Sometime in your life, you will have to deal with the economy’s financial system. You will deposit your savings in a bank account, or you will take out a mortgage to buy a house. After you take a job, you will decide whether to invest your retirement account in stocks, bonds, or other financial instruments. You may try to put together your own stock portfolio, and then you will have to decide between betting on established companies such as General Electric or newer ones such as Cisco Systems. And whenever you watch the evening news, you will hear reports about whether the stock market is up or down, together with the often feeble attempts to explain why the market behaves as it does.

If you reflect for a moment on the many financial decisions you will make through your life, you will see two related elements in almost all of them—time and risk. As we saw in the preceding chapter, the financial system coordinates the economy’s saving and investment. Thus, it concerns decisions we make today that will affect our lives in the future. But the future is unknown. When a person decides to allocate some saving, or a firm decides to undertake an investment, the decision is based on a guess about the likely future result—but the actual result could end up being very different.
This chapter introduces some tools that help us understand the decisions that people make as they participate in financial markets. The field of finance develops these tools in great detail, and you may choose to take courses that focus on this topic. But because the financial system is so important to the functioning of the economy, many of the basic insights of finance are central to understanding how the economy works. The tools of finance may also help you think through some of the decisions that you will make in your own life.

This chapter takes up three topics. First, we discuss how to compare sums of money at different points in time. Second, we discuss how to manage risk. Third, we build on our analysis of time and risk to examine what determines the value of an asset, such as a share of stock.

**PRESENT VALUE:**  
**MEASURING THE TIME VALUE OF MONEY**

Imagine that someone offered to give you $100 today or $100 in ten years. Which would you choose? This is an easy question. Getting $100 today is better, because you can always deposit the money in a bank, still have it in ten years, and earn interest on the $100 along the way. The lesson: Money today is more valuable than the same amount of money in the future.

Now consider a harder question: Imagine that someone offered you $100 today or $200 in ten years. Which would you choose? To answer this question, you need some way to compare sums of money from different points in time. Economists do this with a concept called present value. The present value of any future sum of money is the amount today that would be needed, at current interest rates, to produce that future sum.

To learn how to use the concept of present value, let’s work through a couple of simple examples:

**Question:** If you put $100 in a bank account today, how much will it be worth in \(N\) years? That is, what will be the future value of this $100?

**Answer:** Let’s use \(r\) to denote the interest rate expressed in decimal form (so an interest rate of 5 percent means \(r = 0.05\)). Suppose that interest is paid annually and that the interest paid remains in the bank account to earn additional interest—a process called compounding. Then the $100 will become

\[
(1 + r) \times (1 + r) \times $100 \quad \text{after one year,}
\]

\[
(1 + r) \times (1 + r) \times (1 + r) \times $100 \quad \text{after two years,}
\]

\[
(1 + r)^N \times $100 \quad \text{after } N \text{ years.}
\]

For example, if we are investing at an interest rate of 5 percent for 10 years, then the future value of the $100 will be \((1.05)^{10} \times $100\), which is $163.

**Question:** Now suppose you are going to be paid $200 in \(N\) years. What is the present value of this future payment? That is, how much would you have to deposit in a bank right now to yield $200 in \(N\) years?
**Answer:** To answer this question, just turn the previous answer on its head. In the first question, we computed a future value from a present value by multiplying by \((1 + r)^N\). To compute a present value from a future value, we divide by the factor \((1 + r)^N\). Thus, the present value of $200 in N years is \$200 / (1 + r)^N\.

If that amount is deposited in a bank today, after N years it would become \((1 + r)^N \times [\$200 / (1 + r)^N]\), which is $200. For instance, if the interest rate is 5 percent, the present value of $200 in ten years is $200 / (1.05)^{10}$, which is $123.

This illustrates the general formula: If \(r\) is the interest rate, then an amount \(X\) to be received in \(N\) years has present value of \(X / (1 + r)^N\).

Let’s now return to our earlier question: Should you choose $100 today or $200 in 10 years? We can infer from our calculation of present value that if the interest rate is 5 percent, you should prefer the $200 in ten years. The future $200 has a present value of $123, which is greater than $100. You are better off waiting for the future sum.

Notice that the answer to our question depends on the interest rate. If the interest rate were 8 percent, then the $200 in ten years would have a present value of $200 / (1.08)^{10}$, which is only $93. In this case, you should take the $100 today. Why
should the interest rate matter for your choice? The answer is that the higher the interest rate, the more you can earn by depositing your money at the bank, so the more attractive getting $100 today becomes.

The concept of present value is useful in many applications, including the decisions that companies face when evaluating investment projects. For instance, imagine that General Motors is thinking about building a new factory. Suppose that the factory will cost $100 million today and will yield the company $200 million in ten years. Should General Motors undertake the project? You can see that this decision is exactly like the one we have been studying. To make its decision, the company will compare the present value of the $200 million return to the $100 million cost.

The company's decision, therefore, will depend on the interest rate. If the interest rate is 5 percent, then the present value of the $200 million return from the factory is $123 million, and the company will choose to pay the $100 million cost. By contrast, if the interest rate is 8 percent, then the present value of the return is only $93 million, and the company will decide to forgo the project. Thus, the concept of present value helps explain why investment—and thus the quantity of loanable funds demanded—declines when the interest rate rises.

Here is another application of present value: Suppose you win a million-dollar lottery and are given a choice between $20,000 a year for 50 years (totaling $1,000,000) or an immediate payment of $400,000. Which would you choose? To make the right choice, you need to calculate the present value of the stream of payments. After performing 50 calculations similar to those above (one calculation for each payment) and adding up the results, you would learn that the present value of this million-dollar prize at a 7 percent interest rate is only $276,000. You are better off picking the immediate payment of $400,000. The million dollars may seem like more money, but the future cash flows, once discounted to the present, are worth far less.

QuickQuiz  The interest rate is 7 percent. What is the present value of $150 to be received in 10 years?

MANAGING RISK

Life is full of gambles. When you go skiing, you risk breaking your leg in a fall. When you drive to work, you risk a car accident. When you put some of your savings in the stock market, you risk a fall in prices. The rational response to this risk is not necessarily to avoid it at any cost, but to take it into account in your decisionmaking. Let's consider how a person might do that.

Risk Aversion

Most people are risk averse. This means more than that people dislike bad things happening to them. It means that they dislike bad things more than they like comparable good things.

For example, suppose a friend offers you the following opportunity. He will flip a coin. If it comes up heads, he will pay you $1,000. But if it comes up tails, you will have to pay him $1,000. Would you accept the bargain? You wouldn't if you
were risk averse. For a risk-averse person, the pain from losing the $1,000 would exceed the gain from winning $1,000.

Economists have developed models of risk aversion using the concept of utility, which is a person’s subjective measure of well-being or satisfaction. Every level of wealth provides a certain amount of utility, as shown by the utility function in Figure 1. But the function exhibits the property of diminishing marginal utility: The more wealth a person has, the less utility he gets from an additional dollar. Thus, in the figure, the utility function gets flatter as wealth increases. Because of diminishing marginal utility, the utility lost from losing the $1,000 bet is more than the utility gained from winning it. As a result, people are risk averse.

Risk aversion provides the starting point for explaining various things we observe in the economy. Let’s consider three of them: insurance, diversification, and the risk–return tradeoff.

The Markets for Insurance

One way to deal with risk is to buy insurance. The general feature of insurance contracts is that a person facing a risk pays a fee to an insurance company, which in return agrees to accept all or part of the risk. There are many types of insurance. Car insurance covers the risk of your being in an auto accident, fire insurance covers the risk that your house will burn down, health insurance covers the risk that you might need expensive medical treatment, and life insurance covers the risk.
that you will die and leave your family without your income. There is also insurance against the risk of living too long: For a fee paid today, an insurance company will pay you an annuity—a regular income every year until you die.

In a sense, every insurance contract is a gamble. It is possible that you will not be in an auto accident, that your house will not burn down, and that you will not need expensive medical treatment. In most years, you will pay the insurance company the premium and get nothing in return except peace of mind. Indeed, the insurance company is counting on the fact that most people will not make claims on their policies; otherwise, it couldn’t pay out the large claims to those few who are unlucky and still stay in business.

From the standpoint of the economy as a whole, the role of insurance is not to eliminate the risks inherent in life but to spread them around more efficiently. Consider fire insurance, for instance. Owning fire insurance does not reduce the risk of losing your home in a fire. But if that unlucky event occurs, the insurance company compensates you. The risk, rather than being borne by you alone, is shared among the thousands of insurance-company shareholders. Because people are risk averse, it is easier for 10,000 people to bear 1/10,000 of the risk than for one person to bear the entire risk himself.

The markets for insurance suffer from two types of problems that impede their ability to spread risk. One problem is adverse selection: A high-risk person is more likely to apply for insurance than a low-risk person. A second problem is moral hazard: After people buy insurance, they have less incentive to be careful about their risky behavior. Insurance companies are aware of these problems, and the price of insurance reflects the actual risks that the insurance company will face after the insurance is bought. The high price of insurance is why some people, especially those who know themselves to be low-risk, decide against buying insurance and, instead, endure some of life’s uncertainty on their own.

Diversification of Idiosyncratic Risk

In 2002 Enron, a large and once widely respected company, went bankrupt amid accusations of fraud and accounting irregularities. The company’s top executives were called before Congress to explain their actions, and they faced the prospect of criminal prosecution. The saddest part of the story, however, involved thousands of lower-level employees. Not only did they lose their jobs, but many lost their life savings as well. The employees had about two-thirds of their retirement funds in Enron stock, which was now worthless.

If there is one piece of practical advice that finance offers to risk-averse people, it is this: “Don’t put all your eggs in one basket.” You may have heard this before, but finance has turned this traditional wisdom into a science. It goes by the name diversification.

The market for insurance is one example of diversification. Imagine a town with 10,000 homeowners, each facing the risk of a house fire. If someone starts an insurance company and each person in town becomes both a shareholder and a policyholder of the company, they all reduce their risk through diversification. Each person now faces 1/10,000 of the risk of 10,000 possible fires, rather than the entire risk of a single fire in his own home. Unless the entire town catches fire at the same time, the downside that each person faces is much smaller.

When people use their savings to buy financial assets, they can also reduce risk through diversification. A person who buys stock in a company is placing a bet on
the future profitability of that company. That bet is often quite risky because companies’ fortunes are hard to predict. Microsoft evolved from a start-up by some geeky teenagers to one of the world’s most valuable companies in only a few years; Enron went from one of the world’s most respected companies to an almost worthless one in only a few months. Fortunately, a shareholder need not tie his own fortune to that of any single company. Risk can be reduced by placing a large number of small bets, rather than a small number of large ones.

Figure 2 shows how the risk of a portfolio of stocks depends on the number of stocks in the portfolio. Risk is measured here with a statistic called *standard deviation*, which you may have learned about in a math or statistics class. Standard deviation measures the volatility of a variable—that is, how much the variable is likely to fluctuate. The higher the standard deviation of a portfolio’s return, the riskier it is.

The figure shows that the risk of a stock portfolio falls substantially as the number of stocks increase. For a portfolio with single stock, the standard deviation is 49 percent. Going from 1 stock to 10 stocks eliminates about half the risk. Going from 10 to 20 stocks reduces the risk by another 13 percent. As the number of stocks continues to increase, risk continues to fall, although the reductions in risk after 20 or 30 stocks are small.
Notice that it is impossible to eliminate all risk by increasing the number of stocks in the portfolio. Diversification can eliminate *idiosyncratic risk*—the uncertainty associated with the specific companies. But diversification cannot eliminate *aggregate risk*—the uncertainty associated with the entire economy, which affects all companies. For example, when the economy goes into a recession, most companies experience falling sales, reduced profit, and low stock returns. Diversification reduces the risk of holding stocks, but it does not eliminate it.

### The Tradeoff between Risk and Return

One of the *Ten Principles of Economics* in Chapter 1 is that people face tradeoffs. The tradeoff that is most relevant for understanding financial decisions is the tradeoff between risk and return.

As we have seen, there are risks inherent in holding stocks, even in a diversified portfolio. But risk-averse people are willing to accept this uncertainty because they are compensated for doing so. Historically, stocks have offered much higher rates of return than alternative financial assets, such as bonds and bank savings accounts. Over the past two centuries, stocks offered an average real return of 8.3 percent per year, while short-term government bonds paid a real return of only 3.1 percent per year.

When deciding how to allocate their savings, people have to decide how much risk they are willing to undertake to earn the higher return. Figure 3 illustrates the risk–return tradeoff for a person choosing between risky stock, with an average return of 8.3 percent and a standard deviation of 20 percent, and a safe alternative,
with a return of 3.1 percent and a standard deviation of zero. The safe alternative can be either a bank savings account or a government bond. Each point in this figure represents a particular allocation of a portfolio between risky stocks and the safe asset. The figure shows that the more a person puts into stock, the greater is both the risk and the return.

Acknowledging the risk–return tradeoff does not, by itself, tell us what a person should do. The choice of a particular combination of risk and return depends on a person’s risk aversion, which reflects a person’s own preferences. But it is important for stockholders to realize that the higher average return that they enjoy comes at the price of higher risk.

QuickQuiz Describe three ways that a risk-averse person might reduce the risk he faces.

ASSET VALUATION

Now that we have developed a basic understanding of the two building blocks of finance—time and risk—let’s apply this knowledge. This section considers a simple question: What determines the price of a share of stock? Like most prices, the answer is supply and demand. But that is not the end of the story. To understand stock prices, we need to think more deeply about what determines a person’s willingness to pay for a share of stock.

Fundamental Analysis

Let’s imagine that you have decided to put 60 percent of your savings into stock and, to achieve diversification, you have decided to buy 20 different stocks. If you open up the newspaper, you will find thousands of stocks listed. How should you pick the 20 for your portfolio?

When you buy stock, you are buying shares in a business. When deciding which businesses you want to own, it is natural to consider two things: the value of the business and the price at which the shares are being sold. If the price is less than the value, the stock is said to be undervalued. If the price is more than the value, the stock is said to be overvalued. If the price and the value are equal, the stock is said to be fairly valued. When choosing 20 stocks for your portfolio, you should prefer undervalued stocks. In these cases, you are getting a bargain by paying less than the business is worth.

This is easier said than done. Learning the price is easy: You can just look it up in the newspaper. Determining the value of the business is the hard part. The term fundamental analysis refers to the detailed analysis of a company to determine its value. Many Wall Street firms hire stock analysts to conduct such fundamental analysis and offer advice about which stocks to buy.

The value of a stock to a stockholder is what he gets out of owning it, which includes the present value of the stream of dividend payments and the final sale price. Recall that dividends are the cash payments that a company makes to its shareholders. A company’s ability to pay dividends, as well as the value of the stock when the stockholder sells his shares, depends on the company’s ability to earn profits. Its profitability, in turn, depends on a large number of factors—the
demand for its product, how much competition it faces, how much capital it has in place, whether its workers are unionized, how loyal its customers are, what kinds of government regulations and taxes it faces, and so on. The job of fundamental analysts is to take all these factors into account to determine how much a share of stock in the company is worth.

If you want to rely on fundamental analysis to pick a stock portfolio, there are three ways to do it. One way is to do all the necessary research yourself, by reading through companies’ annual reports and so forth. A second way is to rely on the advice of Wall Street analysts. A third way is to buy a mutual fund, which has a manager who conducts fundamental analysis and makes the decision for you.

The Efficient Markets Hypothesis

There is another way to choose 20 stocks for your portfolio: Pick them randomly by, for instance, putting the stock pages on your bulletin board and throwing darts at the page. This may sound crazy, but there is reason to believe that it won’t lead you too far astray. That reason is called the \textit{efficient markets hypothesis}.

To understand this theory, the starting point is to acknowledge that each company listed on a major stock exchange is followed closely by many money managers, such as the individuals who run mutual funds. Every day, these managers monitor news stories and conduct fundamental analysis to try to determine the stock’s value. Their job is to buy a stock when its price falls below its value, and to sell it when its price rises above its value.

The second piece to the efficient markets hypothesis is that the equilibrium of supply and demand sets the market price. This means that, at the market price, the number of shares being offered for sale exactly equals the number of shares that people want to buy. In other words, at the market price, the number of people who think the stock is overvalued exactly balances the number of people who think it’s undervalued. As judged by the typical person in the market, all stocks are fairly valued all the time.

According to this theory, the stock market is \textit{informationally efficient}: It reflects all available information about the asset. Stock prices change when information changes. When the good news about the company’s prospects become public, the value and the stock price both rise. When the company’s prospects deteriorate, the value and price both fall. But at any moment in time, the market price is the best guess of the company’s value based on available information.

One implication of the efficient markets hypothesis is that stock prices should follow a \textit{random walk}. This means that the changes in stock prices are impossible to predict from available information. If, based on publicly available information, a person could predict that a stock price would rise by 10 percent tomorrow, then the stock market must be failing to incorporate that information today. According to this theory, the only thing that can move stock prices is news that changes the market’s perception of the company’s value. But news must be unpredictable—otherwise, it wouldn’t really be news. For the same reason, changes in stock prices should be unpredictable.

If the efficient markets hypothesis is correct, then there is little point in spending many hours studying the business page to decide which 20 stocks to add to your portfolio. If prices reflect all available information, no stock is a better buy than any other. The best you can do is buy a diversified portfolio.
The efficient markets hypothesis is a theory about how financial markets work. The theory is probably not completely true: As we discuss in the next section, there is reason to doubt that stockholders are always rational and that stock prices are informationally efficient at every moment. Nonetheless, the efficient markets hypothesis does much better as a description of the world than you might think.

There is much evidence that stock prices, even if not exactly a random walk, are very close to it. For example, you might be tempted to buy stocks that have recently risen and avoid stocks that have recently fallen (or perhaps just the opposite). But statistical studies have shown that following such trends (or bucking them) fails to outperform the market. The correlation between how well a stock does one year and how well it does the following year is almost exactly zero.

Some of the best evidence in favor of the efficient markets hypothesis comes from the performance of index funds. An index fund is a mutual fund that buys all the stocks in a given stock index. The performance of these funds can be compared with that of actively managed mutual funds, where a professional portfolio manager picks stocks based on extensive research and alleged expertise. In essence, an index fund buys all stocks, whereas active funds are supposed to buy only the best stocks.

In practice, active managers usually fail to beat index funds, and in fact, most of them do worse. For example, in the ten years ending February 2002, 82 percent of stock mutual funds failed to beat an index fund holding all 500 stocks in the Standard & Poor’s 500 Index. Most active portfolio managers give a lower return than index funds because they trade more frequently, incurring more trading costs, and because they charge greater fees as compensation for their alleged expertise.

What about those 18 percent of managers who did beat the market? Perhaps they are smarter than average, or perhaps they were more lucky. If you have 5,000 people flipping coins ten times, on average about five will flip ten heads; these five might claim an exceptional coin-flipping skill, but they would have trouble replicating the feat. Similarly, studies have shown that mutual fund managers with a history of superior performance usually fail to maintain it in subsequent periods.

The efficient markets hypothesis says that it is impossible to beat the market. The accumulation of many studies in financial markets confirms that beating the market is, at best, extremely difficult. Even if the efficient markets hypothesis is not an exact description of the world, it contains a large element of truth.

Market Irrationality

The efficient markets hypothesis assumes that people buying and selling stock rationally process the information they have about the stock’s underlying value. But is the stock market really that rational? Or do stock prices sometimes deviate from reasonable expectations of their true value?
There is a long tradition suggesting that fluctuations in stock prices are partly psychological. In the 1930s, economist John Maynard Keynes suggested that asset markets are driven by the “animal spirits” of investors—irrational waves of optimism and pessimism. In the 1990s, as the stock market soared to new heights, Fed chairman Alan Greenspan questioned whether the boom reflected “irrational exuberance.” Stock prices did subsequently fall, but whether the exuberance of the 1990s was irrational given the information available at the time remains debatable.

The possibility of such speculative bubbles arises in part because the value of the stock to a stockholder depends not only on the stream of dividend payments but also on the final sale price. Thus, a person might be willing to pay more than a stock is worth today if he expects another person to pay even more for it tomorrow. When you evaluate a stock, you have to estimate not only the value of the business but also what other people will think the business is worth in the future.

There is much debate among economists about whether departures from rational pricing are important or rare. Believers in market irrationality point out (correctly) that the stock market often moves in ways that are hard to explain on the basis of news that might alter a rational valuation. Believers in the efficient markets hypothesis point out (correctly) that it is impossible to know the correct, rational valuation of a company, so one should not quickly jump to the conclusion...
that any particular valuation is irrational. Moreover, if the market were irrational, a rational person should be able to take advantage of this fact; yet, as the previous case study discussed, beating the market is nearly impossible.

**QuickQuiz**  *Fortune* magazine regularly publishes a list of the “most respected” companies. According to the efficient markets hypothesis, if you restrict your stock portfolio to these companies, would you earn a better than average return? Explain.

**CONCLUSION**

This chapter has developed some of the basic tools that people should (and often do) use as they make financial decisions. The concept of present value reminds us that a dollar in the future is less valuable than a dollar today, and it gives us a way to compare sums of money at different points in time. The theory of risk management reminds us that the future is uncertain and that risk-averse people can take precautions to guard against this uncertainty. The study of asset valuation tells us that the stock price of any company should reflect its expected future profitability.
Although most of the tools of finance are well established, there is more controversy about the validity of the efficient markets hypothesis and whether stock prices are, in practice, rational estimates of a company’s true worth. Rational or not, the large movements in stock prices that we observe have important macroeconomic implications. Stock market fluctuations often go hand in hand with fluctuations in the economy more broadly. We will see the stock market again when we study economic fluctuations later in the book.

**SUMMARY**

- Because savings can earn interest, a sum of money today is more valuable than the same sum of money in the future. A person can compare sums from different times using the concept of present value. The present value of any future sum is the amount that would be needed today, given prevailing interest rates, to produce that future sum.

- Because of diminishing marginal utility, most people are risk averse. Risk-averse people can reduce risk using insurance, through diversification, and by choosing a portfolio with lower risk and lower return.

- The value of an asset, such as a share of stock, equals the present value of the cash flows the owner of the share will receive, including the stream of dividends and the final sale price. According to the efficient markets hypothesis, financial markets process available information rationally, so a stock price always equals the best estimate of the value of the underlying business. Some economists question the efficient markets hypothesis, however, and believe that irrational psychological factors also influence asset prices.

**KEY CONCEPTS**

- finance, p. 584
- present value, p. 584
- future value, p. 584
- compounding, p. 584
- risk averse, p. 586
- diversification, p. 588
- idiosyncratic risk, p. 590
- aggregate risk, p. 590
- fundamental analysis, p. 591
- efficient markets hypothesis, p. 592
- informationally efficient, p. 592
- random walk, p. 592
QUESTIONS FOR REVIEW

1. The interest rate is 7 percent. Use the concept of present value to compare $200 to be received in 10 years and $300 to be received in 20 years.

2. What benefit do people get from the market for insurance? What two problems impede the insurance company from working perfectly?

3. What is diversification? Does a stockholder get more diversification going from 1 to 10 stocks or going from 100 to 120 stocks?

4. Comparing stocks and government bonds, which has more risk? Which pays a higher average return?

5. What factors should a stock analyst think about in determining the value of a share of stock?

6. Describe the efficient markets hypothesis, and give a piece of evidence consistent with this theory.

7. Explain the view of those economists who are skeptical of the efficient markets hypothesis.

PROBLEMS AND APPLICATIONS

1. About 400 years ago, native Americans sold the island of Manhattan for $24. If they had invested this money at an interest rate of 7 percent per year, how much would they have today?

2. A company has an investment project that would cost $10 million today and yield a payoff of $15 million in four years.
   a. Should the firm undertake the project if the interest rate is 11 percent? 10 percent? 9 percent? 8 percent?
   b. Can you figure out the exact cutoff for the interest rate between profitability and nonprofitability?

3. For each of the following kinds of insurance, give an example of behavior that can be called moral hazard and another example of behavior that can be called adverse selection.
   a. health insurance
   b. car insurance

4. Imagine that you intend to buy a portfolio of ten stocks with some of your savings. Should the stocks be of companies in the same industry? Should the stocks be of companies located in the same country? Explain.

5. Which kind of stock would you expect to pay the higher average return: stock in an industry that is very sensitive to economic conditions (such as an automaker) or stock in an industry that is relatively insensitive to economic conditions (such as a water company)? Why?
6. A company faces two kinds of risk. An idiosyncratic risk is that a competitor might enter its market and take some of its customers. An aggregate risk is that the economy might enter a recession, reducing sales. Which of these two risks would more likely cause the company’s shareholders to demand a higher return? Why?

7. You have two roommates who invest in the stock market.
   a. One roommate says she buys stock only in companies that everyone believes will experience big increases in profits in the future. How do you suppose the price-earnings ratio of these companies compares to the price-earnings ratio of other companies? What might be the disadvantage of buying stock in these companies?
   b. Another roommate says she only buys stock in companies that are cheap, which she measures by a low price-earnings ratio. How do you suppose the earnings prospects of these companies compare to those of other companies? What might be the disadvantage of buying stock in these companies?

8. When company executives buy and sell stock based on private information they obtain as part of their jobs, they are engaged in insider trading.
   a. Give an example of inside information that might be useful for buying or selling stock.
   b. Those who trade stocks based on inside information usually earn very high rates of return. Does this fact violate the efficient market hypothesis?
   c. Insider trading is illegal. Why do you suppose that is?

9. Find some information on an index fund (such as the Vanguard 500 Index, ticker symbol VFINX). How has this fund performed compared with other stock mutual funds over the past five or ten years? (Hint: One place to look for data on mutual funds is http://www.morningstar.com.) What do you learn from this comparison?

For more study tools, please visit http://mankiwXtra.swlearning.com.