boards of directors use when running companies. In recent years the concept has focused on ethical issues relating to the personal financial relationships between executives and the corporations they serve.

The idea is especially important for large, publicly traded corporations in which the bulk of the stock is held by the investing public and lower level employees whose pension funds are invested in the companies' own stock.

THE AGENCY PROBLEM REVISITED

We discussed conflicts of interest between groups of stakeholders who have interests in corporations in Chapter 1. Such a conflict arises when one group has a power that enables its members to benefit themselves at the expense of another group. Further recall that there's a major conflict of interest called the **agency problem** between management and stockholders, because high level executives can divert company resources that belong to stockholders to their own use. The most flagrant abuse of agency occurs when top executives are paid excessively.

EXECUTIVE COMPENSATION

Excessive executive compensation (pay) can take several forms. Salaries and cash bonuses are usually quite high, but the really big money comes in ways that are related to stock.

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11. The material in this section is drawn from *A Student Guide to the Sarbanes-Oxley Act*, Robert Prentice, Thomson Publishing, Mason, Ohio, 2005.

An **employee stock option** grants the right to purchase stock at a set price over a limited period.

The basic stock-based compensation tool is the **employee stock option.** Under option plans, executives are given the right to purchase blocks of stock at low fixed prices during limited periods. The periods are generally several years long, and have specific start and end dates. If the market price of a company's stock rises above the fixed purchase price during the option period, the executive can *exercise* the option by buying at the low fixed price. He or she can then sell the shares on the open market for a profit.

Example 5.1

Harry Johnson is the president and chief executive officer (CEO) of Wellbridge Communications Corp., a high-tech firm with excellent growth potential. Harry's compensation package includes a salary of $2.5 million per year and cash bonuses of another $1.5 million that are paid if the board of directors decides he's done a good job. Exactly what constitutes a "good job" has never been defined. (Corporations are run by boards of directors who appoint senior management. Directors are elected by stockholders.)

Three years ago the board granted Harry an option on 200,000 shares of Wellbridge stock at $20 per share. The stock was selling for $19 at the time. The board was happy to do this because it didn't cost the company any money and gave Harry, who is considered a valuable executive, an incentive to stay with the company and work hard to help make it successful.

The option period begins two years from the date of issue, which is at the end of June of this year. The option expires after three more years. It is now June 15. Wellbridge stock is currently selling for $48.65 per share. Assuming the board of directors is still pleased with Harry and he exercises his stock option as soon as he can, how much will he make this year?

SOLUTION: Harry will receive cash compensation consisting of his salary and bonus as follows:

Salary	$ 2,500,000
Bonus	1,500,000
	$ 4,000,000

Exercising his stock options and selling at the current market price will lead to the following gain:

Proceeds of sale (200,000 × $48.65=)	$ 9,730,000
Less option payment (200,000 × $20.00=)	(4,000,000)
Gain on option	$ 5,730,000

Hence Harry's income for the year will be

Cash payments from Company	$ 4,000,000
Stock option	5,730,000
Total	$ 9,730,000

Notice first that CEO Harry will make more on stock options than he's paid in cash. That isn't unusual. Next notice that Harry's option gain won't exactly be free to the company. The 200,000 new shares it will issue could alternately be sold to investors at or near the $48.65 market price. So Harry's gain is in a sense the company's cost.[12] Finally notice the magnitude of Harry's compensation. It's fair for ordinary stockholders to ask if anyone could possibly be worth that much. Yet Harry's pay isn't unusual for a CEO.

12. Costs that involve forgoing an opportunity rather than paying out money are called *opportunity costs*. They don't appear in accounting records, but are nevertheless real.

THE MORAL HAZARD OF STOCK-BASED COMPENSATION AND WEALTH

A **moral hazard**[13] is a situation that tempts people to act in immoral or unethical ways. Unfortunately, stock-based compensation plans like the one illustrated in Example 5.1 create a moral hazard which can have dire consequences. In the example, notice that CEO Harry's compensation is directly tied to Wellbridge's short-run stock price, since there's a limited period during which it can be exercised.

He is therefore motivated to take actions that will hold the stock's price up as the end of June approaches. For example, suppose management knows something that if released to investors would cause the stock's price to drop by $10 per share. That would personally cost Harry $2 million if it happened before he could exercise his option. As a result Harry is quite likely to suppress the information until he's exercised.

Stock options can motivate executives to act **unethically** to hold stock price up.

Even worse, in order to increase the stock's price when he exercises his options, Harry might fabricate information that makes the company's future look brighter than it is. Such misinformation could take the form of lying about the success of research projects, the strength of the firm's competitive position, the probable results of lawsuits, and most importantly about the firm's financial results.

The Moral Hazard for Founders

Moral hazards aren't limited to employee executives who don't own a great deal of the company's stock. The temptations for founders can be even worse.

Example 5.2

Suppose CEO Harry Johnson from Example 5.1 is Wellbridge's founder and has retained 20% of its stock; the rest being owned by investors. Further suppose the total market value of the firm[14] is $20 billion. That means Harry, the founding CEO, is worth about ($20 × .2=) $4 billion. What impact would a price decline of $10 have on his personal wealth?

SOLUTION: At a market price of $48.65, a $10 price change represents a value decrease of

$$\$10.00/\$48.65 = .206 = 20.6\%$$

That means our founder/CEO's net worth[15] would decrease by approximately

$$\$4 \text{ billion} \times .206 = \$824 \text{ million}$$

That's a powerful incentive to keep negative information away from the stock market. It's important to notice that a founder's focus is likely to be longer term than that of an option-driven employee executive. The founder would be less concerned about a temporary drop in stock price, because his or her wealth would rebound with that price. A lost option opportunity, on the other hand, is gone forever.

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13. Moral hazard is a term borrowed from the insurance industry. A hazard is a condition that can cause an insured loss. A moral hazard exists when a person can make money easily by acting in an unethical or immoral way. For example, if it were possible to insure a $200,000 house for $400,000, the owner would be tempted to burn it down for a profit. That's why you can't insure property for more than it's worth. It's nice to believe that people will act ethically, but it's safer not to tempt them.
14. The market value of a company whose stock is regularly traded is the current stock price multiplied by the number of shares outstanding (held by investors).
15. A person's net worth is her total assets minus her total liabilities. The concept is applicable to companies as well as people, but it's usually called equity in a business context.

But a founder is quite likely to be motivated to disguise a long-run decline in stock price. Indeed a founder whose wealth depends on the value of his company's stock may be tempted to construct a misinformation campaign designed to hold its price up indefinitely.

THE LINK BETWEEN STOCK PRICE AND REPORTED FINANCIAL PERFORMANCE

Investors bid stock prices up and down based on their opinions of the issuing companies' future financial performance. Those opinions are influenced by information investors regularly receive including projections about products and markets, competition, the economy, and government actions.

But the most pervasive and consistently available predictor of a company's future performance is recent performance as reflected by recently published financial statements. In short, if a company has done well in the recent past, most investors are willing to believe it will do well in the future. The belief is especially strong if there's an improving trend implying *growth* into the future.

The market tends to focus on three current financial results as indicators of the future. These are

Sales revenue,
Earnings per share (EPS), and
Debt

With respect to revenue and EPS (see page 91 for the definition of EPS), more is better, and rapid growth is great. With respect to debt, less is better, and recent growth can be troublesome.

This means stock prices can be artificially inflated or held up despite poor performance by publishing deceptive or misleading financial statements that make results in these areas look better than they really are. Such statements generally *inflate* revenue and EPS and *hide* debt.

Producing Misleading Financial Statements

Unfortunately, producing deceptive financial statements that may hold stock price up isn't especially difficult. The accounting rules for financial reporting, called GAAP for Generally Accepted Accounting Principles, are filled with gray areas, so there's some latitude in reporting results that can be technically "correct" but still misleading.

Further, in large companies, it's possible to produce misleading or even fraudulent reports in which the deceptive entries aren't discovered for years because of the size and complexity of the organization. This can produce a cascading series of misstated reports as executives strive to keep stock price up year after year.

Who is Responsible for Financial Statements

Management is responsible for, and can often **manipulate**, the content of financial statements.

The entire moral hazard issue we're discussing is made worse because top management is ultimately responsible for producing accurate financial statements. That means the CEO, assisted by the Chief Financial Officer (CFO), decides what goes into the company's annual report to shareholders and the investing community. There is some oversight by auditors and boards of directors, which we'll discuss shortly, but the bulk of the responsibility along with the ability to manipulate results, is left to the CEO and CFO, two people who have a lot to gain from high stock prices. In other words,

top executives to some extent have the power to enhance their own wealth by cheating on financial reporting.

If this sounds like "setting the fox to watch the henhouse," it is. It doesn't make sense to put someone in charge of the integrity of a system who stands to gain from its abuse! Nevertheless, that's what the American financial system has done for a long time.

THE RESPONSIBILITY OF AUDITORS, BOARDS OF DIRECTORS, AND ANALYSTS

The agency problem has always been recognized, and safeguards are in place that are *supposed to* protect stockholders' interests. The primary watchdogs have been auditors and boards of directors. A secondary control should be in the *supposedly* unbiased reports of securities analysts.

Auditors

A favorable **audit** result **does not guarantee** that financial statements are entirely **correct**.

Auditors are Certified Public Accountants (CPAs) who are employed by companies to examine (**audit**) their financial records in order to provide a comfortable level of assurance that the books have been kept properly, in accordance with GAAP. Auditors' written opinions are included in annual reports and provide a level of assurance to investors that firms' books are correctly and honestly kept.

That assurance is not, however, absolute, because it would be prohibitively expensive to audit all of a large company's transactions. Hence a statistical sampling of transactions and controls is examined, which along with the heretofore unquestioned integrity of the auditing profession,[16] was thought to be sufficient to give a reasonable level of confidence that the financial statements of public companies were correctly stated.

Unfortunately, that confidence has recently proven to be misplaced. The auditing profession, as we'll explain shortly, is beset by its own conflicts of interest which during the 1990s and early 2000s, succeeded in undermining the role of CPA firms as guardians of the public trust.

Boards of Directors

Corporations are technically run by boards of directors. As a practical matter the board appoints senior management, including the CEO, and delegates the routine running of the business to them reserving only major decisions for itself.

Boards consist of inside and outside directors. The inside directors are generally the company's senior executives, including the CEO. The outside directors are drawn from the elite ranks of banks, law firms, accounting firms, and other companies. The outside directors are supposed to act as a check on the authority of the inside directors who are also company executives. Their presence is intended to bring an independent objectivity to corporate decisions that might be lacking if all of the board members were all insiders.

The **audit and compensations committees** of the board are crucial to controlling the **agency problem.**

Boards have committees that are responsible for specific tasks in running companies. The **audit committee** is responsible for the relationship with the CPAs who audit the firm and indirectly for the *internal accounting controls* that are in place to keep the company's financial records and statements honest and correct. The **compensation committee** approves the pay packages of senior executives including the CEO and CFO. These committees are crucial to controlling the agency problem we've been discussing.

16. Auditing firms are large professional partnerships similar to law firms. The profession has an elaborate code of ethics in which auditors are cast as protectors of the investing public. Until recently the audit industry has been self-regulating in terms of compliance with its own ethical code.

In essence, boards of directors are supposed function as guardians of the investing publics' welfare just as are auditors. Unfortunately, boards are sometimes lax in fulfilling these duties. Members don't attend meetings regularly and may not take the time to fully understand the issues they're being asked to approve. Further, board members with backgrounds outside of finance and accounting may be ill-equipped to understand the details and implications of complex financial transactions.

Securities Analysts

Securities analysts **should** produce **unbiased** reports on the financial condition of companies.

Major brokerage firms employ securities analysts to study all the information available about specific companies and constantly update reports on the quality and safety of their securities as investments. Although primarily intended for each brokerage house's customers, reports are often widely available to the public. Analysts are experienced, sophisticated individuals who are regarded as capable of ferreting out suspicious conditions through careful examination of financial results along with other data.

In effect, the analysts are guardians of the public trust in that they hold themselves out to be impartial evaluators with the best interests of the investing community at heart.

Their analyses culminate with recommendations to investors usually stated as either buy, sell, or hold. A buy recommendation is an endorsement of the subject company and its prospects for the future. In other words, the analyst thinks it's a good investment. A sell recommendation is the opposite, while hold represents a neutral judgment.

Investors regularly use analyst reports to decide which stocks to purchase or sell. This is especially true of smaller investors who don't have the resources to analyze market opportunities themselves.

THE VICTIMS OF SELF-INTEREST AT THE TOP

The victims of the agency problem we've been discussing are, of course, stockholders. But the extent of their losses may not be apparent at first glance. It goes far beyond what unethical executives may make themselves.

Stockholder losses happen in two ways.

Direct Payments to Executives

The first involves excessive compensation paid directly to executives. CEO Harry's $1.5 million per year bonus from Example 5.1, for example, may not be deserved based on the company's performance under his leadership, but he may influence the board to pay it to him anyway. Executives are also often "loaned" money by the companies for which they work. These loans are generally at low or zero interest rates and are often forgiven, i.e., never paid back.

These transactions are direct losses to stockholders who are entitled to the money inappropriately paid to executives. However, such losses are relatively small fractions of the funds that flow through major corporations. That is, even though a large company may overpay a few people by tens of millions of dollars, that action is unlikely to cost individual investors, who number in the millions, more than a few dollars each.

The Effect of Manipulating Stock Price

The second effect is far more serious. When executives artificially inflate stock prices by falsifying financial results, they generally do it for several years before the deceptions are discovered. During those years investors purchase the stock at inflated prices, because they're taken in by the false promises implied by the misleading financial statements. In addition, executives may force the firm's pension fund to invest its assets in company stock to support its market price.

But the deception is eventually discovered, and the market loses confidence in the company. Investors rush to sell their shares, and the stock price drops like a stone. In extreme cases stock can lose 80 or 90% of its value in a few days. This can lead to small investors losing everything they've put into the company. That's sometimes everything they have. The firm's pension fund, if invested in the company's own stock, can be wiped out leaving ordinary employees with no retirement income beyond social security.

In the meantime the executives whose fraud caused the disaster often continue to receive exorbitant salaries and bonuses, and anticipating the crash, sell their own holdings early, pocketing millions just before the small investors are hammered.

Stock **price manipulation** by executives results in **massive investor losses.**

It's important to understand that when this series of events happens, the value represented by the company's stock simply disappears. It doesn't flow into the hands of anyone else. That means investor losses are many times the gains of the unscrupulous executives who created the problem in their own self-interest.

THE EVENTS OF THE 1990s

The stock market saw an unprecedented boom in the 1990s. Led by the Internet's dot coms, new companies were launched, existing firms exploded in size, and stock prices skyrocketed. Buoyed by the enthusiasm, the top managements of a large number of very substantial companies seemed to get the idea that the accounting rules and SEC regulations about financial reporting weren't serious matters. They then undertook to pump up their stock prices by publishing false or deceptive financial statements. The deceptions were amazingly widespread, but were eventually exposed contributing to a major stock market decline in 2000.

Almost **1,000 public companies restated** their financial statements because of **questionable reporting** practices.

The first to crash was Enron, a petroleum pipeline company that had morphed into a huge energy trader/broker, becoming the seventh largest company in the nation at the time. The firm collapsed into virtually nothing when news of its accounting irregularities hit the financial press. But Enron wasn't the only culprit. WorldCom, the parent of MCI, had overstated its earnings by $11 billion. When discovered, it destroyed $180 billion of its market value. Global Crossing, another communications giant, was shown to be carrying $12 billion of debt its stockholders didn't know about. Xerox's books recognized over $6 billion in revenue that wasn't there. And so on. Almost 1,000 publicly traded companies *restated* their financial statements between 1998 and 2002 to eliminate the effects of questionable reporting practices. That represents about 10% of publicly traded companies! Approximately $ 6 *trillion* of stock market value disappeared in the market decline of 2000, much of it triggered by the fraud-induced phenomenon we've been discussing.

The investing public lost confidence in financial markets, and an alarmed Congress was moved to legislative action to prevent a recurrence in the future. The result was the Sarbanes-Oxley Act (SOX).

THE PROVISIONS OF THE SARBANES-OXLEY ACT

The government investigation into the corporate fraud of the 1990s and early 2000s revealed several key areas that contributed to the overall problem. The three most significant were

> The Failure of the Public Accounting Industry: Not only did auditors fail to ensure compliance with GAAP, they were sometimes complicit in devising schemes to misrepresent corporate financial statements.

SOX focused on auditors, boards of directors, and securities analysts.

Corporate Governance: Boards of directors broadly failed to control the agency problem allowing executive fraud to proliferate through the top levels of American companies.

Wall Street: Securities analysts, who are supposedly impartial in evaluating publicly traded securities, were found to have issued reports biased in favor of companies that did business with investment banking divisions of their brokerage firm employers.

We'll discuss each of these problems and what SOX does about them in the following sections.

AUDITORS: CONDITIONS IN THE PUBLIC ACCOUNTING INDUSTRY BEFORE SOX

Prior to SOX a number of conditions existed in the auditing industry that should be understood to appreciate why and how so many auditors lost their moral compasses.

Self-Regulation

Before SOX the **public accounting** (auditing) industry **was self regulated.**

Until 2000, the public accounting industry had convinced the government that it could "self regulate." The industry had an elaborate, formally stated ethical code supported by a series of opinions and pronouncements issued by the Financial Accounting Standards Board (FASB) that told practitioners how corporate books should be kept. Audit practice was further supported by a detailed structure of written "audit standards." In addition, all firms were subject to annual "peer reviews" by representatives of other firms. In theory these reviews compelled public accounting firms to adhere to accepted auditing standards when examining client books, abide by the CPA's ethical code, and insist that clients follow the FASB's rules in their own accounting.

There was, however, no governmental regulation of the industry that had the power to sanction or punish firms for failing to adhere to any of these rules and practices. Hence the self-regulation model under which the industry operated had no real teeth and eventually became ineffective in keeping audit firms conscientious.

Consulting Services

It's important to understand that publicly traded companies are required by law to hire independent auditors to annually certify to a reasonable certainty that their books are correct. Notice that for the privilege of being publicly traded, companies must pay audit firms for that service. Also notice that to function properly an auditor must be independent. Independence is required because auditors must frequently tell clients they're making mistakes or prevent them from doing things they want to do because they conflict with GAAP. This is a difficult position, because it frequently places an auditor in conflict with client management which is paying for his or her services.

Starting in the 1960s, public accounting firms, especially the large ones, began offering client companies consulting services in addition to audits. These fell into two broad categories, management consulting and information technology (IT). A third service, tax advice and return preparation, had long been done by public accountants.

The legal requirement that companies hire outside auditors gives CPA firms entrée into client companies and insight into their business operations. Once that connection is established it's easy to suggest additional services designed to cut the client's costs, increase its efficiency, and otherwise improve its business. Public accounting firms did just that and discovered a lucrative business in selling services outside of auditing.

Some public accounting firms were **focused** on **profitable consulting** services **neglecting auditing** and their roles as **guardians** of the public.

As time passed, more and more of the accounting firms' revenue came from consulting and less and less from auditing. That coupled with client reluctance to pay for audit services, which they considered a nuisance, led to auditing becoming a "loss leader" to CPA firms. That is, they earned little or no profit on auditing and made most of their money on the other services.

As a result audits became less and less rigorous. A laughable rhyming comment made among lower level auditors aptly characterized the condition: "Drive by and certify" came to describe the perfunctory nature of many audits.

By the 1990s some public accounting firms were so hungry for consulting business that they were willing to bend and even break the rules of proper financial reporting to please client company executives who wanted to issue deceptive and misleading financial statements. In extreme cases the auditors even came up with creative ways to circumvent the intent of the rules without appearing to violate them. Basically they partnered with unscrupulous executives in deceiving the investing public.

In a nutshell, the accounting profession failed in its duty to protect the investing public during the 1990s.

Who Hires and Fires Auditors

Another independence problem related to who hired and fired auditors. Generally the client company's CEO and CFO made all decisions regarding retaining the same or different auditors from year to year. But these were the people who were most likely to be interested in publishing misleading financial statements. Hence it was difficult for auditors to resist client executive demands, because the CPAs were constantly being threatened with loss of income which would likely extend beyond audit services into lucrative consulting services.

Too Close to the Client

Some audit activity was generally going on at large client companies all the time, and it was common practice to assign permanent office space to the audit staff. At the same time audit firms began to permanently assign individuals to particular client companies. Indeed in some instances auditors began to hold themselves out as part of the client "team" and became close personal friends with client executives. This practice, while personally pleasant, was detrimental to auditor independence.

Pressure from the Top of the Auditing Firm

Compounding the hiring/firing effect was a practice that evolved among senior client executives to control on-site auditors when they resisted client initiatives to skirt the financial reporting rules. CEOs and CFOs developed the habit of calling senior partners at their auditing firms' headquarters and coercing them to pressure their on-site subordinates to acquiesce to unethical ideas. Surprisingly, senior CPA partners frequently seemed to do just that.

THE SARBANES-OXLEY RESPONSE TO THE FAILURE OF THE AUDITING INDUSTRY

SOX responded to the auditing crisis of the 1990s by establishing a new regulatory agency and enacting a number of laws that affect how auditors and client companies interact.

The Public Company Accounting Oversight Board

The single biggest change made by SOX was to end self-regulation in the public accounting industry. SOX established the **Public Company Accounting Oversight Board** (PCAOB) to regulate the industry. *The profession will never be the same again.* The PCAOB is an independent, nonprofit organization established "to oversee the audit of public companies . . . subject to the securities laws . . . to protect the interests of investors . . . in the preparation of informative, accurate, and independent audit reports."

The PCAOB is not itself a government organization but its charter and authority as well as its enforcement ability flow from the Securities Exchange Commission (SEC) which is a government body.

The public accounting industry is now **overseen** by the **PCAOB**, and is **no longer self regulated.**

The board is directed to require that accounting firms be registered, and makes it illegal to issue audit reports for public companies without being registered. It is empowered to review and/or develop auditing standards for procedures, ethics, and independence by which accounting firms must operate. It is to conduct inspections of registered firms as well as to investigate suspected wrongdoing. And when inappropriate behavior is discovered, it is to conduct disciplinary hearings and impose sanctions upon audit firms as well as individual auditors.

SOX and Consulting Services

SOX and the SEC have taken direct action with respect to the conflict of interest and lack of independence inherent in consulting services. SOX prohibits accounting firms from providing audit clients with certain specific services including, among other things, bookkeeping, information technology, appraising, management consulting, and investments. The SEC goes a step further and prohibits an auditor from receiving any consulting compensation of any kind from an audit client.

SOX **prohibits public accounting firms** from engaging in most **consulting** activities.

It's important to notice, however, that accounting firms are not prohibited from providing consulting services to companies that are not audit clients. Further, SOX only deals with public companies, so accounting firms may still provide consulting services to audit clients that are privately held companies. Importantly, tax-related services to audit clients who are public companies have not been prohibited.

An immediate consequence of the prohibition of consulting was that three of the four major U.S. accounting firms (the "Big Four") made their consulting operations separate, independent businesses.[17]

Auditors No Longer Report to CEOs and CFOs

SOX addressed the independence problem of auditors reporting directly to CEOs and CFOs, the people most likely to falsify financial statements, in two steps. First, the act requires that auditors report not to company executives, but directly to the audit committee of the board of directors.

In addition, the act changes the make up of that committee by requiring that it be formed exclusively of *outside* directors. The act further requires that at least one of the members of the audit committee be a financial expert.

The requirement of financial expertise on the audit committee addressed another related issue. Previously, unethical and very complex financial schemes might be approved by board members untrained in finance, because they didn't understand the

17. Such a transfer is called a spin off. We'll discuss the idea in Chapter 17.

accounting behind the proposals. Now it's much more likely that at least one board/committee member will see through such schemes.

Auditor Independence

SOX also addressed some of the human issues in the audit relationship. Recognizing that long-term association with one client could lead to personal relationships that impair auditor independence, the law prohibits audit partners (senior managers within the accounting firm) from supervising any one client's audits for more than five years. After five years working on a single client company, the key partners in charge must rotate to other clients, and may not return for another five years.

The new law also addresses corporate executives pressuring auditors into accepting unethical schemes by going over their heads to bosses at the accounting firm. SOX makes it a *crime* for a corporate executive to lie to an auditor or to attempt to bully or coerce him or her into agreeing with an improper financial practice.

CORPORATE GOVERNANCE: HOLDING CEOs ACCOUNTABLE

When the corporate frauds of the 1990s were exposed, many CEOs attempted to hide behind a veil of ignorance. Their audacity is hard to believe, but a number of top executives claimed they knew nothing of the frauds their companies had perpetrated on the investing public. Rather, they claimed that overzealous subordinates, acting behind their backs, had dreamed up and implemented the convoluted financial schemes that led to their downfalls. They said that *even though they had signed* their companies' reports to shareholders and the accompanying financial statements, they too had been taken in by the duplicity of the executives a level or two below them.

Unfortunately, it's difficult to prove whether someone did or did not know of an activity some time after the fact. It can be especially difficult if the party in question was careful to avoid creating evidence of his or her involvement while the activity was going on.

This has been the case in a number of high-profile cases. Government prosecutors have had a hard time making fraud charges stick against CEOs claiming an ignorance defense. Despite the difficulty, prosecutors have generally prevailed obtaining convictions, for example, against the ignorance defense of Bernard Ebbers, CEO of WorldCom.

But they don't always win. Richard Scruchy of HealthSouth, for example, was found innocent in spite of testimony to the contrary:

> Five consecutive HealthSouth chief financial officers admitted to cooking the books and copped a plea. They all fingered Scruchy. But jurors chose to believe that the man on top knew nothing about what was going on directly below him.[18]

THE SARBANES-OXLEY RESPONSE TO CLAIMS OF IGNORANCE BY TOP EXECUTIVES

Congress was understandably concerned about the ignorance defense, and took steps in SOX to prevent it in the future. SOX requires CEOs and CFOs of public companies to certify that they have reviewed the financial statements their companies file with the SEC, and that to the best of their knowledge the statements contain no materially false or misleading information.

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18. Michael Kinsley, *The Washington Post*, July 3, 2005.

SOX requires **CEOs to certify** that financial **controls are adequate** and that financial statements are **not false or misleading.**

These executives must also certify that they are responsible for their companies' internal financial controls, that the controls have been designed to expose relevant information, that they have recently evaluated the effectiveness of those controls, and have reported their conclusions. This acknowledgment makes it far more difficult to claim ignorance of wrongdoing than it was before SOX.

It's interesting that when this requirement was first imposed on public companies in 2002, HealthSouth's CFO resigned rather than sign the required certifications. That refusal led to an investigation that exposed massive financial fraud at that company followed by the conviction of a number of key executives but not the CEO, who was acquitted.

Returning Ill Gotten Gains

One of the most upsetting features of the securities frauds of the1990s was that executives were able to keep the excessive salaries and bonuses paid to them based on fraudulent financial statements. Further, they often sold their own stock shortly before the discovery of fraud brought prices crashing down, and were able to keep the gains on those sales. In other words, executives became even richer as employees and ordinary investors lost everything.

SOX addressed this problem by requiring that CEOs and CFOs reimburse their companies for any incentive compensation (bonuses) received or trading profits made during the 12-month period immediately following the issue of financial statements that are subsequently judged to be "a result of misconduct."

This wording, however, is unfortunate, since it isn't clear what constitutes "misconduct" and who must have been guilty of it. Is it the executive him- or herself, or would misconduct by subordinates suffice? Legal scholars are still debating the issue.

Loans to Executives

Loans were another technique used by executives to feather their own nests. Companies lent them millions of dollars at unrealistically low or zero interest rates, and as often as not didn't require repayment, i.e., the loans were "forgiven," meaning the executives just kept the money forever with no further obligation.

SOX addressed this problem by simply making it illegal for public companies to lend money to their executives.

DECEPTION ON WALL STREET: SECURITIES ANALYSTS AT MAJOR BROKERAGE HOUSES

Recall that earlier in this section (page 186) we described securities analysts as being guardians of the public trust in that they issue unbiased investment analyses of companies. Because of that trust, a positive recommendation from an analyst goes a long way toward selling a company's stock. Unfortunately, analysts weren't as unbiased in the 1990s as the investing public was led to believe.

In order to secure investment banking business, **brokerage firms pressured their analysts** to issue **misleading** reports.

It turns out that the brokerage houses that employed analysts also had investment banking departments. (Recall from Chapter 2 that an investment bank is an organization that helps companies market newly issued securities.) That led to a problem for analysts in that their employers wanted to do investment banking business with the companies on which they reported. But those firms were unlikely to deal with brokerage houses that published unfavorable reports about them.

That created an internal pressure to say only nice things in analyses. The pressure included paying analysts' bonuses not on whether their predictions about business performance turned out to be right, but on the amount of investment banking business

they brought in. There was also always the unspoken threat that analysts who didn't comply would be fired.

The result was so biased it's difficult to believe. In 1999, for example, analysts made approximately 33,000 recommendations to either buy, sell, or hold stock. Of those, only 125 (.4%) were sells! That means 99.6% of the recommendations were positive or neutral at a time when the market stood on the brink of collapse.

Analysts are now required to **certify** that they **believe their own reports**.

The Government's Response to Biases on Wall Street

Action was taken to separate analysts' pay from the investment banking business by regulators prior to passage of SOX. In SOX Congress implicitly endorsed those actions and further directed the SEC to adopt rules addressing the analyst conflict of interest. The SEC adopted **Regulation Analyst Certification,** now known as **Reg AC**, which requires analysts to certify that they actually believe in what they say in their reports and that their pay is not tied to what they recommend.

INSIGHTS

REAL **APPLICATIONS**

Independent Analysis—A Vanishing Alternative?

The scandal that rocked the financial community in the early 2000s began with corporate managements, spread to the accounting industry, and eventually engulfed Wall Street analysts in a cloud of suspicion. Analysts were high on the list of people and institutions that were knocked off pedestals of trust and integrity. Many of those who worked for giant Wall Street firms were shown to have been pressured into turning out favorable reports on shaky companies which were also their employers' investment banking clients. Understandably, investors who used the analysts' reports lost confidence in them as reliable sources of information.

Some investors turned to independent analysts who do nothing but financial research and are therefore free of the conflicts of interest that plague big companies. Independents have been around for decades selling their work to subscribers who pay annual subscription fees for access to reports. The independents are unbiased, but they're also expensive. Subscription fees are often in the tens of thousands of dollars, so not many individual investors are clients. The independents' primary customers are hedge funds, special purpose mutual funds that make risky investments for the benefit of wealthy shareholders.

After the scandal kicked off by Enron's fall, the independents enjoyed a sudden increase in subscription clients. But just a few years later, that surge in business is tapering off due to cost pressures. In addition, researchers are leaving the field for an unexpected reason—lawsuits.

Some of the companies that received negative evaluations from independent analysts are suing the analysts, *and their hedge fund clients*, for defamation. That's a legal action seeking money damages for injuring someone's reputation by spreading false information about them. Defamation is hard to prove, so courts aren't likely to find the researchers guilty. Nevertheless, defending lawsuits can be so costly and time consuming, that the effort proves overwhelming to small organizations. As a result, several independents are folding up and moving on.

Source: Jessie Eisinger, "Why Independent Research Is Drying Up," *The Wall Street Journal* (March 8, 2006), page C1,C7.

LIFE AFTER SARBANES-OXLEY

SOX has had tremendous impacts on the way American companies govern themselves, the accounting profession, and Wall Street. But it was passed very quickly after the market debacle of the early 2000s, and critics contend that it was enacted in the heat of the moment and may be somewhat overzealous. The biggest criticism is that compliance costs more than the benefits are worth. The expense arises mainly in the area of internal financial control, and appears in the form of both money and management time and attention.

Some people feel that a large number of honest managements are being penalized for the sins of a few dishonest individuals, and that as the law stands now, the cost of compliance isn't worth the benefit it brings to the investing community. Several years after SOX's passage, a number of government officials seem sympathetic to that idea. No one is suggesting going back to the old ways, but a softening of the rules in the future is a distinct possibility.

INTEREST

Investing in a security implies entrusting money to the organization that issued the security. The issuer uses the money and pays the investor for the use. The payment is called the *return* on the investment, and is usually stated in terms of a percentage of the money invested.

Bonds are the primary vehicle for making debt investments.

The term **interest** is reserved for the return on a debt investment, meaning the investor lends money to the issuer of the security. The primary vehicle for making debt investments is the **bond**. An investor in a bond is making a loan to the issuing company even though we say he or she buys the bond. Every bond has an associated interest rate that is paid to the investor who holds it.

People often talk about *the* interest rate as though there were only one. In fact there are many rates, depending on the nature of the debt and on the characteristics of the borrowers and lenders. The various interest rates tend to move up and down more or less together. A statement like "the interest rate is moving up" is a reference to an approximate, average level rather than to anything specific.

A debt's **term** or **maturity** is the time until it must be repaid.

Debt investments are loans and have **terms**. The term of a loan or a bond is the time measured from the present until the obligation must be repaid. A bond is said to *mature* at the end of its term on its *maturity date*. The word "maturity" can be synonymous with "term." That is, a bond with a 10-year term can also be said to have a **maturity** of 10 years.

http://

Interest rate info in a nutshell is available at **http://www.Channel3000.com/money**

It's important to notice that bonds are *non-amortized* debt. An amortized debt is one in which the principal is paid back regularly along with interest over the life of the loan. Most consumer credit, including home mortgages and car loans, is amortized. Most business and government debt is non-amortized. Borrowers issuing bonds pay interest only, usually semiannually, until the maturity date, and then must repay the entire principal at once.

Stocks (equity) and **bonds** (debt) **compete** for investors' dollars. Stocks offer higher returns but have **more risk**.

THE RELATIONSHIP BETWEEN INTEREST AND THE STOCK MARKET

Returns on stock investments and interest rates on debt are related. Investors always have a choice between investing in debt instruments like bonds or savings accounts or in equity securities like stock. (When you put money into a savings account you're

lending it to the bank.) In other words, stocks (equity) and bonds (debt) compete for investors' dollars.

Debt investments are generally safer than stocks so people prefer them if the expected return on the stock and the interest on the debt are nearly equal. As a result, stocks have to offer higher returns than debt to induce people to invest in equity. As interest rates on debt move up and down over time, the return on stock investments moves up and down as well, usually remaining somewhat above the interest rate on debt.

This movement has a significant effect on the stock market because of the relationship between the return on a stock investment and the price of a share. *A higher return is associated with a lower price.* This should be clear if you think in terms of bargains. Suppose a particular stock is expected to produce a barely acceptable return over the next year. You're thinking of buying some shares, but you aren't quite sure if it's a good deal. Then imagine that the price is suddenly cut in half, while nothing else changes. That makes the stock a much better deal, a bargain. The return it now offers as a percentage of the lower invested price is much higher.

In general, the market changes the return on a share of stock by changing its price, so if stock returns move up, prices move down, and if returns move down, prices move up. We'll understand this idea much better when we study the material in Chapter 8. For now the basic principle is what's important: *Stock prices and returns move in opposite directions.*

Interest rates and security prices **move in opposite directions.**

But remember what we just said about returns and interest rates. Changes in the overall level of stock returns are driven by changes in interest rates on debt investments. That means the general price level of the stock market is driven up and down by changes in interest rates on debt. As interest rates go up, stock prices go down, and as rates go down, prices go up.

That's a very good reason for us to be familiar with the inner workings of interest rates! Interest isn't the only thing that affects the general price level of stocks, but it's very important and more predictable than other influences.

INTEREST AND THE ECONOMY

The interest rate has a significant effect on the economy in general. High interest rates tend to stifle economic activity, while low rates tend to promote it. That's because both in business and in our personal lives a lot is done on credit.

Consider a family interested in buying a new home. If interest rates are high, their mortgage payments will be high and they may not be able to afford the house they want. Lower interest rates mean lower payments, so houses become more affordable in general and the family is more likely to buy.

Lower interest rates stimulate business and economic activity.

When interest rates are low, people buy more houses, cars, refrigerators, and just about everything else. Because someone has to manufacture those products, more sales lead to more jobs and a healthier economy.

The same idea applies to business. Companies often use borrowed money to buy new equipment and undertake new projects. When interest rates are high, borrowing is expensive, and not many projects look good because they don't earn enough to cover their interest cost. When rates are low, more projects are viable and are undertaken. The increased activity in turn leads to a healthier economy.

All this causes the financial community to be very interested in interest rates, and gives us good reason to examine exactly what's in an interest rate and how rates are determined.

DEBT MARKETS

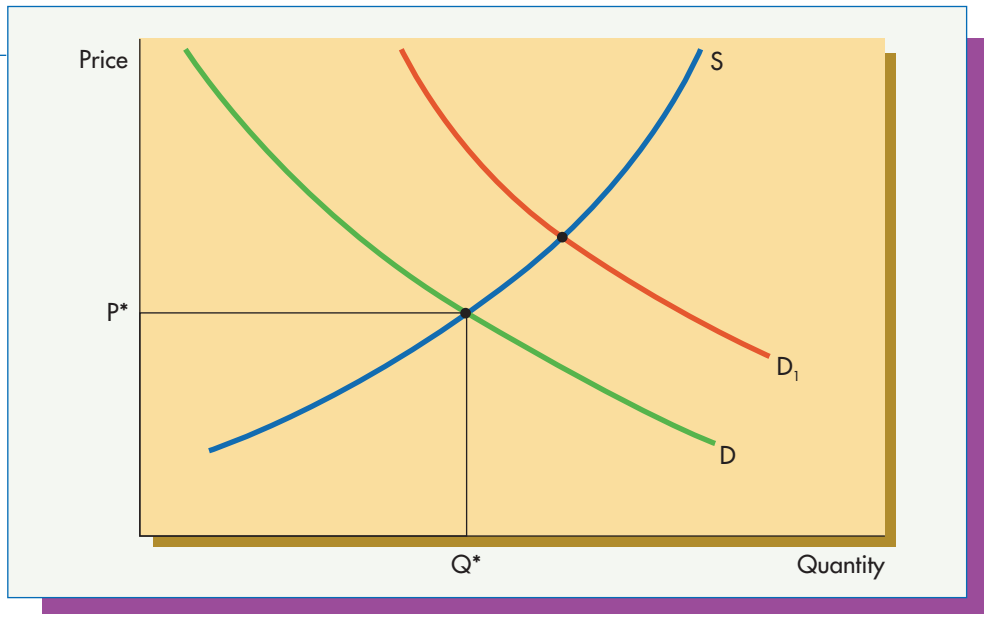
Interest rates are set by the forces of supply and demand in debt markets. To understand how these forces work, we need to review an analytic tool from economics, the supply and demand diagram.

Supply and Demand—A Brief Review

A demand curve is a graph relating price and quantity in the market for a product or service. It reflects the desires and abilities of buyers at a particular point in time. The graph's vertical axis represents price and its horizontal axis indicates the quantity purchased in a period. Figure 5.8 shows a demand curve labeled D.

Figure 5.8

Supply and Demand Curves for a Product or Service



Virtually all demand curves slope downward to the right. That simply means people will buy more of the product if the price is low and less if it's high.

A supply curve relates prices with quantities supplied by producers. The curve is upsloping, indicating that suppliers are willing to produce and sell more product at higher prices than at lower prices. The supply curve is labeled S in Figure 5.8.

Drawing both curves on the same set of axes shows that there's only one point at which both buyers and sellers are happy: the intersection of the two curves. The market tends to operate at that point, and we say it is in equilibrium there. These ideas are depicted in Figure 5.8 where the equilibrium price and quantity are represented by P* and Q*, respectively.

If the conditions of supply or demand change, the curves shift their positions and the market sets a new equilibrium price. Suppose, for example, buyers' preferences change so that they generally want more of the product at any price. Such a change is reflected in the diagram as a shift to the right of the demand curve to D_1. If supply doesn't change at the same time, the new equilibrium point will be higher along the supply curve, resulting in a higher P* and Q*.

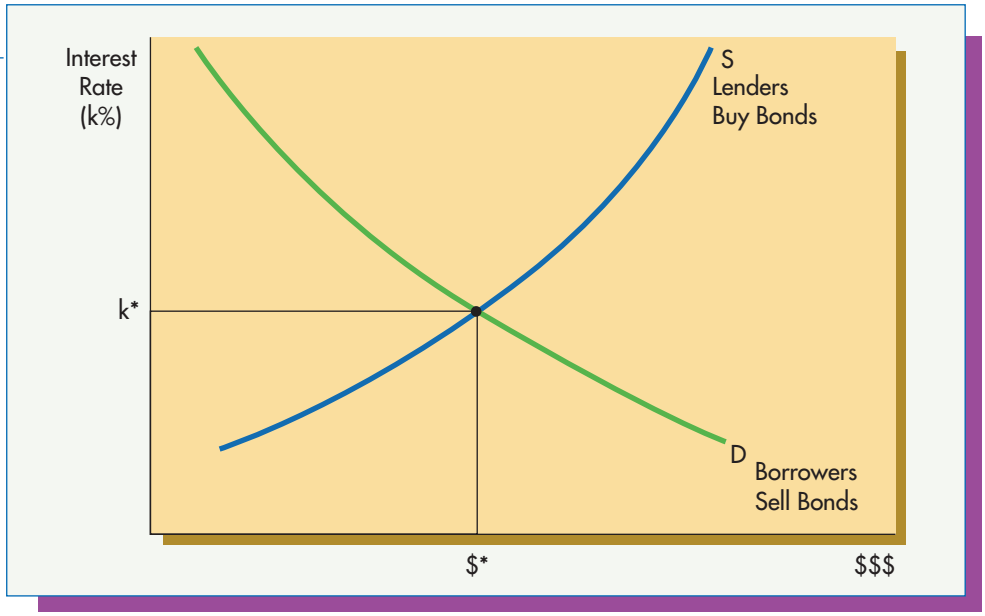
In debt markets **lenders represent supply** and **borrowers represent demand.**

Supply and Demand for Money

In the market for debt, people are borrowing and lending money rather than buying and selling a commodity. Instead of buyers we have borrowers, and instead of sellers

Figure 5.9

Supply and Demand Curves for Money (Debt)



we have lenders. It's important to understand that point. The supply curve in a debt market represents the willingness of people to lend money and the demand curve represents people's (companies') desire to borrow.

Interest is the **price** of money in a debt market.

In the diagram for a debt market, the horizontal (quantity) axis is the amount borrowed in a time period. The vertical axis is the price of borrowing. *That price is interest.* You can think of borrowing as renting a lender's money for a period of time, and interest as the rent payment. It's customary to express this price of borrowing as the percentage of principal required for a one-year rental. That's simply the annual interest rate with which we're all familiar.

A supply and demand graph for a debt market is shown in Figure 5.9. The letter k is used to represent the interest rate. The debt securities in this market are called *bills*, *notes*, and *bonds*, depending on their term when initially issued. For convenience we'll just refer to them all as bonds.

Borrowers **sell** bonds Lenders **buy** bonds.

Borrowers are companies and the government. They *sell* bonds. The downsloping demand curve indicates that they will borrow more (sell more bonds) if interest rates are low. Lenders are individuals and organizations that *buy* bonds. The upsloping supply curve indicates that they are willing to lend more (buy more bonds) when interest rates are high.

Don't be confused by the reversal of the traditional buy and sell roles in the market for debt. In the traditional supply and demand curve depicted in Figure 5.8, demanders do the buying and suppliers do the selling. Here demanders sell (borrow), while suppliers buy (lend). The reversal is just a result of the peculiar terminology of finance in which buying a bond means lending money.

The Determinants of Supply and Demand

When we described the supply and demand picture for a product or service we said that changes in conditions cause the curves to slide back and forth. The same is true in debt markets.

The demand for borrowed funds depends on the opportunities available to use those funds and the attitudes of people and businesses about doing things on credit.

If people feel good about the economy and their futures, they'll be willing to buy houses, cars, vacations, and other things with borrowed money. Similarly, businesses will borrow for expansion and new projects if demand for their products is strong and they have confidence in the future. If these conditions aren't met, they'll borrow only what they have to.

The supply of loanable funds ultimately depends on what economists call the time preference for consumption of individuals. The time preference for consumption refers to whether a person is inclined to spend a dollar of income on current consumption or invest it to grow into something more. Most people have a definite preference for current consumption and spend most of their income as it's earned, saving only a fraction.

Remember that money saved by individuals becomes available for borrowing when people invest their savings in debt securities and savings accounts. So people's time preference for consumption dictates the level of their savings and therefore the supply of loanable funds. A decrease in the preference for current consumption, for example, leads to increased savings and an increase in the supply of debt. This is reflected in a rightward shift in the supply curve in Figure 5.9.

Changes in these conditions occur constantly throughout the economy, causing the supply and demand curves for borrowed money to slide back and forth over time. As a result, the market interest rate is moving up or down most of the time.

For most of the twentieth century movement was modest. The rates stayed at relatively low levels, about 3% to 6% until the early 1970s when the fluctuation became much more dramatic. In the early 1980s some rates exceeded 20%. In the 1990s and 2000s, rates have again been low and stable. The ability to forecast interest rates would clearly be very valuable, but as yet no one has been able to do it with any consistency.

THE COMPONENTS OF AN INTEREST RATE

Interest rates include **base rates** and **risk premiums**.

Any interest rate can be broken into two pieces, each of which can be further subdivided into components. Let's look at the two major pieces first.

All rates can be thought of as the sum of a base rate and a premium for risk borne by the lender. We'll represent the interest rate by the letter k, so we can write

$$\mathbf{k = base\ rate + risk\ premium} \tag{5.1}$$

COMPONENTS OF THE BASE RATE

The base rate is **pure interest** plus **expected inflation**.

The base rate is the rate at which people lend money when there's no risk involved in the loan. It has two components, the **pure interest rate** and the expected rate of inflation over the life of the loan. The pure interest rate is also called the *earning power of money*. We'll use the symbols k_{PR} to denote that idea and INFL to represent expected inflation. Then we can write

$$\mathbf{base\ rate = k_{PR} + INFL} \tag{5.2}$$

The Pure Interest Rate

The **pure interest rate** is the **earning power of money**.

The pure interest rate is more of an abstract concept than anything observable in the real world. It's the rate that would exist in a perfect economy in which there is no inflation, securities can always be sold quickly for their full value, and people always live up to their promises.

In another sense you can think of the pure rate as the average return that can be earned with money available for investment in business. Again the idea is unadjusted for inflation or risk. This is the sense in which we call the pure rate the basic earning power of money.

The pure rate can be thought of as compensation to lenders for the loss of the productive power of their money. It's generally taken to be between 2% and 4%.

The Inflation Adjustment

Inflation refers to a general increase in prices. We usually assume that the increase is uniform over all prices and wages although in reality some things inflate faster than others.

The key notion behind the idea of inflation is the cost of a particular bundle of goods. If the bundle costs $100 at the beginning of a year and prices inflate by 5% during the year, the same bundle will cost $105 at year end. In other words, $100 won't buy as much at the end of the year as it did in the beginning. Money will have lost some of its value.

Now imagine that you loaned someone $100 at 5% interest during a year in which the inflation rate was also 5%. Assume the loan is successfully paid off with interest so you have $105 at year end. Are you any better off than you were at the beginning of the year? The answer, of course, is no, because your year-end $105 won't buy any more than $100 bought before you made the loan. To come out ahead, you have to charge an interest rate that *exceeds* the inflation rate.

Interest rates include **estimates of average annual inflation** over loan periods.

In fact, that's exactly what lenders do. Interest rates always include the anticipated inflation rate over the loan period as an add-on to the pure rate. That addition is reflected in the formulation of equation 5.2. INFL in the equation can be thought of as an inflation adjustment equal to the *average* inflation rate anticipated over the life of the loan.

RISK PREMIUMS

Risk in lending refers to the chance that a lender will receive less than the full value of the principal advanced plus the agreed interest in return for making a loan. In general, loans have varying degrees of risk. Some are very secure, so the chance of not being fully repaid is virtually zero. Others involve a substantial possibility that the lender will receive less than he or she bargained for.

Most lenders are willing to make loans that involve risk. However, they always demand compensation for bearing higher levels of risk. That simply means they want to be paid more for making a risky loan than for making a safe one. Because the payment lenders receive is interest, they demand more of it in the form of higher rates when making riskier loans.

Lenders demand a **risk premium** of extra interest for making risky loans.

The difference between the interest rate charged on a given loan and the rate charged on a zero-risk loan is called the loan's **risk premium**. This idea is expressed in equation 5.1 where the base rate is implied to have zero risk.

Different Kinds of Lending Risk

We'll think of business loans as typically being made through bond issues. In that context, lenders face risks that come from several sources. The simplest to understand is default, which occurs when a borrower doesn't repay the obligation. Other risks are associated with bond prices.

When people lend by buying bonds they generally terminate their investments long before the bonds mature by selling them to other investors. This involves risk because the price at the time of sale may be different from the amount the investor

paid for the bond. If the price is lower, selling will cause a loss. The situation is especially difficult if the lender has an immediate need for funds and has to get out of the investment quickly at whatever price is available.

The important point is that bond lending losses can be associated with fluctuations in the prices of bonds as well as with the failure of borrowers to repay the loans. In what follows we'll describe three sources of risk and formulate a distinct risk premium for each. The sum of these premiums will be the overall risk premium in equation 5.1. The three sources of risk are *default*, *liquidity*, and *maturity*.

Default Risk

Default risk is the chance the lender won't pay principal or interest.

Default risk represents the chance that the borrower won't repay the entire obligation consisting of principal and interest. Losses due to default can be anywhere from the entire amount loaned to a fraction of the interest due. It's important to keep in mind that default isn't solely associated with failure to repay principal at the end of a loan's term. A borrower can default at any time by failing to pay periodic interest.

The size of the *default risk premium* demanded by lenders depends on their perception of the creditworthiness of the borrowing company. That perception is based on the firm's financial condition and its record of paying off its debts in the past. Premiums range from 0% to 6 or 8%. It's important to realize that default premiums don't increase without limit. When a company gets too risky it simply becomes unable to borrow at any interest rate.

Default most commonly occurs when business conditions deteriorate and borrowers don't have funds to service their debt. This doesn't always result in failure or a major loss. Temporarily delayed interest payments are fairly common when companies are in trouble.

Default doesn't actually have to occur for related problems to exist. Suppose a company borrows money through a bond issue and subsequently gets into financial trouble. Assume the loan principal isn't due and the firm continues to make the required interest payments, but financial analysts can tell that each payment is a close call. In other words, the company isn't in default, but its continuing ability to avoid default is in question. New investors would be very reluctant to buy the firm's bonds at full price. To sell, an individual holding such a bond would probably have to reduce its price to get out of the investment.

A time dimension is also involved in the risk of default. Suppose a large, strong company issues a one-year debt instrument. Investors considering the issue won't be concerned about default because a serious deterioration in the firm's financial condition is unlikely to occur in only one year. However, if the issue is a long-term bond, investors will be somewhat concerned because even the strongest companies can get into trouble over a long period.

This kind of thinking indicates that for strong companies, the default risk premium is very small for short-term debt but is significant for longer issues.

Liquidity Risk

Liquidity risk is associated with being unable to sell the bond of a little known issuer.

Some companies' bonds are more difficult to sell than others even if there's nothing wrong with them. The debt of small firms that are not widely known can be particularly hard to market, because only investors who know the firm or its management will be interested in buying. Such bonds are said to be *illiquid*. The sellers must reduce their prices enough to interest buyers with no previous knowledge of the company. That's likely to mean taking a loss.

Liquidity risk refers to the chance of incurring that kind of loss, and the *liquidity risk premium* is extra interest demanded by lenders as compensation for bearing it.

Liquidity risk is somewhat variable with the term of the security. Very short-term obligations don't generally involve much liquidity risk, because a lender in need of funds can just wait out the period until maturity.

Maturity Risk

The primary reason for changes in bond prices is movement in the interest rate in the debt market. It is a fundamental principle of finance and economics that bond prices and interest rates move in opposite directions. We made a similar statement about stocks earlier, but the relation is more precise and predictable for bonds than for stocks.

At this point in our study we haven't developed enough knowledge to understand why this relationship between prices and interest rates occurs and exactly how it works. We'll gain a full understanding of the phenomenon when we study Chapter 7. For now we have to accept two things. The first is what we've already said, that prices and rates move against each other. The second is that the price change associated with a given interest rate change is larger for bonds with a longer maturity (time to go until they are due to be repaid) than for bonds with a shorter maturity.

Let's be very clear about that second point. If a bond is due to mature in a short time, a change in the interest rate will have a small effect on its value. On the other hand, if the principal isn't to be repaid for many years, the same interest rate change will have a significant effect on the bond's value. The longer the maturity, the bigger the price change.

Price changes due to interest rate fluctuations are another source of risk for lenders who invest in bonds. If interest rates increase after an investor purchases a bond, its price will decline and the investor will take a loss if he or she has to get out of the investment quickly. If the bond's term is short, the loss is small and can almost be ignored. But if the security has a long maturity, the loss can be significant.

Maturity risk arises because long-term bond prices change more with interest rate swings than short-term bond prices.

This means longer-term bonds are riskier for investors than shorter-term bonds. We call this idea **maturity risk** because it varies with the term or maturity of the bond. Investors demand a *maturity risk premium*, which ranges from virtually nothing for short-term instruments to 2% or more for longer-term issues. Slight variations on this idea are called **price risk** and **interest rate risk**.

It's important to notice that the loss we're talking about here doesn't occur if the investor holds the bond to maturity. It only happens if he or she has to sell early at a depressed price.

PUTTING THE PIECES TOGETHER

We can now rewrite equation 5.1, substituting the elements we've discussed for the base rate and the risk premium.

The **interest rate model**.

$$k = k_{PR} + INFL + DR + LR + MR \tag{5.3}$$

where
k_{PR} = pure interest rate
INFL = inflation adjustment (the average expected inflation rate over the life of the loan)
DR = default risk premium
LR = liquidity risk premium
MR = maturity risk premium

This important equation says that an interest rate generally consists of the pure earning power of money, plus an allowance for inflation, plus an adjustment for each of three identifiable sources of risk.

We'll call equation 5.3 the *interest rate model*, meaning that it's an abstract portrayal of how interest rates work.

People often refer to k on the left side of the equation as the *nominal* or *quoted* interest rate. It's the market rate that we've been talking about all along.

Setting Interest Rates

It's important to understand that equation 5.3 represents a theoretical construct. People don't actually sit around thinking up how much each of the elements should be and then add them to come up with a rate to charge on a loan. Rates are set by the forces of supply and demand. If a particular lender doesn't feel the going rate is high enough, he or she simply doesn't invest.

The equation is an economic *model* of reality, an *explanation* of what generally has to be behind the interest rate given the needs of investors. However, like most economic models, it occasionally doesn't seem to be consistent with reality.

For example, at times a reasonable estimate of the pure rate plus the current inflation rate equals or exceeds the prevailing interest rate in some markets. That means the risk premiums in those markets must be zero or negative, which doesn't make a lot of sense.

The model is a way of thinking, a tool to aid our understanding. Occasionally things happen in the real world that aren't included in the model, and during those periods it doesn't quite work. But that's not a reason to condemn it as valueless.

FEDERAL GOVERNMENT SECURITIES, RISK-FREE AND REAL RATES

The interest rate model represented by equation 5.3 enables us to understand three special situations that are important in practical finance. We'll consider each in turn.

http://

For info on government securities see **http://www.publicdebt.treas.gov/**

Federal Government Securities

Governmental bodies at all levels issue debt securities that are similar to those issued by companies. Cities, states, and the federal government issue long-term bonds, but the federal treasury also issues a great many short-term securities. Treasury bills have terms from 90 days to a year, while notes mature in 1 to 10 years.[19] The interest rate model, equation 5.3, can be applied to government debt as well as to corporate debt securities.

However, federal government debt has an important characteristic that isn't shared by anyone else's: There's no default risk associated with it. Therefore, the default risk premium in equation 5.3 is zero when the model is applied to treasury securities.

Treasury (federal government) securities are default and liquidity **risk free**.

It's tempting to think that the reason behind this confidence on the part of the investors is a belief that there will always be a federal government. (If there isn't, we won't be worried about money and interest rates anyway!) But the reason is more subtle. For example, as long as there's a federal government, we'd expect state governments to exist. Yet state default risks and the associated premiums are definitely not zero. Think about this for a moment before reading on. Can you figure out why the federal government can never default on a loan?

19. The securities of the federal government are called *treasury* securities.

The answer lies in a power that the federal treasury keeps to itself. It can print money! No one else can. The federal government could pay off all of its debt by simply printing huge stacks of money. It doesn't do so because such an action would create a massive inflation that would disrupt the economy, but the capability is always there. As a result, there's no chance of federal default.

As a practical matter, liquidity risk is also zero for federal debt. That's because there's always an active market in the federal government's obligations. The chance of being unable to sell a federal bond, note, or bill at the going price is very small. That statement definitely cannot be made for the securities of lower governmental units. In fact, a major problem with the obligations of local governments (cities, counties, etc.) is that they are often illiquid.

Maturity risk is not zero for government securities. It's the same as it is for any other borrower.

The Risk-Free Rate

The foregoing ideas give rise to the notion of a risk-free interest rate. This rate includes the pure rate and an allowance for inflation, but nothing for any of the risks we've been talking about.

The **risk-free rate** is approximately the yield on short-term treasury bills.

Noting that government debt has no default or liquidity risk, and that maturity risk is insignificantly small for short-term debt, we can surmise that short-term treasury securities are essentially risk free. In fact, people generally take the 90-day treasury bill rate to be the current **risk-free rate**.

Notice that the risk-free rate is the same as the base rate we used to introduce the idea of the components of interest (see equations 5.1 and 5.2). All interest rates are essentially the risk-free rate plus premiums for various risks.

The risk-free rate is an important idea in financial theory. It provides an alternative place for investors to put their money that's always available. In other words, if investors don't like the general opportunities available in debt markets, they can always park their money in short-term government securities until something more attractive comes along. It can also be viewed as a conceptual floor for the structure of interest rates. If investors can always get the risk-free rate without bearing risk, no investment that does have risk can offer a lower rate. When we encounter the risk-free rate, we'll denote it as k_{RF}.

The Real Rate of Interest

Real interest rates have no adjustment for inflation.

In economics the term *real* refers to figures and statistics that are adjusted to remove the effects of inflation. The *real* interest rate is the rate that currently exists less the inflation adjustment. In terms of equation 5.3, INFL is zero.

The real interest rate tells investors if they're actually getting ahead. Suppose, for example, you invest some money in a long-term security at 8% interest. Several years later, you discover that the inflation rate has risen to 10%, and you're actually losing purchasing power on your investment at a rate of 2% per year.

This situation hasn't been unusual in the last 30 years. For that reason people have become reluctant to make long-term commitments at lower market rates. The solution has often been to make long-term contracts at variable interest rates that move up and down as the inflation rate and the nominal interest rate change.

There are also occasional periods in which the real interest rate is negative on most investment opportunities. That can happen because we don't really know what the rate of inflation is at a point in time until the government statistics come out several months later. If inflation rises rapidly while supply and demand forces push interest rates down, the actual interest rate can wind up below the inflation rate for some period. Obviously, when that happens the model expressed in equation 5.3 isn't working very well.

The Real Risk-Free Rate

Putting the last two concepts together results in the idea of a real risk-free rate, a term that is sometimes used in financial circles. "Real" implies the inflation adjustment is zero, and "risk-free" implies that all the risk premiums are also zero.

Looking at the interest rate model, we can immediately see that the real risk-free rate is conceptually identical to the pure interest rate, k_{PR}.

Example 5.3

You're a junior analyst in the treasury department of the Bullwork Company. The treasurer is contemplating raising money for a new plant expansion by issuing debt securities, but is unsure of the interest rates the company might have to pay. He has asked you to estimate the interest cost of issues with maturities ranging from 1 to 10 years.

You are aware that rates are actually set by supply and demand forces in the debt market, but feel the interest rate model (equation 5.3) will provide some reasonable estimates under normal conditions. The following assumptions seem to provide a reasonable starting point.

(a) The pure rate of interest is 3%.
(b) Inflation is expected to rise in the near future and then subside. Your favorite economist projects the following pattern.

Year	Inflation Rate
1	4%
2	6
3	8
4	6
5–10	5

(c) The default risk premium will be zero for one-year debt, but it will increase .2% for each additional year of term to a maximum of 1%.
(d) The liquidity premium is zero for one- and two-year debt and .5% for longer issues.
(e) The maturity risk premium is zero for a one-year term and increases by .3% for each additional year of term to a maximum of 2.5%.

Prepare a table showing the projected interest rate for loans of various terms and the components of each rate.

SOLUTION: First we'll calculate the inflation adjustment for securities having terms from 1 to 10 years. That involves taking the average inflation rate over the entire projected term.

Year	Inflation Rate	Inflation Adjustment
1	4.0%	4.0%
2	6.0	5.0
3	8.0	6.0
4	6.0	6.0
5	5.0	5.8
6	5.0	5.7
7	5.0	5.6
8	5.0	5.5
9	5.0	5.4
10	5.0	5.4

Next we'll create a table with a column for each of the elements of the model and fill in each column according to the assumed behavior of the factor. The estimated interest rate is simply the sum of each row across the columns.

Term	k_{PR}	+	INFL	+	DR	+	LR	+	MR	=	k
1	3.0		4.0		0.0		0.0		0.0		7.0%
2	3.0		5.0		0.2		0.0		0.3		8.5
3	3.0		6.0		0.4		0.5		0.6		10.5
4	3.0		6.0		0.6		0.5		0.9		11.0
5	3.0		5.8		0.8		0.5		1.2		11.3
6	3.0		5.7		1.0		0.5		1.5		11.7
7	3.0		5.6		1.0		0.5		1.8		11.9
8	3.0		5.5		1.0		0.5		2.1		12.1
9	3.0		5.4		1.0		0.5		2.4		12.3
10	3.0		5.4		1.0		0.5		2.5		12.4

Notice that the interest rate is higher for longer-term loans. That's the normal state of affairs, although sometimes the reverse is true. In this case the rising rate can be traced to the action of the risk factors. Each increases with increasing term for its own reason. The inflation factor has an unusual impact in this instance. It first rises and then falls away as the projected annual rates of inflation rise and then subside to a constant level.

The **yield curve** plots interest against term for otherwise similar loans. The **normal curve** slopes upward reflecting higher rates on longer loans.

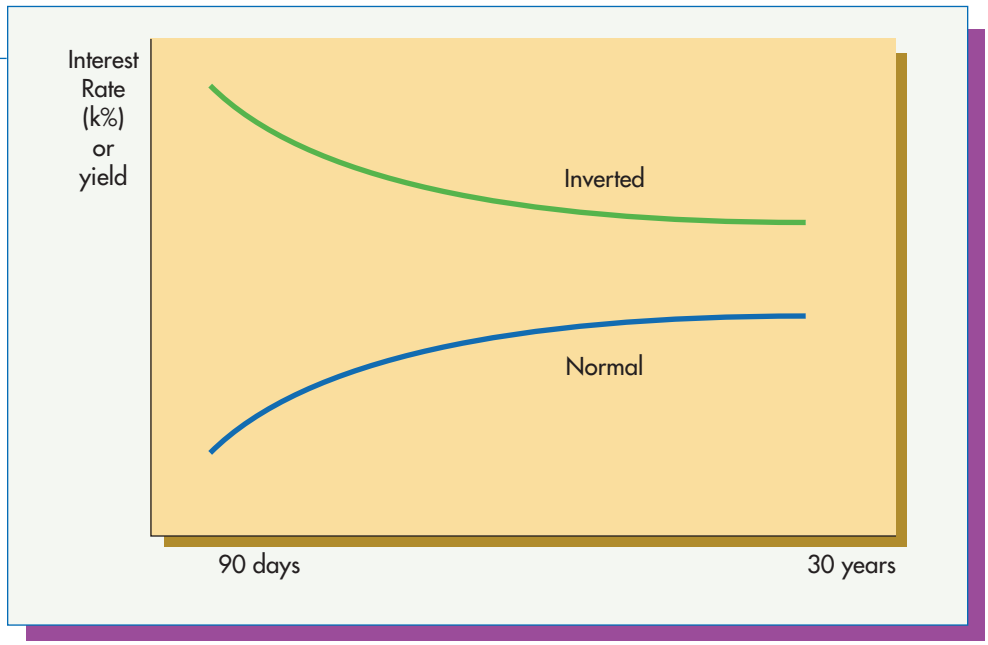
YIELD CURVES—THE TERM STRUCTURE OF INTEREST RATES

As the example in the last section illustrates, interest rates generally vary with the term of the debt. The relationship is known as the *term structure of interest rates*.

A graphic portrayal of the term structure is known as a **yield curve**. **Yield** is simply another term for return or interest. Figure 5.10 shows two yield curves of different shapes.

Figure 5.10

Yield Curves



Most of the time short-term rates are lower than long-term rates and the yield curve is upsloping to the right. This is called a *normal* yield curve because it is the most common. Sometimes, however, long rates are lower than short rates and the curve slopes downward. That's called an *inverted* yield curve.

A great deal of thought has gone into trying to explain the forces that drive the yield curve to take a particular shape. That is, why should long and short rates differ in either direction? Three explanations have emerged, all of which have some appeal.

Expectations theory: Today's rates rise or fall with term as future rates are expected to rise or fall.

The Expectations Theory

The **expectations theory** says that the curve slopes up or down on the basis of people's expectations about the general level of future interest rates. For example, suppose on a given day all interest rates are a uniform 5% regardless of term, and everyone expects them to stay there indefinitely. That means the yield curve is flat at 5%. Then imagine something happens to cause everyone to believe interest rates will increase to 10%, but only after remaining at 5% for two more years. Put yourself in the place of a lender under these conditions. You'd be willing to make a loan of up to two years at 5%, because that would be the prevailing rate during that entire period. But would you make a three-year loan at 5%? Clearly you wouldn't, because in the third year you'd be stuck earning 5% on your money while everyone else is making 10%.

INSIGHTS

PRACTICAL **FINANCE**

The Implications of an Inverted Yield Curve

The yield curve inverts only rarely, but when it does it's usually a signal that an economic slowdown is ahead. Economists agree that an inverted yield curve isn't a perfect predictor of a weakening economy, but history indicates that it's a fairly good one. There have been eight inversions in the last fifty years and six of them were followed by downturns, the last occurring in 1998.

The reasoning behind the link between the shape of the yield curve and the future of the economy is based on expectations about interest rates. If bond investors think rates are generally going down, they often lock in the higher rates available before the decline by buying long-term bonds. If enough investors do that, the prices of long-term bonds are driven up lowering their yields. (Recall that bond yields and prices move in opposite directions.)

But lower interest rates are associated with economic downturns because in such times the Federal Reserve puts downward pressure on rates to stimulate the economy. Hence an expectation of lower rates due to government pressure is associated with the end of a boom and the beginning of a slowdown.

The economy began to flirt with a mildly inverted yield curve in 2005 and early 2006. There was, however, little else to indicate a slowdown was around the corner. In fact, the economy was enjoying an unusally long period of sustained, stable growth at that time. Numerous articles appeared in the financial press wondering if some fundamental economic change had stripped the yield curve of its predictive power, or if some other phenomenon was behind the boom time inversion.

A rationale offered by a number of economists was related to the activities of foreign investors. They had recently been buying long-term treasury bonds in unprecedented quantities. That could have had the effect of bidding up long-term prices and driving down yields thus

http://

To learn more about interest rates and yield curves go to **http://www.smartmoney.com/tools**

However, you might be willing to make the loan at a rate that reflects an average of two years at 5% and one year at 10%, [(5+5+10)/3 =] 6.67%. That way your overall yield would be the same as it would be if you'd made three one-year loans.

What if someone wanted to borrow for four years? You'd want a rate that averaged two 5% years and two 10% years for 7.5%. Notice that the average rate is increasing as the term of the loans increases and we get more 10% years into the calculation. That increase is the essence of an upward-sloping normal yield curve.

A variation on the expectations theory says that the shape of the curve depends on people's expectations about inflation. But because the inflation rate is a large part of the interest rate (see equation 5.3), expectations of increasing inflation are essentially equivalent to expectations of an increasing interest rate.

The Liquidity Preference Theory

Liquidity preference theory: Investors prefer shorter-term securities and must be induced to make longer loans.

The **liquidity preference theory** says that the yield curve should be upward-sloping because lenders generally prefer short-term loans. They're more liquid, making it easier to get invested cash back if you have to. As a result of that preference, there has to be an additional interest inducement to lend long term. Hence, long rates will usually be higher, and the normal yield curve slopes up.

This argument involves two of the ideas we discussed in the development of the interest rate model of equation 5.3. One is the liquidity risk concept, that short-term loans are better for lenders because people can wait for maturity rather than selling

inverting the yield curve. But few were ready to say that foreign investment was definitely behind the phenomenon.

By mid 2006, at this writing, the economy had slowed a little while the yield curve had flattened. But neither movement was significant enough to draw any conclusions about the yield curve as a modern day economic predictor.

Students reading this page in 2007, 2008 and beyond will know the answer. Did the economy slow significantly after the inverted yield curve appeared? Or did the predictor miss its mark a third time?

The Inverted Yield Curve and Banks

An inverted yield curve's effect on banks and banking stocks is far more certain. Banks' primary source of income comes from borrowing at low rates and lending the borrowed money at higher rates. That generally means borrowing short term by taking in savings deposits and certificates of deposit (CDs). (These are short term loans to banks because savings deposits can be withdrawn on demand, and CDs typically have terms that vary from six months to a few years.) Banks then make long-term loans to individuals and businesses that can last up to 30 years.

This works fine under a normal yield curve when short rates are substantially below longer rates. But when the yield curve inverts and short rates are higher than long rates, this basic source of banking income evaporates, and industry earnings take a dive. That, of course, drives investors away and banking stock prices fall.

Sources: Scott Patterson, "Uncertainty is Certain Next Year," *The Wall Street Journal* (December 12, 2005); Mark Whitehouse, "Yields on Bonds Invert Reflecting Unease About Economy's Future," *The Wall Street Journal* (December 28, 2005); Mark Whitehouse, "Economists Ask If Bonds Have Lost Their Predictive Power," *The Wall Street Journal* (December 29, 2005); Clint Riley, "Investors Puzzle: Banks and Flat Yield Curve," *The Wall Street Journal* (January 30, 2006).

their bonds. The second is the maturity risk idea, that short bonds are better for bondholders (lenders) because they are less subject to price variation due to interest rate movement. That makes them less risky and perhaps easier to sell.

In a nutshell, liquidity preference means that investors like short-term securities because they're easier to get out of in a hurry. Therefore, longer-term securities have to offer higher rates to attract buyers (lenders).

The Market Segmentation Theory

Market segmentation theory: Loan terms define independent segments of the dept market, which set separate rates.

The **market segmentation theory** goes back to the forces of supply and demand in the market for debt pictured in Figure 5.9. It says that the debt market isn't represented by a single set of supply and demand curves, but by many sets, each representing a separate market for money of a specific term.

When people are interested in borrowing money, they have a definite term in mind that is based on the use they intend to make of the funds. For example, a company interested in building a factory wouldn't want to fund it by borrowing for 90 days; it would be in the market for a very long-term loan. If it couldn't get that, it wouldn't want any loan at all.

Lenders operate similarly. They want to commit their funds for a definite period of time at a known yield. If they have long-term money available, they don't want short-term borrowers.

This results in a debt market that's *segmented* by term. Each segment has its own supply and demand picture with an independent set of forces pushing the curves back and forth. That means the market interest rate in each segment is independently determined, and not related to the market rate in other segments.

This independence leads to a pattern of rates that just happens. Most of the time market forces are such that short rates are lower than long rates and the yield curve takes its normal upward-sloping shape. However, at times independent market forces push short rates higher and the yield curve slopes down.

QUESTIONS

1. Describe the sectors into which economists divide an industrialized economy and outline the financial flows between them.
2. What do we mean when we say businesses spend two kinds of money? Where does each kind come from? How is each used?
3. What is the primary purpose of financial markets?
4. Define the following terms: primary market, secondary market, capital market, and money market.
5. What's the difference between a direct and an indirect transfer of money between investors and firms?
6. Your friend Sally just returned from a trip to New York where she was very impressed by a visit to the stock market. Is it correct to say that she visited the stock market? What exactly did Sally visit? Is there more than one place in New York that she might have visited? Explain exactly what the stock market is and how it's related to what Sally visited.
7. Describe the process that occurs when an investor places an order with a broker to buy or sell stocks.

8. Your friend Charlie is excited about a newly issued stock. You've looked at the company's prospectus and feel it's a very risky venture. You told Charlie your opinion, and he said he wasn't worried because the stock has been approved by the SEC and therefore must be OK. Write a paragraph to help Charlie out. What is the main thrust of federal securities regulation?
9. Describe insider trading. Why is it illegal?
10. Explain the following terms: privately held company, publicly traded company, listed company, Nasdaq market, IPO, prospectus, and red herring.
11. Define term and maturity. Is there a difference?
12. Corporate executives sometimes abuse their positions by overpaying themselves at the expense of stockholders. When that happens are the executives' gains dollar-for-dollar losses to stockholders or can investors lose more or less than the amounts by which the executives profit? Explain thoroughly.
13. Why does stock-based compensation create a moral hazard for executives?
14. Describe the primary conflict of interest that caused the public accounting industry to fail in its duty to protect the investing public's interests in the 1990s.
15. Why did securities analysts issue biased reports in the 1990s? In what direction were the reports biased?
16. Interest is said to drive the stock market. But interest is paid on bonds and loans, while stocks pay dividends, never interest. It would seem that interest has nothing to do with the stock market. Explain this apparent contradiction.
17. Discuss the similarities and differences between supply and demand for a good (product or service) and supply and demand in a money (debt) market.
18. Briefly explain the idea of representing an interest rate as a collection of components. What is represented by the base rate? What is the risk premium for? Explain the idea of risk in lending.
19. Why is inflation important to lenders? How do they take it into consideration?
20. Explain the nature of the potential lending losses associated with each of the following: default risk, liquidity risk, and maturity risk.
21. Do all loans have default, liquidity, and maturity risk more or less equally? Are some types of loans relatively free of some risks? Is the debt of a particular organization free of certain risks? If so, explain who, what, and why.
22. Explain the ideas of a risk-free rate and the real rate of interest. Is either of them approximated by anything that exists in the real world?
23. What is a yield curve? Briefly outline three theories that purport to explain its shape. How does the yield curve influence the behavior of lenders?

BUSINESS ANALYSIS

1. Harry, a friend of yours, is taking a course in economics, and has become confused by some of the terminology because of the way people commonly use the same-words. The economics professor says investment occurs when companies buy

equipment and build factories. Yet Harry has always heard people talk about investing as a method of saving when they put money in the bank or purchase securities. He's confused by these dissimilar uses of the word and has asked you to explain. After asking for your help, Harry happily states that there's one thing he does understand perfectly about what the econ prof says, and that is "savings equals investment." Because investing in stocks and bonds is also saving money, it's obvious that savings equals investment! Write a brief explanation to help out.

2. Brokers and mutual funds do the same thing: invest your money for you. Is that statement true or false? Explain. What kind of financial institution is a mutual fund? What is its distinguishing feature? Describe how savings banks and insurance companies are similar to mutual funds.

3. Sharon Jacobs is CEO of Henderson Industries Inc., a public company. Henderson makes heavy construction equipment like bulldozers and cranes which it sells to small construction companies. These customers are generally in poor financial condition and must finance their purchases with banks or finance companies. Unfortunately lenders have had increasing trouble collecting on their loans. As many as 30% of customers default, requiring the lenders to repossess and resell the equipment. This usually avoids a loss, but it's an administrative hassle. Because of the ups and downs of the construction industry, it is impossible at the time of sale to predict which customers will default.

   The economy is going downhill at present and Henderson has been experiencing financial difficulties itself. The company's problems are reflected in its stock price which has declined 40% over the last two years on weakening sales.

   In order to boost sales, Henderson would like to sell to new customers that are financially even weaker than its current customers. Unfortunately, the banks and finance companies won't lend to even weaker borrowers. As a result, Henderson is considering offering product to these new customers on deferred payment terms.

   That means it will receive a stream of monthly payments over two or three years until the equipment is paid off. Defaults on this new business will probably be worse than the finance companies are now experiencing but no one knows by how much. The good news, however, is that Sharon thinks she can sell a *lot* of equipment to these new customers.

   On top of all this, the deferred payment idea presents an accounting issue. Typically when a sale is made, the entire price of the product along with its cost are recognized on the income statement at the time of sale. Any unpaid money is carried as a receivable regardless of how long the customer has to pay.

   But if there are serious questions about collecting the deferred payments, it's more appropriate to use the *installment sales method* which recognizes revenue and a pro rata portion of cost only as cash is received from customers.

   What ethical issues does Sharon face with respect to disclosure of financial information including but not limited to the income statement?

   Suppose Sharon has stock options and/or a bonus package that depend on stock price. How might her compensation plan affect her decisions?

4. Does the so-called risk-free rate actually have some risk? (This is a tough question that isn't discussed in the chapter. Think about what makes up the risk-free rate and what among those pieces is an estimate of the future.)

5. Your Aunt Sally has a large portfolio of corporate bonds of different maturities. She has asked your advice on whether to buy more or get rid of some. You anticipate an increase in interest rates in the near future. How would you advise her? Would your advice depend on the maturity of individual bonds?

PROBLEMS

1. Refer to the General Motors stock quotation on page 179.
   a. Demonstrate that GM's dividend yield shown as YLD % is correct using other information in the listing.
   b. Estimate earnings per share from the information in the listing. Assume the figure in column 5 is a 5 rather than dd.
2. Read Business Analysis Case 3. Henderson Industries Inc.'s stock is currently selling at $22.40 per share. Sharon Jacobs, the CEO, has options to buy 250,000 shares at $25.50 per share that expire at the end of this year. Sharon feels that if the traditional accounting method is used, implementing the deferred payment sales program will push the stock's price about half way toward the level it was at two years ago which was about $43. (That method recognizes the entire price and cost of a sold item on the income statement at the time of sale.) If the installment sales technique is used the price of the stock will probably be unchanged but may even go down a little.
   How much will Sharon make on her stock option if she can pressure Henderson's auditors into allowing the traditional method?
3. Economists have forecast the following yearly inflation rates over the next 10 years:

Year	Inflation Rate
1	3.0
2	2.5
3–6	4.0
7–10	3.0

   Calculate the inflation components of interest rates on new bonds issued today with terms varying from one (1) to ten (10) years.
4. Nu-Mode Fashions Inc. manufactures quality women's wear and needs to borrow money to get through a brief cash shortage. Unfortunately, sales are down, and lenders consider the firm risky. The CFO has asked you to estimate the interest rate Nu-Mode should expect to pay on a one-year loan. She's told you to assume a 3% default risk premium, even though the loan is relatively short, and to assume the liquidity and maturity risk premiums are each $^1/_2$%. Inflation is expected to be 4% over the next 12 months. Economists believe the pure interest rate is currently about $3^1/_2$%.
5. Calculate the rate Nu-Mode in the last problem should expect to pay on a two-year loan. Assume a 4% default risk premium and liquidity and maturity risk premiums of $^3/_4$% due to the longer term. Inflation is expected to be 5% in the loan's second year.
6. Keena is saving money so she can start a two year graduate school program two years from now. She doesn't want to take any chances going grad school, so she's planning to invest her savings in the lowest risk securities available, Treasury notes (short-term bonds). She will need the first year's tuition in two years and the second year's in three. Use the interest rate model to estimate the returns she can expect on two and three year notes. The inflation rate is expected to be 4% next year, 5% in the following year, and 6% in the year after that. Maturity risk generally adds .1% to yields on shorter term notes like these for each year of term. Assume the pure rate is 1.5%.

7. Adams Inc. recently borrowed money for one year at 9%. The pure rate is 3%, and Adams's financial condition warrants a default risk premium of 2% and a liquidity risk premium of 1%. There is little or no maturity risk in one-year loans. What inflation rate do lenders expect next year?

8. Mountain Sports Inc. borrowed money for two years last week at 12%. The pure rate is 2%, and Mountain's financial condition warrants a default risk premium of 3% and a liquidity risk premium of 2%. The maturity risk premium for two-year loans is 1%. Inflation is expected to be 3% next year. What does the interest rate model imply the lender expects the inflation rate to be in the following year?

9. The Habender Company just issued a two-year bond at 12%. Inflation is expected to be 4% next year and 6% the year after. Habender estimates its default risk premium at about 1.5% and its maturity risk premium at about .5%. Because it's a relatively small and unknown firm, its liquidity risk premium is about 2% even on relatively short debt like this. What pure interest rate is implied by these assumptions?

10. Charles Jackson, the founder and president of the Jackson Company, is concerned about his firm's image in the financial community. The concern arose when he went to the bank for a one-year loan and was quoted a rate of 12%, which was considerably more than the firm had been paying recently. He has asked you, the treasurer, for an analysis that could shed some light on what might be causing the bank to ask for such a high rate.

    Your research indicates the following. The economy is stable with a 3% inflation rate that isn't expected to change in the near future. The local banking community consistently considers the pure interest rate to be about 4%. Liquidity risk for companies of Jackson's size and reputation is generally not more than 1%, and maturity risk is virtually zero for one-year loans. In the past Jackson's reputation has warranted a low default risk premium of 2%. The firm's financial condition has been stable for some time. Two months ago Jackson had a major dispute with one of its suppliers. Charles refused to pay for a large shipment due to poor quality. The vendor did not agree and claimed that Jackson was just using the quality issue to avoid paying its bills.

11. Use the interest rate model to solve the following problem. One-year treasury securities are yielding 12% and two-year treasuries yield 14%. The maturity risk premium is zero for one-year debt and 1% for two-year debt. The real risk-free rate is 3%. What are the expected rates of inflation for the next two years? (*Hint*: Set up a separate model for each term with the yearly inflation rates as unknowns.)

12. Inflation is expected to be 5% next year and a steady 7% each year thereafter. Maturity risk premiums are zero for one-year debt but have an increasing value for longer debt. One-year government debt yields 9%, whereas two-year debt yields 11%.

    a. What is the real risk-free rate and the maturity risk premium for two-year debt?
    b. Forecast the nominal yield on one- and two-year government debt issued at the beginning of the second year.

13. The interest rate outlook for Montrose Inc., a large, financially sound company, is reflected in the following information.

    - The pure rate of interest is 4%.
    - Inflation is expected to increase in the future from its current low level of 2%. Predicted annual inflation rates follow.

Year	Inflation Rate
1	2%
2	3
3	4
4	5
5–20	6

- The default risk premium will be .1% for one-year debt, but will increase by .1% for each additional year of term to a maximum of 1%.
- The liquidity premium is zero for one- and two-year debt, .5% for three-, four-, and five-year terms, and 1% for longer issues.
- The maturity risk premium is zero for a one-year term and increases by .2% for each additional year of term to a maximum of 2%.

a. Use the interest rate model to estimate market rates on the firm's debt securities of the following terms: 1 to 5 years, 10 years, and 20 years.
b. Plot a yield curve for the firm's debt.
c. Using different colors on the same graph, sketch yield curves for
   i. federal government debt and
   ii. Shaky Inc., a firm currently in financial difficulty.
d. Explain the pattern of deviation from Montrose's yield curve for each of the others.

14. Atkins Company has just issued a series of bonds with 5- through 10-year maturities. The company's default risk is .5% on 5-year bonds, and grows by .2% for each year that's added to the bond's term. Atkins' liquidity risk is 1.0% on 5-year bonds, and grows by .1% for each additional year of term. Maturity risk on all bonds is .2% on one-year bonds, and grows by .1% for each additional year of term. What is the difference between the interest rates on Atkins' bonds and those on federal government bonds of like terms?

15. Assume that interest rates on federal government bonds are as follows:

1-year	6.5%
2-year	6.3%
3-year	6.0%
4-year	5.8%
5-year	5.5%
10-year	5.2%
15-year	5.0%
20-year	5.0%

Do the theories of the shape of the yield curve offer any insights into this rate pattern? Discuss the expectations, liquidity preference, and market segmentation theories separately.

16. The real risk free rate is 2.5%. The maturity risk premium is .1% for 1-year maturities, growing by .2% per year up to a maximum of 1.0%. The interest rate on 4-year treasuries (federal government bonds) is 6.2%, 7.5% on 8-year treasuries, and 8.0% on 10-year treasuries. What conclusions can be drawn about expected inflation rates over the 10-year period?

INTERNET PROBLEM

17. Go to http://www.nyse.com for a tour of the New York Stock Exchange.
    a. Go to *About the NYSE*. Click on *Education* and then *Educational Materials*. Look at *A Guide to the NYSE Marketplace;* Chapter 1, *The NYSE: At the Heart of Global Financial Markets* and Chapter 2, *The Hybrid Market*. How many listed companies are on the Exchange? Given the market technology today, what is the maximum number of shares the Exchange has the ability to trade in a given day? Write a paragraph or two describing the job of a specialist.
    b. Go back to the home page and click on *NYSE Regulations Listed Companies* and then *Listed Standards*. Write a paragraph identifying at least three of the minimum standards required to be listed on the Exchange.
    c. Get an *International Overview* of the Exchange. Print the listing of German Non-U.S. Listed Companies.

APPENDIX 5A

Can There Be Interest without Money? The Desert Island

We've just concluded a discussion of the nature of interest in the context of a society that has a well-developed financial system. In what we've said, interest seems to be entirely wound up with money. But does there have to be money for interest, or a concept like interest, to exist? Would some or all of the ideas underlying interest exist if we lived in a primitive world without money? Let's explore that question with a story about being stranded on a desert island where there is no money. We'll gain some basic insights into the ideas we've been talking about that are well worth the time we'll spend.

ON A DESERT ISLAND

Imagine that Rob Carusoe is a successful businessperson taking a well-deserved ocean cruise in the South Pacific. During a lifeboat drill Rob is separated from the other passengers and crew, and through no fault of his own finds himself adrift in a small rubber raft. Fortunately, he drifts ashore on an uncharted island after only a day on the raft. He's stranded!

Suppose the climate on the island is very pleasant, so Rob has little or no need for shelter or protective clothing. And after a little exploration, he finds a natural spring that provides all the water he needs.

Food, however, is something of a problem. The only edible item on the island turns out to be a certain palm root that Rob learned about from a PBS special when he was in high school and had time to watch TV. Unfortunately, it grows underground and has to be dug up. Because he was cast ashore with nothing but the clothes on his back, Rob has to dig up his food with his bare hands, which isn't very efficient.

After a few days, it becomes apparent that Rob has to spend all his time digging just to get enough to eat. In other words, one full day's labor spent in food production

supplies his consumption need for just about one day. This doesn't mean that he'll starve instantly if he doesn't work all day every day, but in general he has no time for leisure and no ability to make anything extra. Life is pretty dull.

MAKING A TOOL

One day Rob gets an idea. He could dig a lot more effectively if he had a tool, in particular a shovel. Looking around, he notices some flat rocks that might serve as a shovel blade, some bamboo stalks that would do as a handle, and some vines that might be used to fasten the two together. However, because he has no other tools with which to make the shovel, it's obvious that it's going to take a long time to fashion it by hand, say five whole days.

This presents a problem. Rob has to dig up roots every day to get enough to eat, so building a shovel means spending at least some time hungry. After due consideration, he decides it's worth the sacrifice and begins spending every second afternoon building the implement. At that rate, 20 partially starved days must elapse before he has anything to show for his efforts. This represents quite a bit of suffering, but in the end the task is complete and Rob is shovel-equipped.

LIFE WITH TOOLS—SAVINGS AND INVESTMENT

Rob begins to use the shovel on the twenty-first day and discovers that he can dig twice as fast with it as without it. (It's a crude shovel.) That makes his life on the island a lot better. Now he has some choices. He can work as hard as before and eat twice as much. Or he can eat as much as before by working half the time. This option gives him some leisure. Of course, any combination in between is also possible.

Let's digress for a moment and apply some economic terminology to what's been going on. Notice that the shovel is a piece of *capital equipment*, a tool or implement that makes production more effective. Further, Rob *invested* his *savings* to make it.

We normally think of savings as income that's not consumed. In this case Rob saved productive capacity by not digging food during every second afternoon. That saving represents a sacrifice in that he could have eaten more, but he elected not to. He was willing to forgo current consumption to devote resources to something else. That's what saving is.

The saved labor resource was invested in producing the shovel. Investment means spending resources on something that's expected to produce more in the future rather than on something that will be consumed and then be gone. Rob used his savings to invest in the shovel.

A NEW ARRIVAL—AND A REQUEST TO BORROW

Now let's return to the island and imagine that Rob has been using his shovel and enjoying a better life for some time. Then imagine that one morning a great event occurs. Another castaway washes up on the island several hundred yards down the beach. We'll call the newcomer Joe. While reasonably civil, Joe turns out to be something of a loner. He sets up some distance from Rob's camp and seems determined to remain by himself.

Rob watches Joe scratch out a hand-to-mouth existence digging roots by hand, while Joe watches Rob living much better with the aid of his shovel. This goes on for several weeks.

Finally, Joe shows up at Rob's camp with a request (and the point of our story). He wants to *borrow* Rob's shovel.

THE COST OF BORROWED SHOVELS

Rob isn't entirely opposed to the idea but feels that if he does lend, some compensation is in order. (The compensation could be paid in food or in labor services.) The key question is, what things should Rob demand compensation for before lending?

Thinking about it, he comes up with the following ideas.

1. He has to receive the incremental productive power of the shovel in his own hands—that is, the amount of extra food he can produce with the shovel as opposed to the amount he can produce without it. If he doesn't get that, he's back where he was originally. (Notice that for borrowing to make sense for Joe, he would have to be able to produce more than Rob can with the shovel.)
2. Next, Rob worries that he might not get the shovel back. Joe might break it, lose it, disappear with it, or just refuse to return it. He feels he should get something for bearing this risk.
3. Finally, Rob is concerned that the shovel may be somewhat worn out when it's returned—not broken, but worth less than when it was lent. We'd normally use the term "depreciated" to describe this idea, but on the island we'll just say "reduced in value." Rob wants to be paid for any reduction in value his shovel suffers while being used by Joe.

The exact amount of these items isn't important. It's the concepts that count. Rob will demand rent for his shovel made up of amounts related to the three items above.

TYING BACK TO INTEREST

Now let's go back to the interest rate model expressed in equation 5.3 and conceptually relate Rob's three requirements to the five elements of the model. We'll rewrite 5.3 here for convenience.

$$\mathbf{k = k_{PR} + INFL + DR + LR + MR} \tag{5.3}$$

where k_{PR} = pure interest rate

INFL = inflation adjustment (the average expected inflation rate over the life of the loan)

DR = default risk premium

LR = liquidity risk premium

MR = maturity risk premium

Rob's first requirement, the incremental productive power of the shovel, is exactly the idea behind the pure interest rate. It's the amount you can earn with the resource, shovel or money, if you keep it and use it yourself.

Rob's second concern, compensation for the chance of losing the shovel altogether, is just like the idea of default risk in the model. If the borrowing company defaults severely, the lender can lose everything just as Rob can lose everything if Joe takes a hike to the other side of the island with the shovel.

Rob's third worry is that the shovel might be worn out or reduced in value upon its return. That's exactly what happens to money in inflationary times; it loses its value. Dollars returned after a year of inflation buy less than the dollars lent in the

beginning of the year. So Rob's third issue is just like the inflation adjustment in the model.

The last two elements in the model are also analogous to the idea of a reduction in value. Both liquidity risk and maturity risk involve price reductions if a lender has to get out of a loan quickly by selling it to another investor. If that happens, borrowers' obligations in lenders' hands are worth less money, and a reduction in value has occurred. LR and MR are actually premiums for bearing the risk of that happening, but the analogy is still quite close.

CONCLUSION

The point of our story is that when we pick interest apart into its component pieces, we see that it's more basic than money. Interest really involves control over the productive power of resources as well as the ideas of capital, investment, and saving, all overlaid by the concept of risk. These ideas are more fundamental than money. Of course interest relates to money, but only because money represents control over resources in an advanced economy.

QUESTIONS

1. The concept of interest is grounded in money. Without money there could be no interest. Is this statement true or false? Explain and discuss.