CHAPTER 1

The Role and Method of Economics

LEARNING OUTCOMES

After reading this chapter, you should be able to

1.1 Define and describe what is meant by the term *economics*.

1.2 Describe what economists mean when they say that people engage in rational behavior and respond to incentives in predictable ways.

1.3 Define and explain economic theories and models.

1.4 Describe the difference between correlation and causation.

1.5 Define and explain the distinction between positive statements and normative statements.

Master the content.
edge.sagepub.com/sextonmacro8e

$SAGE edge™

iStock/jacoblund

As you begin your first course in economics, you may be asking yourself why you're here. What does economics have to do with your life? Although we can list many good reasons to study economics, perhaps the best reason is that many issues in our lives are at least partly economic in character.

A good understanding of economics would allow you to answer such questions as, Why do 10:00 A.M. classes fill up more quickly than 8:00 A.M. classes during registration? Why is it so hard to find an apartment in cities such as San Francisco, Berkeley, and New York? Why is teenage unemployment higher than adult unemployment? Why is the price of your prescription drugs so high? Will higher taxes on cigarettes reduce the number of teenagers smoking? If so, by how much? Why do male basketball stars in the NBA make more than female basketball stars in the WNBA? Do houses with views necessarily sell faster than houses without views? Why do people buy houses near noisy airports? Why do U.S. auto producers like tariffs (taxes) on imported cars? Is globalization good for the economy? The study of economics improves your understanding of these and many other concerns.

Economics is a unique way of analyzing many areas of human behavior. Indeed, the range of topics to which economic analysis can be applied is broad. Many researchers discover that the economic approach to human behavior sheds light on social problems that have been with us for a long time: discrimination, crime, divorce, political favoritism, and more. In fact, your daily news source is filled with economics. You can find economics in the domestic section, the international section, the business section, the sports section, the entertainment section, and even the weather section—economics is all around us.

However, before we delve into the details and models of economics, it is important that we present an overview of how economists approach problems—their methodology. How does an economist apply the logic of science to approach a problem? And what are the pitfalls that economists should avoid in economic thinking? We also will discuss why economists disagree.

• Why do female models make more money than male models? •

1.1 Economics: A Brief Introduction

- What is economics?
- What is scarcity?
- What is the economic problem?

1.1a Economics—A Word with Many Different Meanings

Some people think economics involves the study of the stock market and corporate finance, and it does—in part. Others think that economics is concerned with the wise use of money and other matters of personal finance, and it is—in part. Still others think that economics involves forecasting or predicting what business conditions will be in the future, and again, it does—in part. The word *economics* is, after all, derived from the Greek *Oeconomicus*, which referred to the management of household affairs.

Precisely defined, economics is the study of the choices we make among our many wants and desires given our limited resources. What are resources? Resources are inputs—land, human effort, skills, and machines and factories, for instance—used to produce goods and services. The problem is that our unlimited wants exceed our limited resources, a fact that we call scarcity. That is, scarcity exists because human wants for goods and services exceed the number of goods and services that can be produced using all of our available resources. So scarcity forces us to decide how best to use our limited resources. This is the economic problem: Scarcity forces us to choose, and choices are costly because we must give up other opportunities that we value. Consumers must make choices on what to buy, how much to save, and how much to invest of their limited incomes. Workers must decide what types of jobs they want, when to enter the workforce, where they will work, and the number of hours they wish to work. Firms must decide what kinds of goods and services to produce, how much to produce, and how to produce those goods and services at the lowest cost. That is, consumers, workers, and firms all face choices because of scarcity, which is why economics is sometimes called the *study of choice*.

economics: the study of choices we make among our many wants and desires given our limited resources

resources: inputs used to produce goods and services

scarcity: the situation that exists because our unlimited wants exceed our limited resources

the economic problem: the fact that scarcity forces us to choose, and choices are costly because we must give up other opportunities that we value

• Newspapers, magazines, and websites are filled with articles related to economics—either directly or indirectly. News headlines may cover topics such as unemployment, deficits, financial markets, health care, Social Security, energy issues, war, global warming, and so on. Even magazines such as *Sports Illustrated* and *People* have many articles that are driven by economic factors. •

ECS

economic content standards

Productive resources are limited. Therefore, people cannot have all the goods and services they want. As a result, they must choose some things and give up others.

In fact, most economic behavior evolves from choices people make. Choices are the unifying issue of economics. Why do we study choices? What are the implications of these choices? How do you and society weigh the benefits and costs of decisions, to lead to the best choices? And what consequences do our choices have for the global economy?

We all have to make difficult choices. Economics does not tell us what to choose. However, it helps us better understand the consequences of our choices.

1.1b Economics Is All Around Us

The economic problem is evident in every aspect of our lives. You may find that the choice between shopping for groceries and browsing at the mall, or between finishing a research paper and going to a movie, is easier to understand when you have a good handle on the economic way of thinking.

The tools of economics are far reaching, even beyond the choices we make in our everyday lives. In fact, other social scientists have accused economists of being imperialistic because their tools have been used in so many fields outside the formal area of economics, such as crime, education, marriage, divorce, addiction, finance, health, law, politics, and religion. Every individual, every business, and every social, religious, and governmental organization faces the economic problem. Every society, whether it is capitalistic, socialistic, or totalitarian, must also face the economic problem of scarcity, choices, and costs.

Even time has an economic dimension. In fact, in modern culture, time has become perhaps the most precious resource we have. Everyone has the same limited amount of time per day, and how we divide our time between work and leisure (including study, sleep, exercise, and so on) is a distinctly economic matter. If we choose more work, we must sacrifice leisure. If we choose to study, we must sacrifice time with friends or time spent sleeping or watching television. Virtually everything we decide to do, then, has an economic dimension.

Living in a world of scarcity involves trade-offs. As you are reading this text, you are giving up other things you value: shopping, spending time on social media, text messaging with friends, going to the movies, sleeping, or working out. When we know what the trade-offs are, we can make better choices from the options all around us, every day. George Bernard Shaw stated, "Economy is the art of making the most of life."

What is the relationship between scarcity and trade-offs?

iStock/skynesher

SECTION QUIZ

1. If a good is scarce,
   a. it only needs to be limited.
   b. it is not possible to produce any more of the good.
   c. our unlimited wants exceed our limited resources.
   d. our limited wants exceed our unlimited resources.

2. Which of the following is true of resources?
   a. Their availability is unlimited.
   b. They are the inputs used to produce goods and services.
   c. Increasing the number of resources available could eliminate scarcity.
   d. Both b and c.

1.2 Economic Behavior

- What is self-interest?
- Why is self-interest not the same as selfishness?
- What is rational behavior?

1.2a Self-Interest

Economists assume that most individuals act *as if* they are motivated by self-interest and respond in predictable ways to changing circumstances. In other words, self-interest is a good predictor of human behavior in most situations. For example, to a worker, self-interest means pursuing a higher-paying job and/or better working conditions. To a consumer, it means gaining a higher level of satisfaction from limited income and time.

We seldom observe employees asking employers to cut their wages and increase their workload to increase a company's profits. And how often do customers walk into a supermarket demanding to pay more for their groceries? In short, a great deal of human behavior can be explained and predicted by assuming that most people act *as if* they are motivated by their own self-interest in an effort to increase their *expected* personal satisfaction. When people make choices, they often do not know with certainty which choice is best. But they *expect* the best outcome from that decision—the one that will yield the greatest satisfaction.

Critics will say people don't think that way, and the critics might be right. But economists are arguing that people *act* that way. Economists are observing and studying what people do—their actions. We largely leave what people think to psychologists and sociologists.

Furthermore, when economists use the term *self-interest*, they are not implying that people only seek to maximize their material consumption. Many acts of selfless behavior may be self-interested. For example, people may be kind to others in hopes that the same behavior will be returned. Establishing a reputation of honesty may send a signal of a willingness to make a commitment. This may make society a better place. So is it love, or self-interest, that keeps society together?

Do people really pursue their self-interest? Do people really think that way?

• Enormous amounts of resources (time and money) were donated to the Hurricane Harvey and Hurricane Irma victims. This was an example of self-interest—the self-interest was to help others in need. •

There is no question that self-interest is a powerful force that motivates people to produce goods and services. But self-interest can include benevolence. For example, workers may be pursuing self-interest when they choose to work harder and longer to increase their charitable giving or saving for their children's education. That is, self-interest to an economist is not a narrow monetary self-interest; it can involve fulfilling non-monetary goals. The enormous amount of money and time donated to victims of Hurricane Harvey and Hurricane Irma is an example of self-interest, too—the self-interest was to help others in need. However, even our charitable actions for others are influenced by our own benefits and costs. We would predict that most people would be more charitable when the tax deductions are greater or that you may be more likely to offer a friend a ride to the airport when the freeway is less congested. In short, the lower the cost of helping others, the more help we would expect to be offered.

In the United States, total charitable donations exceeded $390 billion in 2017. People also pay more money for environmentally friendly goods, "giving" a cleaner world to the future. Consumers can derive utility or satisfaction from these choices. It is clearly not selfish—it is in their best interest to care about the environment and those who are less fortunate than themselves.

1.2b What Is Rational Behavior?

What do economists mean when they say people are rational?

rational behavior: when people do the best they can, based on their values and information, under current and anticipated future circumstances

Economists assume that people, for the most part, engage in rational, or purposeful, behavior. And you might think that could not possibly apply to your brother, sister, or roommates. But the key is in the definition. To an economist, rational behavior merely means that people do the best they can, based on their values and information, under current and anticipated future circumstances. That is, people may not know with complete certainty which decisions will yield the most satisfaction and happiness, but they select the one that they expect to give them the best results among the alternatives. It is important to note that it is only the person making the choice who determines its rationality. You might like red sports cars, while your friend might like black sports cars. So it would be rational for you to choose a red sports car and your friend to choose a black sports car.

Economists assume that people do not intentionally make decisions that will make them worse off. Most people act purposefully. They make decisions with some *expected* outcome in mind. Their actions are rational and purposeful, not random and chaotic. All individuals take purposeful actions when they decide what to buy and produce. They make mistakes and are impacted by emotion, but the point is that they make their decisions with some expected results in mind. In short, rational self-interest means that individuals try to weigh the expected marginal (additional) benefits and marginal (additional) costs of their decisions, a topic we will return to in Chapter 2.

GREAT ECONOMIC THINKERS
Adam Smith (1723–1790)

Adam Smith was born in a small fishing village just outside of Edinburgh, Scotland, in 1723. At age 4, gypsies (called *tinkers* in Scotland) kidnapped Smith, but he was rescued through the efforts of his uncle. He began studying at Glasgow College when he was just 14 and later continued his studies at Oxford University. He returned to Glasgow at age 28 as a professor of philosophy and logic. (Until the nineteenth century, economics was considered a branch of philosophy; thus, Smith neither took nor taught a class in economics.) He later resigned that position to become the private tutor to the stepson of Charles Townshend.

Although Smith was known for his intelligence, warm hospitality, and charitable spirit, he was not without his eccentricities. He was notorious for his absent-mindedness—for example, there is a story about Smith taking a trip to a tanning factory and, while engaged in conversation with a friend, walking straight into a large tanning vat. Another tale features Smith walking 15 miles in his sleep, awakening from his sleepwalk to the ringing of church bells, and scurrying back home in his nightgown. Most astonishing and unfortunate, Smith, without explanation, had the majority of his unpublished writings destroyed before his death in 1790.

Adam Smith is considered the founder of modern economics. He addressed problems of both economic theory and policy in his famous book, *An Inquiry into the Nature and Causes of the Wealth of Nations*, published in 1776. The book was a success from the beginning, with its first edition selling out in just six months, and people have continued to read it for well over two centuries.

Smith believed that the wealth of a nation did not come from the accumulation of gold and silver—the prevailing thought of the day. Smith observed that people tend to pursue their own personal interests and that an "invisible hand" (the market) guides their self-interest, increasing social welfare and general economic well-being. Smith's most powerful and enduring contribution was this idea of an invisible hand of market incentives channeling individuals' efforts and promoting social welfare.

Smith also showed that through the division of labor and the specialization of tasks, producers could increase their output markedly. While Smith did not invent the market, he demonstrated that free markets, unfettered by monopoly and government regulation, and free trade were at the very foundation of the wealth of a nation. Many of Smith's insights are still central to economics today.

Scrabbleship1 / Wikimedia Commons

• Smith is buried in a small cemetery in Edinburgh, Scotland. Money is usually left on the grave site but gone by morning; the homeless prey on the donations to use for food and spirits. Adam Smith is probably smiling somewhere. He had a reputation as a charitable man—"a scale much beyond what might have been expected from his fortunes." •

1.3 Economic Theories and Models

- What are economic theories and models?
- What can we expect from theories and models?
- Why do we need to abstract?
- What is a hypothesis?
- What is empirical analysis?
- What is the *ceteris paribus* assumption?
- What are microeconomics and macroeconomics?

1.3a Economic Theories and Models

theories and models: simplified versions of the real world used to explain and predict behavior

Theories and models are explanations of how things work that help us understand and predict how and why economic agents such as consumers, producers, firms, government, and so on behave the way they do. That is, we use the theories and models to observe how people really behave.

1.3b Abstraction Is Important

Economic theories and models cannot realistically include every event that has ever occurred. A good economic theory or model weeds out the irrelevant facts from the relevant ones. We must abstract. Without abstraction or simplification, the world is too complex to analyze. That is, the lack of realism is not a bad thing—it is actually a good thing!

Economic theories and models make some unrealistic assumptions. For example, we may assume there are only two countries in the world, producing two goods. Obviously, this is an abstraction from the real world. But if we can understand trade in a simplified world, it will help us understand trade in a more complex world. Similarly, sometimes economists make very strong assumptions, such as that all people seek self-betterment or all firms attempt to maximize profits. That is, economists use simplifying assumptions in their models to make the world more comprehendible. But only when we test our models using these assumptions can we find out if they are too simplified or too limiting.

How are economic theories and models like a road map? Much like a road map, economic theories and models are more useful when they ignore details that are *not* relevant to the questions that are being investigated. Some maps, like some economic models, may be too detailed, while others may be too abstract. There is no single correct map or model. Suppose we wanted to drive from Chicago to Los Angeles. What kind of map would we need? All we would need is a map showing the interstate highways that ignores the details of individual streets within a city. However, if we were looking for a particular restaurant or a friend's house in Los Angeles, we would need a more detailed street map of Los Angeles.

1.3c Developing a Testable Proposition

The beginning of any theory is a hypothesis, a testable proposition that makes some type of prediction about behavior in response to certain changes in conditions based on our assumptions. In economic theory, a hypothesis is a testable prediction about how people will behave or react to a change in economic circumstances. For example, if we notice an increase in the price of coffee beans (per pound), we might hypothesize that sales of coffee beans will fall, or if the price of coffee beans (per pound) decreases, our hypothesis might be that coffee bean sales will rise. Once we state our hypothesis, we test it by comparing what it predicts will happen to what actually happens.

hypothesis: a testable proposition

langll/pixabay

USING EMPIRICAL ANALYSIS

To determine whether our hypothesis is valid, we must engage in empirical analysis. That is, we must examine the data to see whether our hypothesis fits well with the facts. If the hypothesis is consistent with real-world observations, we can accept it; if it does not fit well with the facts, we must go back to the drawing board.

Determining whether a hypothesis is acceptable is more difficult in economics than it is in the natural or physical sciences. Chemists, for example, can observe chemical reactions under laboratory conditions. They can alter the environment to meet the assumptions of the hypothesis and can readily manipulate the variables (chemicals, temperatures, and so on) that are crucial to the proposed relationship. Such controlled experimentation is seldom possible in economics. The laboratory of economists is usually the real world. Unlike chemists in their labs, economists cannot easily control all the variables that might influence human behavior.

• How is economic theory like a map? Much like a road map, economic theories and models are more useful when they ignore details that are not relevant to the questions that are being investigated. •

empirical analysis: the use of data to test a hypothesis

FROM HYPOTHESIS TO THEORY

After gathering their data, economic researchers must evaluate the results to determine whether their hypothesis is supported or refuted. If supported, the hypothesis can be tentatively accepted as an economic theory.

Every economic theory is on lifelong probation; the hypothesis underlying an economic theory is constantly being tested against empirical findings. Do the observed findings support the prediction? When a hypothesis survives numerous tests, it is accepted until it no longer predicts well.

1.3d The *Ceteris Paribus* Assumption

ceteris paribus: holding all other things constant

Virtually all economic theories share a condition usually expressed by the Latin phrase *ceteris paribus*. A rough translation of the phrase is "letting everything else be equal" or "holding everything else constant." When economists try to assess the effect of one variable on another, they must keep the relationship between the two variables isolated from other events that might also influence the situation that the theory tries to explain or predict. In other words, everything else freezes so that we can see how one thing affects another. For example, if the price of tomatoes falls, we would expect to see more people buy tomatoes. But if the government recently recommended not buying tomatoes because they have been infected by a bug that causes intestinal problems, people would buy fewer, not more, at lower prices. Does that mean you throw out your theory that people buy more at lower prices? No—we just did not freeze the effects of news from the government, which had a greater impact on purchases than lower prices did.

Suppose you drop a feather and a brick off the Eiffel Tower on a windy day. We would expect the brick to win the race. But if we could hold everything constant in a vacuum, then we would expect them to hit the ground at the same time. The law of gravity needs the *ceteris paribus* assumption, too.

Why is the *ceteris paribus* assumption so important?

1.3e Why Are Observation and Prediction Harder in the Social Sciences?

Working from observations, scientists try to make generalizations that will enable them to predict certain events. However, observation and prediction are more difficult in the social sciences than in physical sciences such as physics, chemistry, and astronomy. Why? The major reason for the difference is that social scientists, including economists, are concerned with *human* behavior. And human behavior is more variable and often less readily predictable than the behavior of experiments observed in a laboratory. However, by looking at the actions and the incentives faced by large groups of people, economists can still make many reliable predictions about human behavior.

iStock/South_agency

• If I study harder, I will perform better on the test. That sounds logical, right? Holding other things constant (*ceteris paribus*), your theory is likely to be true. However, what if you studied harder but inadvertently overslept the day of the exam? What if you were so sleepy during the test that you could not think clearly? Or what if you studied the wrong material? Although it might look like additional studying did not improve your performance, the real problem could be the impact of other variables, such as sleep deficiency or how you studied. •

1.3f Why Do Economists Predict on a Group Level?

Economists' predictions usually refer to the collective behavior of large groups rather than that of specific individuals. Why is this? Looking at the behaviors of a large group allows economists to discern general patterns of actions. For example, consider what would happen if the price of air travel from the United States to Europe was reduced drastically, say from $1,000 to $400, because of the invention of a more fuel-efficient jet. What type of predictions could we make about the effect of this price reduction on the buying habits of typical consumers?

WHAT DOES INDIVIDUAL BEHAVIOR TELL US?

Let's look first at the responses of individuals. As a result of the price drop, some people will greatly increase their intercontinental travel, taking theater weekends in London or week-long trips to France to indulge in French food. Some people, however, are terribly afraid to fly, and the price reduction will not influence their behavior in the slightest. Others might detest Europe and, despite the lowered airfares, prefer to spend a few days in Aspen, Colorado, instead. A few people might respond to the airfare reduction in precisely the opposite way: At the lower fare, they might make fewer trips to Europe because they might believe (rightly or wrongly) that the price drop would be accompanied by a reduction in the quality of service, greater crowding, or reduced safety. In short, we cannot predict with any level of certainty how a given individual will respond to this airfare reduction.

WHAT DOES GROUP BEHAVIOR TELL US?

Group behavior is often more predictable than individual behavior. When the weather gets colder, more firewood will be sold. Some individuals may not buy firewood, but we can predict with great accuracy that a group of individuals will establish a pattern of buying more firewood. Similarly, while we cannot say what each individual will do within a group of persons, we can predict with great accuracy that more flights to Europe from Los Angeles will be sold at lower prices than at higher prices, holding other things such as income and preferences constant. We cannot predict exactly how many more airline tickets will be sold at $400 than at $1,000, but we can predict the direction of the impact and approximate the extent of the impact. By observing the relationship between the price of goods and services and the quantities people purchase in different places and during different time periods, it is possible to make some reliable generalizations about how much people will react to changes in the prices of goods and services. Economists use this larger picture of the group for most of their theoretical analysis.

Why is group behavior more predictable than individual behavior?

ECONOMISTS AND SURVEY DATA

Economists do not typically use survey data. Economists prefer to look at revealed preferences (how people actually behave) rather than declared preferences (how they say they behave). Participants in surveys may consciously or subconsciously fib, especially when it costs almost nothing to fib. Measuring revealed preferences will generally give us more accurate results.

• Professors Oster and Jensen, by measuring revealed preferences rather than declared preferences, found that rural Indian families who had cable TV had lower birth rates than those with no television. Why? Television may provide information about family planning. Or it may expose rural families to the urban lifestyle, which is very different from their own. They may now begin to emulate the urban lifestyle. •

1.3g The Two Branches of Economics: Microeconomics and Macroeconomics

Conventionally, we distinguish between two main branches of economics: microeconomics and macroeconomics. Microeconomics deals with the smaller units within the economy, attempting to understand the decision-making behavior of firms and households and their interaction in markets for particular goods or services. Microeconomic topics include discussions of health care, agricultural subsidies, the price of everyday items such as running shoes, the distribution of income, and the impact of labor unions on wages. Macroeconomics, in contrast, deals with the aggregate, or total, economy; it looks at economic problems as they influence the whole of society. Topics covered in macroeconomics include discussions of inflation, unemployment, business cycles, and economic growth. To put it simply, microeconomics looks at the trees, while macroeconomics looks at the forest.

microeconomics: the study of household and firm behavior and how they interact in the marketplace

macroeconomics: the study of the whole economy, including the topics of inflation, unemployment, and economic growth

aggregate: the total amount—such as the *aggregate level of output*

⟨⟩ SECTION QUIZ

1. Economists use theories and models to
   a. abstract from the complexities of the world.
   b. understand economic behavior.
   c. explain and help predict human behavior.
   d. do all of the above.
   e. do none of the above.

⟱

≫

2. The importance of the *ceteris paribus* assumption is that it
    a. allows one to separate subjective issues from objective ones.
    b. allows one to generalize from the whole to the individual.
    c. allows one to analyze the relationship between two variables apart from the influence of other variables.
    d. allows one to hold all variables constant so that the economy can be carefully observed in a suspended state.

3. When we look at a particular segment of the economy, such as a given industry, we are studying
    a. macroeconomics.
    b. microeconomics.
    c. normative economics.
    d. positive economics.

4. Which of the following is most likely a topic of discussion in macroeconomics?
    a. An increase in the price of a pizza
    b. A decrease in the production of stereos by a consumer electronics company
    c. An increase in the wage rate paid to automobile workers
    d. A decrease in the unemployment rate
    e. The entry of new firms into the software industry

---

1. What are economic theories and models?

2. What is the purpose of a theory or a model?

3. Why must economic theories and models be abstract?

4. What is a hypothesis? How do we determine whether it is tentatively accepted?

5. Why do economists hold other things constant (*ceteris paribus*)?

6. Why are observation and prediction more difficult in the social sciences?

7. Why do economic predictions refer to the behavior of groups of people rather than individuals?

8. Why do economists prefer revealed preference over declared preference?

9. Why is the market for running shoes considered a microeconomic topic?

10. Why is inflation considered a macroeconomic topic?

Multiple-choice answers: 1. d 2. c 3. b 4. d

1.4 Pitfalls to Avoid in Scientific Thinking

• If two events usually occur together, does it mean one event caused the other to happen?
• What is the fallacy of composition?

In our discussion of economic theory, we have not yet mentioned that there are certain pitfalls to avoid that may hinder scientific and logical thinking: confusing correlation and causation, and the fallacy of composition.

1.4a Confusing Correlation and Causation

correlation: when two events occur together

causation: when one event brings about another event

Without a theory of causation, no scientist could sort out and understand the enormous complexity of the real world. But one must always be careful not to confuse correlation with causation. In other words, the fact that two events usually occur together (**correlation**) does not necessarily mean that one caused the other to occur (**causation**). For example, say a groundhog awakes after a long winter of hibernation, climbs out of his hole, and sees his shadow—then six weeks of bad weather ensue. Did the groundhog cause the bad weather?

Perhaps the causality runs in the opposite direction. A rooster may always crow before the sun rises, but it does not cause the sunrise; rather, the early light from the sunrise causes the rooster to crow.

WHY IS THE CORRELATION BETWEEN ICE CREAM SALES AND PROPERTY CRIME POSITIVE?

Did you know that when ice cream sales rise, so do property crime rates? What do you think causes the two events to occur together? The explanation is that property crime peaks in the summer because of warmer weather, more people on vacations (leaving their homes vacant), teenagers out of school, and so on. It just happens that ice cream sales also peak in those months because of the weather. It is the case of a third variable causing both to occur. Or what if there were a positive correlation between sales of cigarette lighters and the incidence of cancer? The suspect might well turn out to be the omitted variable (the so-called "smoking gun"): the cigarette. Or what if research revealed that parents who bought parenting books were "better" parents. Does that prove the books work? Or is it possible that people who would buy books on parenting tend to be "better" parents? That is, it might be about the parents, not the book. Causality is tricky stuff. Be careful.

• In Europe, the stork population has fallen and so have birth rates. Does this mean that one event caused the other to occur? •

1.4b The Fallacy of Composition

Economic thinking requires us to be aware of the problems associated with aggregation (adding up all the parts). One of the biggest problems is the fallacy of composition. This fallacy states that even if something is true for an individual, it is not necessarily true for many individuals as a group. For example, say you are at a football game and you decide to stand up to get a better view of the playing field. This works as long as the people seated around you don't stand up. But what happens if everyone stands up at the same time? Then your standing up does nothing to improve your view. Thus, what is true for an individual does not always hold true in the aggregate. The same can be said of getting to school early to get a better parking place—what if everyone arrived early? Or studying harder to get a better grade in a class that is graded on a curve—what if everyone studied harder?

fallacy of composition: the incorrect view that what is true for the individual is always true for the group

SECTION QUIZ

1. Which of the following statements can explain why correlation between Event A and Event B may not imply causality from A to B?
   a. The observed correlation may be coincidental.
   b. A third variable may be responsible for causing both events.
   c. Causality may run from Event B to Event A instead of in the opposite direction.
   d. All of the above can explain why the correlation may not imply causality.

2. Ten-year-old Tommy observes that people who play football are larger than average and tells his mom that he's going to play football because it will make him big and strong. Tommy is
   a. committing the fallacy of composition.
   b. violating the *ceteris paribus* assumption.
   c. mistaking correlation for causation.
   d. committing the fallacy of decomposition.

3. The fallacy of composition
   a. is a problem associated with aggregation.
   b. is the incorrect view that what is true for the individual is always true for the group.
   c. is illustrated in the following statement: If I stand up at a football game, I will be able to see better; therefore, if we all stood up, we would all see better.
   d. All of the above are true.

1. What is the relationship between correlation and causation?

2. What types of misinterpretation result from confusing correlation and causation?

3. What is the fallacy of composition?

4. If you can sometimes get a high grade on an exam without studying, does it mean that additional studying does not lead to higher grades? Explain your answer.

Multiple-choice answers: 1. d 2. c 3. d

1.5 Positive Statements and Normative Statements

- What is a positive statement?
- What is a normative statement?
- Why do economists disagree?

1.5a Positive Statement

Most economists view themselves as scientists seeking the truth about the way people behave. They make speculations about economic behavior, and then, ideally, they assess the validity of those predictions based on human experience. Their work emphasizes how people *do* behave, rather than how people *should* behave. In the role of scientist, an economist tries to observe patterns of behavior objectively, without reference to the appropriateness or inappropriateness of that behavior. This objective, value-free approach, based on the scientific method, is called *positive analysis*. In positive analysis, we want to know the impact of variable A on variable B. We want to be able to test a hypothesis. For example, the following is a positive statement: If rent controls are imposed, vacancy rates will fall. This statement is testable. A positive statement does not have to be a true statement, but it does have to be a testable statement.

Keep in mind, however, that it is doubtful that even the most objective scientist can be totally value free in his or her analysis. An economist may well emphasize data or evidence that supports a hypothesis, putting less weight on other evidence that might be contradictory. This tendency, alas, is human nature. But a good economist/scientist strives to be as fair and objective as possible in evaluating evidence and in stating conclusions based on the evidence. In some sense, economists are like engineers; they try to figure out how things work and then describe what would happen if you changed something.

positive statement: an objective, testable statement that describes what happens and why it happens

Does a positive statement have to be true, or just testable?

1.5b Normative Statement

Economists, like anyone else, have opinions and make value judgments. And when economists, or anyone else for that matter, express opinions about an economic policy or statement, they are indicating in part how they believe things should be, not stating facts about the way things are. In other words, they are performing normative analysis. Normative statements involve judgments about what should be or what ought to happen. For example, normative questions might include the following: Should the government raise the minimum wage? Should the government increase spending in the space program? Should the government give "free" prescription drugs to senior citizens?

normative statement: a subjective, contestable statement that attempts to describe what should be done

1.5c Positive versus Normative Analysis

The distinction between positive and normative analysis is important. It is one thing to say that everyone should have universal health care, an untestable normative statement, and quite another to say that universal health care would lead to greater worker productivity, a testable positive statement. It is important to distinguish between positive and normative analysis because many controversies in economics revolve around policy considerations that contain both. For example, what impact would a 3 percent reduction in income taxes across the board have on the economy?

This question requires positive analysis. Whether we should have a 3 percent reduction in income taxes requires normative analysis as well. So if an economist were asked to identify the effects of a 3 percent reduction in the income tax, the response would involve positive analysis. But if an economist were asked whether there *should* be an income reduction of 3 percent, this would require normative analysis.

When economists are trying to explain the way the world works, they are scientists. When economists start talking about how the economy should work rather than how it does work, they have entered the normative world of the policy maker. Anytime you see the word *should*, that is a sign you are in the realm of normative economics. Positive statements are about *what is*; normative statements are about *what ought to* or *should* be. In short, positive statements are attempts to *describe* what happens and why it happens, while normative statements are attempts to *prescribe* what should be done. But sometimes the two are intertwined. For example, there are two different types of policies that are used to help low-income housing residents: rent controls, which control how much rent a landlord can charge, and rent subsidies, which provide low-income families with money to pay rent. While both are policies that engage normative analysis, most economists would favor the subsidy because it is more efficient—a conclusion derived from positive analysis.

Take another example. Suppose a city passes a new higher minimum wage of $15 per hour. This means that it is now illegal for an employer to hire workers for less than $15 per hour. Positive analysis would try to determine the impact of the new higher minimum wage. How many people would lose their jobs? What would happen to on-the-job training? Where workers would lose jobs, would it disproportionately impact the ones with the fewest skills? What would the higher minimum wage do to company profits? What impact would the higher minimum wage have on consumer prices?

After economists complete their positive analysis, they turn to normative analysis. Is the new higher minimum wage a good or bad policy? This requires value judgments to determine whether the benefits are considered greater than the costs. Is the policy fair or equitable? Is it efficient or wasteful? Who gains and who loses? Should we value the gains to winners more or less than the loss to losers?

Because value judgments differ, people will often disagree in the conclusions they reach, without any scientific way to establish whose value judgments are better. Proponents of a higher minimum wage will argue that it is worth it because the losses of the employers and the workers who have become unemployed as a result of the new law are more than offset by the gains in higher wages for the workers who benefit from a new higher minimum wage. Opponents will argue that the losses are greater than the gains. That is, positive analysis can show the benefits and costs of a particular policy, but it cannot tell us whether the policy is good or bad.

Does positive analysis prove that a policy is good?

1.5d Disagreement Is Common in Most Disciplines

Although economists do frequently have opposing views on economic policy questions, they probably disagree less than the media would have you believe. Disagreement is common in most disciplines: Seismologists differ over predictions of earthquakes or volcanic eruption; historians can be at odds over the interpretation of historical events; psychologists disagree on proper ways to raise children; and nutritionists debate the efficacy of particular vitamins and the quantities that should be taken.

The majority of disagreements in economics stem from normative issues; differences in values or policy beliefs result in conflict. For example, a policy might increase efficiency at the expense of a sense of fairness or equity, or it might help a current generation at the expense of a future generation. Because policy decisions involve trade-offs, they will always involve the potential for conflict.

Some economists are concerned about individual freedom and liberty, thinking that any encroachment on individual decision making is bad, other things being equal. People with this philosophic bent are inclined to be skeptical of any increased government involvement in the economy.

On the other hand, some economists are concerned with what they consider an unequal, "unfair," or unfortunate distribution of income, wealth, or power, and they view governmental intervention as desirable in righting injustices that they believe exist in a market economy. To these persons, the threat to individual liberty alone is not sufficient to reject governmental intervention in the face of perceived economic injustice.

Aside from philosophic differences, a second reason helps explain why economists may differ on any given policy question. Specifically, they may disagree about the validity of a given economic theory for the policy in question—that is, they disagree about the positive analysis. Why would they disagree about positive analysis? For at least two reasons: One, a particular model may yield mixed results, with some empirical evidence supporting it and some not. Two, the information available may be insufficient for making a compelling theory.

Currently, several well-respected economists believe we should substitute a national sales tax (called a *value-added tax*) for the current income tax. A sales tax is the main source of revenue for many European countries. However, there are also many well-respected economists who think this is a bad idea. Why the differences? It might be because of fairness. But what is fairness? Some may think the tax would fall disproportionately on the poor and middle classes, so it would not be fair. Others might argue that the national tax would be fair because everyone would pay their fair share, based on what they spend rather than what they earn. Or economists may disagree about the modeling. One model might focus on collection costs, while the other might focus on the policy's potential to increase savings and economic growth. Therefore, the focus of different models may lead to different policy prescriptions.

1.5e Often Economists Do Agree

It seems like economists always disagree on important issues. Is that true?

Although you may not believe it after reading the previous discussion, economists don't always disagree. In fact, according to a survey of members of the American Economic Association, most economists agree on a wide range of issues, including the effects of rent control, import tariffs, export restrictions, the use of wage and price controls to curb inflation, and the minimum wage.

According to studies, most economists agree that these statements are correct:

1. A ceiling on rents (rent control) reduces the quantity and quality of rental housing available (93 percent agree).
2. Tariffs and import quotas usually reduce general economic welfare (93 percent agree).
3. The United States should not restrict employers from outsourcing work to foreign countries (90 percent agree).
4. Fiscal policy (e.g., tax cuts and/or increases in government expenditure) has a significant stimulative impact on an economy that is less than fully employed (90 percent agree).
5. Flexible and floating exchange rates offer an effective international monetary arrangement (90 percent agree).
6. Economic growth in developed countries such as the United States leads to greater levels of well-being (88 percent agree).
7. The gap between Social Security funds and expenditures will become unsustainably large within the next 50 years if the current policies remain unchanged (85 percent agree).
8. The United States should eliminate agricultural subsidies (85 percent agree).
9. Local and state governments in the United States should eliminate subsidies to professional sport franchises (85 percent agree).
10. The redistribution of income in the United States is a legitimate role for the government (83 percent agree).
11. Inflation is caused primarily by too much growth in the money supply (83 percent agree).
12. A large budget deficit has an adverse effect on the economy (83 percent agree).
13. A minimum wage increases unemployment among the young and unskilled (79 percent agree).
14. The government should restructure the welfare system along the lines of a "negative income tax" (79 percent agree).
15. Effluent taxes and marketable pollution permits represent a better approach to pollution control than the imposition of pollution ceilings (78 percent agree).
16. Economists favor expanding competition and market forces in education (67 percent agree).[1]

---

[1] Richard M. Alston, J. R. Kearl, and Michael B. Vaughn, "Is There Consensus among Economists in the 1990s?" *American Economic Review* (May 1992): 203–09; Robert Whaples, "Do Economists Agree on Anything? Yes!" *Economists' Voice* (November 2006): 1–6; Robert Whaples, "The Policy Views of American Economic Association Members: The Results of a New Survey," *Econ Journal Watch* (September 2009): 337–48.

SECTION QUIZ

1. Which of the following is a positive statement?
   a. New tax laws are needed to help the poor.
   b. Teenage unemployment should be reduced.
   c. We should increase Social Security payments to older adults.
   d. An increase in tax rates will reduce unemployment.
   e. It is only fair that firms protected from competition by government-granted monopolies pay higher corporate taxes.

2. Positive statements
   a. are testable.
   b. are attempts to describe what happens and why it happens.
   c. do not have to be a true statement.
   d. All of the above are true.

3. Normative statements
   a. attempt to describe what happens and why it happens.
   b. are objective and testable.
   c. attempt to describe the way the world works.
   d. are subjective and attempt to prescribe what should be done.

4. The statement "the government should increase spending for the space program" is
   a. objective and testable.
   b. a positive statement.
   c. subjective, prescriptive, and normative.
   d. a fact and very important for the defense of our country.

5. Which of the following statements is/are true?
   a. Economists disagree but most often about normative issues.
   b. Economists do agree about a wide range of issues.
   c. Disagreement is also common in other disciplines.
   d. All of the above statements are true.

---

1. What is a positive statement? Must positive statements be testable?

2. What is a normative statement? Is a normative statement testable?

3. Why is the positive/normative distinction important?

4. Why do policy disagreements arise among economists?

Multiple-choice answers: 1. d 2. d 3. d 4. c 5. d

TEN STEPS ON HOW TO DO WELL IN THIS (OR ANY OTHER) COURSE

1. Are you motivated to learn? Link your motivation to goals: *I want an A in this class. I want to graduate. I want to go to medical school or law school. I want a college degree.* Setting goals demonstrates an intention to achieve and activates learning. School is really about learning to learn and, hopefully, learning to enjoy learning. Students must find satisfaction in learning based on the understanding that their goals are useful to them. Put yourself in the right mind-set. In short, learning is most effective when an individual is ready to learn. If you are not ready for Step 1, the other nine steps are less useful.

2. Do you attend class and take good notes? Listen actively—think before you write, but be careful not to fall behind. *Do not multitask!* Don't email, text, or tweet while "trying" to listen to the lecture. You are not as good at multi-tasking as you think. In fact, the brain naturally focuses on concepts sequentially. Your brain needs to pay attention! Try to capture the main points of the lecture. You cannot take down everything. Leave space in your notebook so that you can fill it in with greater clarity when reading or rereading text material. This is also a good time to edit your notes. Review your notes within 24 hours of the lecture. This way you will be reviewing rather than relearning.

3. Do you read before class? Stay current. If you are studying Chapter 3 when the lecture is on Chapter 6, it will harm your performance. While perfection is not necessary, do the best you can to read the material before it is covered in the lecture. And it is better to try to recall what you read the first time than to just reread the material.

4. Do you use highlighting when you read? Don't. It is too passive. Finish a section and summarize it in your own words. Afterward, compare it with the section checks and summary at the end of the chapter to see if you caught all the main points. Do *not* read something without learning anything. That's a waste of time. Train your mind to learn—questioning, reciting, and reviewing while you read will make you an active reader and a better student. Highlighting focuses on individual concepts, but it is much less helpful when trying to make connections between concepts. Try to recall the material from memory. When you try to recall it through memory, you may realize you have gaps to fill. When you reread something, you think it sounds familiar but may not truly understand it.

5. When do you study? Break up your study time to keep it fresh. Don't study when you are tired. Know when you function best. To many people, an hour of studying during the day is worth two at night! That is, reading in the morning after a good night's sleep may be much more productive than studying when you are tired late at night. Study in 20- to 50-minute chunks, with 5- to 10-minute breaks. This has proven to be the most effective way to study. One of the most consistent findings of scholars of learning behavior is something called *spacing effects*, which means spacing your studies over time. That is, it is easier to retain information when you study 5 hours over 5 days than it is to study 5 hours in 1 day.

6. How do you study? Study actively. Study by doing. Work problems, as people do in physics, chemistry, or engineering. Go back and forth between problems, examples, and text. That is, practice, practice, and practice more. There are many problems throughout this book and on the website. Do them. The late John Wooden (a famous basketball coach at UCLA) would often quote Ben Franklin, who said, "Failing to prepare is preparing to fail." Have you worked on your self-confidence? Before you look up the answer to a question, assign a "confidence factor" to your work. On a scale of 1 to 10, how confident are you that you are right? Be honest with yourself. The more often you prove yourself right, the less test anxiety you will have. Self-testing, or practice testing, is part of recalling. Try to recall material by quizzing yourself. Practicing recall also involves writing down material to be learned. When you are reading a section or working on a practice exam, grab a pencil and a piece of paper and write it down. *Don't be overconfident!* Most students think they understand the material better than they do, so they tend to underperform.

7. Do you focus on understanding? Can you explain the concepts to others? If you can explain an idea to others, perhaps in a study group, you will really know it. There is no better way to learn something than by teaching it to others.

8. Do you find a quiet place to study with few distractions? Music and TV are not conducive to quality study time. They will only impair concentration. If you find your mind wandering, get up and walk around for a couple of minutes. Try to relax before you start studying, and associate reading with relaxation, not anxiety. Set a goal of how much you want to accomplish in each session and try to increase it gradually.

9. Do you apply your reading and lectures to your daily life? Retention is always greater when you can make the connection between the course and your life. Read the In the News features and the other real-world examples throughout the text and see how the economic principles apply to your everyday life. Economics should also help you better understand the events you read about in the news.

10. Do you cram for tests? Don't. It will not work well in economics and perhaps any other class. Study regularly, with greater review being the only difference in your study habits prior to a test. Try to have all your material read two days prior to an exam, so that the remaining time can be devoted to review. Cramming for tests leads to fatigue, test anxiety, and careless mistakes. Get plenty of sleep. Treat being in school as having a full-time job—put in your time regularly, and you won't need or want to cram. In short, don't procrastinate!

Learning is an acquired skill. You have to learn how to learn. You have to work at it, but it will have huge payoffs for your education and beyond.

$SAGE edge™

Visit **edge.sagepub.com/sextonmacro8e** to help you accomplish your coursework goals in an easy-to-use learning environment.

- Mobile-friendly eFlashcards
- Mobile-friendly practice quizzes
- A complete online action plan

- Chapter summaries with learning objectives
- EXCLUSIVE! Access to full-text SAGE journal articles

INTERACTIVE SUMMARY

Fill in the blanks:

1. Economics is the study of the choices we make among our many wants and desires given our _____ resources.

2. _____ occurs because our unlimited wants exceed our limited resources.

3. Resources are _____ used to produce goods and services.

4. The economic problem is the fact that _____ forces us to choose, and choices are costly because we must give up other opportunities that we _____.

5. Living in a world of scarcity means _____.

6. _____ deals with the aggregate, or total, economy (the forest), while _____ deals with the smaller units within the economy (the trees).

7. Economists assume that individuals act as if they are motivated by _____ and respond in _____ ways to changing circumstances.

8. Economists believe that it is _____ for people to anticipate the likely future consequences of their behavior.

9. Actions have _____.

10. Rational behavior implies that most people act _____.

11. Economic _____ and _____ are statements or propositions used to _____ and _____ patterns of human economic behavior.

12. Because of the complexity of human behavior, economists must _____ to focus on the most important components of a particular problem.

13. A(n) _____ in economic theory is a testable prediction about how people will behave or react to a change in economic circumstances.

14. _____ analysis is the use of data to test a hypothesis.

15. To isolate the effects of one variable on another, we use the _____ assumption.

16. When two events usually occur together, it is called _____.

17. When one event brings on another event, it is called _____.

18. The _____ is the incorrect view that what is true for an individual is always true for the group.

19. The objective, value-free approach to economics, based on the scientific method, is called _____ analysis.

20. _____ analysis involves judgments about what should be or what ought to happen.

21. _____ analysis is descriptive; normative analysis is _____.

22. "A tax increase will lead to a lower rate of inflation" is a(n) _____ economic statement.

Answers: 1. limited 2. Scarcity 3. inputs 4. scarcity; value 5. trade-offs 6. Macroeconomics; microeconomics 7. self-interest; predictable 8. rational 9. consequences 10. purposefully 11. theories; models; explain; predict 12. abstract 13. hypothesis 14. Empirical 15. *ceteris paribus* 16. correlation 17. causation 18. fallacy of composition 19. positive 20. Normative 21. Positive; prescriptive 22. positive

KEY TERMS AND CONCEPTS

aggregate 11

causation 12

ceteris paribus 10

correlation 12

the economic problem 3

economics 3

empirical analysis 9

fallacy of composition 13

hypothesis 9

macroeconomics 11

microeconomics 11

normative statement 14

positive statement 14

rational behavior 6

resources 3

scarcity 3

theories and models 8

ADDITIONAL SECTION QUIZ ANSWERS

1.1 Economics: A Brief Introduction

1. What is the definition of *economics*?

Economics is the study of the choices we make among our many wants and desires given our limited resources.

2. Why does scarcity force us to make choices?

Scarcity—the fact that our wants exceed what our resources can produce—means that we are forced to make choices about how best to use these limited resources.

3. Why are choices costly?

In a world of scarcity, whenever we choose one option, we also choose to do without something else that we also desire. The want that we choose not to satisfy is the opportunity cost of that choice.

4. What is the economic problem?

Scarcity forces us to choose, and choices are costly because we must give up other opportunities that we value. This is the economic problem. Every individual, every business, and every social, religious, and governmental organization faces the economic problem. Every society, whether it is capitalistic, socialistic, or totalitarian, must also face the economic problem of scarcity, choices, and costs.

5. Why do even "non-economic" issues have an economic dimension?

Even apparently non-economic issues have an economic dimension because economics concerns anything worthwhile to some human being (including love, friendship, charity, etc.) and the choices we make among the things we value.

1.2 Economic Behavior

1. What do economists mean by *self-interest*?

By *self-interest*, economists simply mean that people try to improve their own situation (as they see it, not necessarily as others see it). Self-interest can also include benevolence.

2. What does rational self-interest involve?

Economists consider individuals to be acting in their rational self-interest if they are striving to do their best to achieve their goals with their limited income, time, and knowledge, and given their expectations of the likely future consequences of their behavior (both benefits and costs).

3. How are self-interest and selfishness different?

Self-interest means that people are striving to do their best to achieve their goals, which may or may not be selfish. Parents working more hours to give more to their children or a favorite charity can be self-interested but are not selfish.

4. What is rational behavior?

Rational behavior is when people do the best they can based on their values and information, under current and anticipated future consequences. Rational individuals weigh the benefits and costs of their actions, and they pursue actions only if they perceive their benefits to be greater than their costs.

1.3 Economic Theories and Models

1. **What are economic theories and models?**

    A theory, or model, is an established explanation that accounts for known facts or phenomena. Economic theories and models are statements or propositions about patterns of human behavior that are expected to take place under certain circumstances.

2. **What is the purpose of a theory or a model?**

    The purpose of a theory is primarily to explain and predict well. Theories are necessary because the facts of a complex world do not organize themselves.

3. **Why must economic theories and models be abstract?**

    Economic theories and models must be abstract because they could not possibly include every possible event, circumstance, or factor that might affect behavior. Like a road map, economic theories and models abstract from some issues to focus more clearly and precisely on the central questions they are designed to understand.

4. **What is a hypothesis? How do we determine whether it is tentatively accepted?**

    A hypothesis is a testable proposal that makes some type of prediction about behavior in response to certain changed conditions. An economic hypothesis is a testable proposal about how people will behave or react to a change in economic circumstances. It is tentatively accepted if its predictions are consistent with what actually happens. In economics, testing involves empirical analysis to see whether the hypothesis is supported by the facts.

5. **Why do economists hold other things constant (*ceteris paribus*)?**

    The hold-other-things-constant, or *ceteris paribus*, assumption is used in economics because in trying to assess the effect of one variable on another, we must isolate the variables' relationship from other important events or variables that might also influence the situation the theory tries to explain or predict.

6. **Why are observation and prediction more difficult in the social sciences?**

    Observation and prediction are more difficult in the social sciences than in the physical sciences because social sciences are concerned with human behavior, which is more variable and often less readily predictable than the behavior of experiments observed in a laboratory. Social scientists can seldom run truly "controlled" experiments like those of biological scientists.

7. **Why do economic predictions refer to the behavior of groups of people rather than individuals?**

    Economists' predictions usually refer to the collective behavior of large groups rather than individuals because looking at the behaviors of a large group of individuals allows economists to discern general patterns of actions and, therefore, make more reliable generalizations.

8. **Why do economists prefer revealed preference over declared preference?**

    Researchers find that their results are more accurate when they observe what people do (revealed preferences) rather than what they say they do (declared preferences).

9. **Why is the market for running shoes considered a microeconomic topic?**

    Because a single industry is "small" relative to the economy as a whole, the market for running shoes (or the running-shoe industry) is a microeconomic topic.

10. **Why is inflation considered a macroeconomic topic?**

    Inflation—a change in the overall price level—has effects throughout the entire economy, rather than just in certain small areas of the economy, which makes it a macroeconomic topic.

1.4 Pitfalls to Avoid in Scientific Thinking

1. **What is the relationship between correlation and causation?**

    Correlation means that two things are related; causation means that one thing caused the other to occur. Even though causation implies correlation, correlation does not necessarily imply causation.

2. **What types of misinterpretation result from confusing correlation and causation?**

    Confusing correlation between variables with causation can lead to misinterpretation where a person "sees" causation between two variables or events where none exists or where a third variable or event is responsible for causing both of them.

3. **What is the fallacy of composition?**

    The fallacy of composition is the incorrect idea that if something is true for an individual, it must also be true for many individuals as a group.

4. **If you can sometimes get a high grade on an exam without studying, does it mean that additional studying does not lead to higher grades? Explain your answer.**

In some instances, a student can get a high grade on an exam without studying. However, because additional studying increases mastery of the material, additional studying would typically increase test performance and grades. That is, even though added studying would not raise grades in some unusual situations, as a generalization, additional studying does lead to higher grades.

1.5 Positive Statements and Normative Statements

1. **What is a positive statement? Must positive statements be testable?**

    Positive statements focus on how people actually behave, rather than on how people should behave. They deal with how variable *A* impacts variable *B*. Positive statements must be testable to determine whether their predictions are borne out by the evidence.

2. **What is a normative statement? Is a normative statement testable?**

    Normative statements focus on what should be or what ought to happen; they involve opinions about the desirability of various actions or results. Normative statements are not testable because it is not scientifically possible to establish whether one value judgment is better than another value judgment.

3. **Why is the positive/normative distinction important?**

    It is important to distinguish between positive and normative statements because many controversies in economics revolve around policy considerations that contain both. Deciding whether a policy is good requires both positive analysis (what will happen) and normative analysis (whether what happens is good or bad).

4. **Why do policy disagreements arise among economists?**

    Economists do disagree, as people do within most disciplines. However, the majority of those disagreements stem from differences in normative analysis because the evidence cannot establish whether one set of value judgments is better or more appropriate than other sets of value judgments.

PROBLEMS

1. In most countries, the birth rate has fallen as incomes and the economic opportunities for women have increased. Use economics to explain this pattern.

2. Write your own definition of *economics*. What are the main elements of the definition?

3. Are the following topics ones that would be covered in microeconomics or macroeconomics?

    a. The effects of an increase in the supply of lumber on the home-building industry

    b. Changes in the national unemployment rate

    c. Changes in the inflation rate

    d. Changes in the country's economic growth rate

    e. The price of concert tickets

4. Identify whether each of the following headlines represents a microeconomic topic or a macroeconomic topic.

    a. "U.S. Unemployment Rate Reaches Historic Highs"

    b. "General Motors Closes Auto Plant in Wisconsin"

    c. "OPEC Action Results in a General Increase in Prices"

    d. "The Cost of Health Care Rises for Employees"

    e. "Lawmakers Worry about the Possibility of a U.S. Recession"

    f. "Los Angeles Dodgers Make Pitcher Highest Paid Ballplayer"

5. Suppose the Environmental Protection Agency asks you to help it understand the causes of urban pollution. Air pollution problems are worse the higher the Air Quality Index gets. You develop the following two hypotheses. Hypothesis I: Air pollution will be a

greater problem as the average temperature increases in an urban area. Hypothesis II: Air pollution will be a greater problem as the population increases in an urban area.

Test each hypothesis with the data given in the following table. Which hypothesis fits the facts better? Have you developed a theory?

METROPOLITAN STATISTICAL AREA	DAYS WITH POLLUTED AIR	AVERAGE MAXIMUM TEMPERATURE	POPULATION (THOUSANDS)
Cincinnati, OH	30	64.0	1,979
El Paso, TX	13	77.1	680
Milwaukee, WI	12	55.9	1,690
Atlanta, GA	24	72.0	4,112
Philadelphia, PA	33	63.2	5,101
Albany, NY	8	57.6	876
San Diego, CA	20	70.8	2,814
Los Angeles, CA	80	70.6	9,519

6. Do any of the following statements involve fallacies? If so, which ones do they involve?

   a. Because sitting in the back of a classroom is correlated with getting a lower grade in the class, students should always sit closer to the front of the classroom.

   b. Historically, the stock market rises in years when an NFC team wins the Super Bowl and falls when the AFC wins the Super Bowl; I am rooting for an NFC team to win for the sake of my investment portfolio.

   c. When a basketball team spends more to get better players, it is more successful, which proves that all the teams should spend more to get better players.

7. In the 1940s, Dr. Melvin Page conducted a national campaign to stop people other than infants from drinking milk. According to Page, milk was a dangerous food and a leading cause of cancer. He pointed to the fact that more people died of cancer in Wisconsin, the nation's leading milk producer, than in any other state as proof of his claim. How would you evaluate Dr. Page's claim?

8. Are the following statements normative or positive, or do they contain elements of both normative and positive statements?

   a. A higher-income tax rate would generate increased tax revenues. Those extra revenues should be used to give more government aid to the poor.

   b. The study of physics is more valuable than the study of sociology, but both should be studied by all college students.

   c. An increase in the price of corn will decrease the amount of corn purchased. However, it will increase the amount of wheat purchased.

   d. A decrease in the price of butter will increase the amount of butter purchased, but that would be bad because it would increase Americans' cholesterol levels.

   e. The birth rate is reduced as economies urbanize, but it also leads to a decreased average age of developing countries' populations.

9. In the debate about clean air standards, we have often heard the statement "a nation as rich as the United States should have no pollution." Why is this a normative statement? Would it help you make a decision on national air quality standards? Describe two positive statements that might be useful in determining the air quality standards.

10. Answer the following questions:

    a. What is the difference between self-interest and selfishness?

    b. Why does inaction have consequences?

    c. Why are observation and prediction more difficult in economics than in chemistry?

    d. Why do economists look at group behavior rather than individual behavior?

11. Using the map analogy from the chapter, talk about the importance of abstraction. How do you abstract when taking notes in class?

APPENDIX

Working with Graphs

Graphs Are an Important Economic Tool

Sometimes the use of visual aids, such as graphs, greatly enhances our understanding of a theory. It is much the same as finding your way to a friend's house with the aid of a map rather than with detailed verbal or written instructions. Graphs are important tools for economists. They allow us to better understand the workings of the economy. To economists, a graph can be worth a thousand words. This textbook will use graphs throughout to enhance the understanding of important economic relationships. This appendix provides a guide on how to read and create your own graphs.

The most useful graph for our purposes is one that merely connects a vertical line (the *y*-axis) with a horizontal line (the *x*-axis), as seen in Exhibit 1. The intersection of the two lines occurs at the *origin*, which is where the value of both variables is equal to zero. In Exhibit 1, the graph has four quadrants, or boxes. In this textbook, we will be primarily concerned with the shaded box in the upper-right corner. This portion of the graph deals exclusively with positive numbers. Always keep in mind that moving out to the right on the horizontal axis and moving up along the vertical axis both lead to higher values.

y-axis: the vertical axis on a graph

x-axis: the horizontal axis on a graph

appendix **exhibit 1**	**Plotting a Graph**
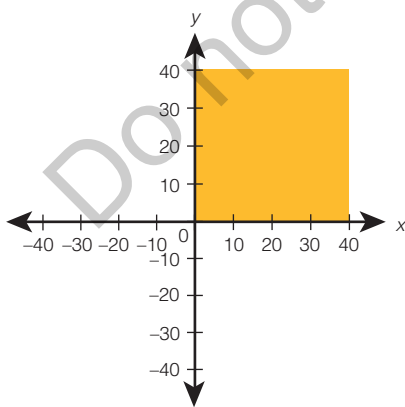
In the upper-right corner, we see that the graph includes a positive figure for the *y*-axis and the *x*-axis. As we move to the right along the horizontal axis, the numerical values increase. As we move up along the vertical axis, the numerical values increase.

Using Graphs and Charts

Exhibit 2 presents three common types of graphs. The **pie chart** in Exhibit 2(a) shows the revenues received from various taxes levied on households and corporations. Each slice in the pie chart represents the percentage of finances that are derived from different sources—for example, individual income taxes account for 44 percent of the federal government's tax revenues. Therefore, pie charts are used to show the relative size of various quantities that add up to 100 percent.

Exhibit 2(b) is a **bar graph** that shows the unemployment rate by age and sex in the United States. The height of the line represents the unemployment rate. Bar graphs are used to show a comparison of quantities.

Exhibit 2(c) is a **time-series graph**. This type of graph shows changes in the value of a variable over time. This visual tool allows us to observe important trends over a certain time period. In Exhibit 2(c) we see a graph that shows trends in the inflation rate over time. The horizontal axis shows us the passage of time, and the vertical axis shows us the inflation rate (annual percent change). From the graph, we can see the trends in the inflation rate from 1960 to 2018.

pie chart: a visual display showing the relative size of various quantities that add up to 100 percent

bar graph: a visual display showing the comparison of quantities

time-series graph: a visual tool to show changes in a variable's value over time

Using Graphs to Show the Relationship between Two Variables

Even though the graphs and chart in Exhibit 2 are important, they do not allow us to show the relationship between two variables (a **variable** is something that is measured by a number, such as your height). To more closely examine the structures and functions of graphs, let's consider the story of Tony, an avid skateboarder who has aspirations of winning the Z Games next year. He knows that to get there, he'll need to put in many hours of practice. But how many hours? In search of information about the practice habits of other skateboarders, he searches the Internet, where he finds the results of a study that looked at the score
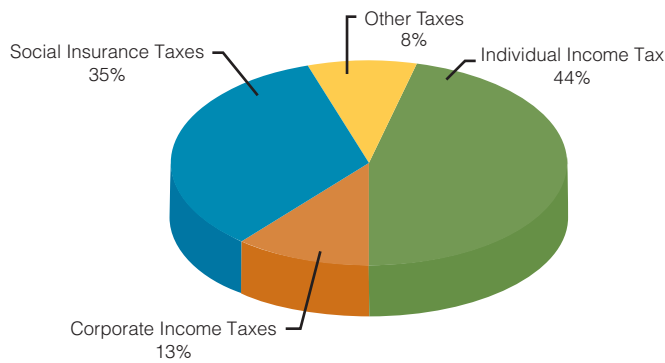
variable: something that is measured by a number, such as your height

appendix
exhibit 2   **Pie Chart, Bar Graph, and Time-Series Graph**

a. Pie Chart—Tax Revenues—Federal Government

Other Taxes
8%

Social Insurance Taxes
35%

Individual Income Tax
44%

Corporate Income Taxes
13%

SOURCE: Economic Report of the President and Bureau of Economic Analysis, 2018.

b. Bar Graph—U.S. Unemployment, by Sex and Age

| | |
| Total Unemployment |
| Men |
| Women |
| Teenagers (age 16–19) |
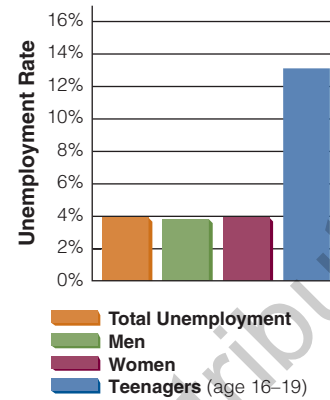
SOURCE: Bureau of Labor Statistics, July 2018.

c. Time-Series Graph—Inflation Rate

**Inflation Rate, 1960–2018**

Percent (per year)

Year
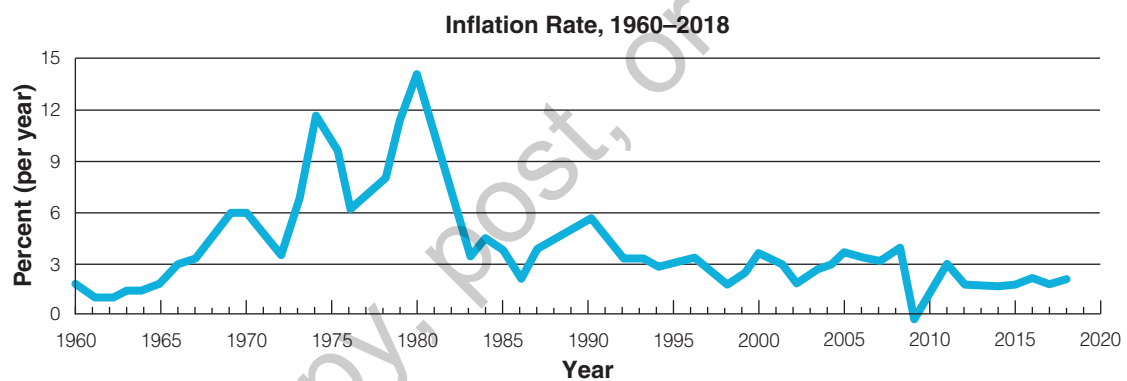
SOURCE: Bureau of Labor Statistics, September 2018.

positive relationship: when two variables change in the same direction

of each Z Games competitor in relation to the amount of practice time per week spent by each skateboarder. As Exhibit 3 shows, the results of the study indicate that skateboarders had to practice 10 hours per week to receive a score of 4, 20 hours per week to receive a score of 6, 30 hours per week to get a score of 8, and 40 hours per week to get a perfect score of 10. How does this information help Tony? By using a graph, he can more clearly understand the relationship between practice time and overall score.

A Positive Relationship

The study on scores and practice times reveals what is called a *direct relationship*, also called a *positive relationship*. A positive relationship means that the variables change in the same direction. That is, an increase in one variable (practice time) is accompanied by an increase in the other variable (overall score), or a decrease in one variable (practice time) is accompanied by a decrease in the other variable (overall score). In short, the variables change in the same direction.

A Positive Relationship
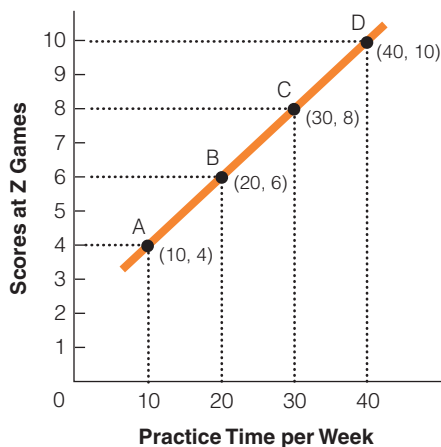
The skateboarders' practice times and scores in the competition are plotted on the graph. Each participant is represented by a point. The graph shows that the skateboarders who practiced the most scored the highest, which indicates a positive, or direct, relationship.

A Negative Relationship
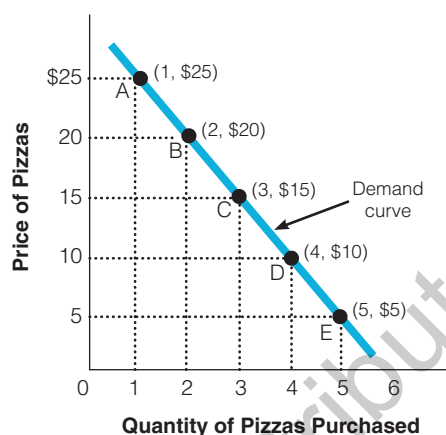
The downward slope of the curve means that price and quantity purchased are inversely, or negatively, related: When one increases, the other decreases. That is, moving down along the demand curve from point A to point E, we see that as the price falls, the quantity purchased increases. Moving up along the demand curve from point E to point A, we see that as the price increases, the quantity purchased falls.

A Negative Relationship

When two variables change in opposite directions, they have an inverse relationship, also called a **negative relationship**. That is, when one variable rises, the other variable falls, or when one variable decreases, the other variable increases.

The Graph of a Demand Curve

Let's now examine one of the most important graphs in economics—the demand curve. In Exhibit 4, we see Emily's individual demand curve for pizzas per month. It shows the price of pizzas on the vertical axis and the quantity of pizzas purchased per month on the horizontal axis. Every point in the space shown represents a price and quantity combination. The downward-sloping line, labeled "Demand curve," shows the different combinations of price and quantity purchased. Note that the higher the price of the pizzas (as shown on the vertical axis), the smaller the quantity purchased (as shown on the horizontal axis), and the lower the price (shown on the vertical axis), the greater the quantity purchased (shown on the horizontal axis).

In Exhibit 4, we see that moving up the vertical price axis from the origin, the price of pizzas increases from $5 to $25, in increments of $5. Moving out along the horizontal quantity axis, the quantity purchased increases from zero to five pizzas per month. Point A represents a price of $25 and a quantity of one pizzas, point B represents a price of $20 and a quantity of two pizzas,

point C a price of $15 and a quantity of three pizzas, and so on. When we connect all the points, we have what economists call a *curve*. As you can see, curves are sometimes drawn as straight lines for ease of illustration. Moving down along the curve, we see that as the price falls, a greater quantity is demanded; moving up the curve to higher prices, a smaller quantity is demanded. That is, when pizzas become less expensive, Emily buys more pizzas. When pizzas become more expensive, Emily buys fewer pizzas, perhaps choosing to go to the movies or stream music instead.

negative relationship: when two variables change in opposite directions

Using Graphs to Show the Relationship among Three Variables

Although only two variables are shown on the axes, graphs can be used to show the relationship among three variables. For example, say we add a third variable—income—to our previous example. Our three variables are now income, price, and quantity purchased. If Emily's income rises—say that she gets a raise at work—she is now able and willing to buy more pizzas than before at each possible price. As a result, the whole demand curve shifts outward (to the right) compared with the old curve. That is, the new income gives her more money to use to

slope: the ratio of rise (change in the *y* variable) over run (change in the *x* variable)

buy more pizzas. This shift is seen in the graph in Exhibit 5(a). On the other hand, if her income falls—say that she quits her job to go back to school—she would have less income to buy pizzas. A decrease in this variable causes the whole demand curve to shift inward (to the left) compared with the old curve. This shift is seen in the graph in Exhibit 5(b).

The Difference between a Movement along and a Shift in the Curve

It is important to remember the difference between a movement between one point and another along a curve and a shift in the whole curve. A change in one of the variables on the graph, such as price or quantity purchased, will cause a movement along the curve, say from point A to point B, as shown in Exhibit 6. A change in one of the variables not shown (held constant to show only the relationship between price and quantity), such as income in our example, will

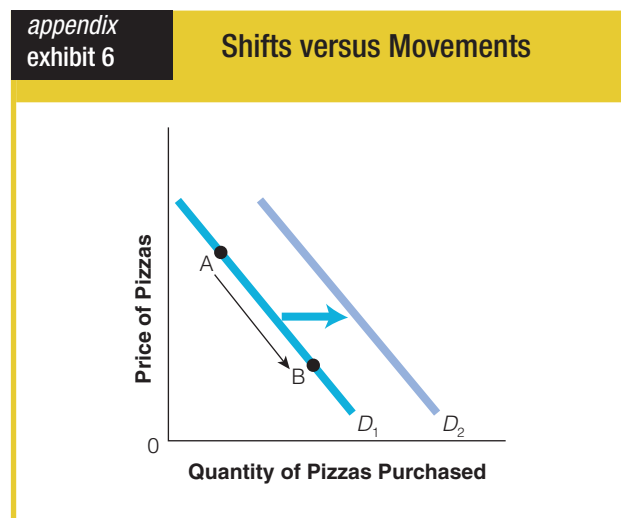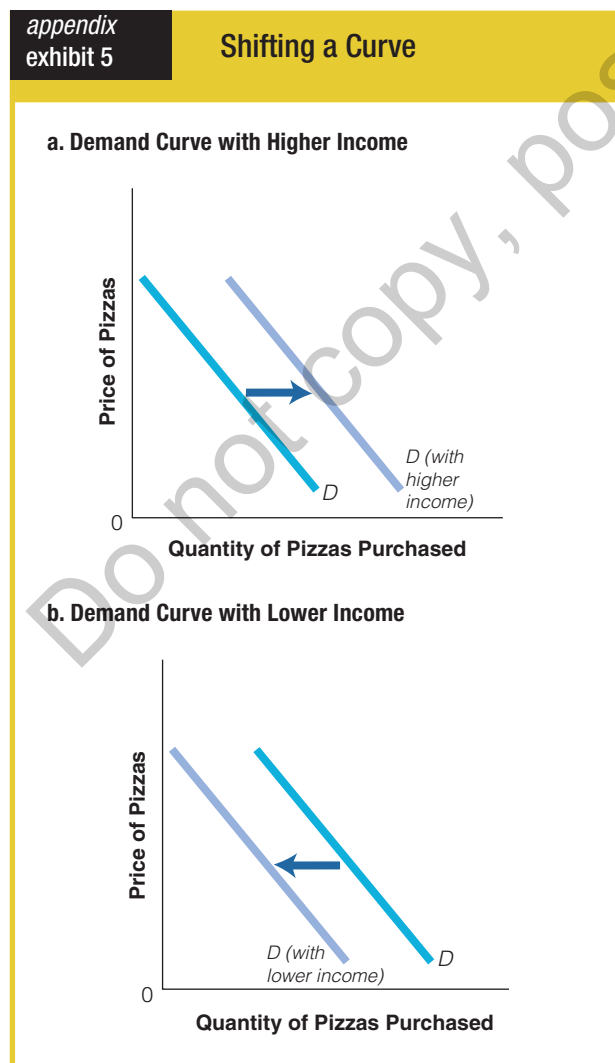cause the whole curve to shift. The change from D_1 to D_2 in Exhibit 6 shows such a shift.
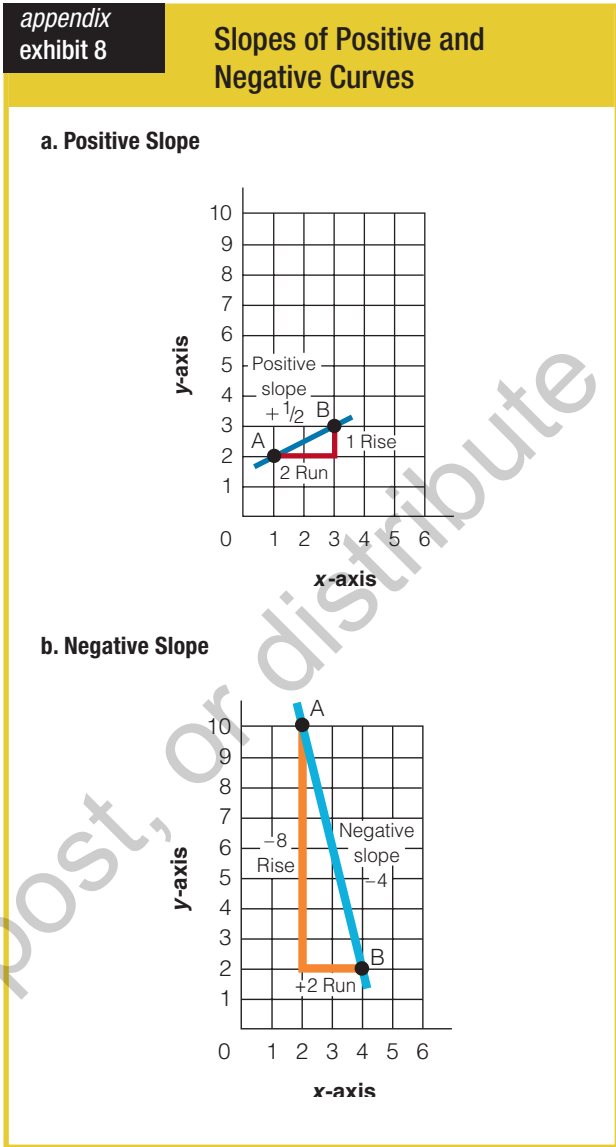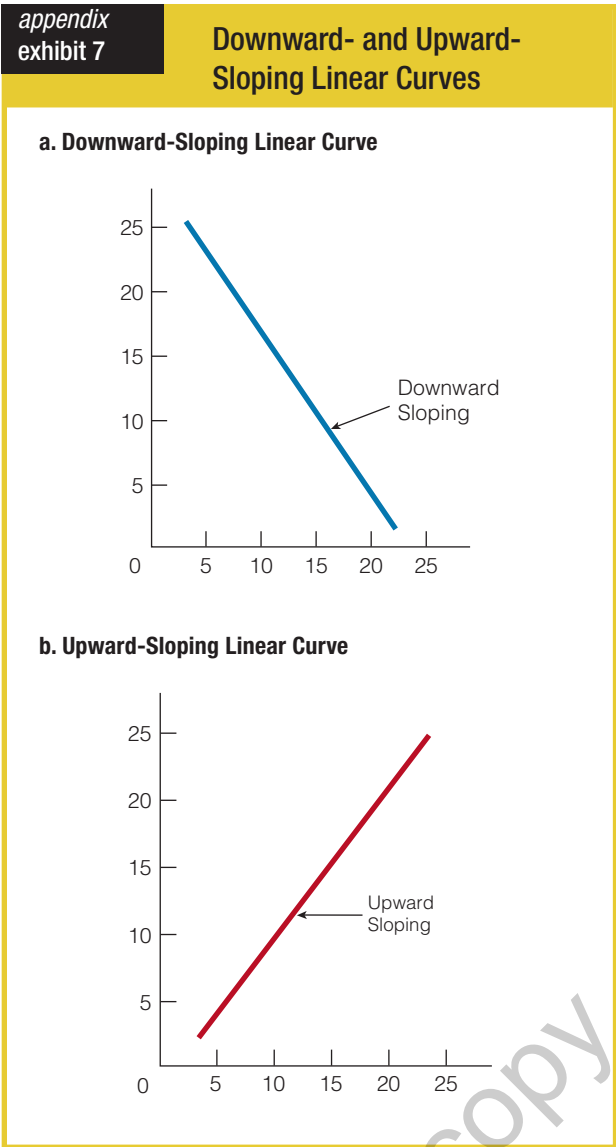
Slope

In economics, we sometimes refer to the steepness of a line or curve on a graph as the **slope**. A slope can be either positive (upward sloping) or negative (downward sloping). A curve that is downward sloping represents an inverse, or negative, relationship between the two variables and slants downward from left to right, as seen in Exhibit 7(a). A curve that is upward sloping represents a direct, or positive, relationship between the two variables and slants upward from left to right, as seen in Exhibit 7(b). The numeric value of the slope shows the number of units of change of the *y*-axis variable for each unit of change in the *x*-axis variable. Slope provides the direction (positive or negative) as well as the magnitude of the relationship between the two variables.

Measuring the Slope of a Linear Curve

A straight-line curve is called a *linear curve*. The slope of a linear curve between two points measures the relative rates of change of two variables. Specifically, the slope of a linear curve can be defined as the ratio of the change in the *Y* value to the change in the *X* value. The slope can also be expressed as the ratio of the rise over the run, where the rise is the vertical change and the run is the horizontal change.

Exhibit 8 shows two linear curves, one with a positive slope and one with a negative slope. In Exhibit 8(a), the slope of the positively sloped linear curve from point A to B is 1/2 because the rise is 1 (from 2 to 3) and the run is 2 (from 1 to 3). In Exhibit 8(b), the negatively sloped linear curve has a slope of –4: A rise of –8 (a fall of 8, from 10 to 2) and a run of 2 (from 2 to 4) gives us a slope of –8/2, or –4. Notice the appropriate signs on the slopes: the negatively sloped line carries a minus sign and the positively sloped line has a plus sign.

---

appendix
exhibit 5

Shifting a Curve

a. Demand Curve with Higher Income

b. Demand Curve with Lower Income

---

appendix
exhibit 6

Shifts versus Movements

<table>
<tr><td>

appendix
exhibit 7   Downward- and Upward-Sloping Linear Curves

a. Downward-Sloping Linear Curve

Downward Sloping

b. Upward-Sloping Linear Curve

Upward Sloping

</td><td>

appendix
exhibit 8   Slopes of Positive and Negative Curves

a. Positive Slope

Positive slope $+\frac{1}{2}$ 1 Rise   2 Run   y-axis   x-axis

b. Negative Slope

−8 Rise   Negative slope −4   +2 Run   y-axis   x-axis

</td></tr>
</table>

Finding the Slope of a Nonlinear Curve

In Exhibit 9, we show the slope of a nonlinear curve. A *nonlinear curve* is a line that actually curves. Here the slope varies from point to point along the curve. However, we can find the slope of this curve at any given point by drawing a straight line tangent to that point on the curve. A *tangency* is when a straight line just touches the curve without actually crossing it. At point A, we see that the positively sloped line that is tangent to the curve has a slope of 1: the line rises 1 and runs 1. At point B, the line is horizontal, so it has zero slope. At point C, we see a slope of –2 because the negatively sloped line has a rise of –2 (a fall of 2) for every run of 1.

Remember, many students have problems with economics simply because they fail to understand graphs, so make sure that you understand this material before going on to Chapter 2.

appendix
exhibit 9   Slopes of a Nonlinear Curve

Slope = 0   A   B   C   y-axis   x-axis
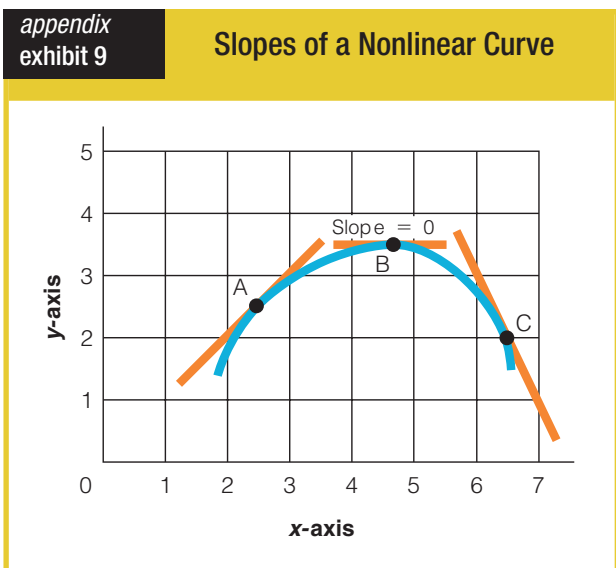
KEY TERMS AND CONCEPTS

bar graph 24	positive relationship 25	variable 24
negative relationship 26	slope 27	*x*-axis 24
pie chart 24	time-series graph 24	*y*-axis 24

PROBLEMS

1. The following table gives the prices and quantity demanded of oranges (in pounds) for the month of December.

PRICE ($/LB.)	QUANTITY DEMANDED (LBS.)
$0.80	0
0.70	3
0.60	4
0.50	5
0.40	7

   a. Plot the data from the table into a graph.

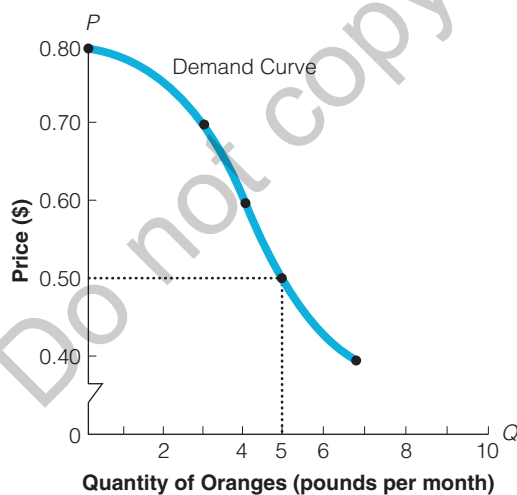   b. Is it a positive or negative relationship? Explain.

Answer

We have created a negatively sloped demand curve. That is, the price and quantity demanded of oranges are inversely related:

$$\uparrow P \Rightarrow \downarrow Q_D \text{ and } \downarrow P \Rightarrow \uparrow Q_D$$

Individual demand curve of a customer for oranges of a certain grade, the month of December.

The demand curve records the pounds of oranges a consumer desires at various prices in a given month, holding all other factors fixed. Because the individual desires more oranges at lower prices, the demand curve slopes downward.
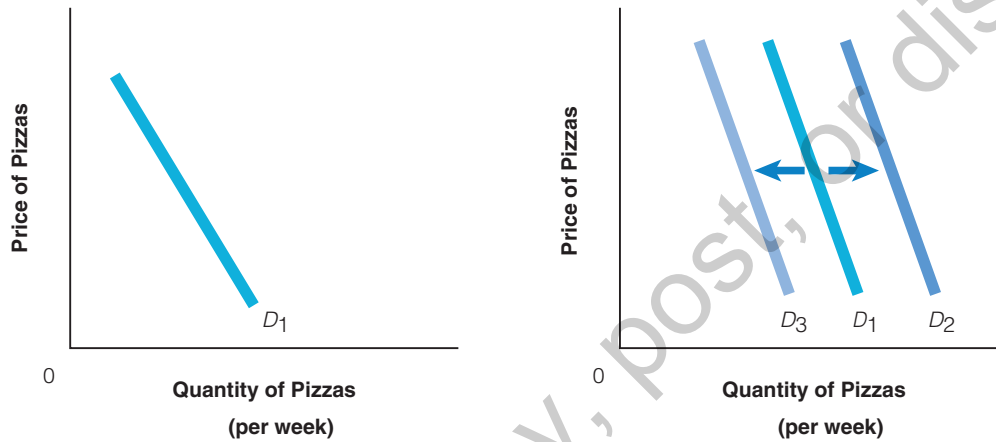
2. Which of the following will lead to a positive relationship? A negative relationship?

    a. hours studied and grade in a course

    b. the price of ice cream and the amount of ice cream purchased

    c. the amount of seasonal snowfall and the sale of snow shovels

    Answer

    a. positive

    b. negative

    c. positive

3. Below is Emily's demand curve for pizzas. How do we add income, a third variable, to price and quantity purchased on our graph? Using a graph, explain what would happen if Emily had an increase in income. What would happen if Emily had a decrease in income?
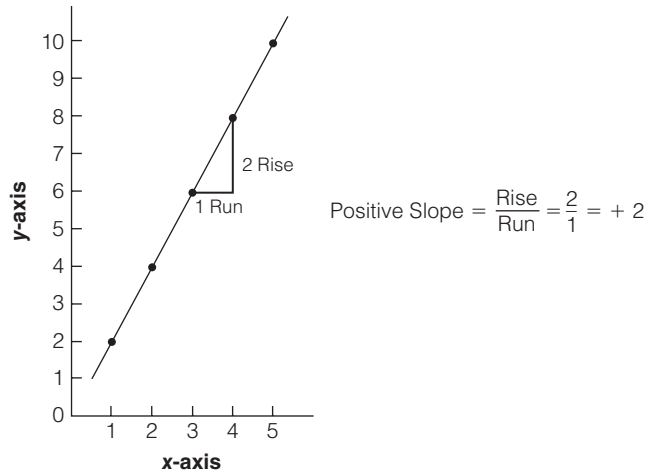
    Answer

    Price of Pizzas — Quantity of Pizzas (per week) — D_1

    Price of Pizzas — Quantity of Pizzas (per week) — D_3 D_1 D_2

    When income increases, Emily can purchase more pizzas at each and every price—a rightward shift from D_1 to D_2. If Emily's income falls, her demand will shift leftward from D_1 to D_3.

4. Use the information in the following table to plot a graph. Is it a positive or negative relationship? What is the slope?

X	Y
1	2
2	4
3	6
4	8
5	10

Answer

5. What is a pie chart? Bar graph? Time-series graph?

Answer

Pie charts are used to show the relative size of various quantities that add up to 100 percent. Bar graphs are used to show a comparison of quantities of similar items. Time-series graphs allow us to see important trends over a period of time.