CHAPTER 5

Uncertainty and Consumer Behavior

CHAPTER OUTLINE

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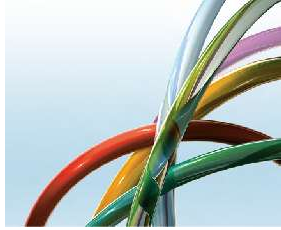
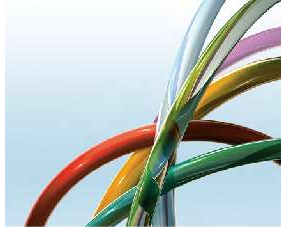


To examine the ways that people can compare and choose among risky alternatives, we take the following steps:

1. In order to compare the riskiness of alternative choices, we need to quantify risk.
2. We will examine people's preferences toward risk.
3. We will see how people can sometimes reduce or eliminate risk.
4. In some situations, people must choose the amount of risk they wish to bear.
5. Sometimes demand for a good is driven partly or entirely by speculation—people buy the good because they think its price will rise.

In the final section of this chapter, we offer an overview of the flourishing field of behavioral economics.

5.1 Describing Risk



Probability

- **probability** Likelihood that a given outcome will occur.

Subjective probability is the perception that an outcome will occur.

Expected Value

- **expected value** Probability-weighted average of the payoffs associated with all possible outcomes.

- **payoff** Value associated with a possible outcome.

The expected value measures the *central tendency*—the payoff or value that we would expect on average.

$$\text{Expected value} = \Pr(\text{success})(\$40/\text{share}) + \Pr(\text{failure})(\$20/\text{share})$$
$$= (1/4)(\$40/\text{share}) + (3/4)(\$20/\text{share}) = \$25/\text{share}$$

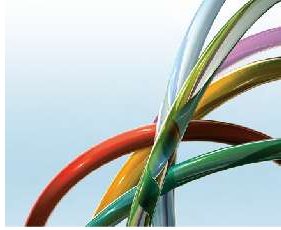
With two possible outcomes*, the expected value is*

$$E(X) = \Pr_1 X_1 + \Pr_2 X_2$$

When there are n possible outcomes, the expected value becomes

$$E(X) = \Pr_1 X_1 + \Pr_2 X_2 + \ldots + \Pr_n X_n$$

Variability



- **variability** Extent to which possible outcomes of an uncertain event differ.

TABLE 5.1 INCOME FROM SALES JOBS

	OUTCOME 1		OUTCOME 2		
	PROBABILITY	INCOME ($)	PROBABILITY	INCOME ($)	EXPECTED INCOME ($)
Job 1: Commission	.5	2000	.5	1000	1500
Job 2: Fixed Salary	.99	1510	.01	510	1500

- **deviation** Extent to which possible outcomes of an uncertain event differ.

TABLE 5.2 DEVIATIONS FROM EXPECTED INCOME ($)

	OUTCOME 1	DEVIATION	OUTCOME 2	DEVIATION
Job 1	2000	500	1000	−500
Job 2	1510	10	510	−990

- **standard deviation** Square root of the weighted average of the squares of the deviations of the payoffs associated with each outcome from their expected values

TABLE 5.3 CALCULATING VARIANCE ($)

	OUTCOME 1	DEVIATION SQUARED	OUTCOME 2	DEVIATION SQUARED	WEIGHTED AVERAGE DEVIATION SQUARED	STANDARD DEVIATION
Job 1	2000	250,000	1000	250,000	250,000	500
Job 2	1510	100	510	980,100	9900	99.50

The average of the squared deviations under Job 1 is given by

$$.5(\$250,000) + .5(\$250,000) = \$250,000$$

The probability-weighted average of the squared deviations under Job 2 is

$$.99(\$100) + .01(\$980,100) = \$9900$$

The standard deviations of job 1 and job 2 are $500 and $99.50, respectively. Thus the second job is much less risky than the first; the standard deviation of the incomes is much lower.

FIGURE 5.1

OUTCOME PROBABILITIES FOR TWO JOBS

The distribution of payoffs associated with Job 1 has a greater spread and a greater standard deviation than the distribution of payoffs associated with Job 2.

Both distributions are flat because all outcomes are equally likely.

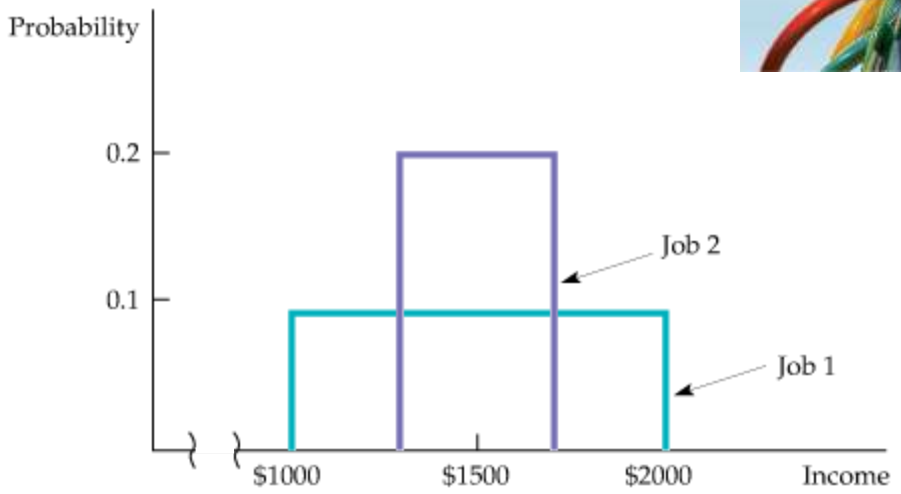
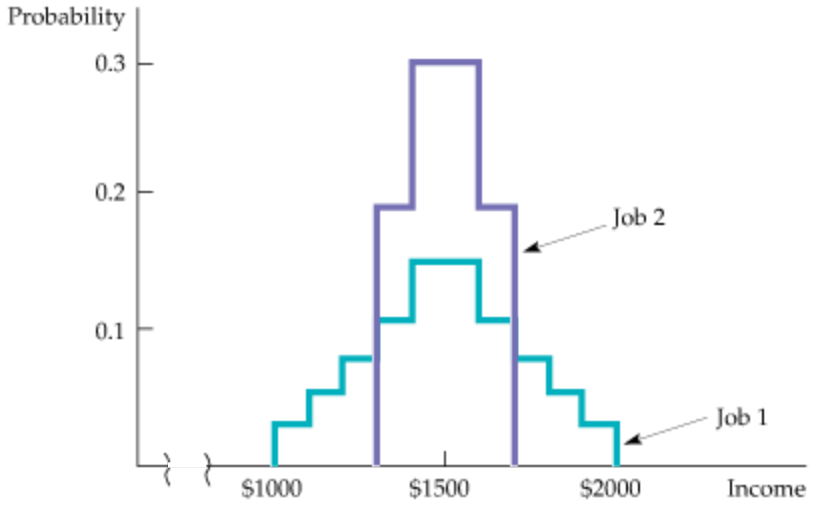


Figure 5.2

UNEQUAL PROBABILITY OUTCOMES

The distribution of payoffs associated with Job 1 has a greater spread and a greater standard deviation than the distribution of payoffs associated with Job 2.

Both distributions are peaked because the extreme payoffs are less likely than those near the middle of the distribution.



Decision Making

Suppose we add $100 to each of the payoffs in the first job, so that the expected payoff increases from $1500 to $1600.

TABLE 5.4 INCOME FROM SALES JOBS—MODIFIED ($)

	OUTCOME 1	DEVIATION SQUARED	OUTCOME 2	DEVIATION SQUARED	EXPECTED INCOME	STANDARD DEVIATION
Job 1	2100	250,000	1100	250,000	1600	500
Job 2	1510	100	510	980,100	1500	99.50

The two jobs can now be described as follows:

Job 1: Expected Income = $1600 Standard Deviation = $500
Job 2: Expected Income = $1500 Standard Deviation = $99.50

Job 1 offers a higher expected income but is much riskier than Job 2. Which job is preferred depends on the individual. While an aggressive entrepreneur who doesn't mind taking risks might choose Job 1, with the higher expected income and higher standard deviation, a more conservative person might choose the second job.

EXAMPLE 5.1 DETERRING CRIME

Fines may be better than incarceration in deterring certain types of crimes, such as speeding, double-parking, tax evasion, and air polluting.

The size of the fine that must be imposed to discourage criminal behavior depends on the attitudes toward risk of potential violators.

In practice, it is too costly to catch all violators. Fortunately, it's also unnecessary. The same deterrence effect can be obtained by assessing a fine of $50 and catching only one in ten violators (or perhaps a fine of $500 with a one-in-100 chance of being caught). In each case, the expected penalty is $5, i.e., [$50][.1] or [$500][.01]. A policy that combines a high fine and a low probability of apprehension is likely to reduce enforcement costs. This approach is especially effective if drivers don't like to take risks.

A new type of crime that has become a serious problem for music and movie producers is digital piracy; it is particularly difficult to catch and fines are rarely imposed. Nevertheless, fines that are levied are often very high. In 2009, a woman was fined $1.9 million for illegally downloading 24 songs. That amounts to a fine of $80,000 per song.

5.2 Preferences Toward Risk

In this section, we concentrate on consumer choices generally and on the *utility* that consumers obtain from choosing among risky alternatives.

To simplify things, we'll consider the utility that a consumer gets from his or her income—or, more appropriately, the market basket that the consumer's income can buy. We measure payoffs in terms of utility rather than dollars.

In our example, a consumer has an income of $15,000 and is considering a new but risky sales job that will either double her income to $30,000 or cause it to fall to $10,000. Each possibility has a probability of .5.

To evaluate the new job, she can calculate the expected value of the resulting income. Because we are measuring value in terms of her utility, we must calculate the expected utility E(*u*) that she can obtain.

- **expected utility** Sum of the utilities associated with all possible outcomes, weighted by the probability that each outcome will occur.

$$E(u) = (1/2)u(\$10{,}000) + (1/2)u(\$30{,}000) = 0.5(10) + 0.5(18) = 14$$

The risky new job is thus preferred to the original job because the expected utility of 14 is greater than the original utility of 13.5

Different Preferences Toward Risk

Figure 5.3 (1 of 2)

RISK AVERSE, RISK LOVING, AND RISK NEUTRAL

- **risk averse** Condition of preferring a certain income to a risky income with the same expected value.

People differ in their preferences toward risk.

In **(a),** a consumer's marginal utility diminishes as income increases.

The consumer is risk averse because she would prefer a certain income of $20,000 (with a utility of 16) to a gamble with a .5 probability of $10,000 and a .5 probability of $30,000 (and expected utility of 14).

The expected utility of the uncertain income is 14—an average of the utility at point *A* (10) and the utility at *E* (18)—and is shown by *F*.

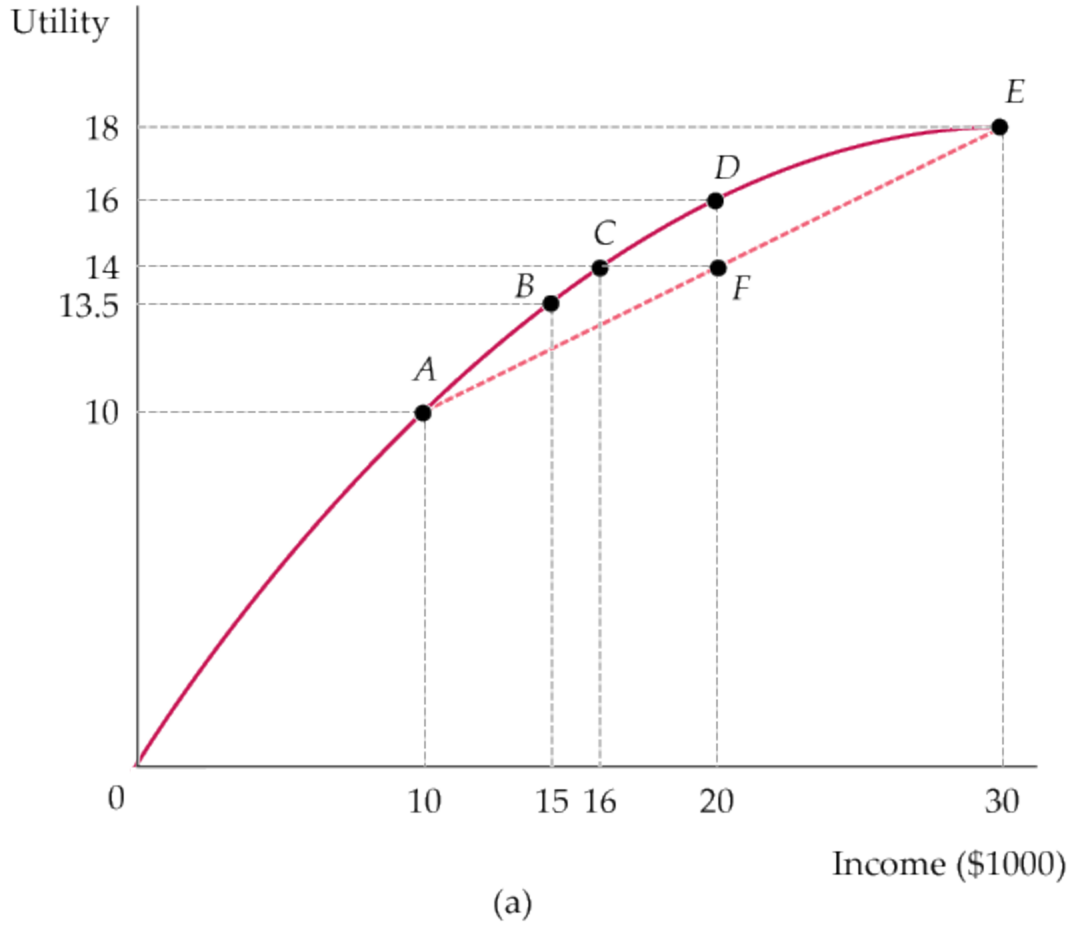
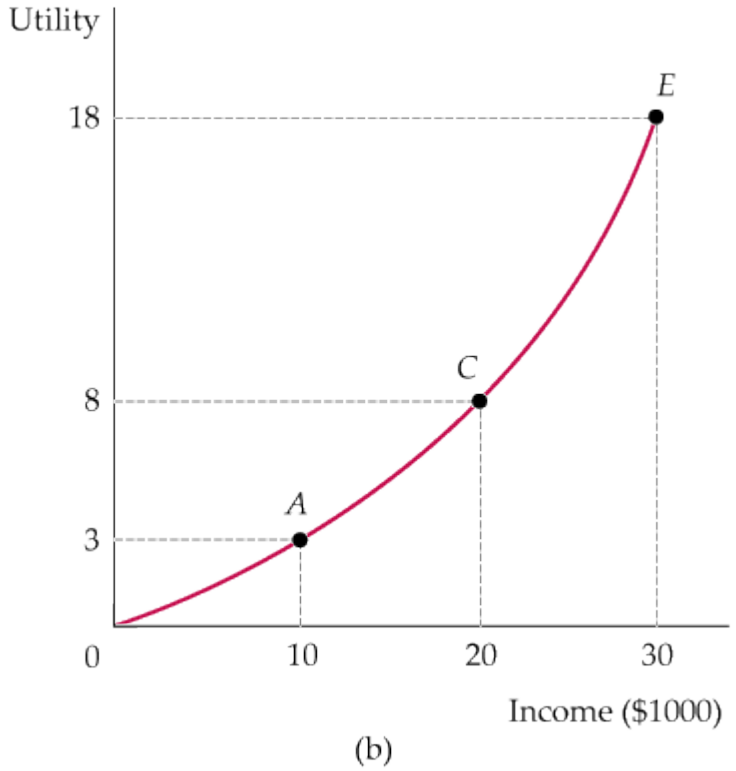


Figure 5.3 (2 of 2)

RISK AVERSE, RISK LOVING, AND RISK NEUTRAL

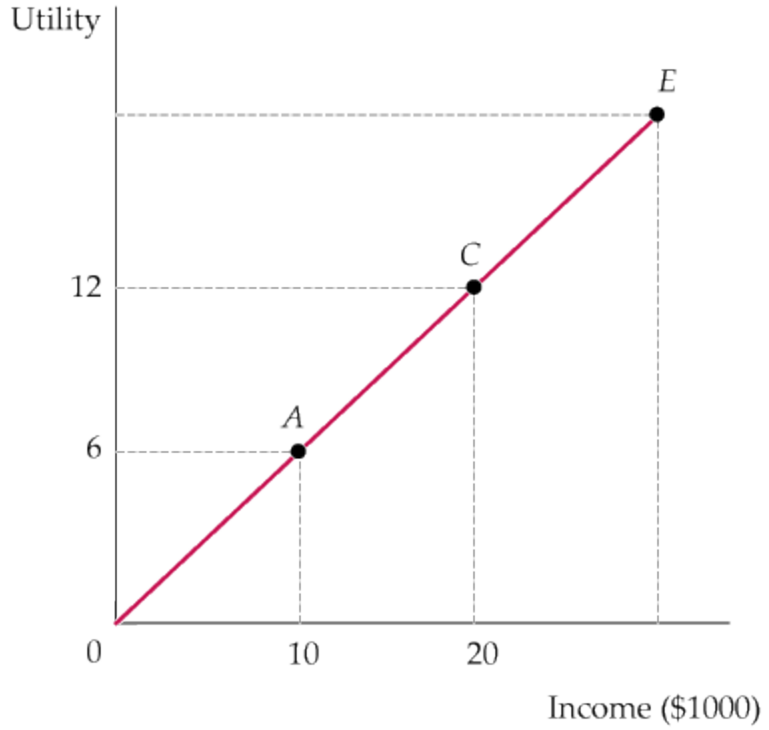
- **risk loving** Condition of preferring a risky income to a certain income with the same expected value.



(b)

In (**b**), the consumer is risk loving: She would prefer the same gamble (with expected utility of 10.5) to the certain income (with a utility of 8).

- **risk neutral** Condition of preferring a risky income to a certain income with the same expected value.



(c)

In (**c**) is risk neutral and indifferent between certain and uncertain events with the same expected income.

RISK PREMIUM

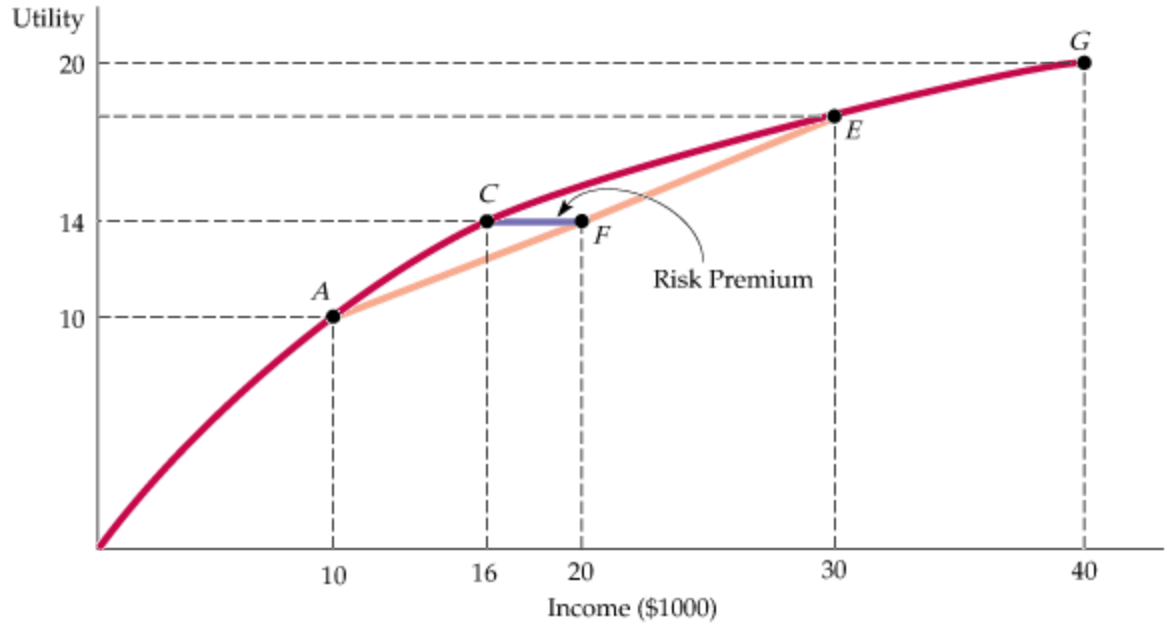
- **risk premium** Maximum amount of money that a risk-averse person will pay to avoid taking a risk.

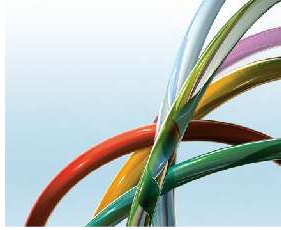
Figure 5.4

RISK PREMIUM

The risk premium, *CF*, measures the amount of income that an individual would give up to leave her indifferent between a risky choice and a certain one.

Here, the risk premium is $4000 because a certain income of $16,000 (at point *C*) gives her the same expected utility (14) as the uncertain income (a .5 probability of being at point *A* and a .5 probability of being at point *E*) that has an expected value of $20,000.





RISK AVERSION AND INCOME

The extent of an individual's risk aversion depends on the nature of the risk and on the person's income. Other things being equal, risk-averse people prefer a smaller variability of outcomes.

We saw that when there are two outcomes—an income of $10,000 and an income of $30,000—the risk premium is $4000. Now consider a second risky job, also illustrated in Figure 5.4.

With this job, there is a .5 probability of receiving an income of $40,000, with a utility level of 20, and a .5 probability of getting an income of $0, with a utility level of 0.

The expected income is again $20,000, but the expected utility is only 10:

$$\text{Expected utility} = .5u(\$0) + .5u(\$40{,}000) = 0 + .5(20) = 10$$

RISK AVERSION AND INDIFFERENCE CURVES

Figure 5.5

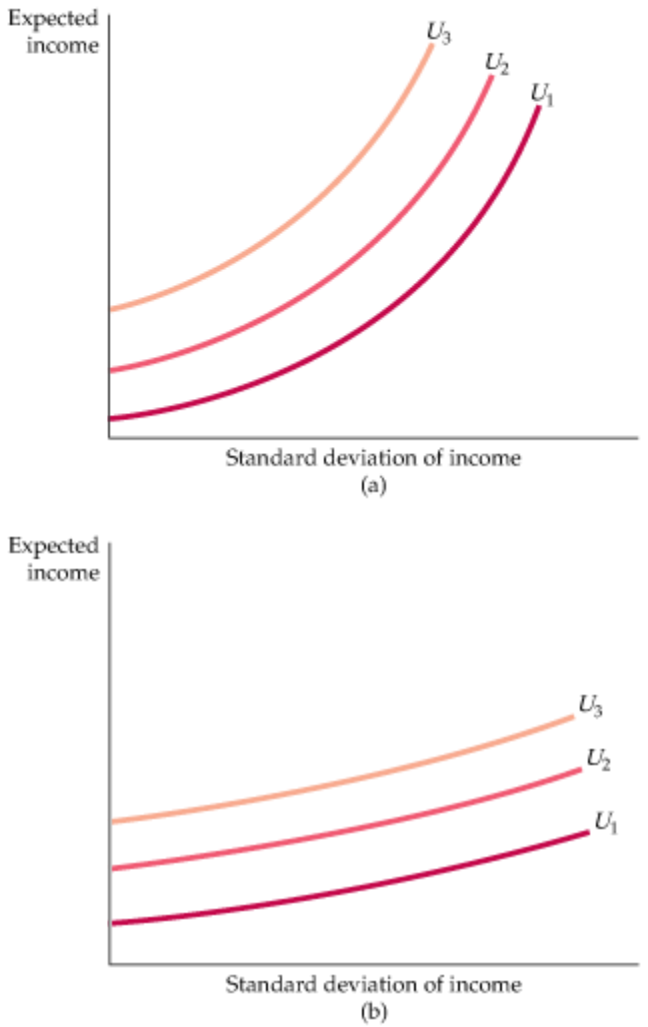
RISK AVERSION AND INDIFFERENCE CURVES

Part **(a)** applies to a person who is highly risk averse:

An increase in this individual's standard deviation of income requires a large increase in expected income if he or she is to remain equally well off.

Part **(b)** applies to a person who is only slightly risk averse:

An increase in the standard deviation of income requires only a small increase in expected income if he or she is to remain equally well off.



EXAMPLE 5.2 BUSINESS EXECUTIVES AND THE CHOICE OF RISK

Are business executives more risk loving than most people?

In one study, 464 executives were asked to respond to a questionnaire describing risky situations that an individual might face as vice president of a hypothetical company.

The payoffs and probabilities were chosen so that each event had the same expected value.

In increasing order of the risk involved, the four events were:

1. A lawsuit involving a patent violation
2. A customer threatening to buy from a competitor
3. A union dispute
4. A joint venture with a competitor

The study found that executives vary substantially in their preferences toward risk. More importantly, executives typically made efforts to reduce or eliminate risk, usually by delaying decisions and collecting more information.

5.3 Reducing Risk

Diversification

- **diversification** Practice of reducing risk by allocating resources to a variety of activities whose outcomes are not closely related.

TABLE 5.5 INCOME FROM SALES OF APPLIANCES ($)

	HOT WEATHER	COLD WEATHER
Air Conditioner sales	30,000	12,000
Heater sales	12,000	30,000

If you sell only air conditioners or only heaters, your actual income will be either $12,000 or $30,000, but your expected income will be

$21,000 (.5[$30,000] + .5[$12,000]).

If you diversify by dividing your time evenly between the two products, your income will certainly be $21,000, regardless of the weather. If the weather is hot, you will earn $15,000 from air conditioner sales and $6000 from heater sales; if it is cold, you will earn $6000 from air conditioners and $15,000 from heaters. In this instance, diversification eliminates all risk.

- **negatively correlated variables** Variables having a tendency to move in opposite directions.

THE STOCK MARKET

- **mutual fund** Organization that pools funds of individual investors to buy a large number of different stocks or other financial assets.

- **positively correlated variables** Variables having a tendency to move in the same direction.

Insurance

TABLE 5.6 THE DECISION TO INSURE ($)

INSURANCE	BURGLARY (PR = .1)	NO BURGLARY (PR = .9)	EXPECTED WEALTH	STANDARD DEVIATION
No	40,000	50,000	49,000	3000
Yes	49,000	49,000	49,000	0

For a risk-averse individual, losses count more (in terms of changes in utility) than gains. A risk-averse homeowner, therefore, will enjoy higher utility by purchasing insurance.

THE LAW OF LARGE NUMBERS

Insurance companies are firms that offer insurance because they know that when they sell a large number of policies, they face relatively little risk. The ability to avoid risk by operating on a large scale is based on the law of large numbers, which tells us that although single events may be random and largely unpredictable, the average outcome of many similar events can be predicted.

ACTUARIAL FAIRNESS

When the insurance premium is equal to the expected payout, as in the example above, we say that the insurance is **actuarially fair**.

- **actuarially fair** Characterizing a situation in which an insurance premium is equal to the expected payout.

EXAMPLE 5.3 THE VALUE OF TITLE INSURANCE WHEN BUYING A HOUSE

Suppose you are buying your first house. To close the sale, you will need a deed that gives you clear "title." Without such a clear title, there is always a chance that the seller of the house is not its true owner.

In situations such as this, it is clearly in the interest of the buyer to be sure that there is no risk of a lack of full ownership.

The buyer does this by purchasing "title insurance."

Because the title insurance company is a specialist in such insurance and can collect the relevant information relatively easily, the cost of title insurance is often less than the expected value of the loss involved.

In addition, because mortgage lenders are all concerned about such risks, they usually require new buyers to have title insurance before issuing a mortgage.

The Value of Information

- **value of complete information** Difference between the expected value of a choice when there is complete information and the expected value when information is incomplete.

TABLE 5.7 PROFITS FROM SALES OF SUITS ($)

	SALES OF 50	SALES OF 100	EXPECTED PROFIT
Buy 50 units	5000	5000	5000
Buy 100 units	1500	12,000	6750

With complete information, you can place the correct order regardless of future sales. If sales were going to be 50 and you ordered 50 suits, your profits would be $5000. If, on the other hand, sales were going to be 100 and you ordered 100 suits, your profits would be $12,000. Because both outcomes are equally likely, your expected profit with complete information would be $8500.

The value of information is computed as

Expected value with complete information:	$8500
Less: Expected value with uncertainty (buy 100 suits):	–6750
Equals: Value of complete information	$1750

EXAMPLE 5.4 THE VALUE OF INFORMATI ON IN AN ONLINE CONSUMER ELECTRONICS MARKET

Internet-based price comparison sites offer a valuable informational resource to consumers.

The value of price comparison information is not the same for everyone and for every product. Competition matters. The savings increase with the number of competitors.

One might think that the Internet will generate so much information about prices that only the lowest price products will be sold in the long run, causing the value of such information to eventually decline to zero. So far, this has not been the case. There are fixed costs for parties to both transmit and to acquire information over the Internet. The result is that prices are likely to continue to vary widely as the Internet continues to grow and mature.

EXAMPLE 5.5 DOCTORS, PATIENTS , AND T HE VALUE OF INFORMATION

Suppose you were seriously ill and required major surgery. Assuming you wanted to get the best care possible, how would you go about choosing a surgeon and a hospital to provide that care?

A truly informed decision would probably require more detailed information.

This kind of information is likely to be difficult or impossible for most patients to obtain.

More information is often, but not always, better. Whether more information is better depends on which effect dominates—the ability of patients to make more informed choices versus the incentive for doctors to avoid very sick patients.

More information often improves welfare because it allows people to reduce risk and to take actions that might reduce the effect of bad outcomes. However, information can cause people to change their behavior in undesirable ways.

5.4 The Demand for Risky Assets

Assets

- **asset** Something that provides a flow of money or services to its owner.

An increase in the value of an asset is a capital gain; a decrease is a capital loss.

Risky and Riskless Assets

- **risky asset** Asset that provides an uncertain flow of money or services to its owner.

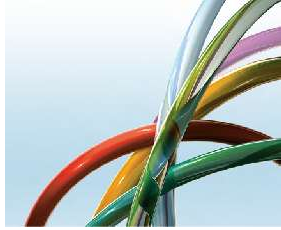
- **riskless (**or **risk-free) asset** Asset that provides a flow of money or services that is known with certainty.

Asset returns

- **return** Total monetary flow of an asset as a fraction of its price.

- **real return** Simple (or nominal) return on an asset, less the rate of inflation.

EXPECTED VERSUS ACTUAL RETURNS



- **expected return** Return that an asset should earn on average.
- **actual return** Return that an asset earns.

TABLE 5.8 INVESTMENTS—RISK AND RETURN (1926–2010)

	AVERAGE RATE OF RETURN (%)	AVERAGE REAL RATE OF RETURN (%)	RISK (STANDARD DEVIATION)
Common stocks (S&P 500)	11.9	8.7	20.4
Long-term corporate bonds	6.2	3.3	8.3
U.S. Treasury bills	3.7	0.7	3.1

The Trade-Off Between Risk and Return

Let's denote the risk-free return on the Treasury bill by R_f. Because the return is risk free, the expected and actual returns are the same. In addition, let the *expected* return from investing in the stock market be R_m and the actual return be r_m.

THE INVESTMENT PORTFOLIO

To determine how much money the investor should put in each asset, let's set *b* equal to the fraction of her savings placed in the stock market and (1 - *b*) the fraction used to purchase Treasury bills. The expected return on her total portfolio, R_p, is a weighted average of the expected return on the two assets:

$$R_p = bR_m = (1-b)R_f \qquad \textbf{(5.1)}$$

The standard deviation of the risky stock market investment is σ_m., and the standard deviation of the portfolio is σ_p, therefore:

$$\sigma_p = b\sigma_m \qquad \textbf{(5.2)}$$

The Investor's Choice Problem

How should the investor should choose the fraction *b*?

$$R_p = R_f + b(R_m - R_f)$$

From equation (5.2) we see that $b = \sigma_p / \sigma_m$, so that:

$$R_p = R_f + \frac{(R_m - R_f)}{\sigma_m}\sigma_p \qquad \textbf{(5.3)}$$

RISK AND THE BUDGET LINE

$$R_p = R_f + \frac{(R_m - R_f)}{\sigma_m}\sigma_p \qquad (5.3)$$

This equation is a *budget line* because it describes the trade-off between risk (σ_p) and expected return (R_p). Note that it is the equation for a straight line: Because R_m, R_f, and σ_m are constants, the slope $(R_m - R_f)/\sigma_m$ is a constant, as is the intercept, R_f. The equation says that *the expected return on the portfolio R_p increases as the standard deviation of that return sp increases.* We call the slope of this budget line, $(R_m - R_f)/\sigma_m$, the **price of risk**.

- **Price of risk** Extra risk that an investor must incur to enjoy a higher expected return.

RISK AND INDIFFERENCE CURVES

Figure 5.6 (1 of 2)

CHOOSING BETWEEN RISK AND RETURN

An investor is dividing her funds between two assets—Treasury bills, which are risk free, and stocks.
To receive a higher expected return, she must incur some risk.

The budget line describes the trade-off between the expected return and its riskiness, as measured by the standard deviation of the return.

The slope of the budget line is $(R_m - R_f)/\sigma_m$, which is the price of risk.

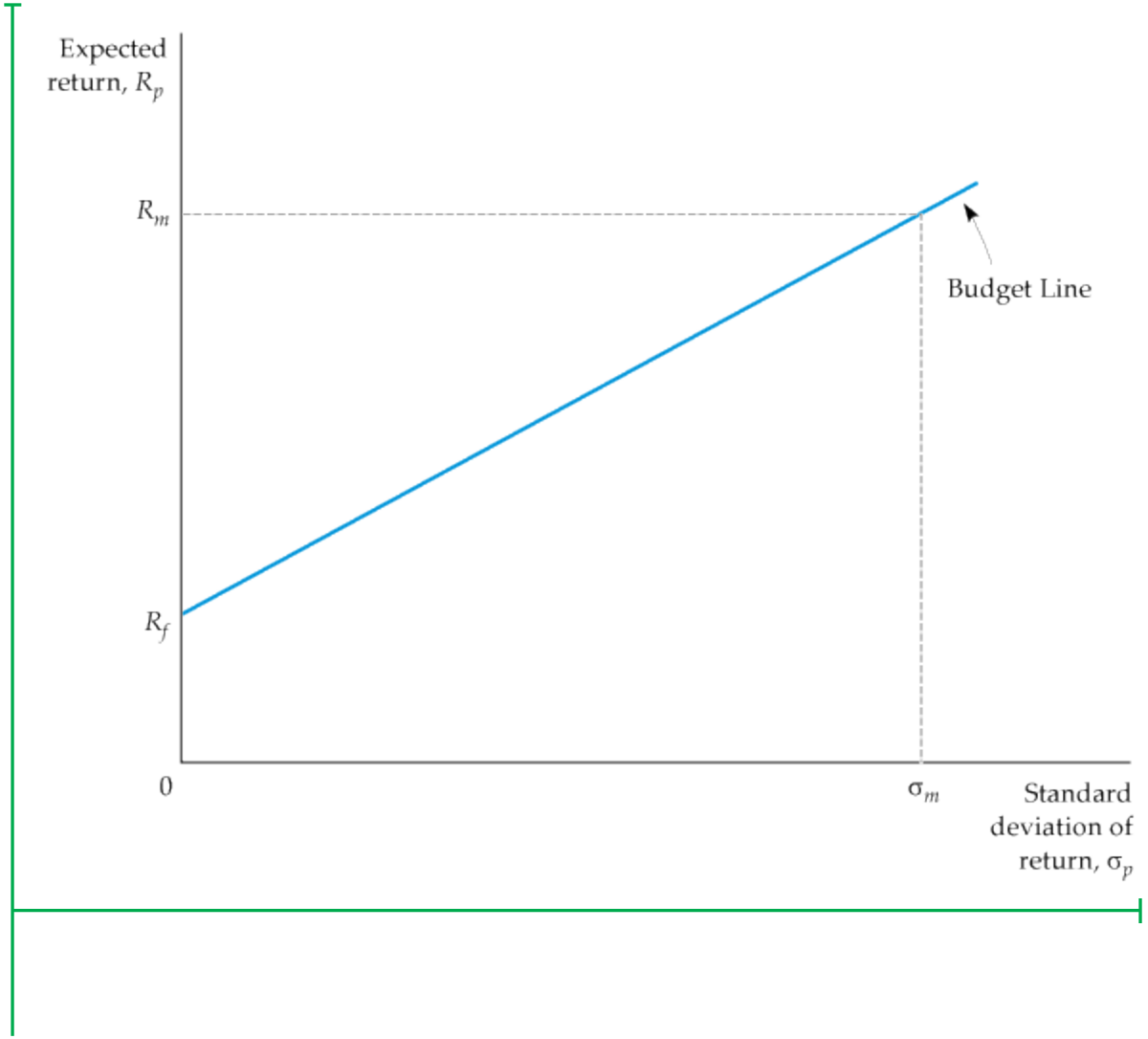


Figure 5.6 (2 of 2)

CHOOSING BETWEEN RISK AND RETURN

Three indifference curves are drawn, each showing combinations of risk and return that leave an investor equally satisfied.

The curves are upward-sloping because a risk-averse investor will require a higher expected return if she is to bear a greater amount of risk.

The utility-maximizing investment portfolio is at the point where indifference curve U_2 is tangent to the budget line.

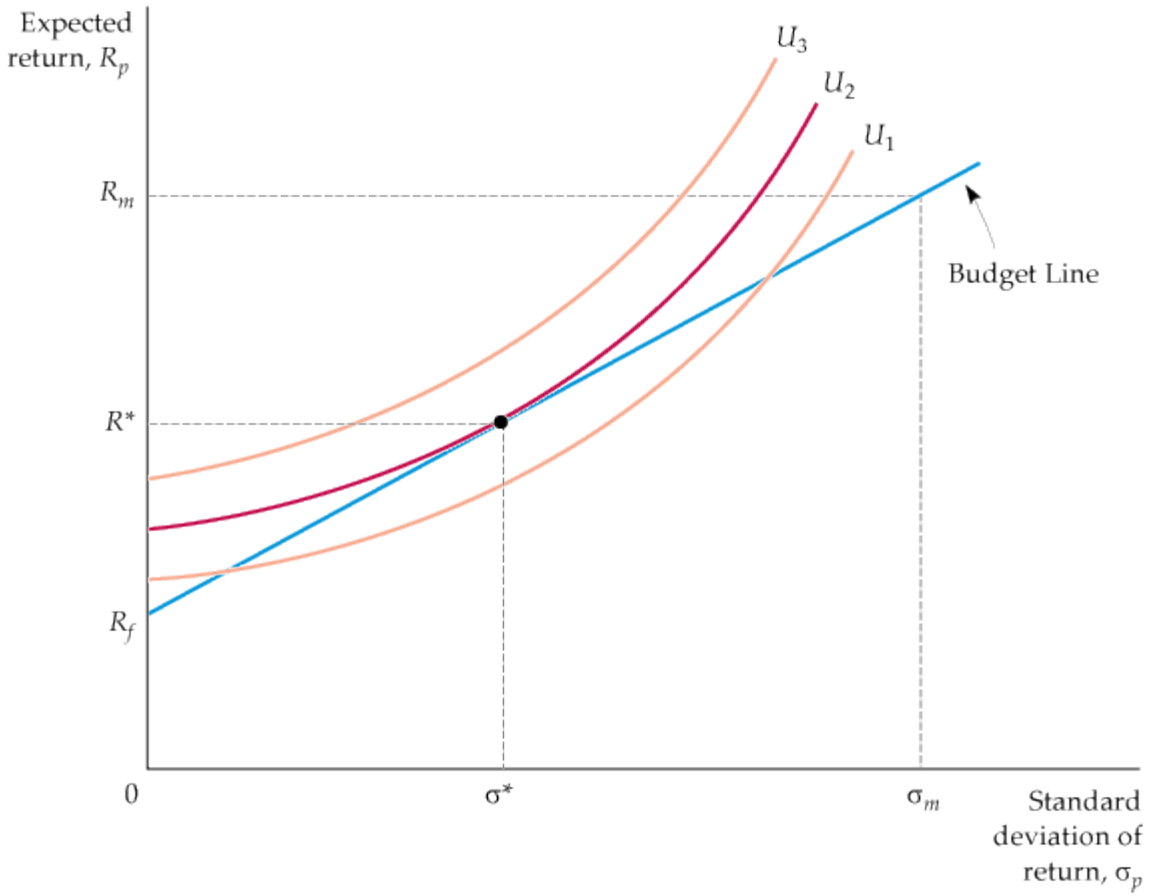


Figure 5.7

THE CHOICES OF TWO DIFFERENT INVESTORS

Investor A is highly risk averse. Because his portfolio will consist mostly of the risk-free asset, his expected return R_A will be only slightly greater than the risk-free return. His risk σ_A, however, will be small.

Investor B is less risk averse. She will invest a large fraction of her funds in stocks. Although the expected return on her portfolio R_B will be larger, it will also be riskier.

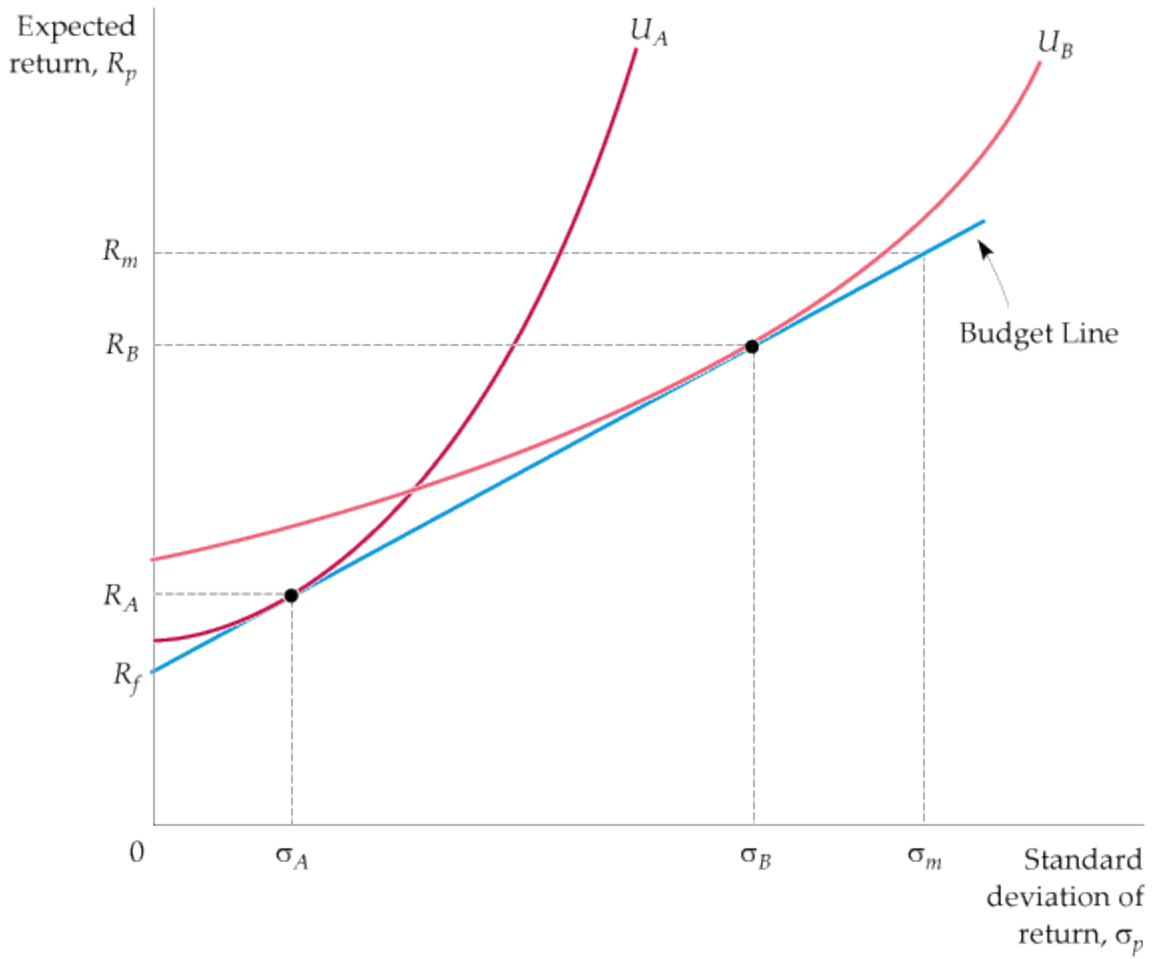


Figure 5.8

BUYING STOCKS ON MARGIN

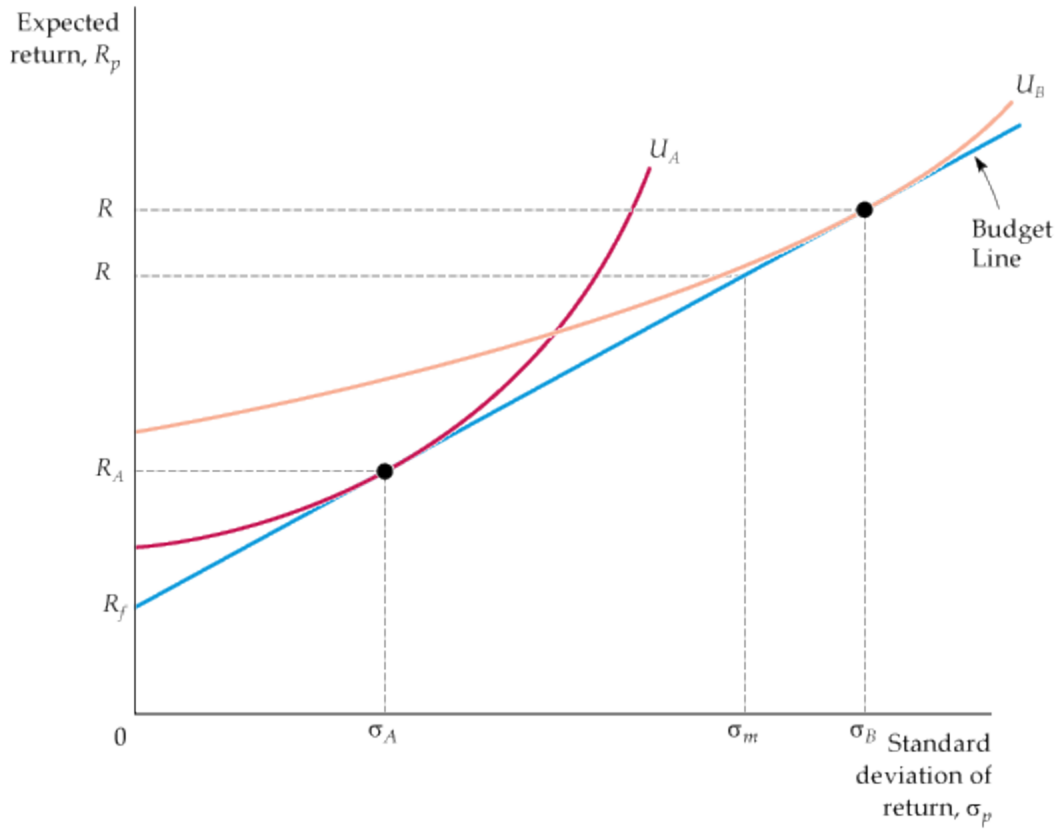
Because Investor *A* is risk averse, his portfolio contains a mixture of stocks and risk-free Treasury bills.

Investor *B*, however, has a very low degree of risk aversion.

Her indifference curve, U_B, is tangent to the budget line at a point where the expected return and standard deviation for her portfolio exceed those for the stock market overall (R_m, σ_m) .

This implies that she would like to invest *more* than 100 percent of her wealth in the stock market.

She does so by buying stocks *on margin*—i.e., by borrowing from a brokerage firm to help finance her investment.



EXAMPLE 5.6 INVESTING IN THE STOCK MARKET

The 1990s, many people started investing in the stock market for the first time. The share of wealth invested in stocks increased from about 26 percent to about 54 percent during the same period.

The advent of online trading has made investing much easier. Another reason may be the considerable increase in stock prices that occurred during the late 1990s, driven in part by the so-called “dot com euphoria.”

In the late 1990s, many investors had a low degree of risk aversion, were quite optimistic about the economy, or both.

Alternatively, the run-up of stock prices may have been the result of “herd behavior,” in which investors rushed to get into the market after hearing of the successful experiences of others. The psychological motivations that explain herd behavior can help to explain stock market bubbles.

EXAMPLE 5.6 INVESTING IN THE STOCK MARKET

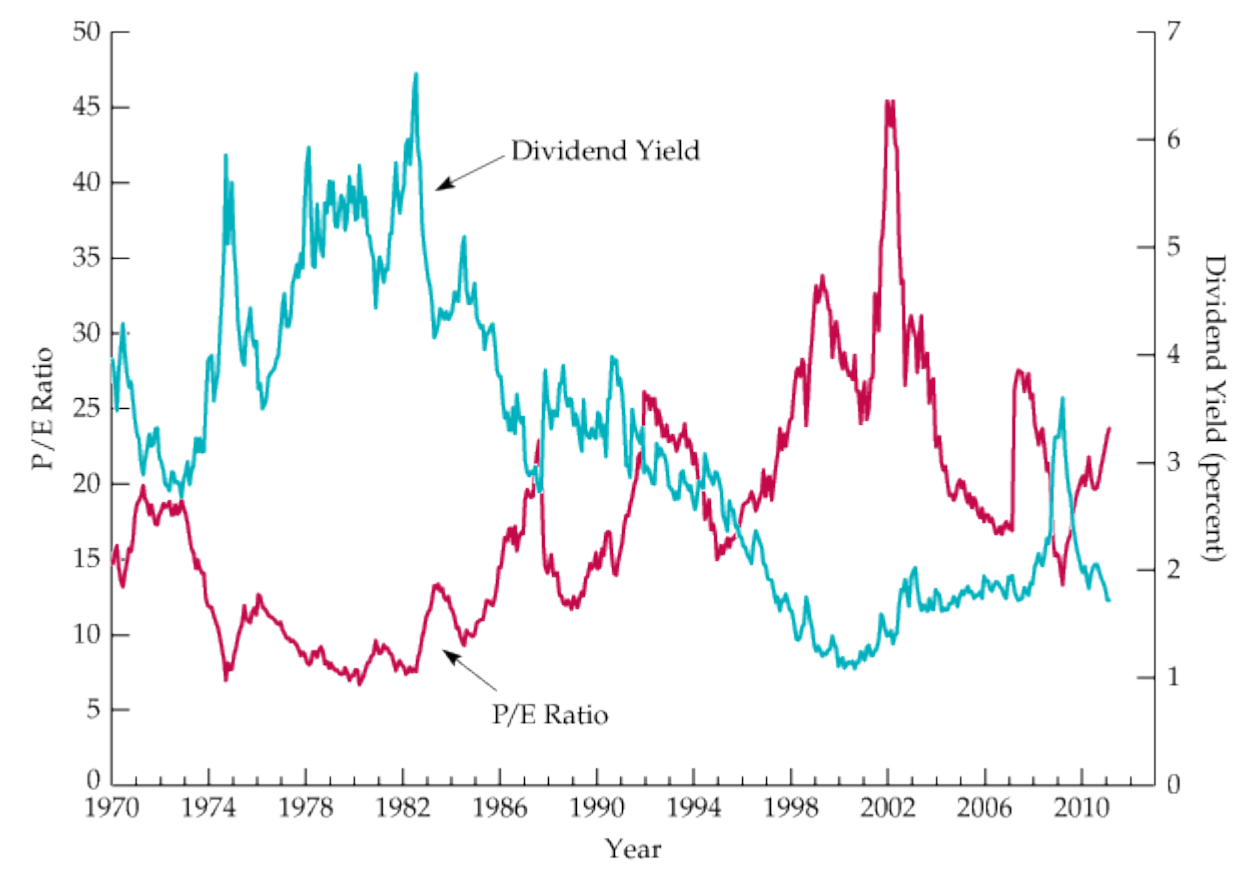


Figure 5.9

DIVIDEND YIELD AND P/E RATIO FOR S&P 500

The dividend yield for the S&P 500 (the annual dividend divided by the stock price) has fallen dramatically, while the price/earnings ratio (the stock price divided by the annual earnings-per-share) rose from 1980 to 2002 and then dropped.

5.5 Bubbles

- **bubble** An increase in the price of a good based not on the fundamentals of demand or value, but instead on a belief that the price will keep going up.

Bubbles are often the result of irrational behavior. People stop thinking straight.

During 1995 to 2000, many investors (perhaps “speculators” is a better word) bought the stocks of Internet companies at very high prices, prices that were increasingly difficult to justify based on fundamentals. The result was the Internet bubble.

The United States experienced a prolonged housing price bubble that burst in 2008, causing financial losses to large banks. By the end of 2008, the United States was in its worst recession since the Great Depression of the 1930s. The housing price bubble, far from harmless, was partly to blame for this.

EXAMPLE 5.7 THE HOUSING PRICE BUBBLE (I)

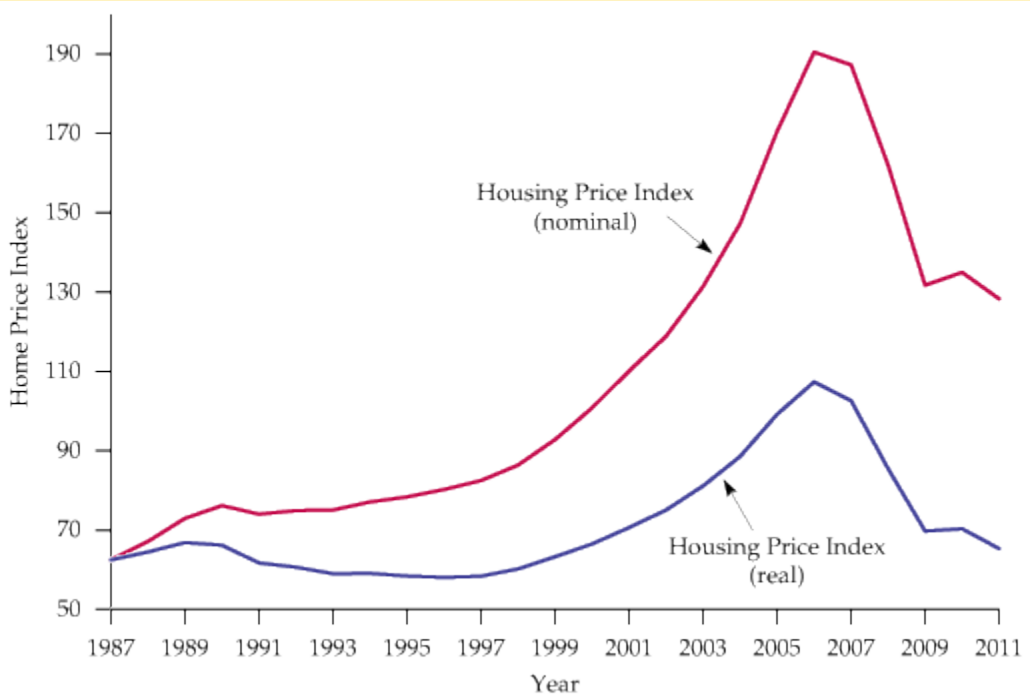
During that 8-year period from 1998 to 2006, many people bought into the myth that housing was a sure-fire investment, and that prices could only keep going up. Many banks also bought into this myth.

The demand for housing increased sharply, with some people buying four or five houses. This speculative demand served to push prices up further. By 2010, housing prices had fallen over 28% from their 2007 peak.

Figure 5.10

S&P/CASE-SHILLER HOUSING PRICE INDEX

The Index shows the average home price in the United States at the national level. Note the increase in the index from 1998 to 2007, and then the sharp decline.



Informational Cascades

- **informational cascades** An assessment (e.g., of an investment opportunity) based in part on the actions of others, which in turn were based on the actions of others.

The bubble that results from an informational cascade can in fact be rational in the sense that there is a basis for believing that investing in the bubble will yield a positive return.

The reason is that if investors early in the chain indeed obtained positive information and based their decisions on that information, *the expected gain to an investor down the chain will be positive.*

However, the risk involved will be considerable, and it is likely that at least some investors will underestimate that risk.

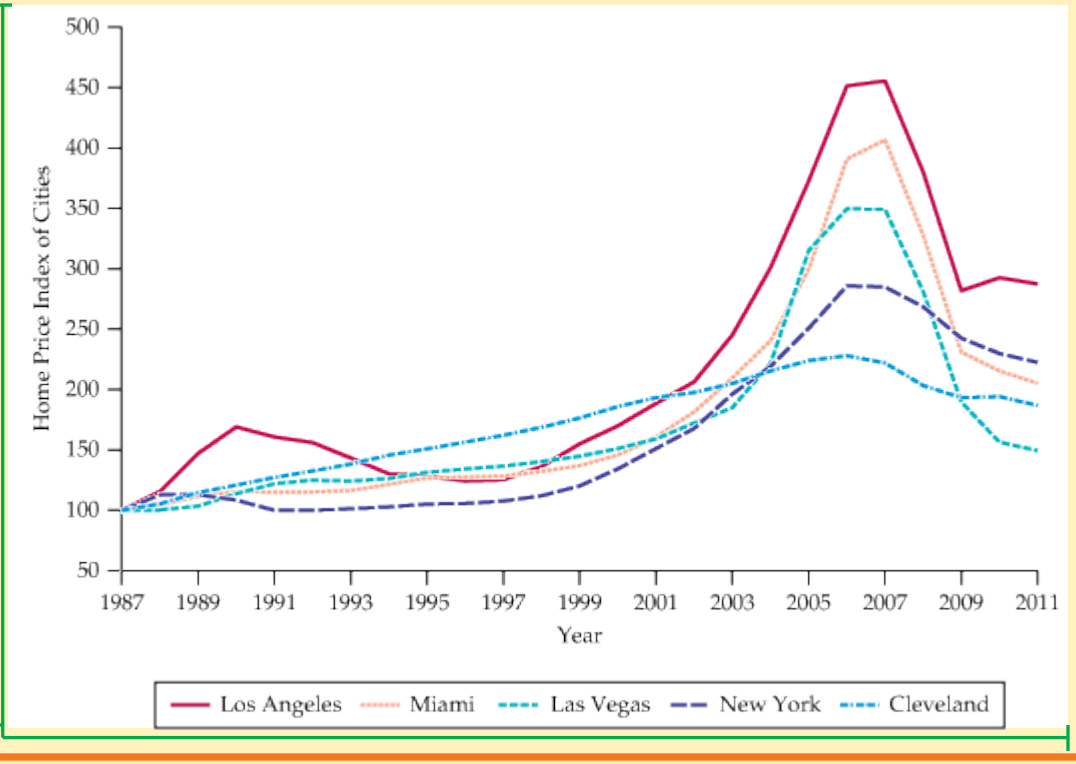
EXAMPLE 5.8 THE HOUSING PRICE BUBBLE (II)

Was it rational to buy real estate in Miami in 2006? Rational or not, investors should have known that considerable risk was involved in buying real estate there (or elsewhere in Florida, Arizona, Nevada, and California). Looking back, we now know that many of these investors lost their shirts (not to mention their homes).

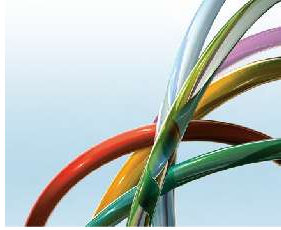
Figure 5.11

S&P/CASE-SHILLER HOUSING PRICE INDEX FOR FIVE CITIES

The Index shows the average home price for each of five cities (in nominal terms). For some cities, the housing bubble was much worse than for others. Los Angeles, Miami, and Las Vegas experienced some of the sharpest increases in home prices, and then starting in 2007, prices plummeted. Cleveland, on the other hand, largely avoided the bubble, with home prices increasing, and then falling, only moderately.



5.6 Behavioral Economics



Recall that the basic theory of consumer demand is based on three assumptions:

(1) consumers have clear preferences for some goods over others;

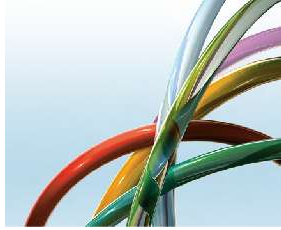
(2) consumers face budget constraints; and

(3) given their preferences, limited incomes, and the prices of different goods, consumers choose to buy combinations of goods that maximize their satisfaction.

These assumptions, however, are not always realistic.

Perhaps our understanding of consumer demand (as well as the decisions of firms) would be improved if we incorporated more realistic and detailed assumptions regarding human behavior.

This has been the objective of the newly flourishing field of *behavioral economics*.



Here are some examples of consumer behavior that cannot be easily explained with the basic utility-maximizing assumptions:

- There has just been a big snowstorm, so you stop at the hardware store to buy a snow shovel. You had expected to pay $20 for the shovel—the price that the store normally charges. However, you find that the store has suddenly raised the price to $40. Although you would expect a price increase because of the storm, you feel that a doubling of the price is unfair and that the store is trying to take advantage of you. Out of spite, you do not buy the shovel.
- Tired of being snowed in at home you decide to take a vacation in the country. On the way, you stop at a highway restaurant for lunch. Even though you are unlikely to return to that restaurant, you believe that it is fair and appropriate to leave a 15-percent tip in appreciation of the good service that you received.
- You buy this textbook from an Internet bookseller because the price is lower than the price at your local bookstore. However, you ignore the shipping cost when comparing prices.

Reference Points and Consumer Preferences

- **reference point** The point from which an individual makes a consumption decision.

ENDOWMENT EFFECT

- **endowment effect** Tendency of individuals to value an item more when they own it than when they do not.

LOSS AVERSION

- **loss aversion** Tendency for individuals to prefer avoiding losses over acquiring gains.

FRAMING

- **framing** Tendency to rely on the context in which a choice is described when making a decision.

EXAMPLE 5.9 SELLING A HOUSE

Homeowners can get a good idea of what the house will sell for by looking at the selling prices of comparable houses, or by talking with a realtor. Often, however, the owners will set an asking price that is well above any realistic expectation of what the house can actually sell for.

As a result, the house may stay on the market for many months before the owners grudgingly lower the price. During that time the owners have to continue to maintain the house and pay for taxes, utilities, and insurance. This seems irrational. Why not set an asking price closer to what the market will bear?

The *endowment effect* is at work here. The homeowners view their house as special; their ownership has given them what they think is a special appreciation of its value—a value that may go beyond any price that the market will bear.

If housing prices have been falling, *loss aversion* could also be at work. Selling the house turns a paper loss, which may not seem real, into a loss that is real. Averting that reality may explain the reluctance of home owners to take that final step of selling their home. It is not surprising, therefore, to find that houses tend to stay on the market longer during economic downturns than in upturns.

Fairness

Figure 5.12

DEMAND FOR SNOW SHOVELS

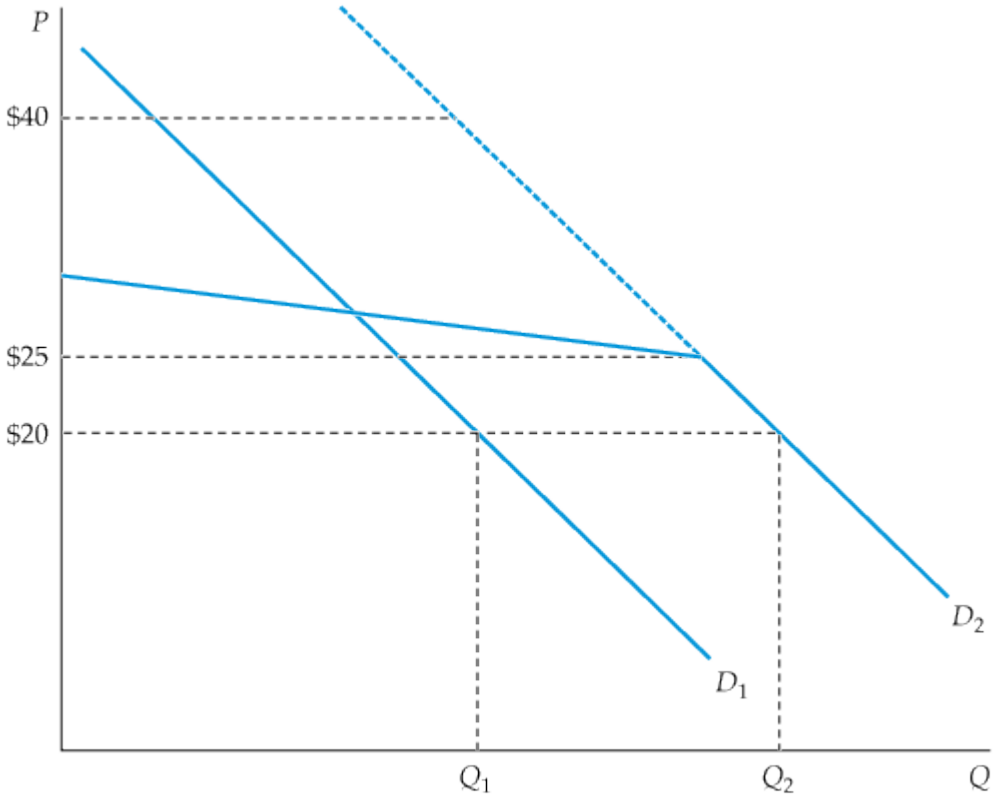
Demand curve D_1 applies during normal weather. Stores have been charging \$20 and sell Q_1 shovels per month.

When a snowstorm hits, the demand curve shifts to the right.

Had the price remained \$20, the quantity demanded would have increased to Q_2.

But the new demand curve (D_2) does not extend up as far as the old one. Consumers view an increase in price to, say, \$25 as fair, but an increase much above that as unfair gouging.

The new demand curve is very elastic at prices above \$25, and no shovels can be sold at a price much above \$30.



Rules of Thumb and Biases in Decision Making

ANCHORING

- **anchoring** Tendency to rely heavily on one or two pieces of information when making a decision.

RULES OF THUMB

A common way to economize on the effort involved in making decisions is to ignore seemingly unimportant pieces of information.

For example, a recent study has shown that shipping costs are typically ignored by many consumers when deciding to buy things online. Their decisions are biased because they view the price of goods to be lower than they really are.

Frequently, rules of thumb help to save time and effort and result in only small biases. Thus, they should not be dismissed outright.

THE LAW OF SMALL NUMBERS

- **law of small numbers** Tendency to overstate the probability that a certain event will occur when faced with relatively little information.

Research has shown that investors in the stock market are often subject to a small-numbers bias, believing that high returns over the past few years are likely to be followed by more high returns over the next few years—thereby contributing to the kind of "herd behavior" that we discussed in the previous section.

Similarly when people assess the likelihood that housing prices will rise based on several years of data, the resulting misperceptions can result in housing price bubbles.

Forming subjective probabilities is not always an easy task and people are generally prone to several biases in the process.

Likewise, when a probability for a particular event is very, very small, many people simply ignore that possibility in their decision making.

Summing Up

Where does this leave us? Should we dispense with the traditional consumer theory discussed in Chapters 3 and 4? Not at all. In fact, the basic theory that we learned up to now works quite well in many situations. It helps us to understand and evaluate the characteristics of consumer demand and to predict the impact on demand of changes in prices or incomes.

The developing field of behavioral economics tries to explain and to elaborate on those situations that are not well explained by the basic consumer model.

If you continue to study economics, you will notice many cases in which economic models are not a perfect reflection of reality. Economists have to carefully decide, on a case-by-case basis, what features of the real world to include and what simplifying assumptions to make so that models are neither too complicated to study nor too simple to be useful.

EXAMPLE 5.10 NEW YORK CITY TAXICAB DRIVERS

Most cab drivers rent their taxicabs for a fixed daily fee from a company that owns a fleet of cars. They can then choose to drive the cab as little or as much as they want during a 12-hour period. As with many services, business is highly variable from day to day, depending on the weather, subway breakdowns, holidays, and so on.

An interesting study analyzed actual taxicab trip records and found that most drivers drive more hours on slow days and fewer hours on busy days. In other words, there is a negative relationship between the effective hourly wage and the number of hours worked each day; the higher the wage, the sooner the cabdrivers quit for the day.

Behavioral economics can explain this result. An income target provides a simple decision rule for drivers because they need only keep a record of their fares for the day. A daily target also helps drivers with potential self-control problems.