Financial Markets

17

For many people, the financial markets, where stocks and bonds are traded, are the most visible aspects of the economy. When you hear the phrase "economic news" on TV or read it in a newspaper, there is a good chance that you are about to find out about the latest gyrations in stock prices and interest rates.

At the very beginning of this book we confronted the myth that economics is a primarily a guide to making money, and in subsequent chapters we have been able to go into some detail about the workings of the modern economy without ever mentioning the role of finance. This tells us that money isn't everything, but it should also be a warning sign—that unless we bring the role of financial investment into the picture, something important will be missing.

In this chapter we look at the markets in which financial assets, valuable pieces of paper like stocks and bonds, are bought and sold. We will have two main purposes, to simply describe what these markets are and how they operate and to examine the effects they have on the allocation of resources in society. As we will see, the rise and fall of prices in these markets can have far-reaching effects on what gets produced, by whom and how. What we will *not* consider in this chapter is the role of financial markets in economic growth, employment and inflation, since this is the domain of macroeconomics. But there is more than enough microeconomic significance in finance to keep us busy.

First, however, we need to take a short detour and explore the meaning of "capital" in economic theory. This will tell us something about what financial markets represent and also about the dangers of ascribing too much importance to them.

17.1 The Mystery of Capital

It is common to refer to the modern profit-driven economy as capitalist, so we should know what we mean by "capital", right? Well, it's not so easy. There are two very different meanings to this word, and although economists have struggled since

P. Dorman, *Microeconomics*, Springer Texts in Business and Economics,
DOI 10.1007/978-3-642-37434-0_17, © Springer-Verlag Berlin Heidelberg 2014

the time of Adam Smith to bring them together into one consistent theory, it has not yet happened and may prove to be an impossible dream.

Very generally, by **capital** we refer to resources that have three characteristics:

- They are created by an initial process of investment.
- They are used to produce further goods and services, including, perhaps, more capital.
- They are not immediately used up in production.

The first of these points to a typical time pattern of costs and benefits: there is a beginning phase in which expenses are incurred to create capital, followed by a second phase in which capital is employed productively, yielding a return. Two types of measurement are often used to describe how much benefit a capital investment creates compared to its cost, the payback period (how many time periods of productive use will be needed to recoup the initial cost of investment) and the rate of return (the ratio of the value of revenue it generates over its lifespan to the value of its costs). As we saw in the previous chapter, any activity that has this time structure of costs followed by benefits is likely to be designated a form of a capital by economists, including the human capital of investments in education.

The third characteristic is what distinguishes capital from raw materials or semi-finished goods like fabrics or auto parts. A bit of fabric that goes into the making of a shirt is used up simply by being used. A piece of capital equipment, like a truck, contributes value to production but normally survives to be used in future periods. True, a portion of its value is lost, which is referred to as **depreciation**, but the ability of capital to be used over and over is the basis for its time structure of costs and benefits.

"Real" capital, the kind that is actually used in production, consists of **capital goods**, specific pieces of equipment, buildings and other items that possess the three characteristics of capital. The stock of these goods comprises the major part of what we might think of as "the wealth of nations", to use Adam Smith's phrase. If we want to convey to someone exactly how much capital a particular country possesses at a moment in time, we would have to draw up a very long itemized list, indicating each particular type of capital good and how much of it is available.

Of course, no one does this for a country, and even most businesses, once they get to a sufficient level of size and complexity, give up the task of enumerating each capital item on hand. Instead, people measure the value of these goods, and the total monetary value of all of them combined is accepted as an answer to the question, "How much capital is there?" In this way, individuals, businesses and governments have come to see capital as a sum of money, referred to as **financial capital**.

Let's suppose for a moment that these are essentially the same—that financial capital is simply the monetary equivalent of a stock of capital goods. In that case, we could analyze the market for capital by considering the factors underlying its supply and demand. First, consider supply, which in this case means the amount of money made available for financial investments. Money used in this way is unavailable for other purposes; instead of purchasing goods that can be consumed in the present, for example, the investor is opting for the prospect of earning even more money in the future. Different people, of course, will require different

incentives for making this choice. Some, who have little desire for more spending power in the current period, will invest their money at a relatively low rate of return. Others, for whom immediate financial needs are more pressing, will require a higher rate of return to supply their money to financial markets. And even the same individual might supply some money at a lower rate and more at a higher one. The overall effect would be an upward-sloping supply curve: more money is made available for purposes of investment as higher returns are offered. In this way the supply side of the market would draw on the observation that there is a general rate of return on money in the marketplace, the rate of interest.

The demand curve, on the other hand, would reflect the productivity of this money when it is invested in capital goods by those who borrow it. In this case, we can imagine that there are many such productive investments available to those with the funding to make them. We could line them up from most profitable to least, as in Fig. 17.1 on the following page, which is a repeat of Fig. 12.1. In a different approach to make the underlying logic clear, we use columns to indicate profitability, designated by the rate of return r, as if there are just a few specific investments to display, along with a curve that shows the profitability relationship if there are so many investments that it becomes continuous.

At any actual interest rate, say r*, there is one particular investment, or group of investments, designated by I*, whose expected rate of return is exactly equal to it. This would just cover the cost of the money used to finance it, since the interest rate is the cost of money and the rate of return is what it earns. Any investment to the left of I* would more than justify the cost of funds; any investment to the right would not. This means that, as r falls, more investments are desired, and more money would be used to finance them. In other words, our investment ranking curve is also the demand curve for financial capital.

Putting supply and demand together would yield a typical diagram like Fig. 17.2, which superimposes a supply curve onto the demand curve of Fig. 17.1. Now r* is an equilibrium rate of return on money. If the interest rate rises above this, there will be an excess supply of funds on the market looking for takers, and this would be expected to result in lending offers that would bring the rate back down, and vice versa for interest rates below r*.

What is particularly interesting to us is the interpretation of r*. It represents the interest rate that is just sufficient to convince the marginal lender (the one who provides the last dollop of money) to make it available to the capital market. It must therefore just equal this person's perceived cost of postponing access to this money's spending power until the future. This is referred to as the **marginal time preference** of the community, the rate at which the present is preferred to the future. For instance, if I think, all else being equal, that having a sum of money a year from now is 10 % less desirable than having it today—my degree of time preference—it will take a 10 % return on my money to just induce me to lend it out anyway. To speak of the marginal time preference in the market as a whole is to indicate that the last infusion of money has exactly that psychological barrier to overcome.

Meanwhile, on the supply side, r* represents exactly what it did before: the rate of return on the last investment made at this interest rate. In other words, r*

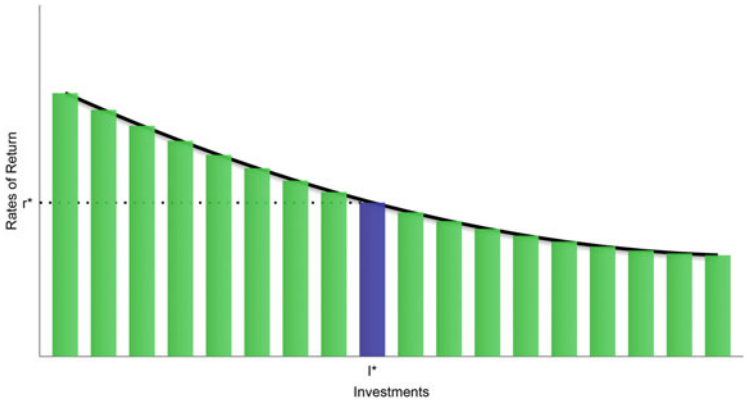

Fig. 17.1 Potential investments ranked by their prospective rates of return. Investments are ranked by their rates of return (r), from greatest to least. The bars represents specific investments when there are relatively few; the curve represents a continuous ranking when there are a great many investments. At r* investment I* exactly covers its financial cost, and all investments to its left would more than cover it

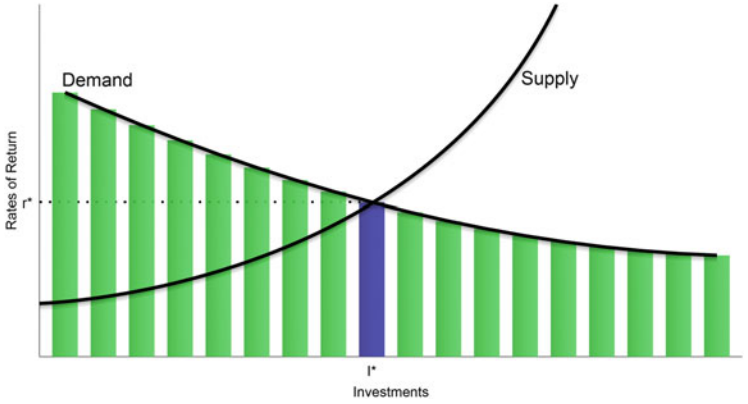

Fig. 17.2 The supply and demand for capital (financial and physical). When an upward-sloping supply curve is added to the demand curve, we have an account of the market for "capital" which is simultaneously financial capital (money) and capital goods (physical assets). The equilibrium return, r*, represents both the marginal time preference for money and the marginal return on investment

represents the **marginal return on capital**. If you want to have more investment by bringing online investments to the right of I*, you would have to lower the interest rate paid by investors.

This seems like an appealing result: the marginal cost of supplying an extra bit of money to the capital market is exactly equal to the marginal benefit this money provides in the form of enhanced future productivity. It reminds us of the Market Welfare Model, since the supply curve represents the marginal cost of supplying

funds, the demand curve the marginal benefit of using them, and there is a single, market-clearing equilibrium. All investments whose productivity justifies the cost of financing them take place, and none of the rest. What's not to like?

There is just one small problem. The supply curve is based on people's preference to have money today rather than in the future—that is, on financial capital—while the demand curve is based on the productive potential of capital in its physical state, capital goods. If these were just two ways of describing the same thing, all would be well, but they aren't. It is entirely possible—normal, in fact—for the amount of financial capital to rise while the stock of capital goods is constant or falling, or vice versa. We will discuss this point in more detail shortly, when we delve into the operations of the stock market. Even in the ideal world of economic models, where messy complications are dispelled under the **ceteris paribus** assumption, there is no predictable correspondence between the two types of capital. (This was established in economic theory as the result of a bitter controversy that erupted during the 1960s.)

The result is that the analysis incorporated in Fig. 17.2 is not valid. As in so much of economics, the operative question has become, *how* not valid? Many economists like to think that the difficulties caused by combining two inconsistent definitions of capital are small enough to be ignored. They prefer to accept the interpretation of capital markets as adhering to the Market Welfare Model, with its implications for the interpretation of equilibrium interest rates. Some are more cautious and regard the normative evaluation of capital markets as beyond our current understanding.

This fissure also creates a problem for writers of economics textbooks. Capital is important because it is productive, but the markets (like stock exchanges) on which capital is traded deal in financial capital, not capital goods. It would be convenient to ignore this distinction, but in what follows we will take financial capital on its own terms, as simply a vehicle for the movement of money, and make limited inferences about what the stock markets tell us about society's capacity for production. Actually, as we will see, keeping the two forms of capital distinct in our minds will prove to be an advantage when we examine the forces that drive financial markets.

17.2 Equity Markets

In Chap. 8 we considered the nineteenth century innovation of the public joint-stock company, one of the fundamental building blocks of a modern economy. In that chapter we looked at this structure from the viewpoint of the company, with a focus on the greater size and security that distinguishes corporations from other business forms. Here we will look at this same development from the perspective of investors, those who possess or manage enough financial wealth to buy and sell stakes in corporate enterprises. These stakes are also called **equity** and their value is measured by the price they command in the marketplace. In other words, if you multiply the number of shares of a corporation held

by its shareholders times the price per share, you get the total equity of that corporation, its market valuation.

Recall that two developments are necessary for a corporation to be traded on a stock market. First, the ownership of the corporation has to be subdivided into shares, pieces of paper that represent fractions of the firm's net worth. Typically a large corporation has millions or even billions of such shares available for ownership, so that each represents a tiny portion of the total value of the company. Second, the firm must be "public" in the sense that it allows any member of the public to buy or sell these shares. (Some corporations are private; they restrict ownership to particular individuals rather than putting it up for general trading.) Corporations that choose to be public must list themselves on one or more stock exchanges. A stock exchange is an organization dedicated to facilitating markets in corporate equity; examples include the London, Frankfurt, Hong Kong and New York exchanges.

Stock markets, like all financial markets, are purely creatures of supply and demand. At any point in time some people wish to purchase the stock of a given company and some wish to sell it. Transactions can take place only if there is an agreed-upon price, so the price rises and falls as buying or selling pressure becomes more predominant. It is not too far from the truth to regard most of these buying and selling decisions as bets, placing money on the belief that future events will yield a profit rather than a loss. Clearly, if A sells a share of stock to B at a given price, A is betting that the price is more likely to fall and B that it is more likely to rise. Differences of opinion are the fuel on which financial markets run.

Very generally, we can recognize two different approaches to analyzing such bets. The first is referred to as relying on the **fundamentals**, the underlying economic prospects of the firms whose equity is being traded. Owning a share of a company means having a claim on the profits this company will make. Such profits can either be returned to owners directly in the form of **dividends**, periodic distributions to shareholders on the basis of how many shares they own, or indirectly through reinvestment, which should increase the value of the firm in the future. So, according to this line of thinking, the price of a company's share should reflect the best possible estimate of that company's future earnings. Many private analysts are employed by investment houses and other organizations to scrutinize the future business prospects of companies listed on the stock exchanges, providing information and analysis to guide trading strategies.

A different approach focuses on the market itself, and for this reason has been called **technical**. "Winning" in the stock market means placing bets that are ultimately vindicated by the market in the future, which is to say thinking like everyone else, but just a little sooner. From this perspective, the strategy is to examine the market as carefully as possible, looking for patterns in its recent history and divining the psychology of its most influential participants. The goal is not to predict the future performance of firms over some long period of time, but to anticipate the moves the market will make in the next few days, hours or moments. With the advent of computerized trading, it has become possible to incorporate complex technical algorithms in software, so that the speed of response can become

nearly instantaneous. As a larger percentage of all trading is triggered by programs of this sort, the potential for sudden, extreme market events could be increasing, although no one knows for sure. (This has emerged in recent years as the problem of "flash crashes".)

Do these two methods converge? That is, are the share prices predicted by the best fundamental analysis more or less the same as those predicted by state of the art technical analysis? Sometimes yes, sometimes no. The real-world meaning of convergence between fundamental and technical outlooks can be seen by comparing two dramatic sell-offs in the recent history of New York equity markets. The first was in 1987: in less than a day the Dow Jones Industrial Average, an index composed of 30 leading stocks, fell by 22.5 %, the worst such decline ever. Nothing had changed in the real economy or the profit potential of the firms being traded, however, to justify this panic. The second began in 2000 and continued for over a year, when the so-called "dotcom" bubble burst, and hundreds of companies that had staked their business strategies on the internet saw their share prices collapse. It is estimated that the total equity of these firms fell by about eight trillion dollars during this time. It was a severe sell-off, but probably justified, at least in part, on fundamental grounds, since the share prices had previously risen to astronomic heights based on unrealistic expectations of future earnings growth. Very roughly, we could say that the two approaches diverged in 1987 but mostly converged at the beginning of the new century.

A second way to distinguish between traders is by whether they are on the buying or selling side of the market. Those who want to buy, who are optimistic about future trends in share prices, are called **bulls**; those who want to sell are the **bears**. A market whose share values are rising over time is called a **bull market**, since the bulls outnumber (or are more enthusiastic than) bears; the opposite is called a **bear market**. It has been noted for a long time that bullishness and bearishness have a strong psychological component; some prominent market players are congenitally one or the other irrespective of the course of economics events. When then-Chairman of the Federal Reserve Alan Greenspan famously warned against "irrational exuberance" on Wall Street in 1996, he no doubt believed that psychology had run away from careful, objective analysis.

Whether driven by views about business fundamentals, market patterns or gut psychology, share prices have a life of their own. The economic value of a company, as measured by share prices, tends to fluctuate substantially and is difficult to predict in the short run. At the same time, however, the stock of productive assets the company owns, things like land, buildings, patents and so on, changes more slowly. In the end, you might ask, what is a company really worth—its valuation on the stock exchange or the amount of money it would cost to buy all its assets, one by one? It is worth looking at this question in more detail.

It turns out that there are two different ways to measure the value of an asset like a piece of equipment. You could find out how much had been spent to purchase it in the past, its **purchase value**, or how much it would cost to replace it today, its **replacement value**. Because prices are always changing, these are rarely the same. It is easiest for firms to record purchase value, since all they have to do is keep track

of past transactions, but the better measurement is replacement value, since it is today's price that should determine today's value.

Public corporations have to file financial information on a regular basis, and one of the types of information they must disclose is the replacement value of the physical assets they own. This is sometimes referred to as the corporation's **book value**. It is believed that publicizing this number, broken down into its major categories, helps make stock markets more fair and efficient.

But as we have already seen, stock markets provide us with a different way to place a value on firms, their total equity (also called capitalization) based on the market value of all the shares they have issued. When a company's stock price rises, its total market value goes up irrespective of whether its book value has risen, fallen or remained the same. This divergence between the money tied up in a firm's stock and the calculated replacement value of its capital goods mirrors the distinction between financial and physical capital introduced earlier in this chapter.

A handy way to summarize these two types of value is **Tobin's *q***, defined as the ratio of market valuation to total replacement value, and named for Nobelist James Tobin, who introduced the idea in 1969. This ratio should always be equal to or greater than one; otherwise shareholders could increase their wealth by ordering the firm to be liquidated, selling off all the assets and distributing the proceeds. (Sometimes q does fall below one temporarily, but this is an unstable situation.) In the normal state of affairs, q is more than one, and this indicates that the company is viewed as adding value to its stock of assets: if the stock price is in line with fundamentals, these assets are more valuable used in combination by the company than they would be if sold off one-by-one.

Another useful statistic is the **price-earnings ratio** of a particular firm or an entire market. As we saw above, from a fundamental perspective a share of stock is simply a claim on the future profits of a firm. No one knows what they will be, but one possible indicator is the firm's current profits. The price-earnings (P-E) ratio relates the total market value of the firm to its profits during the most recent period. If the P-E ratio is high, it presumably indicates that investors expect future profitability to rise. In some cases, like the internet retailer Amazon, investors paid substantial share prices even though earnings were negative for many years, because they believed in the company's long run business plan. It should be noted, however, that the variability of earnings for an entire market is a lot less than the variability of any particular firm. Firms fluctuate between years of spectacular profits and painful losses, but most of this cancels out at the level of the whole market, where P-E ratios should normally be more stable.

The stock market plays an important role in allocating society's resources. An economy has only a limited capacity to make investments, and somehow decisions must be made to invest in one industry or technology rather than another. Many of these decisions are made within firms according to motivations discussed in Chap. 8, but the resources available to the firms themselves must be divvied up as well. The stock market helps perform this function, but not always in the most visible ways.

A direct connection can be seen in the procedure known as an **initial public offering** (IPO). This occurs when a new corporation forms or when a private corporation goes public. New shares of stock are offered to investors, and the higher their initial price, the more money flows to the enterprise. Some of this may go to its former private owners, who can now cash out, leaving less of their wealth tied up in one asset, but the rest goes to the firm itself. These funds are available for making new investments, and gaining this access to financial capital is one of the main spurs to making an IPO. Firms that are already publicly traded sometimes offer new shares for the same reason.

All the same, the vast majority of stock that trades on the world's financial markets was issued in the past, and the money paid for it just flows from one group of investors to another. This money is *not* channeled into the purchases of new capital goods, at least not in this way. Nevertheless, fluctuations in share prices have profound indirect effects on business decisions, a topic we will return to in greater detail toward the end of this chapter. For now, it is enough to say that managers keep a close eye on the stock market, and if share prices fall they are likely to worry for their own livelihoods. Thus, high prices are seen as ratifying current investment decisions and encouraging more; low prices have the opposite effect. In the extreme case, which is becoming less extreme in recent years, a low enough price can lead the firm to liquidate its assets, effectively un-making all its investments.

An interesting use of financial market data, particularly information from the world's stock exchanges (which are all publicly available) is **event analysis.** This involves looking at changes in share prices that correspond to events that might alter the underlying profitability of the companies involved. For instance, suppose the government passes a law regulating a particular industry. This could affect profits in that industry either positively or negatively depending on what the law specifies (and which interests promoted it). To do an event analysis, you would look for the moment when the regulation becomes "news" to people who trade on financial markets—either the day new information comes out that makes it likely the law will pass, or when the contents of the law are clarified, or some other decisive point. Recall that players in the stock market will trade on their expectations, so "news" is whatever changes their expectations. (Usually by the time a regulation is signed into law it is no longer news in this sense.)

When you have pinpointed the moment of news you look for signs of a response in the stock market: did the company's share price go up or down? By how much? If you believe in the fundamentalist approach to stock price evaluation, this price bump, if it occurs, should reflect changes in the expected profitability of the company. In fact, by multiplying the bump times the number of shares of stock outstanding, you can get an idea of how large a profit gain or loss is expected to result from the news.

But be careful. Event analysis is based on the notion that a change in a company's stock price is related to an unexpected event that financial market participants find out about at a certain point in time—but stock prices fluctuate for all kinds of reasons. In doing this analysis, look at the longer term price trend of

the stock to separate out a one-time bump from longer-term tendencies. Pay attention to the size of the bump in relation to the typical gyrations of the share price: how likely is it that such a bump could occur by chance? (This is an example of separating the "signal" from the "noise" in data analysis.) Finally, look at what was happening to other, unrelated companies over the same time period, for instance by tracking an index of the entire market. If all companies were experiencing approximately the same bump, it would probably not be due to an event that affected only one of them.

Event analysis is relatively easy to do, the data are readily available, and the results can be fascinating.

17.3 Credit Markets

In stock markets investors put up money to take an equity stake in a firm; in credit markets they make loans. A loan is embodied in a piece of paper called a **bond**. The creditor provides money to the lender; the lender provides a bond entitling its owner to a series of future payments. Like all financial assets, bonds can then be traded to new investors, so that their owners at any point in time are not the same people as those who originally lent the money. To put it differently, in a sufficiently liquid market (one with enough participants and low transaction costs), it is possible to become a creditor and then, if desired, quickly become an ex-creditor by selling the bond to a third party.

Some bonds are originally issued by private companies, others by government agencies. Some have only a general legal obligation to repay—a topic we will return to when we discuss defaults—while others are tied to particular items of collateral. All are traded in credit markets, but their different characteristics are reflected in the range of prices they command, as we will see shortly.

Before we look at the two sides of the credit market, we need to take care of a technical matter concerning bond prices and interest rates. Sometimes one hears a news report like, "There was a rally on the bond market today, with prices rising. . ." or "There was a rally on the bond market with interest rates falling. . ." These are two ways of saying exactly the same thing. Here's why.

Suppose two pieces of information are given to us, the future payments specified on a particular bond and the market interest rate; our goal is to figure out what the price of the bond should be. To make things simple, let's assume that the bond pays \$100 every year forever. (Some bonds actually do this.) If we use r for the interest rate and P_B for the price of the bond, we can write the formula in Eq. 17.1:

$$r = \frac{\$100}{P_B} \tag{17.1}$$

This is simply a definition of what r stands for. The interest rate is the rate of return on money, and the bond, measured by its price P_B, is a repository of money, so the yearly income as a percentage of the money invested to obtain it *is* the

interest rate. If we assume that competition in the marketplace will lead to a single interest rate on all equivalent investments, then the price of the bond must be such as to produce the economy-wide r.

By multiplying both sides by P_B and dividing by r, we can rewrite this as Eq. 17.2:

$$P_B = \frac{\$100}{r} \tag{17.2}$$

Now it is easy to calculate P_B for any r that might prevail. If $r = 5\ \%$, for instance, $P_B = \$2{,}000$. If $r = 10\ \%$ $P_B = \$1{,}000$. Notice that, if r rises, P_B falls, and vice versa. Investors make this happen by pricing bonds so that their return is equal to the interest rate. If they didn't, someone could make money by either borrowing at r to buy P_B or selling P_B to invest in some other asset at r. It is unlikely that such easy profit opportunities would persist for very long.

Now that we have this relationship clearly in mind, we can analyze credit markets as the supply and demand for either money or bonds. If we choose money, lenders are the suppliers, borrowers provide the demand, and the price is the interest rate. If we choose bonds, issuers of bonds are the suppliers, buyers of bonds provide the demand, and the bond price is set in the market. Once again, these are two ways of analyzing exactly the same thing: the buyers of bonds are the lenders of money, and the issuers of bonds are the borrowers of money. Figure 17.3 on the next page illustrates this by looking at the effect of an issuance of new bonds that increases the volume of lending in the credit market.

In Fig. 17.3a we see the market for money; by issuing new bonds, borrowers are expressing an increased demand for loans. Given a fixed supply curve, this will lead to a higher equilibrium interest rate. In Fig. 17.3b we see the market for bonds. Now borrowers are on the supply side, offering bonds to investors. By issuing new bonds, they increase their supply from S_1 to S_2, which will have the effect of reducing the equilibrium bond price. Since money trades for bonds in the credit market, these two diagrams are different ways of depicting exactly the same event.

While the identities of the credit market participants are easy enough to identify in most cases, their motives are complex. Some who supply credit are saving for the future; some are speculating (gambling) on the future prices of bonds. Still others may need to park their money for a period of time; for them a bond is a convenient store of value. Borrowers may also have different motives. Some are companies raising money for investments or to survive a downturn in earnings. Some are consumers, taking out mortgages to finance a house or other types of loans for education or travel. The largest supply of bonds comes from government, which must borrow whenever its spending exceeds its tax revenues. All of these play a role in determining the level of borrowing in the economy and the interest rate borrowers must pay.

Thus far we have been treating bonds as if they were identical, but they aren't. They come in different sizes (amounts of money being borrowed) and repayment terms, but for our purposes the most important difference is the risk of default. By

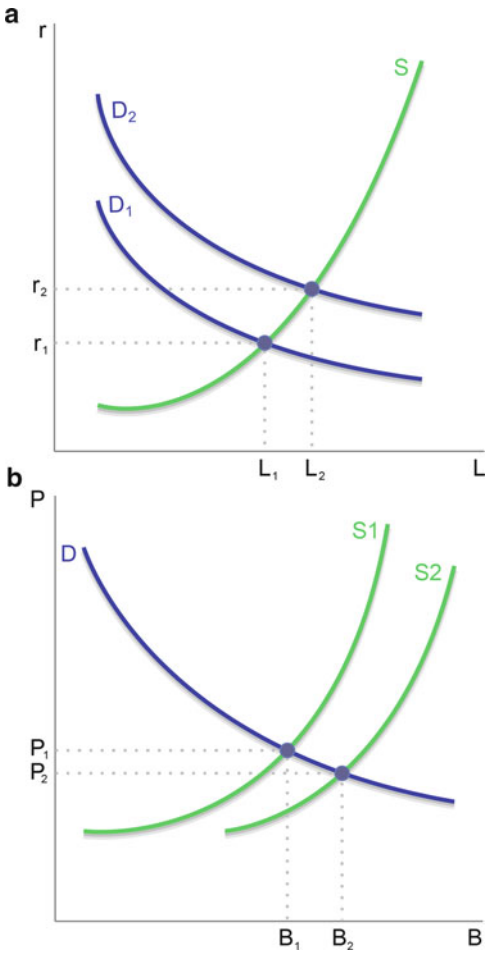

Fig. 17.3 The effect of a new bond issue. (**a**) In the market for money, L is the amount of money loaned and r the interest rate. A new bond issue increases loan demand from D_1 to D_2, raising the equilibrium interest rate from r_1 to r_2. (**b**) In the market for bonds, B is the amount of bonds purchased and P is the price of a bond. A new bond issue is shown as an increase in supply from S_1 to S_2, lowering the equilibrium price from P_1 to P_2

default we mean the possibility that the issuer of the bond will not make the payments the bond specifies. For a bond that requires an annual payment, like our hypothetical asset in Fig. 17.3, this could mean postponing a payment, reducing the amount of payment or stopping payment altogether. Of course, the borrower is legally obligated to follow through on the terms of the bond, but that may be little consolation to bondholders if the borrower is simply short of funds.

Several factors govern the risk of default. Public borrowers, governments, are usually considered more reliable than private bond issuers, like corporations. Governments can raise taxes more easily than companies can raise revenues, and the debts of particular government agencies are usually backed by the "full faith and credit" of the government as a whole. Bonds are also considered more secure if they are backed by collateral. Mortgages, for example, are secured by the possibility that the mortgage-holder can repossess the land and buildings in the event that the borrower defaults. As long as the market value of these hard assets exceeds the

value of the bond, the mortgage-holder is not at risk. (In a declining housing market, where market values fall below the loans taken out in earlier periods, this risk re-emerges, as we have seen on a dramatic scale in recent years.) Finally, the financial prospects of borrowers provide a crucial indicator of their repayment capacity. Companies like Moody's and Standard & Poor's research the financial health of borrowers and rate their bonds on a scale that ranges from "prime" (virtually secure) to "junk" (purchase at your own risk). The failure of these rating outfits to properly identify the risk in mortgages, and the complex securities based on them, was one of the causes of the recent financial crisis.

The differentiation of bonds according to their security gives rise to a **risk premium** in the marketplace. Less secure bonds must pay this premium, measured as an increment above the interest rates paid by the most secure borrowers, for instance government agencies—at least, in the US and other countries where governments have high credibility. A poor bond rating can therefore make all the difference between having access to affordable credit and having this credit effectively shut off.

It is worth considering what credit rating and risk premiums mean for the allocation of society's resources. At any point in time there are many companies with potential business ideas. Many or most require loans to carry them out. There is not enough money to finance everyone, so choices must be made. Credit-rating companies, market analysts and others examine the companies proposing to issue bonds and the intended uses of the money they hope to borrow. Some borrowers are given a seal of approval and can sell bonds at the lowest interest rate available in the market, while others are seen as risky and must pay a higher price. In this way the financial resources of the economy are rationed.

One dramatic example of this process was the reversal of the nuclear power industry during the 1970s and 1980s. Nuclear power plants are extremely expensive to build, and revenues from their operation do not begin until the plants are completed, as many as 10 years after the investment process begins; for this reason their financing comes almost entirely from bond issues. During the '70s the market looked favorably on this technology and the companies that relied on it. Government regulation was friendly, there were handsome public subsidies, and most of the scientific experts seemed to have confidence in the future of the industry. Then a series of events altered this perception: a large protest movement arose in opposition to nuclear power, waste disposal became a contentious public problem, and high-profile accidents like Three Mile Island in Pennsylvania and Chernobyl near the Ukraine-Moldova border undermined the confidence of the general public and experts alike. Within the space of a few months bond ratings for utilities investing in nuclear power plummeted, and there was even a major default. The supply of new funding dried up. As a result, resources were pulled out of nuclear power in the US and many other countries and transferred to other uses. This decision was made not by governments or panels of scientists, but by investors acting within credit markets.

17.4 Commodity Markets

Our main interest in this chapter is stocks and bonds—equity and credit—but other financial markets exist and can sometimes play an important economic role. The biggest of these is the **commodities market**, in which claims to standardized agricultural and mineral products are traded. Examples of particular commodities include wheat, coffee, copper and gold.

The reason these can be considered financial markets is that there is so much trading taking place that participants never have to worry about actually having to take possession of these commodities; only paper and money circulate. If I buy the right to be delivered 10,000 tons of wheat in 3 months, I don't have to worry about buying a warehouse. Long before the delivery date arrives, I will be able to sell this claim to someone else. Eventually, just before delivery, the paper embodying this claim can be sold to an actual mill or other agricultural business, so that the wheat goes to someone who can use it. Even more conveniently, a claim to possess this wheat can be combined with another piece of paper that promises to supply it, so that the two claims cancel each other out. The same argument holds for other widely-traded commodities, including metals.

Much of the activity in commodity markets is of the purely speculative variety we encountered in the stock market. Participants are guessing which way they think prices will move, and they place their money accordingly. Commodity market instruments, the paper claims traders buy and sell, have become increasingly complex, taking the form of rights to execute contracts under a set of specified conditions—not before this date or after that one, if the price of one good is below or above a "trigger price", etc. Arcane mathematical models are required to price these contracts, and even the best minds are sometimes unable to sort out the difficulties.

For all the nerdy glamour of this trading arena, commodities markets do have real-world effects. As we have seen earlier in this book, the gyrations of the coffee market have life-or-death consequences for millions of coffee farmers around the world; the same could be demonstrated for wheat, rice and copper. For decades economists have argued about the merits of separating the speculative from the practical aspects of commodities markets through some sort of price stabilization scheme. Again, we saw the rise and fall of such an approach in the global coffee trade. Attempts to manage commodity prices are much more the exception than the rule, however, especially at the international level. One problem is that some speculative trading is essential, since one of the main purposes of a well-functioning market is to bring future conditions to bear on current prices. If there is good reason to expect a shortage of wheat a year from now, for instance, it makes sense for the current price to rise, thereby encouraging conservation on the part of buyers and more intensive planting on the part of producers. Commodities markets serve this role by enabling trades over future deliveries, so that current and future supplies can be exchanged for each other—as paper.

17.5 Default

The entire edifice of modern financial markets is built up on the premise that borrowers will be able to fulfill the terms of their loans. If they fail to make their payments creditors and stockholders alike can find themselves holding worthless pieces of paper. "Default" is normally the last word they want to hear, but it is always present in the background as a risk to be considered, and its occurrence is an unavoidable aspect of modern economic life.

At any moment in time a business or individual can be thought of as possessing both a stock of assets—things of value that it owns, like money or buildings—and liabilities like debts. The value of assets minus liabilities is its **net worth**; as long as this is a positive number the organization or person is described as **solvent**. Should this become a negative amount, however, we can speak of insolvency. Just because a borrower has become insolvent, it does not mean that loan payments must stop, because it is possible that there is enough cash on hand to keep the payments going for a while. In the long run, of course, insolvency, if it persists, must lead to default.

It is important to recognize that a business or individual can be entirely solvent, with assets well in excess of liabilities, and still be unable to make payments on a loan. This is because payments require money, and too large a percentage of assets may be tied up in items that cannot easily be converted to money. This is referred to as a liquidity problem: not enough **liquid assets**. This sometimes happens when borrowers become too optimistic, making long-term investments in capital goods without enough short-term cash flow to keep lenders happy.

When scheduled loan payments are not made the borrower is held to be in default. This triggers a series of economic and legal changes that can potentially be extremely important not only for those directly involved, but also the entire economy.

The first thing that happens, of course, is that the lender fails to receive expected income from the bond or other loan. This can cause hardship in itself, and it can sometimes lead to a chain reaction if the lender is also a borrower, one default leading to another.

Very quickly, financial markets will absorb the new information and reconsider the structure of risk premiums attached to other credit assets. If this borrower has unexpectedly defaulted today, how many others might do so tomorrow? In this way, it is likely that interest rates, incorporating the added risk of default, will increase, with the biggest rate hikes in sectors of the economy believed to be linked to the one currently experiencing default. (As we will see in the macroeconomics portion of the text, lending may be choked off by credit rationing—simply denying loans to prospective borrowers—as well as higher interest rates.)

As for the borrower who defaulted, new borrowing is out of the question, at least temporarily. If it is a corporation, and if the default is seen as signifying insolvency, share prices can fall to near zero. These developments make it that much harder to get back on track to repay existing loans.

Modern economies have also developed special legal procedures to handle default, the realm of bankruptcy law. They differ across jurisdictions, but all have the same general form. First, the defaulting borrower is placed under the protection of the court. This means that they are temporarily relieved of the legal obligation to repay creditors, but in return they must give up some or all control of their assets. If it is a corporation that is in default, the court is likely to appoint someone to take operational control. The purpose is to operate the company in a way that maximizes the likelihood that creditors will eventually be repaid. Under some systems the creditors themselves are represented in this control.

Bankruptcy, therefore, does not mean the immediate dissolution of a company. Some firms have been run for years under bankruptcy statutes, with their earnings earmarked for debt repayment. Of course, the original owners can only stand on the sidelines while this occurs. If a firm cannot even cover its operating costs, so that continued operation only increases the amount of debt needing to be serviced, a court can impose partial or full liquidation. This means that some or all of the company's assets will now be sold, with the proceeds to go to the creditors. If the company is insolvent, it is unlikely that creditors will recover the full amount of their investment. (Note: during the current financial crisis, governments in many countries have chosen to bail out firms in financial distress, meaning that the government itself assumes some of the debt obligations of particular insolvent borrowers. In that case, there are high-stakes political questions about how much of the debt the government will pay, whether the shareholders of the firms being bailed out will lose their equity, and whether the firms' managers will get to keep their jobs.)

In the case of individuals a similar procedure takes place. Courts can assume control over a borrower's assets and impose a repayment schedule that must be adhered to. Bankruptcy entails the liquidation of some or all of these assets, and the bankrupt individual may have to limit personal spending as well. These terms can be harsh, but they are not as onerous as the debtors prisoners of former times.

There is a lot of disagreement among economists over how strict bankruptcy laws, or how generous bailouts, ought to be. It is clear that there are risks to taking too harsh an approach, but too much leniency could be a problem too. If the laws are too lenient it could create a situation of **moral hazard**, where borrowers could be encouraged to take on too much debt or spend their borrowed money too recklessly, secure in the knowledge that failure to repay will not result in serious penalties. On the other hand, borrowers cannot always control the forces that determine their financial condition. Individuals, for example, can suffer an unexpected health problem that increases their expenses while reducing their income. Businesses, as we have seen, are often borrowers and lenders at the same time, so that failure to receive payment on loans in one context can lead to a failure to repay in another. Also, bankruptcy laws that impose high debt service costs can make it difficult for individuals and businesses to return to productive life.

Personal and business bankruptcy law is a hot topic in many countries, and, as we will see in the macro portion of this book, a debate has been taking place over whether some institution similar to a bankruptcy court is needed to stabilize the global financial system.

17.6 Two Models of Financing Business

As we saw earlier, financial markets play a major role in determining where and how society's resources are put to work—who gets the money to produce what and where. This is not equally true in all countries, however. In fact, the world is divided between countries where financial markets are paramount and others where they play a lesser role. The first of these we will call **market-centered financial systems** and the second **institution-centered financial systems**. In Chap. 8 we introduced this distinction in terms of corporate governance, the organizational basis for the control of business firms; here we will briefly describe each from a financial perspective and highlight their main strengths and weaknesses.

A. Market-centered systems are based on the principle that control of the firm should rest in the hands of its shareholders. This means that the interests of those who purchase stock, higher profits and share prices, should determine the firm's business decisions. As we saw in Chap. 8, this can be achieved directly, through shareholder election of the company's board of directors, or indirectly via the pressure that the stock market puts on corporate managers. The main exemplars of market-centered finance are the United States and Great Britain.

There are two arguments in favor of this approach. First, if market prices truly reflect the social costs and benefits of the productive activities of businesses, then the goal of maximizing net benefits (total benefit minus total cost) is identical to that of maximizing profits, since profit is simply revenue (what consumers are willing to pay for products) minus cost. Second, those who purchase a share of the firm's capital are putting their money at risk. They will be more willing to do this if they have control over how the money is used; others, like corporate managers, might regard this money as "free" and spend it less carefully.

The main ingredients of a market-centered financial system are these: First, most large firms must be organized as joint-stock companies (companies whose capital is divided up into many shares), and members of the public must be able to buy and sell these shares without limit. Second, there should be a system of stock-trading (such as stock exchanges) that make it possible for large numbers of people to take part in the process. This means that stock markets will be **liquid**; it will not be difficult to find buyers and sellers at the going price. Third, there needs to be a system of reporting on the financial condition of businesses so that a few insiders (such as company managers) are not in a privileged position; otherwise investors who are not in the know will feel cheated, and participation in the market will diminish over time.

An example of the creation of a new market-centered system in the current period can be found in the regulations promulgated by the European Union. Its goal is the creation of a single financial market for the ownership and control of corporations across its member states. To achieve this it has promoted privatization (to put ownership on a joint-stock basis), rules that prohibit restrictions on who can own shares (such as citizens of the country in which the corporation is situated, or its workers), and European-wide regulations to govern financial market operations.
B. Institution-centered systems rely primarily on financial institutions, such as banks, to play the dominant role in the ownership and control of businesses. Firms may issue stock, but a substantial portion is held by banks with close ties to the company and its management. These banks hold shares not primarily as a way to make money, but to fulfill their role as overseers of the companies they have a stake in. For this to be true, of course, the banks themselves cannot simply be profit-making enterprises; they have to reflect other economic and social interests. For this reason, institution-centered systems generally adhere to the stakeholder approach discussed in Chap. 8.

One well-known example of a bank-centric financial system is Germany. Several large private banks have longstanding ownership connections to the leading multinational firms in sectors like auto-making and chemicals. At the same time, more than half the assets of the German banking system reside in public and cooperative banks whose primary mission is local economic development. These banks are more likely to build relationships with mid-sized German enterprises. As you might expect, the German system has come under pressure from the EU, which would like to steer it toward a market-based model.

Another prominent example is Japan. Japan's innovation is to center several otherwise unrelated firms around the same "main bank", their provider of finance and source of oversight and guidance. Each bank, then, manages what might be thought of as a mini-economy, a diversified set of businesses whose prospects are only loosely correlated. The banks, in turn, take guidance from the Ministry of Finance, the branch of the Japanese government charged with overall financial policy. This system, which allocates capital in a more planned, systematic fashion than one would find even in countries like Germany, has been replicated in several other east Asian economies.
C. Comparisons
To those who may not have thought about the role of finance in modern economies, this discussion of different national styles of financial organization may seem arcane, but it could be argued that it constitutes the biggest source of economic differentiation in the post-1989 world. With the collapse of Communism, differences in the way capitalism is constructed are more sharply etched. Consider Box 17.1, for example, which reports some of the results of a survey of executives and managers of large corporations in several countries.

Box 17.1: Whose Company Is It?

Employees were asked the question, "Under which of the following assumptions is a large company in your country managed?" The average answers for four countries are:

	United states (%)	Britain (%)	Germany (%)	Japan (%)
Shareholder interest should be given the first priority	76	70	17	3
A firm exists for the interest of all stakeholders	24	30	82	97

Source: Yoshimori (1995)

The results could not be further apart. In the US and Britain, which adhere to market-centered models of business finance, companies put profits first. In Germany and Japan, where banks rather than private investors, play the central role, a variety of stakeholders, including employees, the local community and the general public have to be taken into account.

Here we can see how different financial systems translate into different policies for firms. Of course, the stakeholder/stockholder divide is not absolute. Companies in Germany and Japan are expected to make profits; if they don't their future is dim. Companies in the US and Britain are held to at least some standards of responsible conduct by governments, consumers and in some cases unions; gross illegality or other ethical violations can lead to financial ruin just as surely as poor earnings. Nevertheless, the difference in emphasis is clear and significant.

Supporters of the Anglo-American approach regard the bank-centered model as rigid and prone to corruption. Banks are conservative, they argue, oriented toward the successes of the past and overly cautious about the future. It is harder for an entrepreneur with a new idea to get financing from a bank's investment board than from the market, where one like-minded venture capitalist might be found who can put up the money. Worse, by dealing with the same companies and their managers over and over, year after year, banks become insular and even potentially corrupt. Funds are made available not on the basis of where they will do the most good, but who has the best connections. The charge of "crony capitalism" has been made against such arrangements, particularly in east Asia.

From a theoretical standpoint, defenders of market-centered finance are likely also to believe that the Market Welfare Model generally characterizes most aspects of the economy. As we saw earlier, if consumer demand truly reflects the benefit to society and if the cost of production equally reflects the opportunity and disutility costs of making goods available, then profit represents net benefit, a surplus of benefits over costs. A system that puts profit in the driver's seat, such as that employed by the US and Britain, would then operate in the interest of economic efficiency. An example of this way of thinking is provided by the experience of Wal-Mart, the retailing giant discussed in earlier chapters. Wal-Mart gains its profits by having a high level of sales

at its stores while holding down every sort of cost: the prices of the goods it buys from manufacturers, the cost of holding inventories, and the wages and benefits of its employees. If its success in sales shows that it is genuinely benefitting consumers, and if its reduced costs are a sign of its greater efficiency of operation, Wal-Mart's profits truly reflect its positive social role.

Supporters of bank-centered finance, however, have their own points to make. In their view, the Market Welfare Model is often a poor guide to true social costs and benefits. Wal-Mart's sales do not reflect the interests of consumers if the goods are poorly made or if the company's advertising is misleading. Holding down wages and other benefits to workers may simply be a means of transferring income from one segment of society (low-wage workers) to others (shareholders), rather than a reduction in the underlying (opportunity cost and disutility) basis for true social cost. Guiding the company by other signals than simply profit can help correct these possible flaws. (It is interesting that Wal-Mart was unable to compete even on low prices in Germany and was forced to abandon the market to local retailers: stakeholder-oriented firms are not necessarily inefficient.)

Another argument is that there is a large public interest in the opportunities for employment and economic development that business investment offers. It may be in the public interest, for example, for businesses to operate with somewhat lower rates of profit if this is the result of greater investment in regions that especially need it. We have seen that German public banks make loans for this purpose to smaller firms that, while not profit powerhouses, export their wares successfully and boost local employment. Japanese banks put a premium on investments that build capacity in the "hot" technologies and stimulate entry into foreign markets. They think that a coordinated investment strategy makes it more likely for this ambitious approach to succeed.

Related to this is the claim that bank-centered systems promote superior decision-making. This could be because of the detailed knowledge of the strengths and weaknesses of businesses that banks can acquire through long-term relationships—a better basis for evaluating investment prospects, perhaps, than would emerge from markets whose participants are far removed from the scene. Also, it is often said that markets put a premium on short-run profits, whereas banks can afford to be more patient, since they hold their shares for years or even decades. Japanese banks in particular have a reputation for making investments whose returns are likely to be far into the future.

So it is clear that there is a case to be made on both sides of this debate. It is probable that one system works better for some parts of the economy or for some purposes, and the other works better for others. For example, market failures, such as public goods and externalities, play a more significant role in some industries than others, and even when they are acute it may not be the case that the stakeholders who matter in an institution-centered system are the ones who have an interest in correcting these failures. For instance, if the market failure is that the firm's products pollute the environment, and if employees or government officials are put in charge of economic development, are they the proper stakeholders to set matters right?

The problem of "insider" versus "outside" control is also difficult to evaluate in any general way. Sometimes insiders, like bank loan officers, have a more detailed knowledge of a company's future prospects, but sometimes their objectivity can be undermined and cronyism can set in. Patience is a virtue, but not obstinacy in the face of facts; in the name of long-term vision investment planners can sometimes go for years down a road to nowhere. (This criticism has been made of the Japanese main bank system in particular.) Market-based finance, on balance, probably does favor more innovation, but successful innovation sometimes requires coordination.

Even the evidence is moot, because there is no agreement on what the indicators should be. Is economic growth the best measure of success? If so, it is difficult to pass judgment, since market-based economies have grown faster in some periods but slower in others. Should the measure be high rates of employment? In the years leading up to the financial crisis this would favor the US and Britain, but since then several institution-based systems, in particular Germany, have turned the tables. Another indicator might be a country's trade balance—whether its exports are greater or less than its imports—since this shows which producers, as a group, do better in competition. Here the nod goes to the institution-based economies, which tend to have substantial trade surpluses. (The US, as we will see in the next volume, has the largest trade deficit in history.) All of these measures, however, by lumping entire economies together, may mask the more detailed strengths and weaknesses that can show up only at the level of particular sectors. A Germany versus US comparison, for example, may give different results depending on whether we look at auto production or computers, agriculture or retailing.

17.7 Are Financial Markets Efficient?

Since the markets for stocks and bonds play such central roles in modern economies, much research has gone into assessing how well they work. The central concept used by economists is that of market efficiency, but it has a specific meaning in the context of financial markets. Here efficiency means two things:

- Market participants have access to all economically useful information. This refers to all information whose value in the marketplace exceeds its cost of discovery, and it rules out the possibility that there is crucial inside information that only a few participants may have access to.
- Market participants use this information rationally in their buying and selling decisions. That is, they make the best possible decisions on the basis of the information they have access to.

These are difficult standards to meet, but modern financial markets are highly sophisticated, so it is possible that they might actually measure up. To see why we would care whether they do or not, let's assume for the moment that both criteria are met and that markets are efficient in this sense.

The first conclusion we could draw is that no particular participant has any reason to do better (make more money through clever trades) than the market as a whole. This is a powerful claim, one that would put many a stockbroker or financial

analyst out of business if it is believed to be true. It also says that *you* should not expect to outperform the market either. Your return on your investments might be higher than the average return for a while, but it would fall below at other times, and over a long enough period of comparison it should come out about the same (if your investment strategy is rational, like everyone else's). Why should this be so?

One way of looking at it is this: if the rest of the market has access to the same information you do, and if their trading strategies are as rational as yours, why should you expect to do any better? Another way, which really gets to the heart of the matter, builds on the insight that, if markets are efficient in the above sense, the prices they set (for stocks, bonds and other assets) reflect all the available information. They will change only if there is new information—but truly new information cannot be predicted in advance, since otherwise it would not be new. Therefore the change in prices—whether a particular stock, for instance, will rise or fall in value—must also be unpredictable. In other words, an efficient market is one that fluctuates randomly with each new input of information, leaving participants in a permanent state of surprise. If this were not true, if future information and future prices *could* be predicted more often than not by certain clever traders, then this would mean that some either know more than others or can use information more effectively, in which case one or both of the two criteria for efficiency would be violated.

A second conclusion is that an efficient financial market, as we have characterized it, would provide society with the most accurate possible set of measurements for the value of its various financial assets. We could look to market prices to tell us how much each company is worth, what the true rate of return will be on bonds of different payment lengths (which implies a prediction of future rates of inflation, as we will see in the next volume), what risks of default need to be considered for different public and private bonds, etc. No individual, no matter how much research they do (and how many economics courses they take), can expect to provide a better set of assessments than the market as a whole. This is the social science side to financial market efficiency, just as the previous paragraph presented the personal investment side.

All well and good, you might say, but how realistic is this claim that markets could ever be completely efficient? This might be asking for too much, since, as with other aspects of economics, it is enough for practical purposes that markets be "sufficiently" or "mostly" efficient—efficient enough that individual participants would not outperform the market by more than a little, and that very high investments of economic research would be required to put only slightly more accurate values on bonds, stocks and other assets. So the bar is set at a level of reasonable rather than maximum efficiency. Still, how would we know?

There are two tests for financial market efficiency, one weak, the other strong. The weak test is that the movement of asset prices over time should be unpredictable, which is to say that they do not reveal a pattern that could be used to predict future movements. This is a purely mathematical test, and it is weak because, while an efficient market must meet this test, it could meet it for reasons that have nothing to do with efficiency. After all, if buying and selling decisions were based on the chirping of parakeets rather than the thinking of people, they would be random and

unpredictable but without much rationality either. (My apologies to any parakeets who happen to be reading this.)

In fact, however, there is some evidence that even this weak test is not met. Financial markets have a tendency to move in certain directions on particular days of the week or seasons of the year. It ought to be possible for some participants to make extra money by anticipating these movements, which would then eliminate them. (If enough people know a stock will rise tomorrow, they will buy it at a higher price today—but then tomorrow's price becomes today's.) This does not happen, however, indicating that perfect rationality does not prevail in the market as a whole.

The stronger test is to look for a reasonable relationship between the market prices of financial assets and the "fundamentals", the information about likely future risks and returns, that ought to set them. Here it is agreed that market prices tend to rise and fall to a greater extent than the true value of the underlying assets. A little bit of good news often leads to a disproportionately large price increase, and a little bad news often has the opposite effect; economists call this process "overshooting". In the aggregate we sometimes see this in market frenzies, when prices rise to an unsustainable level (a bubble) or fall in a panic. Usually the underlying value of stocks and bonds do not fluctuate so wildly.

Consider Fig. 17.4 on the following page, for instance. This shows the daily closing prices of the Standard & Poor's 500 over the period from April 1997 to April 2007. The S&P 500 is an index representing a basket of 500 stocks traded on the New York Stock Exchange. The value of the index is proportional to what one would have to pay to buy one share each from these 500 companies. The story goes like this: when the period begins the index is below 800. It mostly rises until it breaks 1,500 in the year 2000. For the next 2 years it falls again, dipping once more below the 800 mark. After pausing at the bottom for the better part of a year it starts to climb again and nearly reaches 1,500 in April 2007. To summarize: this index, which represents the market value of 500 leading American companies, nearly doubles in the 3 years beginning in 1997, then falls to where it started from, then nearly doubles again. Did the actual value, the true long-term earning potential, of these companies rise and fall to a comparable extent? Hardly. The stock prices incorporated in the S&P 500 rose too much in the upswing and fell too much in the downswing. (We end this chart before the onset of the most recent crisis, since big shifts in profit expectations would be more justifiable post-2008.)

One reason for this tendency on the part of markets to exaggerate real economic factors has to do with the nature of the speculative process. Market participants make money by anticipating where the market will go next; in other words, the goal is to think like everyone else one day (or hour or nanosecond) sooner. The economist John Maynard Keynes, who will play a prominent role in the next volume, compared the situation to a beauty contest in which the judges are given a prize for choosing the entry that *other* judges have chosen as most beautiful. This creates a herd dynamic, where the crowd moves strongly in one direction, then races off in another. One implication is that financial markets provide better price signals when averaged over a longer run, compared with the prices that appear on any given day. They are efficient in the way that a mythical statistician was when he

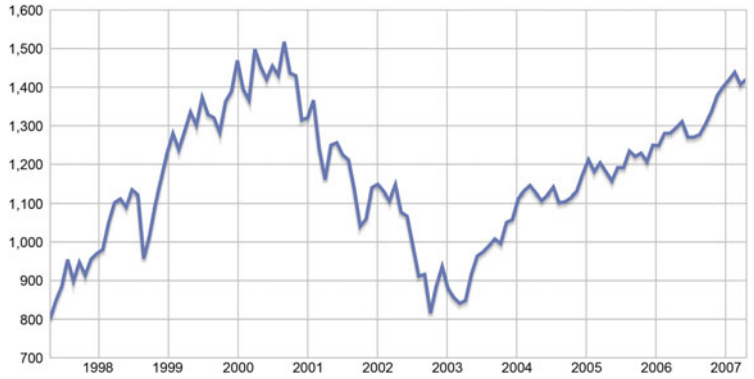

Fig. 17.4 Daily closing values of the S&P 500 index, April 1997 to April 2007. (Source: New York Stock Exchange)

took up hunting. He aimed at a deer, missing to the left. Then he aimed again, missing to the right. "A perfect shot!" he said, "—on average."

The Main Points

1. There are two meanings to "capital". It can either be a collection of goods, like buildings and equipment, that are used to produce other goods and are not immediately used up in the process, or a sum of money used to purchase financial assets that have a rate of return. Physical capital has an objective productivity in production, while financial capital reflects the willingness of wealth-holders to invest their funds. These don't have to equal each other because the two types of capital are different. The ratio of the financial valuation of a firm to its market (financial) capitalization is Tobin's q.
2. Equity markets are where shares of stock, which represent shares of ownership of firms, are traded. From a "fundamental" perspective, equity prices should be determined by the present value of firms' future expected profits. Many traders adopt a "technical" approach, basing their offer decisions on patterns they believe they can identify in the movement of share prices. Sometimes these two approaches yield similar prices, and sometimes not. Firms raise investment funds when they sell equity in an initial public offering, and they sometimes issue additional shares for the same purpose when they think the market can absorb them. The vast majority of stock trading, however, involves existing shares and has no direct effect on the availability of investment funds. To the extent that share prices convey market expectations of the future profitability of firms, we can use event analysis to try to link equity price movements to unanticipated events in the world occurring simultaneously; this provides an estimate of the expected effect of these events on firms' profitability.
3. Credit markets are where bonds, public and private, are traded. Since the rate of return on a bond is equal to its income flow divided by its price, there is an inverse relationship between bond prices and market interest rates. This permits us to analyze credit markets in two ways, as a market in bonds (borrowers supply

bonds, investors demand them, and the price goes up or down) or a market in funds (borrowers demand funds by selling bonds, investors supply them by buying bonds, and the interest rate goes down or up). The extra perceived risk of a borrower's default, relative to the least risky bond (such as a US Treasury bond), is compensated by a risk premium that raises the bond's interest rate. Credit markets play an important role in the allocation of capital, reducing borrowing costs for projects seen as most likely to be profitable and raising them for those seen as riskier or less promising.

4. Commodity markets are where standardized agricultural products, natural resources and their byproducts are traded. Few traders are interested in the products themselves, and it is mainly electronic claims to commodities that are bought and sold. These claims can be packaged in complex ways, as in future and option contracts. Futures markets in particular can serve a socially useful function by helping us anticipate and counteract potential surpluses and shortages.
5. Default is an ever-present possibility in the financial world. It sometimes arises because the borrower is insolvent, but it can also occur because the borrower is insufficiently liquid. When an individual or firm enters a bankruptcy process, it is typical for a court to protect them against the full set of creditor demands in return for supervisory powers designed to guarantee that debt repayment is a priority. Equity investors in firms that default normally lose their entire investment.
6. There are two main forms of financing firms in modern capitalist countries. In some countries, like the US and Great Britain, shares are held by a wide variety of investors who trade them in equity markets; this is a market-centered financial system. In others, like Germany and Japan, a large proportion of equity is held by banks and are not actively traded; this is an institution-centered system. The first approach is closely linked to the principle of shareholder primacy, according to which the primary or even sole purpose of the firm is to boost its share prices. The second is linked to a stakeholder framework in which firms exist to serve the interests of multiple groups including not only shareholders but also workers, business partners and public agencies. Both have performed well and poorly in different circumstances and according to different measures.
7. A financial market is considered efficient if market participants utilize all available information and base their decisions on the best possible concepts and models. A weak test of market efficiency is that price movement should be unpredictable, since at each moment the price should incorporate all predictable knowledge. A stronger test is that price movements are consistent with an objectively rational interpretation of existing information. Financial markets pass the first test most, but not all, of the time. They frequently fail the second test, however, as demonstrated by their tendency to overshoot the likely impact of new events. One reason for this is that the incentives in these markets promote herd behavior: each participant tries to trade like the others are expected to trade, but just a little bit sooner.

▶ Terms to Define

Bear market
Bears
Book value
Bull market
Bulls
Capital goods
Capital
Commodities market
Default
Depreciation
Dividends
Equity
Event analysis
Financial capital
Fundamentals approach to financial markets
Initial public offering
Institution-centered financial systems
Liquid assets
Marginal time preference
Marginal return on capital
Market-centered financial systems
Moral hazard
Net worth
Price-earnings ratio
Purchase value versus replacement value
Risk premium
Solvent/insolvent
Technical approach to financial markets
Tobin's *q*

Questions to Consider

1. If financial capital simply measured the value of capital goods, a higher rate of return on money would imply a higher marginal productivity of capital. Check the newspaper or the web to see what are the current market interest rates on long-term government bonds (the baseline rate on which others depend) in different economies, such as the US, Britain, Germany and Japan. Do these rates signify that an additional investment would be more productive if made in the high interest-rate country? Do individuals in that country have a higher rate of time preference?
2. If Tobin's *q* falls below one for a particular company, should it be liquidated—should its assets be sold off separately to the highest bidders? Are there potential

mitigating circumstances? You might want to think about particular companies you are familiar with.
3. Until a few years ago it was common to have laws against usury, the practice of charging very high rates of interest on loans. These restrictions were removed, in part because it was argued that high interest rates are necessary if credit is to be made available to the riskiest borrowers, such as those with very low incomes. Let these borrowers, it was argued, decide whether the cost of money is too high. Do you agree?
4. In general, do you think bankruptcy laws should be more severe than they are now, or less? You might want to read up a bit on the current legal situation before passing judgment!
5. Based on what you have learned so far, do you tend to favor a market- or an institution-based financial system? Why? Does it matter whether you adopt the point of view of a potential investor, a potential employee or a citizen in the country businesses will be located in?
6. In an institution-centered system, what characteristics would be best for banks to do their job effectively? Should the banks themselves be in a competitive market, competing for deposits? Should they be public or private? What stakeholders in the banks should have the most influence?
7. Financial markets pick investments by putting prices on stocks and interest rates (including risk premiums) on bonds in accordance with the supply and demand decisions of traders. Governments pick investments by conducting their own research and making choices through agencies and commissions. Do you think governments can do this job as well as or better than markets? Does your answer to this question depend on how efficient you think financial markets are?

Reference

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