

# The Economic Approach

*Economist, n.—A scoundrel whose faulty vision sees things as they really are, not as they ought to be.*

*Daniel K. Benjamin,  
after Ambrose Bierce*

## CHAPTER FOCUS

- What is scarcity, and why is it important even in relatively wealthy economies?
- How does scarcity differ from poverty? Why does scarcity necessitate rationing and cause competition?
- What is the economic way of thinking? What is different about the way economists look at choices and human decision making?
- What is the difference between positive and normative economics?

Welcome to the world of economics. Lately there has been a lot about the economy in the news. The recent financial crisis and recession have affected us all. There is a strong interest among the general public in understanding the causes of the current crisis and what might be done about it. Clearly, knowledge of basic economics is more important now than ever. You will soon see that economics is about much more than just financial markets and economic policy. In fact, a field trip to the fruits and vegetables section at your local grocery store could well be filled with more economics lessons than a trip to the New York Stock Exchange.

In a nutshell, economics is the study of human behavior, with a particular focus on human decision making. In economics you will learn a new and powerful way of thinking that might lead you to question some of your current views and to look at things in a different way. As the satirical definition of an economist in the chapter-opening quote suggests, economic analysis provides valuable insights about how the world really works. These insights, however, often conflict with commonly held beliefs about the way things “ought” to work.

You may have heard some of the following statements: Without a large government stimulus, the economy will fall into another Great Depression. The current financial crisis was caused by greed on Wall Street. Gas prices are so high that the government should regulate them. Americans would be better off if we did not buy so many things from foreigners. A higher minimum wage will help the poor. Health care should be freely available to everyone. Are these statements true? This course will provide you with knowledge that will enhance your understanding of issues like these and numerous others. It may even alter the way you think about them.

You will also develop new insights into how and why people (including yourself) make choices. This course will better enable you to argue political and economic issues with your friends at parties. It may even help you impress your date. On a more serious note, though, the better the decisions you make in your lifetime, the better off you will be. The same goes for a society as a whole. Who knows—you may become so good at economics you discover how to improve the lives of many people around the world, in addition to your own. You could even become the next great economist of our time.

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## ECONOMICS *At The Movies*

### **Ferris Bueller's Day Off (1986)**

In one scene in *Ferris Bueller's Day Off*, Ben Stein plays an economics teacher lecturing about macroeconomics. His students are bored and falling asleep. Although some parts of economics might not be as fun as others, it's a misconception that economics is boring. On the contrary, economics will enlighten you about how people make decisions and the way the world works. It will also help you make better decisions yourself, which will make you better off.

Our “Economics at the Movies” features have been inspired by G. Dirk Mateer, the author of *Economics in the Movies*. (Mason, OH: Thomson South-Western Publishing, 2005).

## OUTSTANDING ECONOMIST

### The Importance of Adam Smith, the Father of Economic Science

Economics is a relatively young science. The foundation of economics was laid in 1776, when Adam Smith (1723–1790) published *An Inquiry into the Nature and Causes of the Wealth of Nations*. Smith presented what was at that time a revolutionary view. He argued that the wealth of a nation does not lie in gold and silver, but rather in the goods and services produced and consumed by people. According to Smith, coordination, order, and efficiency would result without the planning and direction of a central authority.

Adam Smith was a lecturer at the University of Glasgow, in his native Scotland. Before economics, morals and ethics were actually his concern. His first book was *The Theory of Moral Sentiments*. For Smith, self-interest and sympathy for others were complementary. However, he did not believe that charity alone would provide the essentials for a good life. He stressed that free exchange and competitive markets would harness self-interest as a creative force. Smith believed that individuals *pursuing their own interests* would be directed by the “invisible hand” of market prices toward the production of those goods that were most advantageous to society.

Ideas have consequences. Smith’s ideas greatly influenced not only Europeans but also those who mapped out the structure of the U.S. government. Smith’s notion of the “invisible hand” of the market has since become accepted as crucial to the prosperity of nations.<sup>1</sup>



<sup>1</sup>For an excellent biographical sketch of Adam Smith, see David Henderson, ed., *The Fortune Encyclopedia of Economics* (New York: Warner Books, 1993), 836–838. The entire text of this useful encyclopedia is now available online, free of charge, at <http://www.econlib.org>.

The origins of economics date back to Adam Smith, a Scottish moral philosopher, who expressed the first economic ideas in his breakthrough book, *An Inquiry into the Nature and Causes of the Wealth of Nations*, published in 1776. As the title of his book suggests, Smith sought to explain why people in some nations were wealthier than those in others. This very question is still a central issue in economics. It is so important that throughout this book we will use a special “Keys to Economic Prosperity” symbol  in the margin to highlight sections that focus on this topic. A listing of the major keys to prosperity is presented inside the front cover of the book. These keys and accompanying discussions will help you understand what factors enable economies, and their citizens, to grow wealthier and prosper. ■

*[Economics is] the science which studies human behavior as a relationship between ends and scarce means which have alternative uses.*

—Lionel Robbins<sup>1</sup>

## What Is Economics About?

While economics is about the choices *individuals* make, we often group together to form collective organizations, such as corporations, labor unions, nonprofit clubs, and governments. Individual choices, however, still underlie and direct the decisions made within

<sup>1</sup>Lionel Robbins, *An Essay on the Nature and Significance of Economic Science* (London: Macmillan, 1932), 15.

these organizations. Thus, even when we study collective organizations like governments, we will still focus our analysis on the choices and decisions made by individuals within those organizations. We begin our journey into economics by discussing the constraints we face as individuals that force us to make choices.

## Scarcity Means Having to Make Choices

Would you like some new clothes, a nicer car, and a larger apartment? How about better grades and more time to watch television, go skiing, and travel? Do you dream of driving your brand-new Porsche into the driveway of your oceanfront house? As individuals, our desire for goods is virtually unlimited. We may want all of these things. Unfortunately, both as individuals and as a society we face a constraint called **scarcity** that prevents us from being able to completely fulfill our desires.

Scarcity is present whenever there is less of a good or resource freely available from nature than people would like. There are some things that are not scarce—seawater comes to mind; nature has provided as much of it as people want. But almost everything else you can think of—even your time—is scarce. In economics, the word *scarce* has a very specific meaning that differs slightly from the way it is commonly used. Even if large amounts of a good have been produced, it is still scarce as long as there is not as much of it *freely available from nature* as we would all like. For example, even though goods like apples and automobiles are relatively abundant in the United States, they are still scarce because we would like to have more of them than nature has freely provided. In economics, we generally wish to determine only if a good is scarce or not, and refrain from using the term to refer to the relative availability or abundance of a good or resource.

The unlimited nature of our desires, coupled with the limited nature of the goods and resources available to satisfy these desires, requires that we make choices. Should I spend the next hour studying or watching TV? Should I spend my last \$20 on a new CD or on a shirt? Should this factory be used to produce clothing or furniture? **Choice**, the act of selecting among alternatives, is the logical consequence of scarcity. When we make choices, we constantly face trade-offs between meeting one desire or another. To meet one need, we must let another go unmet. The basic ideas of *scarcity* and *choice*, along with the *trade-offs* we face, provide the foundation for economic analysis.

**Resources** are the ingredients, or inputs, people use to produce goods and services. Our ability to produce goods and services is limited precisely because of the limited nature of our resources.

**EXHIBIT 1** lists a number of scarce goods and the limited resources that might be used to produce them. There are three general categories of resources. First, there are *human resources*—the productive knowledge, skill, and strength of human beings. Second, there

### Scarcity

Fundamental concept of economics that indicates that there is less of a good freely available from nature than people would like.

### Choice

The act of selecting among alternatives.

### Resource

An input used to produce economic goods. Land, labor, skills, natural resources, and capital are examples. Throughout history, people have struggled to transform available, but limited, resources into things they would like to have—economic goods.

#### SCARCE GOODS

Food (bread, milk, meat, eggs, vegetables, coffee, etc.)  
Clothing (shirts, pants, blouses, shoes, socks, coats, sweaters, etc.)  
Household goods (tables, chairs, rugs, beds, dressers, television sets, etc.)  
Education  
National defense  
Leisure time  
Entertainment  
Clean air  
Pleasant environment (trees, lakes, rivers, open spaces, etc.)  
Pleasant working conditions

#### LIMITED RESOURCES

Land (various degrees of fertility)  
Natural resources (rivers, trees, minerals, oceans, etc.)  
Machines and other human-made physical resources  
Nonhuman animal resources  
Technology (physical and scientific “recipes” of history)  
Human resources (the knowledge, skill, and talent of individual human beings)

#### EXHIBIT 1

#### A General Listing of Scarce Goods and Limited Resources

*History is a record of our struggle to transform available, but limited, resources into goods that we would like to have.*

## Capital

Human-made resources (such as tools, equipment, and structures) used to produce other goods and services. They enhance our ability to produce in the future.

are *physical resources*—things like tools, machines, and buildings that enhance our ability to produce goods. Economists often use the term **capital** when referring to these human-made resources. Third, there are *natural resources*—things like land, mineral deposits, oceans, and rivers. The ingenuity of humans is often required to make these natural resources useful in production. For example, until recently, the yew tree was considered a “trash tree,” having no economic value. Then, scientists discovered that the tree produces taxol, a substance that could be used to fight cancer. Human knowledge and ingenuity made yew trees a valuable resource. As you can see, natural resources are important, but knowing how to use them productively is just as important. As economist Thomas Sowell points out, cavemen had the same natural resources at their disposal that we do today. The huge difference between their standard of living and ours reflects the difference in the knowledge they could bring to bear on those resources versus what we can.<sup>2</sup> Over time, human ingenuity, discovery, improved knowledge, and better technology have enabled us to produce more goods and services from the available resources. Nonetheless, we will never be able to produce enough goods to fulfill human desires entirely. Because scarcity can't be eliminated, people will always face choices. This is what economics is about.

## Scarcity and Poverty Are Not the Same

Think for a moment about what life was like in 1750. People all over the world struggled fifty, sixty, and seventy hours a week to obtain the basic necessities of life—food, clothing, and shelter. Manual labor was the major source of income. Animals provided the means of transportation. Tools and machines were primitive by today's standards. As the English philosopher Thomas Hobbes stated in the seventeenth century, life was “solitary, poor, nasty, brutish, and short.”<sup>3</sup>

Throughout much of South America, Africa, and Asia, economic conditions today continue to make life difficult. In North America, Western Europe, Oceania, and some parts of Asia, however, economic progress has substantially reduced physical hardship and human drudgery. In these regions, the typical family is more likely to worry about financing its summer vacation than obtaining food and shelter. As anyone who has watched the TV reality show *Survivor* knows, we take for granted many of the items that modern technological advances have allowed us to produce at unbelievably low prices. Contestants on *Survivor* struggle with even basic things like starting a fire, finding shelter, and catching

*The degree to which modern technology and knowledge allow us to fulfill our desires and ease the grip of scarcity is often taken for granted—as the castaways on the CBS reality series Survivor quickly find out when they have to struggle to meet even basic needs, such as food, shelter, and cleaning their bodies and clothes.*



Bill Inoshita/CBS Photo Archive/Getty Images

<sup>2</sup>Thomas Sowell, *Knowledge and Decisions* (New York: Basic Books, 1980), 47.

<sup>3</sup>Thomas Hobbes, *Leviathan* (1651), Part I, Chapter 13.

fish. They are thrilled when they win ordinary items like shampoo, rice, and toilet paper. During one episode, a contestant eagerly paid over \$125 for a small chocolate bar and spoonful of peanut butter at an auction—and she considered it a great bargain!

It is important to note, however, that scarcity and poverty are not the same thing. Scarcity is an **objective** concept that describes a factual situation in which the limited nature of our resources keeps us from being able to completely fulfill our desires for goods and services. In contrast, poverty is a **subjective** concept that refers to a personal opinion of whether someone meets an arbitrarily defined level of income. This distinction is made even clearer when you realize that different people have vastly different ideas of what it means to be poor. The average family in the United States that meets the federal government's definition of being "in poverty" would be considered wealthy in most any country in Africa. Even in the United States as recently as the 1950s, a family was considered fairly wealthy if it had central heat and air conditioning, or more than one automobile or television set. In the United States today, the majority of families officially classified as in poverty have many, if not most, of the items that would have been viewed as symbols of wealth only fifty years ago.

The distinction between "needs" and "wants" helps us understand why it is impossible to define poverty objectively. Most people would agree that an absence of poverty means that some basic level of needs has been met. But they would disagree on what constitutes needs versus wants. In the 1920s, less than half of all households in the United States had electricity, and even fewer had a telephone or an automobile. Still, people survived and prospered. Would you consider electricity a need or a want? How about gasoline? How about other items that you generally hear people say they need, like cable television, a computer, and a \$100 pair of tennis shoes—are they really needs? Although food and water are necessary for human survival, no one item (such as pizza, steak, a Big Mac, or a \$1 bottle of spring water) is essential.

People always want more and better goods for themselves and others they care about—medical care, schooling, and national security are examples. Scarcity is the constraint that prevents us from having as much of *all* goods as we would like, but it is not the same as poverty. Even if every individual were rich, scarcity would still be present.

## Scarcity Necessitates Rationing

Scarcity makes **rationing** a necessity. When a good or resource is scarce, some criterion must be used to determine who will receive it and who will go without. The choice of which method is used will, however, have an influence on human behavior. When rationing is done through the government sector, a person's political status and ability to manipulate the political process are the key factors. Powerful interest groups and those in good favor with influential politicians will be the ones who obtain goods and resources. When this method of rationing is used, people will devote time and resources to lobbying and favor seeking with those who have political power, rather than to productive activities.

When the criterion is first-come, first-served, goods are allocated to those who are fastest at getting in line or willing to spend the longest time waiting in line. Many colleges use this method to ration tickets to sporting events, and the result is students waiting in long lines. Sometimes, as at Duke University during basketball season, they even camp out for multiple nights to get good tickets! Imagine how the behavior of students would change if tickets were instead given out to the students with the highest grade point average.

In a market economy, price is generally used to ration goods and resources only to those who are willing and able to pay the prevailing market price. Because only those goods that are scarce require rationing, in a market economy, one easy way to determine whether a good or resource is scarce is to ask if it sells for a price. If you have to pay for something, it is scarce.

## Scarcity Leads to Competitive Behavior

Competition is a natural outgrowth of scarcity and the desire of human beings to improve their conditions. Competition exists in every economy and every society. It exists both when goods are allocated by price in markets and when they are allocated by other means—political decision making, for example.

### Objective

A fact based on observable phenomena that is not influenced by differences in personal opinion.

### Subjective

An opinion based on personal preferences and value judgments.

### Rationing

Allocating a limited supply of a good or resource among people who would like to have more of it. When price performs the rationing function, the good or resource is allocated to those willing to give up the most "other things" in order to get it.

How goods are rationed influences what competitive techniques people will use to get them. When the rationing criterion is price, individuals will engage in income-generating activities that enhance their ability to pay the price needed to buy the goods and services they want. Thus, one benefit of using price as a rationing mechanism is that it encourages individuals to engage in the production of goods and services to generate income. In contrast, rationing on the basis of first-come, first-served encourages individuals to waste a substantial amount of time waiting in line, while rationing through the political process encourages individuals to waste time and other resources in competing with others to influence the political process.

Within a market setting, the competition that results from scarcity is an important ingredient in economic progress. Competition among business firms for customers results in newer, better, and less expensive goods and services. Competition between employers for workers results in higher wages, benefits, and better working conditions. Further, competition encourages discovery and innovation, two important sources of growth and higher living standards.

## The Economic Way of Thinking

*It [economics] is a method rather than a doctrine, an apparatus of the mind, a technique of thinking which helps its possessor to draw correct conclusions.*

—John Maynard Keynes<sup>4</sup>

### Economic theory

A set of definitions, postulates, and principles assembled in a manner that makes clear the “cause-and-effect” relationships.

One does not have to spend much time around economists to recognize that there is an “economic way of thinking.” Admittedly, economists, like others, differ widely in their ideological views. A news commentator once remarked that “any half-dozen economists will normally come up with about six different policy prescriptions.” Yet, in spite of their philosophical differences, the approaches of economists reflect common ground.

That common ground is **economic theory**, developed from basic principles of human behavior. Economic researchers are constantly involved in testing and seeking to verify their theories. When the evidence from the testing is consistent with a theory, eventually that theory will become widely accepted among economists. Economic theory, like a road map or a guidebook, establishes reference points indicating what to look for and how economic issues are interrelated. To a large degree, the basic economic principles are merely common sense. When applied consistently, however, these commonsense concepts can provide powerful and sometimes surprising insights.

## Eight Guideposts to Economic Thinking

The economic way of thinking requires incorporating certain guidelines—some would say the building blocks of basic economic theory—into your own thought process. Once you incorporate these guidelines, economics can be a relatively easy subject to master. Students who have difficulty with economics have almost always failed to assimilate one or more of these principles. The following are eight principles that characterize the economic way of thinking. We will discuss each of these principles in more depth throughout the book so that you will be sure to understand how and when to apply them.

**1. THE USE OF SCARCE RESOURCES IS COSTLY, SO DECISION MAKERS MUST MAKE TRADE-OFFS.** Economists sometimes refer to this as the “there is no such thing as a free lunch” principle. Because resources are scarce, the use of resources to produce one good diverts those resources from the production of other goods. A parcel of undeveloped land could be used for a new hospital or a parking lot, or it could simply be left undeveloped. No option is free of cost—there is always a trade-off. A decision to pursue any one of these options means that the decision maker must sacrifice the others. The

<sup>4</sup>John Maynard Keynes (1883–1946) was an English economist whose writings during the 1920s and 1930s exerted an enormous impact on both economic theory and policy. Keynes established the terminology and the economic framework that are still widely used when economists study problems of unemployment and inflation.

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When a scarce resource is used to meet one need, other competing needs must be sacrificed. The forgone shoe store is an example of the opportunity cost of building the new drugstore.

highest valued alternative that is sacrificed is the **opportunity cost** of the option chosen. For example, if you use one hour of your scarce time to study economics, you will have one hour less time to watch television, read magazines, sleep, work at a job, or study other subjects. Whichever one of these options you would have chosen had you *not* spent the hour studying economics is your highest valued option forgone. If you would have slept, then the opportunity cost of this hour spent studying economics is a forgone hour of sleep. In economics, the opportunity cost of an action is the highest valued option given up when a choice is made.

It is important to recognize that the use of scarce resources to produce a good is always costly, regardless of who pays for the good or service produced. In many countries, various kinds of schooling are provided free of charge *to students*. However, provision of the schooling is not free *to the community as a whole*. The scarce resources used to produce the schooling—to construct the building, hire teachers, buy equipment, and so on—could have been used instead to produce more recreation, entertainment, housing, medical care, or other goods. The opportunity cost of the schooling is the highest valued option given up because the resources required for its production were instead used for schooling.

By now, the central point should be obvious. As we make choices, we always face trade-offs. Using resources to do one thing leaves fewer resources to do another.

Consider one final example. Mandatory air bags in automobiles save an estimated 400 lives each year. Economic thinking, however, forces us to ask ourselves if the \$50 billion spent on air bags could have been used in a better way—perhaps say, for cancer research that could have saved *more* than 400 lives per year. Most people don't like to think of air bags and cancer research as an "either/or" proposition. It's more convenient to ignore these trade-offs. But if we want to get the most out of our resources, we have to consider all of our alternatives. In this case, the appropriate analysis is not simply the lives saved with air bags versus dollars spent on them, but also the number of lives that could have been saved (or other things that could have been accomplished) if the \$50 billion had been used differently. A candid consideration of hard trade-offs like this is essential to using our resources wisely.

## 2. INDIVIDUALS CHOOSE PURPOSEFULLY—THEY TRY TO GET THE MOST FROM THEIR LIMITED RESOURCES.

People try not to squander their valuable resources deliberately. Instead, they try to choose the options that best advance their personal desires and goals at the least possible cost. This is called **economizing behavior**. Economizing behavior is the result of purposeful, or rational, decision making. When choosing among things of equal benefit, an economizer will select the cheapest option. For example, if a pizza, a lobster dinner, and a sirloin steak are expected to yield identical benefits for Mary (including the enjoyment of eating them), economizing behavior implies that Mary will select the cheapest of the three alternatives, probably the pizza. Similarly, when choosing among alternatives of equal cost, economizing decision makers will select the option that yields the greatest benefit. If the prices of several dinner specials are equal, for example, economizers will choose the one they like the best. Because of economizing behavior, the desires or preferences of individuals are revealed by the choices they make.

### Opportunity cost

The highest valued alternative that must be sacrificed as a result of choosing an option.

### Economizing behavior

Choosing the option that offers the greatest benefit at the least possible cost.

## Utility

The subjective benefit or satisfaction a person expects from a choice or course of action.

Purposeful choosing implies that decision makers have some basis for their evaluation of alternatives. Economists refer to this evaluation as **utility**—the benefit or satisfaction that an individual expects from the choice of a specific alternative. Utility is highly subjective, often differing widely from person to person. The steak dinner that delights one person may be repulsive to another (a vegetarian, for example).

The idea that people behave rationally to get the greatest benefit at the least possible cost is a powerful tool. It can help us understand their choices. However, we need to realize that a rational choice is not the same thing as a “right” choice. If we want to understand people’s choices, we need to understand their own subjective evaluations of their options *as they see them*. As we have said, different people have different preferences. If Joan prefers \$50 worth of chocolate to \$50 worth of vegetables, buying the chocolate would be the rational choice for her, even though some outside observer might say that Joan is making a “bad” decision. Similarly, some motorcycle riders choose to ride without a helmet because they believe the enjoyment they get from riding without one is greater than the cost (the risk of injury). When people weigh the benefits they receive from an activity against its cost, they are making a rational choice—even though it might not be the choice you or I would make in the same situation.

**3. INCENTIVES MATTER—CHOICE IS INFLUENCED IN A PREDICTABLE WAY BY CHANGES IN INCENTIVES.** This is probably the most important guidepost in economic thinking. It is sometimes called the basic postulate of all economics. On the one hand, as the personal benefits from an option increase, a person will be more likely to choose it. On the other hand, as the personal costs associated with an option increase, a person will be less likely to choose it. This guidepost also applies to groups of people, and suggests that making an option more beneficial will predictably cause more of them to choose it. Similarly, making an option more costly will cause fewer of them to choose it.

This basic idea is a powerful tool because its usefulness is practically universal. Incentives affect behavior in virtually all aspects of our lives, ranging from market decisions about what to buy to political choices concerning for whom to vote. If beef prices rise, making beef consumption more expensive relative to other goods, consumers will be less likely to buy it. The “incentives matter” postulate also explains why a person would be unlikely to vote for a political candidate who, if elected, would raise taxes to fund a new government program he or she didn’t like very much.

Most errors in economic reasoning occur because people overlook this postulate or fail to apply it consistently. With economic applications generally focusing on people trying to satisfy material desires, casual observers often argue that incentives matter only in cases of human selfishness. This view is false. People are motivated by a variety of goals, some humanitarian and some selfish, and incentives matter equally in both. Even an unselfish individual would be more likely to attempt to rescue a drowning child from a three-foot swimming pool than the rapid currents approaching Niagara Falls. Similarly, people are more likely to give a needy person their hand-me-downs rather than their favorite new clothes.

It is clear that incentives, whether monetary or nonmonetary, matter in human decision making. People will be less likely to walk down a dark alleyway than a well-lit one; they will be more likely to take a job if it has good benefits and working conditions than if it doesn’t; and they will be more likely to bend down and pick up a quarter lying on the sidewalk than they will a penny. Even a person who normally bends down to pick up pennies on the sidewalk probably would be less likely to if late for an important appointment, or on a first date.

Just how far can we push the idea that incentives matter? If asked what would happen to the number of funerals performed in your town if the price of funerals rose, how would you respond? The “incentives matter” postulate predicts that the higher cost would reduce the number of funerals. While the same number of people will still die each year, the number of funerals performed will still fall as more people choose to be cremated or buried in cemeteries in other towns. Substitutes are everywhere—even for funerals. Individuals also



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Because consumers respond to incentives, store owners know they can sell off excess inventory by reducing prices.

respond to incentives when committing crimes—precisely the reason why people put signs in their yard saying “this house protected by XYZ security.”

**4. INDIVIDUALS MAKE DECISIONS AT THE MARGIN.** When making a choice between two alternatives, individuals generally focus on the *difference* in the costs and benefits between alternatives. Economists describe this process as **marginal** decision making, or “thinking at the margin.” The last time you went to eat fast food, you probably faced a decision that highlights this type of thinking. Will you get the \$1.50 cheeseburger and the \$1.00 medium drink, or instead get the \$3.00 value meal that has the cheeseburger and drink and also comes with a medium order of fries? Naturally, individual decision making focuses on the difference between the alternatives. The value meal costs 50 cents more (its marginal cost) but will give you one extra food item—the fries (its marginal benefit). Your marginal decision is whether it is worth the extra 50 cents to have the fries. If you pay attention, you’ll notice yourself frequently thinking at the margin. Next time you find yourself asking a salesclerk “How much *more* is this one?” when you are choosing between two items, you are doing a marginal analysis.

Marginal choices always involve the effects of net additions to or subtractions from current conditions. In fact, the word *additional* is often used as a substitute for *marginal*. For example, a business decision maker might ask, “What is the additional (or marginal) cost of producing one more unit?” Marginal decisions may involve large or small changes. The “one more unit” could be a new factory or a new stapler. It is marginal because it involves additional costs and additional benefits. Given the current situation, what marginal benefits (additional sales revenues, for example) can be expected from the new factory, and what will be the marginal cost of constructing it? What is the marginal benefit versus marginal cost of purchasing a new stapler? The answers to these questions will determine whether building the new factory or buying the new stapler is a good decision.

It is important to distinguish between *average* and *marginal*. A manufacturer’s average cost of producing automobiles (which would be the total cost of production divided by the total number of cars the manufacturer produces) may be \$25,000, but the marginal cost of producing an additional automobile (or an additional 1,000 automobiles) might be much lower, say, \$10,000 per car. Costs associated with research, testing, design, molds, heavy equipment, and similar factors of production must be incurred whether the manufacturer is going to produce 1,000 units, 10,000 units, or 100,000 units. Such costs will clearly

### Marginal

Term used to describe the effects of a change in the current situation. For example, a producer’s marginal cost is the cost of producing an additional unit of a product, given the producer’s current facility and production rate.

contribute to the average cost of an automobile, but they will change very little as additional units are produced. Thus, the marginal cost of additional units may be substantially less than the average cost. Should production be expanded or reduced? That choice should be based on marginal costs, which indicate the *change* in total cost due to the decision.

Confusion between marginal and total benefits or costs can also be a source of error. Almost all of the choices we make are marginal, rather than all-or-nothing decisions. For example, we don't make decisions between eating or wearing clothes—dining well in the nude versus starving in style. Instead, we choose between having a little more food at the cost of a little less clothing, or a little less of something else. So the relevant comparison is not between the total value of food and the total value of clothing but between their marginal values.

People commonly ignore the implications of marginal thinking in their comments, but seldom in their actions. Thus, the concept is far better at explaining how people act than what they say. Students are often overheard telling other students that they shouldn't skip class because they have paid to enroll in it. Of course, the tuition is not a factor relevant at the margin—it will be the same whether or not the student attends class on that particular day. The only real marginal considerations are what the student will miss that day (a quiz, information for the exam, etc.) versus what he or she could do with the extra time by skipping class. This explains why even students who tell others they paid too much for the class to skip it will ignore the tuition costs when they themselves decide to skip class.

When we confront a decision, the *marginal benefit* and *marginal cost* associated with the choice will determine our decision. Marginal analysis will be used extensively throughout this course. As we develop this concept further, you should pay special attention to understanding how to use it properly.

**5. ALTHOUGH INFORMATION CAN HELP US MAKE BETTER CHOICES, ITS ACQUISITION IS COSTLY.** Information that helps us make better choices is valuable. However, the time needed to gather it is scarce, making information costly to acquire. As a result, people economize on their search for information just like they do anything else. For example, when you purchase a pair of jeans, you might evaluate the quality and prices of jeans at several different stores. At some point, though, you will decide that additional comparison shopping is simply not worth the trouble. You will make a choice based on the limited information you already have.

The process is similar when individuals search for a restaurant, a new car, or a roommate. They will seek to acquire some information, but at some point, they will decide that the expected benefit derived from gathering still more information is simply not worth the cost. When differences among the alternatives are important to decision makers, they will spend more time and effort gathering information. People are much more likely to read a consumer ratings magazine before purchasing a new automobile than they are before purchasing a new can opener. Because information is costly for people to acquire, limited knowledge and uncertainty about the outcome generally characterize the decision-making process.

**6. BEWARE OF THE SECONDARY EFFECTS: ECONOMIC ACTIONS OFTEN GENERATE INDIRECT AS WELL AS DIRECT EFFECTS.** In addition to direct effects that are quickly visible, people's decisions often generate indirect, or "secondary," effects that may be observable only with time. Failure to consider secondary effects is one of the most common economic errors because these effects are often quite different from initial, or direct, effects. Frédéric Bastiat, a nineteenth-century French economist, stated that the difference between a good and a bad economist is that the bad economist considers only the immediate, visible effects, whereas the good economist is also aware of the **secondary effects**. The true cause of these secondary effects might not be seen, even later, except by those using the logic of good economics.

Perhaps a few simple examples that involve both immediate (direct) and secondary (indirect) effects will help illustrate the point. The immediate effect of an aspirin is a bitter taste in one's mouth. The secondary effect, which is not immediately observable, is relief from a headache. The short-term direct effect of drinking twelve cans of beer might be a warm, jolly feeling. In contrast, the secondary effect is likely to be a sluggish feeling the next morning, and perhaps a pounding headache.

### Secondary effects

The indirect impact of an event or policy that may not be easily and immediately observable. In the area of policy, these effects are often both unintended and overlooked.

## THE FAMILY CIRCUS<sup>®</sup> By Bil Keane



Sometimes actions change the incentives people face and they respond accordingly, creating secondary effects that were not intended.

Sometimes, as in the case of the aspirin, the secondary effect—headache relief—is actually an intended consequence of the action. In other cases, however, the secondary effects are unintended. Changes in government policy often alter incentives, indirectly affecting how much people work, earn, invest, consume, and conserve for the future. When a change alters incentives, *unintended consequences* that are quite different from the intended consequences may occur.

Let’s consider a couple of examples that illustrate the potential importance of unintended consequences. In an effort to reduce gasoline consumption, the federal government mandates that automobiles be more fuel efficient. Is this regulation a sound policy? It may be, but when evaluating the policy’s overall impact, one should not overlook its secondary effects. To achieve the higher fuel efficiency, auto manufacturers reduced the size and weight of vehicles. As a result, there are more highway deaths—about 2,500 more per year—than would otherwise occur because these lighter cars do not offer as much protection for occupants. Furthermore, because the higher mileage standards for cars and light trucks make driving cheaper, people tend to drive more than they otherwise would. This increases congestion and results in a smaller reduction in gasoline consumption than was intended by the regulation. Once you consider the secondary effects, the fuel efficiency regulations are much less beneficial than they might first appear.

Trade restrictions between nations have important secondary effects as well. The proponents of tariffs and quotas on foreign goods almost always ignore the secondary effects of their policies. Import quotas restricting the sale of foreign-produced sugar in the U.S. market, for example, have resulted in domestic sugar prices that have often been two or three times the price in the rest of the world. The proponents of this policy—primarily sugar producers—argue that the quotas “save jobs” and increase employment. No doubt, the employment of sugar growers in the United States is higher than it otherwise would be. But what about the secondary effects? The higher sugar prices mean it’s more expensive for U.S. firms to produce candy and other products that use a lot of sugar. As a result, many candy producers, including the makers of Life Savers, Jaw Breakers, Red Hots, and Fannie May and Fanny Farmer chocolates, have moved to countries like Canada and Mexico, where sugar can be purchased at its true market price. Thus, employment among sugar-using firms in the United States is reduced. Further, because foreigners sell less sugar in the United States, they have less purchasing power with which to buy products we export to them. This, too, reduces U.S. employment.

Once the secondary effects of trade restrictions like the sugar quota program are taken into consideration, we have no reason to expect that U.S. employment will increase as a result. There may be more jobs in favored industries, but there will be less employment in others. Trade restrictions reshuffle employment rather than increase it. But those who unwittingly fail to consider the secondary effects will miss this point. Clearly, consideration of the secondary effects is an important ingredient of the economic way of thinking.

**7. THE VALUE OF A GOOD OR SERVICE IS SUBJECTIVE.** Preferences differ, sometimes dramatically, between individuals. How much is a ticket to see a performance of the Bolshoi Ballet worth? Some people would be willing to pay a very high price, while others might prefer to stay home, even if tickets were free! Circumstances can change from day to day, even for a given individual. Alice, a ballet fan who usually would value the ticket at more than its price of \$100, is invited to a party and suddenly becomes uninterested in attending the ballet. Now what is the ticket worth? If she knows a friend who would give her \$40 for the ticket, it is worth at least that much. If she advertises the ticket on eBay and gets \$60 for it, a higher value is created. But if someone who doesn't know of the ticket would have been willing to pay even more, then a potential trade creating even more value is missed. If that particular performance is sold out, perhaps someone in town would be willing to pay \$120. One thing is certain: The value of the ticket depends on several things, including who uses it and under what circumstances.

Economics recognizes that people can and do value goods differently. Mike may prefer to have a grass field rather than a parking lot next to his workplace and be willing to bear the cost of walking farther from his car each day. Kim, on the other hand, may prefer the parking lot and the shorter walk. As a science, economics does not place any inherent moral judgment or value on one person's preferences over another's—in economics, all individuals' preferences are counted equally. Because the subjective preferences of individuals differ, it is difficult for one person to know how much another will value an item.

Think about how hard it is to know what would make a good gift for even a close friend or family member. Thus, arranging trades, or otherwise moving items to higher valued users and uses, is not a simple task. The entrepreneurial individual, who knows how to locate the right buyers and arranges for goods to flow to their highest valued use, can sometimes create huge increases in value from existing resources. In fact, moving goods toward those who value them most and combining resources into goods that individuals value more highly are primary sources of economic progress.

**8. THE TEST OF A THEORY IS ITS ABILITY TO PREDICT.** Economic thinking is **scientific thinking**. The proof of the pudding is in the eating. How useful an economic theory is depends on how well it predicts the future consequences of economic action. Economists develop economic theories using scientific thinking based on basic principles. The idea is to predict how incentives will affect decision makers and compare the predictions against real-world events. If the events in the real world are consistent with a theory, we say that the theory has *predictive value* and is therefore valid.

If it is impossible to test the theoretical relationships of a discipline, the discipline does not qualify as a science. Because economics deals with human beings who can think and respond in a variety of ways, can economic theories really be tested? The answer to this question is yes, if, on average, human beings respond in predictable and consistent ways to changes in economic conditions. The economist believes that this is the case, even though not all individuals will respond in the specified manner. Economists usually do not try to predict the behavior of a specific individual; instead, they focus on the general behavior of a large number of individuals.

In the 1950s, economists began to do laboratory experiments to test economic theories. Individuals were brought into laboratories to see how they would act in buying and selling situations, under differing rules. For example, cash rewards were given to individuals who, when an auction was conducted, were able to sell at high prices and buy at low prices, thus approximating real-world market incentives. These experiments have verified many of the important propositions of economic theory.

### Scientific thinking

Developing a theory from basic principles and testing it against events in the real world. Good theories are consistent with and help explain real-world events. Theories that are inconsistent with the real world are invalid and must be rejected.

Laboratory experiments, however, cannot duplicate all real economic interactions. How can we test economic theory when controlled experiments are not feasible? This is a problem, but economics is no different from astronomy in this respect. Astronomers can use theories tested in physics laboratories, but they must also deal with the world as it is. They cannot change the course of the stars or planets to see what impact the change would have on the gravitational pull of Earth. Similarly, economists cannot arbitrarily change the prices of cars or unskilled-labor services in real markets just to observe the effects on quantities purchased or levels of employment. However, economic conditions (for example, prices, production costs, technology, and transportation costs), like the location of the planets, do change from time to time. As actual conditions change, an economic theory can be tested by comparing its predictions with real-world outcomes. Just as the universe is the main laboratory of the astronomer, the real-world economy is the primary laboratory of the economist.

## Positive and Normative Economics

As a social science, economics is concerned with predicting or determining the impact of changes in economic variables on the actions of human beings. Scientific economics, commonly referred to as **positive economics**, attempts to determine “what is.” Positive economic statements involve potentially verifiable or refutable propositions. For example: “If the price of gasoline rises, people will buy less gasoline.” We can statistically investigate (and estimate) the relationship between gasoline prices and gallons sold. We can analyze the facts to determine the correctness of a positive economic statement. Remember, a positive economic statement need not be correct; it simply must be testable.

In contrast, **normative economics** is about “what ought to be,” given the preferences and philosophical views of the advocate. Value judgments often result in disagreement about normative economic matters. Two people may differ on a policy matter because one is from one political party and the other is from another, or because one wants cheaper food while the other favors organic farming (which is more expensive), and so on. They may even agree about the expected outcome of altering an economic variable (that is, the positive economics of an issue), but disagree as to whether that outcome is desirable.

Unlike positive economic statements, normative economic statements can neither be confirmed nor proven false by scientific testing. “Business firms should not be concerned with profits.” “We should have fewer parking lots and more green space on campus.” “The price of gasoline is too high.” These normative statements cannot be scientifically tested because their validity rests on value judgments.

Normative economic views can sometimes influence our attitude toward positive economic analysis, however. When we agree with the objectives of a policy, it’s easy to overlook the warnings of positive economics. Although positive economics does not tell us which policy is best, it can provide evidence about the likely effects of a policy. Sometimes proponents unknowingly support policies that are actually in conflict with their own goals and objectives. Positive economics, based on sound economic logic, can help overcome this potential problem.

Economics can expand our knowledge of how the real world operates, in both the private and the public (government) sectors. If we do not fully understand the implications, including the secondary effects, of alternative actions, we will not be able to choose intelligently. Yet, it is not always easy to use economic thinking to isolate the impact of a change. Let’s now consider some pitfalls to avoid in economic thinking.

*A positive science may be defined as a body of systematized knowledge concerning what is; a normative or regulative science is a body of systematized knowledge relating to criteria of what ought to be, and concerned therefore with the ideal as distinguished from the actual.*

—John Neville Keynes<sup>5</sup>

### Positive economics

The scientific study of “what is” among economic relationships.

### Normative economics

Judgments about “what ought to be” in economic matters. Normative economic views cannot be proven false because they are based on value judgments.

<sup>5</sup>John Neville Keynes, *The Scope and Method of Political Economy*, 4th ed. (London: Macmillan, 1917), 34–35.

## Pitfalls to Avoid in Economic Thinking

### Violation of the *Ceteris Paribus* Condition Can Lead One to Draw the Wrong Conclusion

#### *Ceteris paribus*

A Latin term meaning “other things constant” that is used when the effect of one change is being described, recognizing that if other things changed, they also could affect the result. Economists often describe the effects of one change, knowing that in the real world, other things might change and also exert an effect.

Economists often qualify their statements with the words *ceteris paribus*. *Ceteris paribus* is a Latin term meaning “other things constant.” An example of a *ceteris paribus* statement would be the following: “*Ceteris paribus*, an increase in the price of housing will cause buyers to reduce their purchases of housing.” Unfortunately, we live in a dynamic world, so things seldom remain constant. For example, as the price of housing rises, the income of consumers might also increase for unrelated reasons. Each of these factors—higher housing prices and increasing consumer income—will have an impact on housing purchases. In fact, we would generally expect them to have opposite effects: Higher prices are likely to reduce housing purchases, whereas higher consumer incomes are likely to increase them. We point out this pitfall because sometimes statistical data (or casual observations) do not support economic theories. In most of these cases, other factors have also changed. The effects observed simply reflect the combined effect of these changes.

The task of sorting out the effects of two or more variables that change at the same time is difficult. However, with a strong grip on economic theory, some ingenuity, and enough data, it can usually be done. This is, in fact, precisely the day-to-day work of many professional economists.

### Good Intentions Do Not Guarantee Desirable Outcomes

There is a tendency to believe that if the proponents of a policy have good intentions, their proposals must be sound. This is not necessarily the case. Proponents may be unaware of some of the adverse secondary effects of their proposals, particularly when they are indirect and observable only over time. Even if their policies would be largely ineffective, politicians may still find it advantageous to call attention to the severity of a problem and propose a program to deal with it. In other cases, proponents of a policy may actually be seeking a goal other than the one they espouse. They may tie their arguments to objectives that are widely supported by the general populace. Thus, the fact that an advocate says a program will help the economy, expand employment, help the poor, increase wages, improve health care, or achieve some other highly desirable objective does not necessarily make it so.

Let’s begin with a couple of straightforward examples. Federal legislation has been introduced that would require all children, including those under age two, to be fastened in a child safety seat when traveling by air. Proponents argue the legislation will increase the survival rate of children in the case of an airline crash and thereby save lives. Certainly, saving lives is a highly desirable objective, but will this really be the case? *Some* lives will probably be saved. But what about the secondary effects? The legislation would mean that a parent traveling with a small child would have to purchase an additional ticket, which will make it more expensive to fly. As a result, many families will choose to travel by auto rather than air. Because the likelihood of a serious accident per mile traveled in an automobile is several times higher than for air travel, more automobile travel will result in more injuries and fatalities. In fact, studies indicate that the increase in injuries and fatalities from additional auto travel will exceed the number of lives saved by airline safety seats.<sup>6</sup> Thus, even though the intentions of the proponents may well be lofty, there is reason to believe that the net impact of their proposal will be more fatalities and injuries than would be the case in the absence of the legislation.

The stated objective of the Endangered Species Act is to protect various species that are on the verge of extinction. Certainly, this is an admirable objective, but there is nonetheless reason to question the effectiveness of the act itself. The Endangered Species Act allows the government to regulate the use of individual private property if an endangered species is

<sup>6</sup>For a detailed analysis of this subject, see Thomas B. Newman, Brian D. Johnston, and David C. Grossman, “Effects and Costs of Requiring Child-Restraint Systems for Young Children Traveling on Commercial Airplanes,” *Archives of Pediatrics and Adolescent Medicine* 157 (October 2003): 969–74.

found present on or near an individual's land. To avoid losing control of their property, many landowners have taken steps to make their land less attractive as a natural habitat for these endangered species. For example, the endangered red-cockaded woodpecker nests primarily in old trees within southern pine ecosystems. Landowners have responded by cutting down trees the woodpeckers like to nest in to avoid having one nest on their land, which would result in the owner losing control of this part of their property. The end result is that the habitat for these birds has actually been disappearing more rapidly.

As you can see, good intentions are not enough. An unsound proposal will lead to undesirable outcomes even if it is supported by proponents with good intentions. In fact, many economists believe that the recent financial crisis is a secondary effect of well-intended government policies that lowered mortgage lending standards in order to expand homeownership. Sound economic reasoning can help us better anticipate the secondary effects of policy changes and avoid the pitfall of thinking that good intentions are enough.

## Association Is Not Causation

In economics, identifying cause-and-effect relationships is very important. But statistical association alone cannot establish this causation. Perhaps an extreme example will illustrate the point. Suppose that each November, a witch doctor performs a voodoo dance designed to summon the gods of winter, and that soon after the dance is performed, the weather in fact begins to turn cold. The witch doctor's dance is associated with the arrival of winter, meaning that the two events appear to have happened in conjunction with one another. But is this really evidence that the witch doctor's dance actually caused the arrival of winter? Most of us would answer no, even though the two events seemed to happen in conjunction with one another.

Those who argue that a causal relationship exists simply because of the presence of statistical association are committing a logical fallacy known as the *post hoc propter ergo hoc* fallacy. Sound economics warns against this potential source of error.

## The Fallacy of Composition: What's True for One Might Not Be True for All

What is true for the individual (or subcomponent) may not be true for the group (or the whole). If you stand up for an exciting play during a football game, you will be better able to see. But what happens if everyone stands up at the same time? Will everyone be better able to see? The answer is, of course, no. Thus, what is true for a single individual does not necessarily apply to the group as a whole. When everyone stands up, the view for individual spectators fails to improve; in fact, it may even become worse.

People who mistakenly argue that what is true for the part is also true for the whole are said to be committing the **fallacy of composition**. What is true for the individual can be misleading and is often fallacious when applied to the entire economy. The fallacy of composition highlights the importance of considering both a micro view and a macro view in the study of economics. **Microeconomics** focuses on the decision making of consumers, producers, and resource suppliers operating in a narrowly defined market, such as that for a specific good or resource. Because individual decision makers are the moving force behind all economic action, the foundations of economics are clearly rooted in a micro view.

As we have seen, however, what is true for a small unit may not be true in the aggregate. **Macroeconomics** focuses on how the aggregation of individual micro-units affects our analysis. Like microeconomics, it is concerned with incentives, prices, and output. Macroeconomics, however, aggregates markets, lumping together all 115 million households in this country. Macroeconomics involves topics like total consumption spending, saving, and employment, in the economy as a whole. Similarly, the nation's 25 million business firms are lumped together in "the business sector." What factors determine the level of aggregate output, the rate of inflation, the amount of unemployment, and interest rates? These are macroeconomic questions. In short, macroeconomics examines the forest rather than the individual trees. As we move from the micro-components to a macro view of the whole, it is important that we beware of the fallacy of composition.

### Fallacy of composition

Erroneous view that what is true for the individual (or the part) will also be true for the group (or the whole).

### Microeconomics

The branch of economics that focuses on how human behavior affects the conduct of affairs within narrowly defined units, such as individual households or business firms.

### Macroeconomics

The branch of economics that focuses on how human behavior affects outcomes in highly aggregated markets, such as the markets for labor or consumer products.

## Economics as a Career

If you find yourself doing well in this course and discover that economics interests you, you may want to think about majoring in it. Graduating with a major in economics provides a variety of career choices. Many students go on to graduate school in economics, business, public administration, or law. Graduate M.B.A. and law programs find economics majors particularly attractive because of their strong analytical skills—economics majors score the highest on the LSAT among common majors taking the exam.

A graduate degree (a master's or doctorate) in economics is typically required to pursue a career as a professional economist. About one-half of all professional economists are employed by colleges and universities as teachers and researchers. Professional economists also work for the government or private businesses. Most major corporations have a staff of economists to advise them. Governments employ economists to analyze the impact of policy alternatives. The federal government's Council of Economic Advisers provides the president with analyses of how the activities of the government influence the economy.

Students who major in economics but who do not pursue graduate school still have many job opportunities. Because economics is a way of thinking, knowledge of it is a valuable decision-making tool that can be used in almost any job. Undergraduate majors in economics typically work in business, government service, banking, or insurance. Opportunities for people with undergraduate economics degrees to teach the subject at the high school level are also increasing. Arnold Schwarzenegger, Mick Jagger, and Ronald Reagan are among the long list of famous undergraduate economics majors!

The average salary of an economics graduate is comparable to that of finance and accounting graduates and is generally higher than those with management or marketing degrees. Median salaries for economists range from \$50,000 for those with a bachelor's degree to \$90,000 for those with a Ph.D. in economics. Professional economists with graduate degrees in economics who work in private businesses generally earn more than those who choose to work as teachers and researchers at colleges and universities. Although salaries vary substantially, the point is that a career in economics can be rewarding both personally and financially.

Even if you choose not to major in economics, you will find that your economics courses will broaden your horizons and increase your ability to understand and analyze what is going on around you in the worlds of politics, business, and human relations. Economics is a social science that often overlaps with the fields of political science, sociology, and psychology. Because the economic way of thinking is so useful in making sense of the world around us, economics has sometimes been called the “queen of the social sciences.” Reflecting this, economics is the only social science for which a Nobel Prize of the Swedish Academy of Science is awarded.

### Looking ahead

*The primary purpose of this book is to encourage you to develop the economic way of thinking so that you can separate sound reasoning from economic nonsense. Once you have developed the economic way of thinking, economics will be relatively easy. Using the economic way of thinking can also be fun. Moreover, it will help you become a better citizen. It will give you a different and fascinating perspective on what motivates people, why they act the way they do, and why their actions sometimes go against the best interest of the community or nation. It will also give you valuable insight into how people's actions can be rechanneled for the benefit of the community at large.*





## KEY POINTS

- ▼ Scarcity and choice are the two essential ingredients of economic analysis. A good is scarce when the human desire for it exceeds the amount freely available from nature. Scarcity requires us to choose among available alternatives. Every choice entails a trade-off.
- ▼ Every society will have to devise some method of rationing scarce resources among competing uses. Markets generally use price as the rationing device. Competition is a natural outgrowth of the need to ration scarce goods.
- ▼ Scarcity and poverty are not the same thing. Absence of poverty implies that some basic level of need has been met. An absence of scarcity implies that our desires for goods are fully satisfied. We may someday eliminate poverty, but scarcity will always be with us.
- ▼ Economics is a way of thinking that emphasizes eight points:
  1. The use of scarce resources to produce a good always has an opportunity cost.
  2. Individuals make decisions purposefully, always seeking to choose the option they expect to be most consistent with their personal goals.
  3. Incentives matter. The likelihood of people choosing an option increases as personal benefits rise and personal costs decline.
  4. Economic reasoning focuses on the impact of marginal changes because it is the marginal benefits and marginal costs that influence choices.
  5. Because information is scarce, uncertainty is a fact of life.
  6. In addition to their direct impact, economic changes often generate secondary effects.
  7. The value of a good or service is subjective and varies with individual preferences and circumstances.
  8. The test of an economic theory is its ability to predict and explain events in the real world.
- ▼ Economic science is positive; it attempts to explain the actual consequences of economic actions or “what is.” Normative economics goes further, applying value judgments to make suggestions about what “ought to be.”
- ▼ Microeconomics focuses on narrowly defined units, while macroeconomics is concerned with highly aggregated units. When shifting focus from micro to macro, one must beware of the fallacy of composition: What’s good for the individual may not be good for the group as a whole.
- ▼ The origin of economics as a science dates to the publication of *An Inquiry into the Nature and Causes of the Wealth of Nations* by Adam Smith in 1776. Smith believed a market economy would generally bring individual self-interest and the public interest into harmony.



## CRITICAL ANALYSIS QUESTIONS

1. Indicate how each of the following changes would influence the incentive of a decision maker to undertake the action described.
  - a. A reduction in the temperature from 80° to 50° on one’s decision to go swimming
  - b. A change in the meeting time of the introductory economics course from 11:00 A.M. to 7:30 A.M. on one’s decision to attend the lectures
  - c. A reduction in the number of exam questions that relate directly to the text on the student’s decision to read the text
  - d. An increase in the price of beef on one’s decision to buy steak
  - e. An increase in the rental rates of apartments on one’s decision to build additional rental housing units
2. “The government should provide such goods as health care, education, and highways because it can provide them for free.” Is this statement true or false? Explain your answer.
3. a. What method is used to ration goods in a market economy? How does this rationing method influence the incentive of individuals to supply goods, services, and resources to others?

- b. How are grades rationed in your economics class? How does this rationing method influence student behavior? Suppose the highest grades were rationed to those whom the teacher liked best. How would this method of rationing influence student behavior?
- \*4. In recent years, both the personal exemption and child tax credit have been increased in the United States. According to the basic principles of economics, how will the birthrate be affected by policies that reduce the taxes imposed on those with children?
- \*5. “The economic way of thinking stresses that good intentions lead to sound policy.” Is this statement true or false? Explain your answer.
6. Self-interest is a powerful motivator. Does this necessarily imply that people are selfish and greedy? Do self-interest and selfishness mean the same thing?
- \*7. Congress and government agencies often make laws to help protect the safety of consumers. New cars, for example, are required to have many safety features before they can be sold in the United States. These rules do indeed provide added safety for buyers, although they also add to the cost of making and price of buying the new vehicles. What secondary effects can you see happening as the result of mandating that automobiles have airbags? What incentives do you see changing for drivers as the result of making cars safer? Do you think the millions of dollars spent by consumers on air bags each year could be better spent elsewhere to save even more lives?
- \*8. “Individuals who economize are missing the point of life. Money is not so important that it should rule the way we live.” Evaluate this statement.
- \*9. “Positive economics cannot tell us which agricultural policy is better, so it is useless to policy makers.” Evaluate this statement.
- \*10. “I examined the statistics for our basketball team’s wins last year and found that, when the third team played more, the winning margin increased. If the coach played the third team more, we would win by a bigger margin.” Evaluate this statement.
- \*11. Which of the following are positive economic statements and which are normative?
  - The speed limit should be lowered to 55 miles per hour on interstate highways.
  - Higher gasoline prices cause the quantity of gasoline that consumers buy to increase.
  - A comparison of costs and benefits should not be used to assess environmental regulations.
  - Higher taxes on alcohol result in less drinking and driving.
12. “Economics is about trade-offs. If more scarce resources are used to produce one thing, fewer will be available to produce others.” Evaluate this statement.
13. Do individuals “economize”? If so, what are they trying to do? Do you economize when you shop at the mall? Why or why not?
- \*14. Should the United States attempt to reduce air and water pollution to zero? Why or why not?

\*Asterisk denotes questions for which answers are given in Appendix B.

## A D D E N D U M

### Understanding Graphs

Economists often use graphs to illustrate economic relations. Graphs are like pictures. They are visual aids that can communicate valuable information in a small amount of space. A picture may be worth a thousand words, but only to a person who understands the picture (and the graph).

This addendum illustrates the use of simple graphs as a way to communicate. Many students, particularly those with some mathematics background, are already familiar with this material, and can safely ignore it. This addendum is for those who need to be assured that they can understand graphic illustrations of economic concepts.

### The Simple Bar Graph

A simple bar graph helps us visualize comparative relationships and understand them better. It is particularly

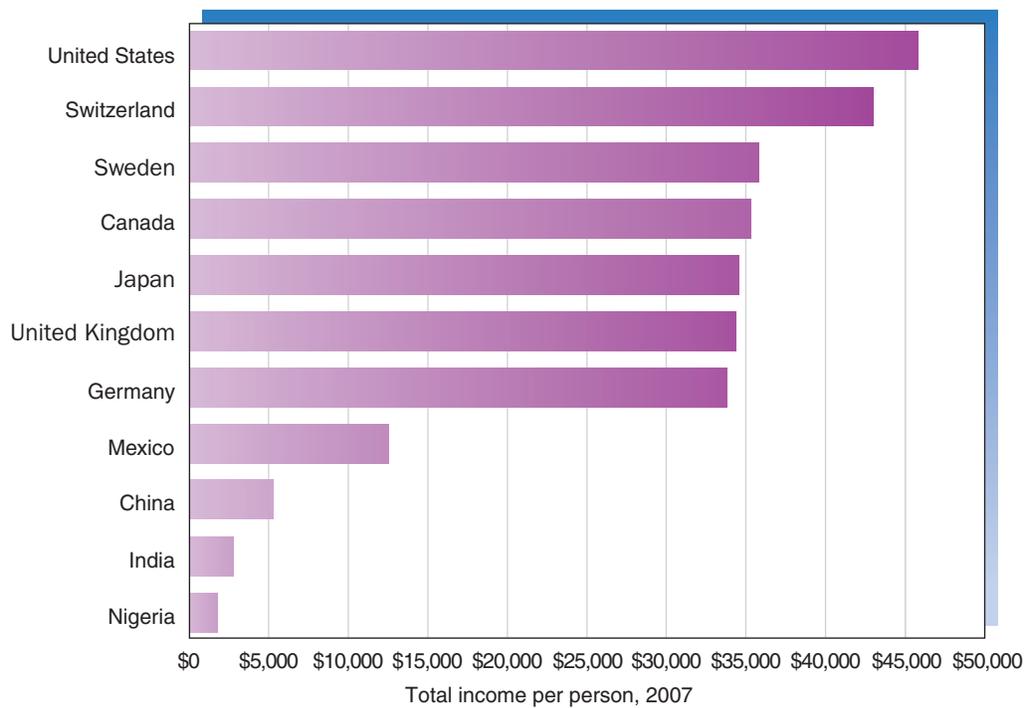
useful for illustrating how an economic indicator varies among countries, across time periods, or under alternative economic conditions.

**EXHIBIT A-1** is a bar graph illustrating economic data. The table in part (a) presents data on the income per person in 2007 for several countries. Part (b) uses a bar graph to illustrate the same data. The horizontal scale of the graph indicates the total income per person. A bar is made for indicating the income level (see the dollar scale on the  $x$ -axis) of each country. The length of each bar is in proportion to the per-person income of the country. Thus, the length of the bars provides a visual illustration of how per capita income varies across the countries. For example, the extremely short bar for Nigeria shows immediately that income per person there is only a small fraction of the comparable income figure for the United States, Japan, Switzerland, and several other countries.

**EXHIBIT A-1**  
 International Comparison  
 of Income per Person

COUNTRY	TOTAL INCOME PER PERSON, 2007
United States	\$45,850
Switzerland	43,080
Sweden	35,840
Canada	35,310
Japan	34,600
United Kingdom	34,370
Germany	33,820
Mexico	12,580
China	5,370
India	2,740
Nigeria	1,770

(a)



(b)

Source: The World Bank, *World Development Report 2009* (<http://econ.worldbank.org/wdr/>), Table 1.

## Linear Graphic Presentation

Economists often want to illustrate variations in economic variables with the passage of time. A linear graph with time on the horizontal axis and an economic variable on the vertical axis is a useful tool to indicate variations over time. **EXHIBIT A-2** illustrates a simple linear graph of changes in consumer prices (the inflation rate) in the United States between 1960 and 2008. The table of the exhibit presents data on the percentage change in consumer prices for each year. Beginning with 1960, the horizontal axis indicates the time period (year). The inflation

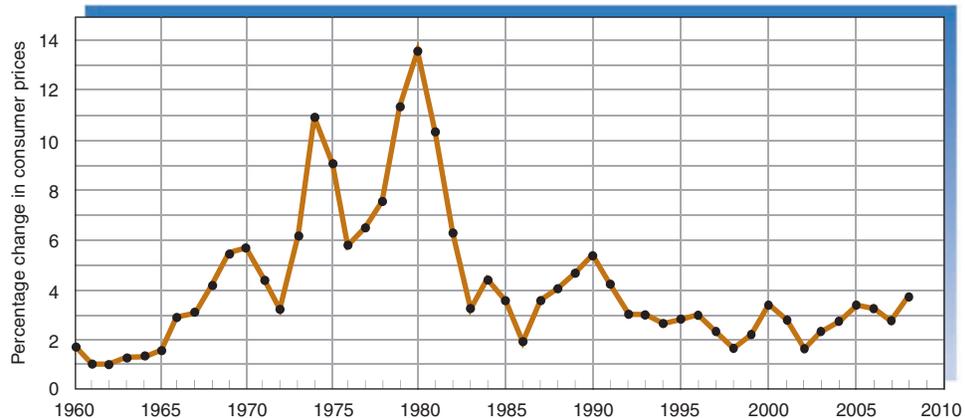
rate is plotted vertically above each year. Of course, the height of the plot (line) indicates the inflation rate during that year. For example, in 1975 the inflation rate was 9.1 percent. This point is plotted at the 9.1 percent vertical distance directly above the year 1975. In 1976, the inflation rate fell to 5.8 percent. Thus, the vertical plot of the 1976 inflation rate is lower than that for 1975. The inflation rate for each year shown in part (a) is plotted at the corresponding height directly above the year in part (b). The linear graph is simply a line connecting the points plotted for each of the years.

**EXHIBIT A-2**  
**Changes in the Level of**  
**Prices in United States**

The tabular data (a) of the inflation rate are presented in graphic form in (b).

YEAR	PERCENTAGE CHANGE IN CONSUMER PRICES	YEAR	PERCENTAGE CHANGE IN CONSUMER PRICES
1960	1.7	1984	4.3
1961	1.0	1985	3.6
1962	1.0	1986	1.9
1963	1.3	1987	3.6
1964	1.3	1988	4.1
1965	1.6	1989	4.8
1966	2.9	1990	5.4
1967	3.1	1991	4.2
1968	4.2	1992	3.0
1969	5.5	1993	3.0
1970	5.7	1994	2.6
1971	4.4	1995	2.8
1972	3.2	1996	3.0
1973	6.2	1997	2.3
1974	11.0	1998	1.6
1975	9.1	1999	2.2
1976	5.8	2000	3.4
1977	6.5	2001	2.8
1978	7.6	2002	1.6
1979	11.3	2003	2.3
1980	13.5	2004	2.7
1981	10.3	2005	3.4
1982	6.2	2006	3.2
1983	3.2	2007	2.8
		2008	3.8

(a)



(b)

Source: Bureau of Labor Statistics (<http://www.bls.gov/cpi/>).

The linear graph is a visual aid to understanding what happens to the inflation rate during the period. As the graph shows, the inflation rate rose sharply between 1967 and 1969, 1972 and 1974, and 1978 and 1980. It was substantially higher during the 1970s than in the early 1960s or the mid-1980s and 1990s. Most

importantly, the inflation rate has been lower and more stable since 1983 than in the period before. Although the linear graph does not communicate any information not in the table, it does make it easier to see the pattern of the data. Thus, economists often use simple graphs rather than tables to communicate information.

## Direct and Inverse Relationships

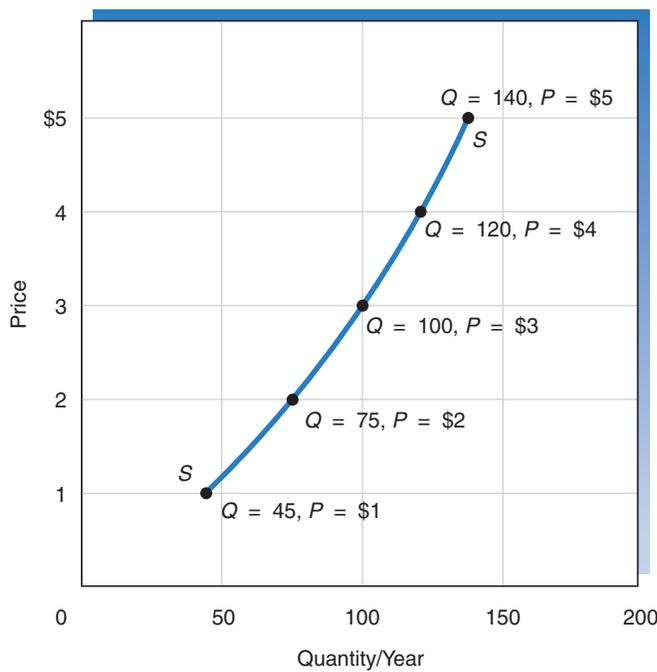
Economic logic often suggests that two variables are linked in a specific way. Suppose an investigation reveals that, other things being constant, farmers supply more wheat as the price of wheat increases. **EXHIBIT A-3** presents hypothetical data on the relationship between the price of wheat and the quantity supplied by farmers, first in tabular form in part (a) and then as a simple two-dimensional graph in part (b). Suppose we measure the quantity of wheat supplied by farmers on the  $x$ -axis (the horizontal axis) and the price of wheat on the  $y$ -axis (the vertical axis). Points indicating the value of  $x$  (quantity supplied) at alternative values of  $y$  (price of wheat) can then be plotted. The line (or curve) linking the points illustrates the relationship between the price of wheat and the amount supplied by farmers.

In the case of price and quantity supplied of wheat, the two variables are directly related. When the  $y$ -variable increases, so does the  $x$ -variable. When two variables are directly related, the graph illustrating the linkage between the two will slope upward to the right, as in the case of  $SS$  in part (b).

Sometimes the  $x$ -variable and the  $y$ -variable are inversely related. A decline in the  $y$ -variable is associated with an increase in the  $x$ -variable. Therefore, a curve picturing the inverse relationship between  $x$  and  $y$  slopes downward to the right. **EXHIBIT A-4** illustrates this case. As the data of the table indicate, consumers purchase more as the price in wheat declines. Measuring the price of wheat on the  $y$ -axis (by convention, economists always place price on the  $y$ -axis) and the quantity of wheat purchased on the  $x$ -axis, the relationship between these two variables can also be illustrated graphically. If the price of

PRICE	AMOUNT OF WHEAT SUPPLIED BY FARMERS PER YEAR (MILLIONS OF BUSHELS)
\$1	45
2	75
3	100
4	120
5	140

(a)



(b)

### EXHIBIT A-3 Direct Relationship between Variables

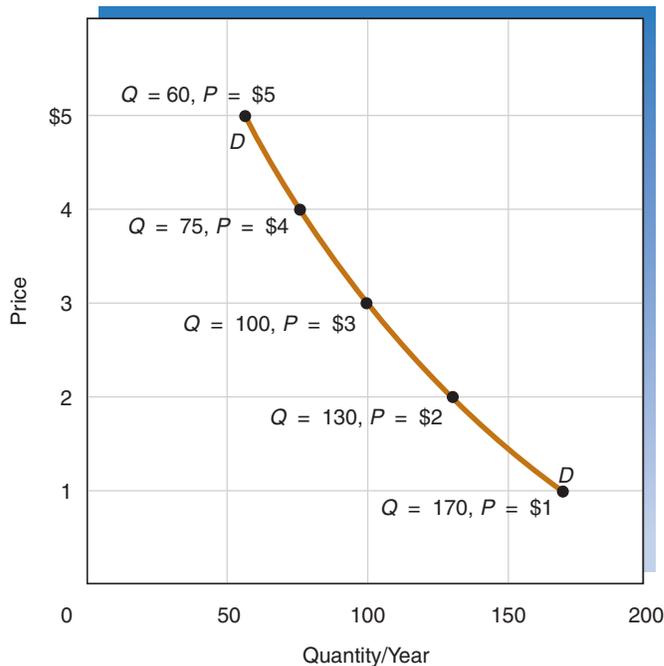
*As the table (a) indicates, farmers are willing to supply more wheat at a higher price. Thus, there is a direct relationship between the price of wheat and the quantity supplied. When the  $x$ - and  $y$ -variables are directly related, a curve mapping the relationship between the two will slope upward to the right like  $SS$ .*

**EXHIBIT A-4**  
Inverse Relationship  
between Variables

As the table (a) shows, consumers will demand (purchase) more wheat as the price declines. Thus, there is an inverse relationship between the price of wheat and the quantity demanded. When the *x*- and *y*-variables are inversely related, a curve showing the relationship between the two will slope downward to the right like *DD*.

PRICE	AMOUNT OF WHEAT DEMANDED BY CONSUMERS PER YEAR (MILLIONS OF BUSHEL)
\$1	170
2	130
3	100
4	75
5	60

(a)



(b)

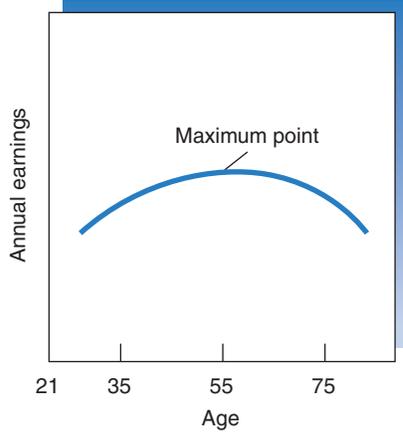
wheat were \$5 per bushel, only 60 million bushels would be purchased by consumers. As the price declines to \$4 per bushel, annual consumption increases to 75 million bushels. At still lower prices, the quantity purchased by consumers will expand to larger and larger amounts. As part (b) illustrates, the inverse relationship between price and quantity of wheat purchased generates a curve that slopes downward to the right.

**Complex Relationships**

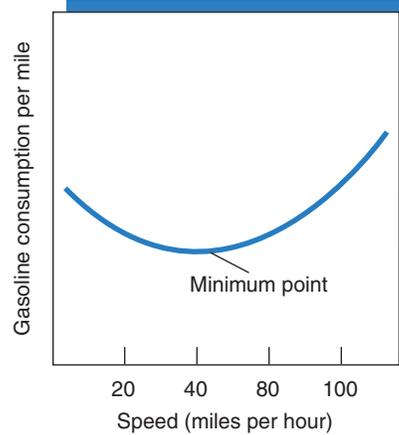
Sometimes the initial relationship between the *x*- and *y*-variables will change. **EXHIBIT A-5** illustrates more complex relationships of this type. Part (a) shows the typical relationship between annual earnings and age. As a young person gets work experience and develops skills, earnings usually expand. Thus, initially, age and annual earnings are directly related; annual earnings increase with age. However,

beyond a certain age (approximately age 55), annual earnings generally decline as workers approach retirement. As a result, the initial direct relationship between age and earnings changes to an inverse relationship. When this is the case, annual income expands to a maximum (at age 55) and then begins to decline with years of age.

Part (b) illustrates an initial inverse relationship that later changes to a direct relationship. Consider the impact of travel speed on gasoline consumption per mile. At low speeds, the automobile engine will not be used efficiently. As speed increases from 5 mph to 10 mph and on to a speed of 40 mph, gasoline consumption per mile declines. In this range, there is an inverse relationship between speed of travel (*x*) and gasoline consumption per mile (*y*). However, as speed increases beyond 40 mph, air resistance increases and more gasoline per mile is required to maintain the additional speed. At very high speeds, gasoline consumption



(a) A direct relationship changing to inverse



(b) An inverse relationship changing to direct

### EXHIBIT A-5 Complex Relationships between Variables

At first, an increase in age (and work experience) leads to a higher income, but later earnings decline as the worker approaches retirement (a). Thus, age and annual income are initially directly related, but at approximately age 55 an inverse relationship emerges. Part (b) illustrates the relationship between travel speed and gasoline consumption per mile. Initially, gasoline consumption per mile declines as speed increases (an inverse relationship), but as speed increases above 40 mph, gasoline consumption per mile increases with the speed of travel (direct relationship).

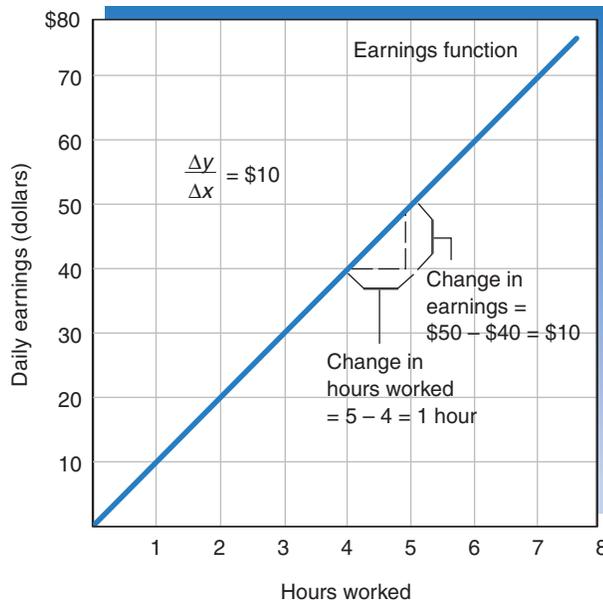
per mile increases substantially with speed of travel. Thus, gasoline consumption per mile reaches a minimum, and a direct relationship between the  $x$ - and  $y$ -variables describes the relationship beyond that point (40 mph).

### Slope of a Straight Line

In economics, we are often interested in how much the  $y$ -variable changes in response to a change in the  $x$ -variable. The slope of the line or curve reveals this information. Mathematically, the slope of a line or curve is

equal to the change in the  $y$ -variable divided by the change in the  $x$ -variable.

EXHIBIT A-6 illustrates the calculation of the slope for a straight line. The exhibit shows how the daily earnings ( $y$ -variable) of a worker change with hours worked (the  $x$ -variable). The wage rate of the worker is \$10 per hour, so when 1 hour is worked, earnings are equal to \$10. For 2 hours of work, earnings jump to \$20, and so on. A 1-hour change in hours worked leads to a \$10 change in earnings. Thus, the slope of the line ( $\Delta y/\Delta x$ ) is equal to 10.

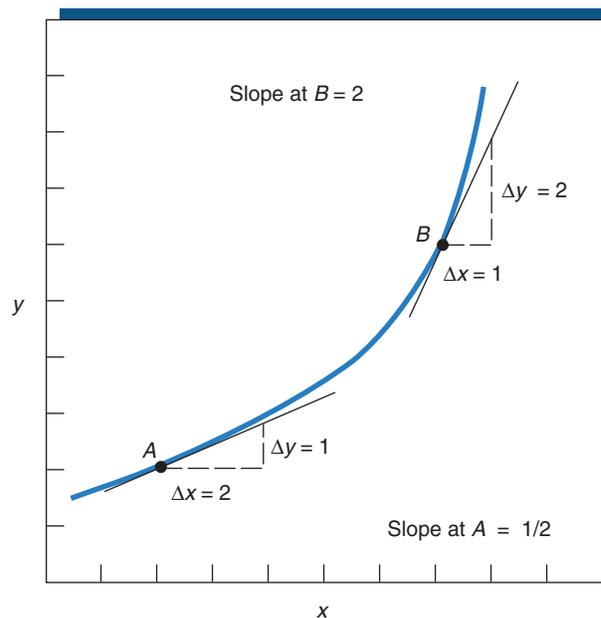


### EXHIBIT A-6 Slope of a Straight Line

The slope of a line is equal to the change in  $y$  divided by the change in  $x$ . The line opposite illustrates the case in which daily earnings increase by \$10 per hour worked. Thus, the slope of the earnings function is 10 (\$10  $\div$  1 hr). For a straight line, the slope is constant at each point on the line.

### EXHIBIT A-7 Slope of a Nonlinear Curve

The slope of a curve at any point is equal to the slope of the straight line tangent to the curve at the point. As the lines tangent to the curve at points A and B illustrate, the slope of a curve will change from point to point along the curve.



(The symbol  $\Delta$  means “change in.”) In the case of a straight line, the change in  $y$ , per unit change in  $x$ , is equal for all points on the line. Thus, the slope of a straight line is constant for all points along the line. Exhibit A-6 illustrates a case in which a direct relationship exists between the  $x$ - and  $y$ -variables. For an inverse relationship, the  $y$ -variable decreases as the  $x$ -variable increases. So, when  $x$  and  $y$  are inversely related, the slope of the line will be negative.

### Slope of a Curve

In contrast with a straight line, the slope of a curve is different at each point along the curve. The slope of a curve at a specific point is equal to the slope of a line tangent to the curve at the point, meaning a line that just touches the curve.

**EXHIBIT A-7** illustrates how the slope of a curve at a specific point is determined. First, consider the slope of the curve at point A. A line tangent to the curve at point A indicates that  $y$  changes by one unit when  $x$  changes by two units at point A. Thus, the slope ( $\Delta y/\Delta x$ ) of the curve at A is equal to 0.5.

Now consider the slope of the curve at point B. The line tangent to the curve at B indicates that  $y$  changes by two units for each one-unit change in  $x$  at point B. Thus, at B the slope ( $\Delta y/\Delta x$ ) is equal to 2. At point B, a change in the  $x$ -variable leads to a much larger change in  $y$  than it does at point A. The greater slope of the curve at B reflects this greater change in  $y$  per unit change in  $x$  at B relative to A.

### Graphs Are Not a Substitute for Economic Thinking

By now, you should have a fairly good understanding of how to read a graph. If you still feel uncomfortable with graphs, try drawing (graphing) the relationship between several things with which you are familiar. If you work, try graphing the relationship between your hours worked ( $x$ -axis) and your weekly earnings ( $y$ -axis). Exhibit A-3 could guide you with this exercise. Can you graph the relationship between the price of gasoline and your expenditures on gasoline? Graphing these simple relationships will give you greater confidence in your ability to grasp more complex economic relationships presented in graphs.

This text uses only simple graphs. Thus, there is no reason for you to be intimidated. Graphs look much more complex than they really are. In fact, they are nothing more than a simple device to communicate information quickly and concisely. Nothing can be communicated with a graph that cannot be communicated verbally.

Most important, graphs are not a substitute for economic thinking. Although a graph may illustrate that two variables are related, it tells us nothing about the cause-and-effect relationship between the variables. To determine probable cause and effect, we must rely on economic theory. Thus, the economic way of thinking, not graphs, is the power station of economic analysis.

# Some Tools of the Economist

## CHAPTER FOCUS

- What is opportunity cost? Why do economists place so much emphasis on it?
- Why do people engage in exchange?
- How does private ownership affect the use of resources? Will private owners pay any attention to the desires of others?
- What does a production possibilities curve demonstrate?
- What are the sources of gains from trade? How does trade influence our modern living standards?
- What are the two major methods of economic organization? How do they differ?



*The key insight of Adam Smith's *Wealth of Nations* is misleadingly simple: if an exchange between two parties is voluntary, it will not take place unless both believe they will benefit from it. Most economic fallacies derive from the neglect of this simple insight, from the tendency to assume that there is a fixed pie, that one party can gain only at the expense of another.*

—Milton and Rose Friedman<sup>1</sup>

<sup>1</sup>Milton Friedman and Rose Friedman, *Free to Choose* (Harcourt Brace, 1990), 13.

In the preceding chapter, you were introduced to the economic way of thinking. We will now begin to apply that approach. This chapter focuses on five topics: opportunity cost, trade, property rights, the potential output level of an economy, and the creation of wealth. These seemingly diverse topics are in fact highly interrelated. For example, the opportunity cost of goods determines which ones an individual or a nation should produce and which should be acquired through trade. In turn, the ways in which trade and property rights are structured influence the amount of output and wealth an economy can create. These tools of economics are important for answering the basic economic questions: what to produce, how to produce it, and for whom it will be produced. We will begin by first explaining in more detail what opportunity cost is. ■

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## What Shall We Give Up?

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Because of scarcity, we can't have everything we want. As a result, we constantly face choices that involve trade-offs between our competing desires. Most of us would like to have more time for leisure, recreation, vacations, hobbies, education, and skill development. We would also like to have more wealth, a larger savings account, and more consumable goods. However, all these things are scarce, in the sense that they are limited. Our efforts to get more of one will conflict with our efforts to get more of others.

### Opportunity Cost

An unpleasant fact of economics is that the choice to do one thing is, at the same time, a choice *not* to do something else. Your choice to spend time reading this book is a choice not to spend the time playing video games, listening to a math lecture, or going to a party. These things must be given up because you decided to read this book instead. As we indicated in Chapter 1, the highest valued alternative sacrificed in order to choose an option is called the *opportunity cost* of that choice. In economics when we refer to the “cost” of an action, we are referring to its opportunity cost.

Opportunity costs are subjective because they depend on how the decision maker values his or her options. They are also based on the expectations of the decision maker—what he or she expects the value of the forgone alternatives will be. Because of this, opportunity cost can never be directly measured by someone other than the decision maker. Only the person choosing can know the value of what is given up.<sup>2</sup> This makes it difficult for someone other than the decision maker—including experts and elected officials—to make choices on that person's behalf. Moreover, not only do people differ in the trade-offs they prefer to make, but their preferences also change with time and circumstances. Thus, the decision maker is the only person who can properly evaluate the options and decide which is the best, given his or her preferences and current circumstances.

Monetary costs can be measured objectively in terms of dollars and cents (or Japanese yen, English pounds, and so forth). They also represent an opportunity cost. If you spend \$20 on a new CD, you must now forgo the other items you could have purchased with the \$20—a new shirt, for example. However, it is important to recognize that monetary costs do not represent the total opportunity cost of an option. The total cost of attending a football

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<sup>2</sup>See James M. Buchanan, *Cost and Choice* (Chicago: Markham, 1969), for a classic work on the relationship between cost and choice.

game, for example, is the highest valued opportunity lost as a result of both the time you spend at the game and the amount of money you pay for your ticket. In cases like the online purchase of a music album, for which there is minimal outlay of time, effort, and other resources to make the purchase, the monetary cost will approximate the total cost. Contrast this with a decision to sit on your sofa and listen to your new music, which involves little or no monetary cost, but has a clear opportunity cost of your time. In this second case, the monetary cost is a poor measure of the total cost.

## Opportunity Cost and the Real World

Is real-world decision making influenced by opportunity costs? Consider your own decision to attend college. Your opportunity cost of going to college is the value of the next best alternative, which could be measured as the salary you would earn if you had chosen to go directly into full-time work instead. Every year you stay in college, you give up what you could have earned by working that year. Typically, students incur opportunity costs of \$80,000 or more in forgone income during their stay in college.

But what if the opportunity cost of attending college changes? How will it affect your decision? Suppose, for example, that you received a job offer today for \$250,000 per year as an athlete or an entertainer, but the job would require so much travel that school would be impossible. Would this change in the opportunity cost of going to college affect your choice as to whether to continue in school? It likely would. Going to college would mean you would have to say good-bye to the huge salary you've been offered. (See the accompanying illustration on LeBron James for a good example.) You can clearly tell from this example that the monetary cost of college (tuition, books, and so forth) isn't the only factor influencing your decision. Your opportunity cost plays a part, too.

Even when their parents pay all the monetary expenses of their college education, some students are surprised to learn that they are actually incurring more of the total cost of going to college than their parents. For example, the average monetary cost (tuition, room and board, books, and so forth) for a student attending college is about \$10,000 per year (\$40,000 over four years). Even if the student's next best alternative were working at a job that paid only \$15,000 per year, over four years, that would amount to \$60,000 in forgone earnings. So, the total cost of the student's education would be \$100,000 (\$40,000 in monetary costs paid by the parents and \$60,000 in opportunity costs incurred by the student).<sup>3</sup>

Now consider another decision made by college students—whether to attend a particular class meeting. The monetary cost of attending class (bus fare, parking, gasoline costs, and so on) remains fairly constant from day to day. Why then do students choose to attend class on some days and not on others? Even though the monetary cost of attending class is fairly constant, a student's opportunity cost can change dramatically from day to day. Some days, the next best alternative to attending class may be sleeping in or watching TV. Other days, the opportunity cost may be substantially larger, perhaps the value of attending a big football game, getting an early start on spring break, or having additional study time for a crucial exam in another class. As options like these increase the cost of attending class, more students will decide not to attend.



Elisa/Getty Images

*LeBron James understands opportunity cost. As a high school player, James was already one of the best basketball players in the nation. He had received numerous scholarship offers and was considering attending college at Ohio State, the University of North Carolina, Michigan State, or the University of California. However, after high school graduation, LeBron decided to go directly into the NBA because the opportunity cost of college was simply too high. He was selected as the first pick in the 2003 NBA draft, signing a three-year contract worth almost \$13 million, with an option for a fourth year at \$5.8 million. Had he decided to go to college instead, James would have incurred an opportunity cost of at least \$19 million in forgone income to earn a four-year college degree! Would you have skipped college if your opportunity cost had been that high?*

<sup>3</sup>From the standpoint of the family's total economic cost of sending a child to college, some of the monetary costs, such as room and board, are not costs of choosing to go to college. The cost of living does have to be covered, but it would be incurred whether or not the student went to college.

Failure to consider opportunity cost often leads to unwise decision making. Suppose that your community builds a beautiful new civic center. The mayor, speaking at the dedication ceremony, tells the world that the center will improve the quality of life in your community. People who understand the concept of opportunity cost may question this view. If the center had not been built, the resources might have funded construction of a new hospital, improvements to the educational system, or housing for low-income families. Will the civic center contribute more to the well-being of the people in your community than these other facilities? If so, it was a wise investment. If not, your community will be worse off than it would have been if decision makers had chosen a higher valued project.

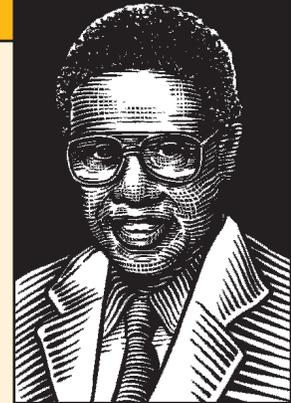
## Trade Creates Value

Why do individuals trade with each other, and what is the significance of this exchange? We have learned that value is subjective. It is wrong to assume that a particular good or service has a fixed objective value just because it exists.<sup>4</sup> The value of goods and services generally depends on who uses them, and on circumstances, such as when and where they are used, as well as on the physical characteristics. Some people love onions, whereas others dislike them very much. Thus, when we speak of the “value of an onion,” this makes sense only within the context of its value to a specific person. Similarly, to most people an umbrella is more valuable on a rainy day than on a sunny one.

### OUTSTANDING ECONOMIST

#### Thomas Sowell (1930–)

Thomas Sowell, a senior fellow at the Hoover Institution, recognizes the critical importance of the institutions—the “rules of the game”—that shape human interactions. His book *Knowledge and Decisions* stresses the role of knowledge in the economy and how different institutional arrangements compare at using scarce information. Sowell is the author of many books and journal articles and writes a nationally syndicated column that appears in more than 150 newspapers. His writings address subjects ranging from race preferences and cultural differences to the origins and ideology of political conflict.



Consider the case of Janet, who loves tomatoes but hates onions, and Brad, who loves onions but hates tomatoes. They go out to dinner together and the waiter brings their salads. Brad turns to Janet and says, “I’ll trade you the tomatoes on my salad for the onions on yours.” Janet gladly agrees to the exchange. This simple example will help us illustrate two important aspects of voluntary exchange.

**1. WHEN INDIVIDUALS ENGAGE IN A VOLUNTARY EXCHANGE, BOTH PARTIES ARE MADE BETTER OFF.** In the previous example, Janet has the option of accepting or declining Brad’s offer of a trade. If she accepts his offer, she does so *voluntarily*. Janet would agree to this exchange only if she expects to be better off as a result. Because she likes tomatoes better than onions, Janet’s enjoyment of her salad will be greater with this trade than without it. On the other side, Brad has voluntarily made this offer of an exchange to Janet because Brad believes he will also be better off as a result of the exchange.

People tend to think of making, building, and creating things as productive activities. Agriculture and manufacturing are like this. On the one hand, they create something genuinely new, something that was not there before. On the other hand, trade—the mere exchange of one

<sup>4</sup>An illuminating discussion of this subject, termed the “physical fallacy,” is found in Thomas Sowell, *Knowledge and Decisions* (New York: Basic Books, 1980), 67–72.

thing for another—does not create new material items. You might be tempted to think that if goods are merely being traded, one party will be better off and the other worse off. A closer look at the motivation for trade helps us see through this popular fallacy. Exchange takes place because both parties expect it will make them better off. If they didn't, they wouldn't agree to do it. For example, if Janet liked onions better than tomatoes, she wouldn't have traded with Brad. The fact that she agreed to the trade means she thinks she has something to gain by doing so. Brad thinks the same thing when it comes to his tomatoes. In other words, because their exchange is voluntary, *both* Janet and Brad are made better off. As the chapter-opening quotation illustrates, most errors in economic reasoning happen when we forget that voluntary trades, like the one between Janet and Brad, make both parties better off.

**2. BY CHANNELING GOODS AND RESOURCES TO THOSE WHO VALUE THEM MOST, TRADE CREATES VALUE AND INCREASES THE WEALTH CREATED BY A SOCIETY'S RESOURCES.** Because preferences differ among individuals, the value of an item can vary greatly from one person to another. Therefore, trade can create value by moving goods from those who value them less to those who value them more. The simple exchange between Janet and Brad also illustrates this point. Imagine for a moment that Brad and Janet had never met and instead were both eating their salads alone. Without the ability to engage in this exchange, both would have eaten their salads but not had as much enjoyment from them. When goods are moved to individuals who value them more, the total value created by a society's limited resources is increased. The same two salads create more value when the trade occurs than when it doesn't.

It is easy to think of material things as wealth, but material things are not wealth until they are in the hands of someone who values them. A highly technical book on electronics that is of no value to an art collector may be worth several hundred dollars to an engineer. Similarly, a painting that is unappreciated by an engineer may be of great value to an art collector. Therefore, a voluntary exchange that moves the electronics book to the engineer and the painting to the art collector will increase the value of both goods. By channeling goods and resources toward those who value them most, trade creates wealth for both the trading partners and for the nation.

## Transaction Costs—A Barrier to Trade

How many times have you been sitting home late at night, hungry, wishing you had a meal from your favorite fast-food restaurant? You would gladly pay the \$4 price for the value meal you have in mind, but you feel it is just not worth the time and effort to get dressed and make that drive. The costs of the time, effort, and other resources necessary to search out, negotiate, and conclude an exchange are called **transaction costs**. High transaction costs can be a barrier to potentially productive exchange.

### Transaction costs

The time, effort, and other resources needed to search out, negotiate, and complete an exchange.

Twentieth Century Fox/The Kobal Collection



## ECONOMICS *At The Movies*

### Wall Street (1987)

Michael Douglas won an Oscar for his performance in *Wall Street*, but he gets a failing grade for his understanding of economics. In response to a question Charlie Sheen poses to him about how much money is “enough,” Michael Douglas replies: “It’s not a question of enough, pal. It’s a zero-sum game. Somebody wins; somebody loses. Money itself isn’t lost or gained, it’s simply transferred from one person to another.” Wrong!

In the real world, even on Wall Street, voluntary exchanges occur only when both parties expect to gain. Voluntary trade is a positive-sum game, meaning that wealth is created. It is not a zero-sum game, in which the gains to one person result in losses to another.

Because of transaction costs, we should not expect all potentially valuable trades to take place, any more than we expect all useful knowledge to be learned, all safety measures to be taken, or all potential “A” grades to be earned. Frequent fliers know that if they never miss a flight, they are probably spending too much time waiting in airports. Similarly, the seller of a car, a house, or a ballet ticket knows that finding the one person in the world willing to pay the most money for the good is not worth the enormous effort it would take to find him or her. Information is costly. That is one reason that perfection in exchange, as in most things we do, is seldom worth achieving.

The Internet has significantly lowered transaction costs. The auction Web site eBay helps sellers to reach millions of potential buyers with little effort and few costs. Buyers can easily search eBay for items they want to buy, even if the items are located halfway around the world. Other Web sites, such as BizRate and PriceGrabber, scour online shopping sites for the lowest prices so buyers don’t have to. Consumers can also readily find detailed information about products on any number of sites. Amazon.com posts prices, product information provided by manufacturers, and reviews from other buyers. By reducing transaction costs, the Internet creates value and wealth. It expands the number of trades that are made, and makes it faster and easier to make them.

## The Middleman as a Cost Reducer

Because it is costly for buyers and sellers to find each other and to negotiate the exchange, an entrepreneurial opportunity exists for people to become **middlemen**. Middlemen provide buyers and sellers information at a lower cost and arrange trades between them. Many people think middlemen just add to the buyer’s expense without performing a useful function. However, because of transaction costs, without middlemen, many trades would never happen (nor would the gains from them be realized). An auto dealer, for example, is a middleman. An auto dealer helps both the manufacturer and the buyer. The dealer helps buyers by maintaining an inventory of vehicles for them to choose from. Knowledgeable salespeople hired by the dealer help car shoppers quickly learn about the vehicles they’re interested in and the pros and cons of each. Car buyers also like to know that a local dealer will honor the manufacturer’s warranty and provide parts and service for the car. The dealer helps manufacturers by handling tasks like these so they can concentrate on designing and making better cars.

Grocers are also middlemen. Each of us could deal with farmers directly to buy our food—probably at a lower monetary cost. But that would have a high opportunity cost. Finding and dealing with different farmers for every product we wanted to buy would take a lot of time. Alternatively, we could form consumer cooperatives, banding together to eliminate the middleman, using our own warehouses and our own volunteer labor to order, receive, display, distribute, and collect payment for the food. In fact, some cooperatives like this do exist. But most people prefer instead to pay a grocer to provide all of the goods they want rather than trying to trade with different farmers.

Stockbrokers, realtors, publishers, and merchants of all sorts are other kinds of middlemen. For a fee, they reduce transaction costs for both buyers and sellers. By making exchanges cheaper and more convenient, middlemen cause more efficient trades to happen. In so doing, they themselves create value.

## The Importance of Property Rights

The buyer of an apple, a CD, a television set, or an automobile generally takes the item home. The buyer of a steamship or an office building, though, may never touch it. When exchange occurs, it’s really the **property rights** of the item that change hands.

### Middleman

A person who buys and sells goods or services or arranges trades. A middleman reduces transaction costs.

### Property rights

The rights to use, control, and obtain the benefits from a good or resource.

### PRIVATE OWNERSHIP



*Private ownership provides people with a strong incentive to take care of things and develop resources in ways that are highly valued by others.*

**Private-property rights** involve three things:

1. the right to exclusive use of the property (that is, the owner has sole possession, control, and use of the property, including the right to exclude others);
2. legal protection against invasion from other individuals who would seek to use or abuse the property without the owner's permission; and
3. the right to transfer, sell, exchange, or mortgage the property.

Private owners can do anything they want with their property as long as they do not use it in a manner that invades or infringes on the rights of another. For example, I cannot throw the hammer that I own through the television set that you own. If I did, I would be violating your property right to your television. The same is true if I operate a factory spewing out pollution harming you or your land.<sup>5</sup> Because an owner has the right to control the use of property, the owner also must accept responsibility for the outcomes of that control.

In contrast to private ownership, common-property ownership occurs when multiple people simultaneously have or claim ownership rights to a good or resource. If the resource is open to all, none of the common owners can prevent the others from using or damaging the property. Most beaches, rivers, and roads are examples of commonly owned property. The distinction between private- and common-property ownership is important because common ownership does not create the same powerful incentives for conservation and efficient use as private ownership. Economists are fond of saying that when everybody owns something, nobody owns it.

Clearly defined and enforced private-property rights are a key to economic progress because of the powerful incentive effects that private ownership generates. The following four incentives are particularly important:

**1. PRIVATE OWNERS CAN GAIN BY EMPLOYING THEIR RESOURCES IN WAYS THAT ARE BENEFICIAL TO OTHERS, AND THEY BEAR THE OPPORTUNITY COST OF IGNORING THE WISHES OF OTHERS.** Realtors often advise homeowners to use neutral colors for countertops and walls in their house because they will improve the resale value of the home. As a private owner, you could install bright green fixtures and paint your walls deep purple, but you will bear the cost (in terms of a lower selling price) of ignoring the wishes of others who might want to buy your house later. Conversely, by fixing up a house and doing things to it that others find beneficial, you can reap the benefit of a higher selling price. Similarly, you could spray paint orange designs all over the outside of your brand-new car, but private ownership gives you an incentive not to do so because the resale value of the car depends on the value that *others* place on it.

Consider a parcel of undeveloped, privately owned land near a university. The private owner of the land can do many things with it. For example, she could leave it undeveloped, turn it into a metered parking lot, erect a restaurant, or build rental housing. Will the wishes and desires of the nearby students be reflected in her choice, even though they are not the owners of the property? Yes. Whichever use is more highly valued by potential customers will earn her the highest investment return. If housing is relatively hard to find but there are plenty of other restaurants, the profitability of using her land for housing will be higher than the profitability of using it for a restaurant. Private ownership gives her a strong incentive to use her property in a way that will also fulfill the wishes of others. If she decides to leave the property undeveloped instead of erecting housing that would benefit the students, she will bear the opportunity cost of forgone rental income from the property.

As a second example, consider the owner of an apartment complex near your campus. The owner may not care much for swimming pools, workout facilities, study desks, washers

## Private-property rights

Property rights that are exclusively held by an owner and protected against invasion by others. Private property can be transferred, sold, or mortgaged at the owner's discretion.

From *The Wall Street Journal*—Permission, Cartoon Features Syndicate



"Their house looks so nice. They must be getting ready to sell it."

*A private owner has a strong incentive to do things with his or her property that increase its value to others.*

<sup>5</sup>For a detailed explanation of how property rights protect the environment, with several real-world examples, see Roger E. Meiners and Bruce Yandle, *The Common Law: How It Protects the Environment* (Bozeman, MT: PERC, 1998), available online at <http://www.perc.org>.

and dryers, or green areas. Nonetheless, private ownership provides the owner with a strong incentive to provide these items if students and other potential customers value them more than it costs to provide them. Why? Because tenants will be willing to pay higher rents to live in a complex with amenities that they value. The owners of rental property can profit by providing an additional amenity that tenants value as long as the tenants are willing to pay enough additional rent to cover the cost of providing it. Because renters differ in their preferences and willingness to pay for amenities, some will prefer to live in less expensive apartments with fewer amenities, whereas others will prefer to live in more expensive apartments with a greater range of amenities. By choosing among potential apartment complexes, renters are able to buy as few or as many of these amenities as they wish.

## 2. PRIVATE OWNERS HAVE A STRONG INCENTIVE TO CARE FOR AND PROPERLY MANAGE WHAT THEY OWN.

Will Ed regularly change the oil in his car? Will he see to it that the seats don't get torn? Probably so, because being careless about these things would reduce the car's value, both to him and to any future owner. The car and its value—the sale price if he sells it—belong just to Ed, so he would bear the burden of a decline in the car's value if the oil ran low and ruined the engine, or if the seats were torn. Similarly, he would capture the value of an expenditure that improved the car, like a new paint job. As the owner, Ed has both the authority and the incentive to protect the car against harm or neglect and even to enhance its value. Private-property rights give owners a strong incentive for good stewardship.

Do you take equally good care not to damage an apartment you rent as you would your own house? If you share an apartment with several roommates, are the common areas of the apartment (such as the kitchen and living room) as neatly kept as the bedrooms? Based on economic theory, we guess that the answer to both of these questions is probably “No.”

A few years ago, the student government association at Berry College in Georgia purchased twenty bicycles to be placed around campus for everyone's use.<sup>6</sup> These \$200 Schwinn Cruiser bicycles were painted red and were marked with a plate reading “Berry Bike.” The bikes were available on a first-come, first-served basis, and students were encouraged to take them whenever they needed them and leave them anywhere on campus for others to use when they were finished. What do you think happened to these bikes? Within two months, most of these high-quality bikes were severely damaged or lost. The campus newspaper reported on the “mangled corpses of twisted red metal that lie about campus.” Over the summer break, the student government replaced or fixed the bikes, but despite its pleas to “treat the bikes as if they were your own property,” the same thing happened the following fall precisely because the bikes weren't the students' own property. It wasn't that the students at Berry College were inherently destructive; after all, there were no problems on campus with privately owned bikes being lost or abused during this time. It was a matter of the different incentives they faced. The student government association eventually abandoned the program and began leasing the remaining bikes to individual students instead. As you can see, there is no denying the strong incentive that private ownership creates for owners to care for their property (or the lack of incentive when private ownership is not clearly defined and enforced).

*When apartments and other investment properties are owned privately, the owner has a strong incentive to provide amenities that others value highly relative to their cost.*



Kzenon, 2009/Used under license from Shutterstock.com



© Compassionate Eye Foundation/ Getty Images

<sup>6</sup>Daniel L. Alban and E. Frank Stephenson, “The ‘Berry Bikes’: A Lesson in Private Property,” *Ideas on Liberty* 49, no. 10 (October 1999): 8–9.

The incentive for owners to care for and properly manage their property is strong. The owner of a hotel doesn't want to neglect fixing electrical or plumbing problems if it means fewer repair costs due to electrical fires or water leaks in the future. The owner knows travelers aren't going to want to stay in a charred or water-damaged hotel. Poor management will reduce the hotel's value and the owner's personal wealth. This gives the owner an incentive to manage the asset properly.

**3. PRIVATE OWNERS HAVE AN INCENTIVE TO CONSERVE FOR THE FUTURE—PARTICULARLY IF THE PROPERTY IS EXPECTED TO INCREASE IN VALUE.** People have a much stronger incentive to conserve privately owned property than they do commonly owned property. For example, when Steven was in college, the general rule among his roommates was that any food or drink in the house was common property—open game for the hungry or thirsty mouth of anyone who stumbled across it. There was never a reason for Steven to conserve food or drinks in the house because it would be quickly consumed by a roommate coming in later that night. When Steven first started living alone, he noticed a dramatic change in his behavior. When he ordered a pizza, he would save some for the next day's lunch rather than eating it all that night. Steven began counting his drinks before he had one to make sure there were enough left for the next day. When Steven was the sole owner, he began delaying his current consumption to conserve for the future because he was the one, not his roommates, who reaped the benefit from his conservation.

Similarly, when more than one individual has the right to drill oil from an underground pool of oil, each has an incentive to extract as much as possible, as quickly as possible. Any oil conserved for the future will probably be taken by someone else. In contrast, when only one owner has the right to drill, the oil will be extracted more slowly. The same applies to the common-property problems involved in overfishing of the sea compared with fisheries that use privately owned ponds.

Someone who owns land, a house, or a factory has a strong incentive to bear costs now, if necessary, to preserve the asset's value for the future. The owner's wealth is tied up in the value of the property, which reflects nothing more than the net benefits that will be available to a future owner. Thus, the wealth of private owners is dependent upon their willingness and ability to look ahead, maintain, and conserve those things that will be more highly valued in the future. This is why private ownership is particularly important for the optimal conservation of natural resources.

**4. PRIVATE OWNERS HAVE AN INCENTIVE TO LOWER THE CHANCE THAT THEIR PROPERTY WILL CAUSE DAMAGE TO THE PROPERTY OF OTHERS.** Private ownership links responsibility with the right of control. Private owners can be held accountable for damage done to



Courtesy of Berry College, Mount Berry, GA

*Without clearly defined private-property rights, there is less of an incentive to take proper care of things—as the student government administration at Berry College found out when it provided common-property bikes to be used around campus.*

others through the misuse of their property. A car owner has a right to drive his car, but will be held accountable if the brakes aren't maintained and the car damages someone else's property. Similarly, a chemical company has control over its products, but, exactly for that reason, it is legally liable for damages if it mishandles the chemicals. Courts of law recognize and enforce the authority granted by ownership, but they also enforce the responsibility that goes with that authority. Because private-property owners can be held accountable for damages they cause, they have an incentive to use their property responsibly and take steps to reduce the likelihood of harm to others. A property owner, for example, has an incentive to cut down a dying tree before it falls into a neighbor's house and to leash or restrain his or her dog if it's likely to bite others.

## Private Ownership and Markets

Private ownership and competitive markets provide the foundation for cooperative behavior among individuals. When private-property rights are protected and enforced, the permission of the owner must be sought before anyone else can use the property. Put another way, if you want to use a good or resource, you must either buy or lease it from the owner. This means that each of us must face the cost of using scarce resources. Furthermore, market prices give private owners a strong incentive to consider the desires of others and use their resources in ways others value.

Friedrich Hayek, the winner of the 1974 Nobel Prize in economics, used the expression "the extended order" to refer to the tendency for markets to lead perfect strangers from different backgrounds around the world to cooperate with one another. Let's go back to the example of the property owner who has the choice of leaving her land idle or building housing to benefit students. The landowner might not know any students in her town nor particularly care about providing them housing. However, because she is motivated by market prices, she might build an apartment complex and eventually do business with a lot of students she never intended to get to know. In the process, she will purchase materials, goods, and services produced by other strangers.

Things are different in countries that don't recognize private-ownership rights or enforce them. In these countries, whoever has the political power or authority can simply seize property from whomever might have it without compensating them. In his book *The Mystery of Capital*, economist Hernando de Soto argues that the lack of well-defined and enforced property rights explains why some underdeveloped countries (despite being market based) have made little economic progress. He points out that in many of these nations, generations of people have squatted on the land without any legal deed giving them formal ownership. The problem is these squatters cannot borrow against the land or the homes they built on it to generate capital because they don't have a deed to it, nor can they prevent someone else from arbitrarily taking the land away from them.

Private ownership and markets can also play an important role in environmental protection and natural-resource conservation. Ocean fishing rights, tradable rights to pollute, and private ownership of endangered species are just some examples. The accompanying Applications in Economics feature, "Protecting Endangered Species with Private-Property Rights," explores some of these issues.

### Production possibilities curve

A curve that outlines all possible combinations of total output that could be produced, assuming (1) a fixed amount of productive resources, (2) a given amount of technical knowledge, and (3) full and efficient use of those resources. The slope of the curve indicates the amount of one product that must be given up to produce more of the other.

## Production Possibilities Curve

People try to get the most from their limited resources by making purposeful choices and engaging in economizing behavior. This can be illustrated using a conceptual tool called the **production possibilities curve**. The production possibilities curve shows the maximum amount of any two products that can be produced from a fixed set of resources, and the possible trade-offs in production between them. The real economy obviously produces more than just two products, but this highly simplified production possibilities curve can help us understand a number of important economic ideas.

## APPLICATIONS IN ECONOMICS

## Protecting Endangered Species with Private-Property Rights



Tom Brakerfield/Getty Images

Have you ever wondered why the wild tiger is endangered in much of the world but most cats are thriving? Or why spotted owls are threatened in the Pacific Northwest but chickens are not? Why have elephant and rhinoceros populations declined in number but not cattle or hogs? The incentives accompanying private ownership provide the answer.

To understand why many wild animals are scarce, consider what happens with animals that provide food, most of which are privately owned. Suppose that people decided to eat less beef. Beef prices would fall, and the incentive for individuals to dedicate land and other resources to raise cattle would decline. The result would be fewer cows. The market demand for beef creates the incentive for suppliers to maintain herds of cattle and to protect them under a system of private ownership.

In some ways, the rhinoceros is similar to a cow. A rhino, like a large bull in a cattle herd, may charge if disturbed. At 3,000 pounds, a charging rhino can be very dangerous to humans. Also like cattle, rhinos can be valuable to people—a single horn from a black rhino, used for artistic carvings and medicines, can sell for up to \$30,000. But when hunting rhinos and selling their horns is illegal, rhinos become a favorite target of poachers—people who hunt illegally. Poachers are sometimes even assisted by local people eager to see fewer rhinos present because rhinos make life risky for humans and they also compete for food and water.

Rhinos are very different from cattle in one important respect: In most of Africa where they naturally range, private ownership of the rhino is prohibited. Since 1977, many nations have outlawed rhino hunting and forbidden the sale of rhino parts. But this approach has only made things worse for the rhino: between 1970 and 1994, the number of black rhinos declined by 95%.<sup>1</sup> According to South African

economist Michael 't Sas-Rolfes, the trade ban “has not had a discernible effect on rhino numbers and does not seem to have stopped the trade in rhino horn. If anything, the . . . listings led to a sharp increase in the black market price of rhino horn, which simply fuelled further poaching and encouraged speculative stockpiling of horn.”

But what if the powerful incentives created by private ownership were instead brought to bear on the rhino? That actually happened for a while in Zimbabwe. Landowners were allowed to fence and manage game animals on their property. Because they could profit from protecting the big animals, some ranchers shifted their operations from producing cattle to wildlife protection, ecotourism, and hunting, often in cooperation with neighboring landowners. Under these rules, the black rhino population climbed dramatically. And because ranchers were allowed to cooperate and combine operations, they could reduce fencing between ranches and manage the larger preserves as a unit, better helping not only rhinos but other valued wildlife as well.

Indeed, several parts of southern Africa have a tradition, extending back to the 1960s, of allowing ownership of wildlife. Namibia, for example, gave those rights to private landholders in the 1960s and extended them to communal lands in the mid-1990s. “These institutional reforms led to wildlife becoming an economically valued land use at the local level,” says wildlife specialist Fred Nelson. “For example, in 2003, Namibia’s local communal landholders earned over US \$1 million from wildlife-based enterprises such as tourism and hunting.”<sup>2</sup> Landholders had invested in conservation measures to speed up the recovery that made these revenues possible.

Nelson reports that wildlife on private lands in Namibia increased by an estimated 80% from 1972 to 1992 as a result of the new policies. Where similar policy changes have occurred, wildlife has increased, says Nelson. “In South Africa, Namibia, Botswana, and Zimbabwe (prior to its socio-political collapse, 2000–present), the proportion of large herbivore species that are increasing or stable substantially exceeds the number that are declining.” Clearly, property rights to ownership or use are one key to conservation.

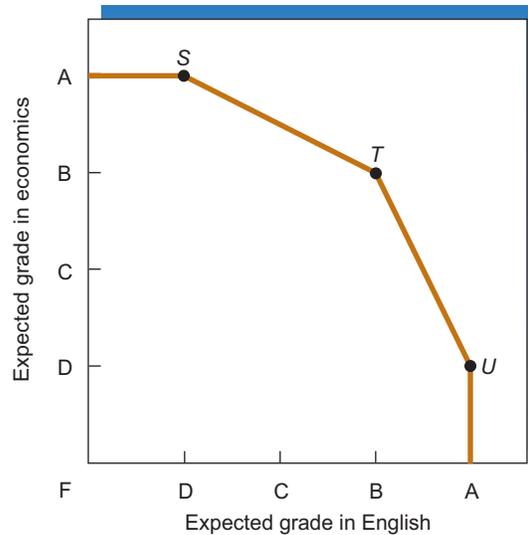
<sup>1</sup>See Michael De Alessi, *Private Conservation and Black Rhinos in Zimbabwe: The Savé Valley and Bubiana Conservancies*, available online at <http://www.cei.org/gencon/025.01687.cfm>.

<sup>2</sup>Fred Nelson, “Are Large Mammal Declines in Africa Inevitable?” *African Journal of Ecology*, 46 (2007): 3–4.

**EXHIBIT 1** illustrates the production possibilities curve for Susan, an intelligent economics major. This curve indicates the combinations of English and economics grades that she thinks she can earn if she spends a total of ten hours per week studying for the two subjects. Currently, she is choosing to study the material in each course that she expects will help her grade the most for the time spent, and she is allocating five hours of study time

**EXHIBIT 1****Production Possibilities Curve for Susan's Grades in English and Economics**

The production possibilities for Susan, in terms of grades, are illustrated for ten hours of total study time. If Susan studied ten hours per week in these two classes, she could attain a D in English and an A in economics (point S), a B in English and a B in economics (point T), or a D in economics and an A in English (point U).



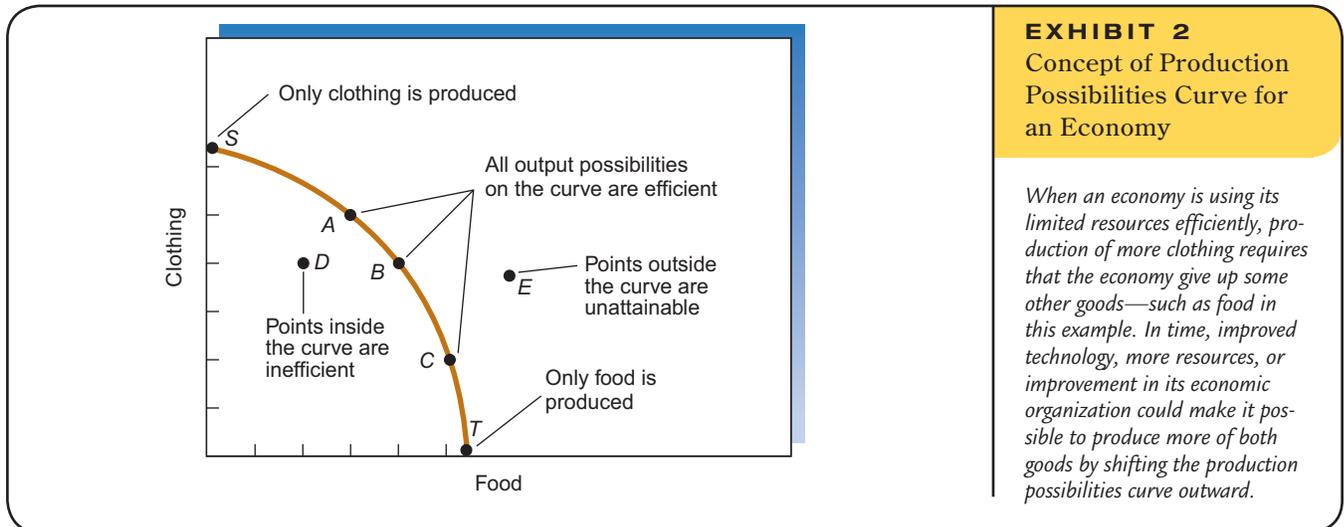
to each course. She expects that this amount of time, carefully spent on each course, will allow her to earn a B grade in both, indicated at point *T*. But if she were to take some time away from studying one of the two subjects and spend it studying the other, she could raise her grade in the course receiving more study time. However, it would come at the cost of a lower grade in the course she spends less time studying for. If she were to move to point *S* by spending more hours on economics and fewer on English, for example, her expected economics grade would rise, while her expected English grade would fall. This illustrates the first important concept shown in the production possibilities framework—the idea of trade-offs in the use of scarce resources. Whenever more of one thing is produced, there is an opportunity cost in terms of something else that now must be forgone.

You might notice that Susan's production possibilities curve indicates that the additional study time required to raise her economics grade by one letter, from a B to an A (moving from point *T* to point *S*), would require giving up two letter grades in her English class, not just one, reducing her English grade from a B to a D. If, alternatively, Susan were to move from point *T* to point *U*, the opposite would be true—she would improve her English grade by one letter at the expense of two letter grades in economics. You can understand this by thinking about your own studying behavior. When you have only a limited amount of time to study a subject, you begin by studying the most important (grade-increasing) material first. As you spend additional time on that subject, you begin studying topics that are of decreasing importance for your grade. Thus, adding an hour of study time to the subject Susan studies least will have a larger impact on her grade than will taking away an hour from the subject on which she currently spends more time.

This idea of increasing opportunity cost is reflected in the slope of the production possibilities curve. The curve is flatter to the left of point *T*, and steeper to the right, showing that, as Susan takes more and more of her resources (time, in this case) from one course and puts it into the other, she must give up greater and greater amounts of productivity in the course getting fewer resources.

Of course, Susan could study more economics *without* giving up her English study time, if she gave up some leisure, or study time for other courses, or her part-time job in the campus bookstore. If she gave up leisure or her job and added those hours to the ten hours of study time for economics and English, the entire curve in Exhibit 1 would shift outward. She could get better grades in both classes by having more time to study.

Can the production possibilities concept be applied to the entire economy? Yes. We can grow more soybeans if we grow less corn, because both can be grown on the same land. Beefing up the nation's military would mean we would have to produce fewer nonmilitary goods than we could otherwise. When scarce resources are being used efficiently, getting more of one requires that we sacrifice others.



**EXHIBIT 2** shows a hypothetical production possibilities curve for an economy with a limited amount of resources that produces only two goods: food and clothing. The points along the curve represent all possible combinations of food and clothing that could be produced with the current level of resources and technology of the economy (assuming the resources are being used efficiently). A point outside the production possibilities curve (such as point *E*) would be considered unattainable at the present time. A point inside the production possibilities curve (such as point *D*) is attainable, but producing that amount would mean that the economy is not making maximum use of its resources (some resources are being underutilized). Thus, point *D* is considered inefficient.

More specifically, the production possibilities curve shows all of the maximum combinations of two goods that an economy will be able to produce: (1) given a fixed quantity of resources, (2) holding the level of technology constant, and (3) assuming that all resources are used efficiently.

When these three conditions are met, the economy will be at the edge of its production possibilities frontier (where points *A*, *B*, and *C* lie), and producing more of one good will necessitate producing less of others. If condition 3 above is not met, and resources are being used inefficiently, an economy would be operating inside its production possibilities curve. If the level of resources and technology change (conditions 1 and 2), it will result in an outward shift in the production possibilities curve. We will return to these factors that can shift the production possibilities curve in a moment.

Notice that the production possibilities curve is concave (or bowed out) to the origin, just as Susan's was in Exhibit 1 because of the concept of increasing opportunity cost. Here, the curved shape reflects the fact that an economy's resources are not equally well suited to produce food and clothing. If an economy were using all its resources to produce clothing (point *S*), transferring those resources least suited for producing clothing toward food production would reduce clothing output a little but increase food output a lot. Because the resources transferred would be those better suited for producing food and less suited for producing clothing, the opportunity cost of producing additional food (in terms of clothing forgone) is low—near point *S*. However, as more and more resources are devoted to food production and successively larger amounts of food are produced (moving the economy from *S* to *A* to *B* and so on), the opportunity cost of food will rise. This is because, as more and more food is produced, additional food output can be achieved only by using resources that are less and less suitable for the production of food relative to clothing. Thus, as food output is expanded, successively larger amounts of clothing must be forgone per unit of additional food. This is similar to what happened to Susan when she diverted study hours from one course to another. Only this time, we are talking about an entire economy.

## Shifting the Production Possibilities Curve Outward

What restricts an economy—once its resources are fully utilized—from producing more of everything? Why can't we get more of something produced without having to give up the production of something else? The same constraint that kept Susan from simultaneously making a higher grade in both English and economics: a lack of resources. As long as all current resources are being used efficiently, the only way to get more of one good is to sacrifice some of the other. Over time, however, it is possible for a country's production possibilities curve to shift outward, making it possible for more of all goods to be produced. There are four factors that could potentially shift the production possibilities curve outward.

**1. AN INCREASE IN THE ECONOMY'S RESOURCE BASE WOULD EXPAND OUR ABILITY TO PRODUCE GOODS AND SERVICES.** If we had more or better resources, we could produce a greater amount of all goods. Resources such as machinery, buildings, tools, and education are human-made, and thus we can expand our resource base by devoting some of our efforts to producing them. This **investment** would provide us with better tools and skills and increase our ability to produce goods and services in the future. However, like with the production of other goods, devoting effort and resources toward producing these long-lasting physical assets means fewer resources are available to produce other things, in this case goods for current consumption. Thus, the choice between using resources to produce goods for current consumption and using them to produce investment goods for the future can also be illustrated within the production possibilities framework. The two economies illustrated in **EXHIBIT 3** begin with identical production possibilities curves (*RS*). Notice that Economy A dedicates more of its output to investment (shown by  $I_A$ ) than Economy B (shown by  $I_B$ ). Economy B, on the other hand, consumes more than Economy A. Because Economy A allocates more of its resources to investment and less to consumption, A's production possibilities curve shifts outward over time by a greater amount than B's. In other words, the growth rate of Economy A—the expansion of its ability to produce goods—is enhanced by this investment. But more investment in machines and human skills requires a reduction in current consumption.

**2. ADVANCEMENTS IN TECHNOLOGY CAN EXPAND THE ECONOMY'S PRODUCTION POSSIBILITIES.** **Technology** determines the maximum amount of output an economy can produce given the resources it has. New and better technology makes it possible for us to get more output from our resources. An important form of technological change is **invention**—the use of science and engineering to create new products or processes. In recent years, for example, inventions have allowed us to develop photographs faster and more cheaply,

### Investment

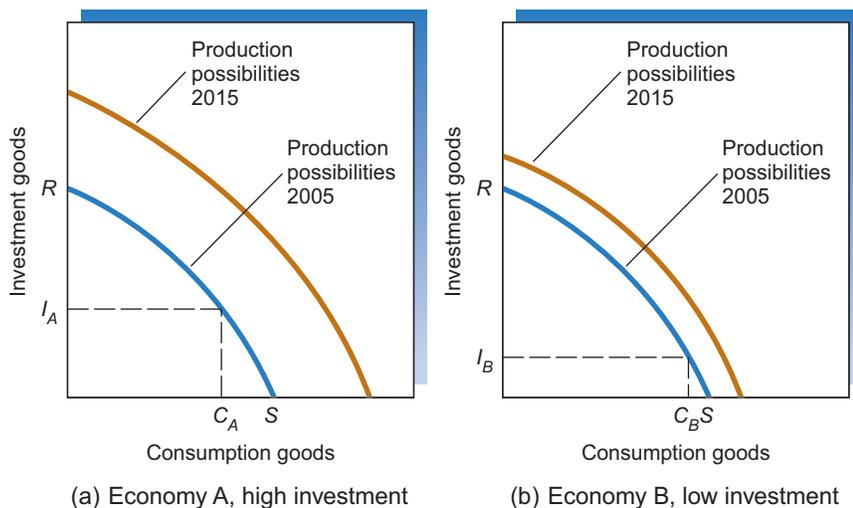
The purchase, construction, or development of resources, including physical assets, such as plants and machinery, and human assets, such as better education. Investment expands an economy's resources. The process of investment is sometimes called capital formation.

### Technology

The technological knowledge available in an economy at any given time. The level of technology determines the amount of output we can generate with our limited resources.

### Invention

The creation of a new product or process, often facilitated by the knowledge of engineering and science.



**EXHIBIT 3**  
Investment and  
Production Possibilities  
in the Future

*Here we illustrate two economies (A and B) that initially confront identical production possibilities curves (*RS*). Economy A allocates a larger share of its output to investment ( $I_A$ , compared to  $I_B$  for Economy B). As a result, the production possibilities curve of the high-investment economy (Economy A) will tend to shift outward by a larger amount over time than the low-investment economy's will.*

process data more rapidly, get more oil from existing fields, and send information instantly and cheaply by satellite. Such technological advances increase our production possibilities, shifting our economy's entire production possibilities curve outward.

An economy can also benefit from technological change through **innovation**—the practical and effective adoption of new techniques. Such innovation is commonly carried out by an **entrepreneur**—a person who introduces new products or improved techniques to satisfy consumers at a lower cost. To make a profit, an entrepreneur must convert or rearrange resources in a way that increases their value. This also pushes the production possibilities curve outward.

Take, for example, Henry Ford, an entrepreneur who changed how cars were made by pioneering the assembly line. With the same amount of labor and materials, Ford made more cars more cheaply. Another entrepreneur, the late Ray Kroc, purchased a hamburger restaurant from Richard and Maurice McDonald and built it into the world's largest fast-food chain. Kroc revolutionized fast food by offering attractive food at economical prices. He also developed a franchising system that resulted in uniform quality across the many different McDonald's restaurants worldwide. More recently, entrepreneurs like Steven Jobs (Apple Computer) and Bill Gates (Microsoft) helped develop the personal computer and software programs that dramatically increased their usefulness to businesses and households.

Through entrepreneurial discovery and innovation, new products and methods of production are continuously replacing old ones. The great Harvard economist, Joseph Schumpeter, called this process **creative destruction**. The compact disc, for example, rendered vinyl records obsolete, while the automobile caused the demise of the horse and buggy industry. Although this process destroys some businesses or industries, it creates new and arguably better ones in their place. Creative destruction is a powerful force leading to economic growth and prosperity.

**3. AN IMPROVEMENT IN THE RULES UNDER WHICH THE ECONOMY FUNCTIONS CAN ALSO INCREASE OUTPUT.** The legal system of a country influences the ability of people to cooperate with one another and produce goods. Changes in legal institutions that promote social cooperation and motivate people to produce what others want will also push the production possibilities curve outward. However, poor institutions can reduce both the level of resources used (shifting the curve inward) and how efficiently they are used (causing the economy to operate inside its production possibilities curve).

Historically, legal innovations have been an important source of economic progress. During the eighteenth century, a system of patents was established in Europe and North America, giving inventors private-property rights to their ideas. At about the same time, laws were passed allowing businesses to establish themselves legally as corporations, reducing the cost of forming large firms that were often required for the mass production of manufactured goods. Both of these legal changes allowed improved forms of economic organization and accelerated the growth of output by shifting the production possibilities curve outward more rapidly.

Sometimes governments, perhaps because of ignorance or prejudice, adopt legal institutions that reduce production possibilities. Laws that restrict or prohibit trade are one example. For almost a hundred years following the American Civil War, the laws of several southern states prohibited hiring African Americans for certain jobs and restricted other economic exchanges between blacks and whites. The legislation not only was harmful to African Americans; it also retarded economic progress and reduced the production possibilities of these states.

**4. BY WORKING HARDER AND GIVING UP CURRENT LEISURE, WE COULD INCREASE OUR PRODUCTION OF GOODS AND SERVICES.** Hypothetically, the production possibilities curve would shift outward if everyone worked more hours and took less leisure time. Strictly speaking, however, leisure is also a good, so we would simply be giving up leisure to have more of other things. If we were to construct a production possibilities curve for leisure versus other goods, this would be shown as simply a movement along the curve. However, if we restrict our model to only material goods and services, a change in the amount we work would be shown as a shift in the curve.

### Innovation

The successful introduction and adoption of a new product or process; the economic application of inventions and marketing techniques.

### Entrepreneur

A person who introduces new products or improved technologies and decides which projects to undertake. A successful entrepreneur's actions will increase the value of resources and expand the size of the economic pie.

### Creative destruction

The replacement of old products and production methods by innovative new ones that consumers judge to be superior. The process generates economic growth and higher living standards.

How much people work depends not only on their personal preferences but also on public policy. For example, high tax rates on personal income may cause people to work less. This is because high tax rates reduce the payoff from working. When this happens, people spend more time doing other, untaxed activities—like leisure activities. This will move the production possibilities curve for material goods inward because the economy can't produce as much when people work less.

## Production Possibilities and Economic Growth

Within the production possibilities framework, economic growth is simply an outward shift in the curve through time. The more rapidly the curve shifts outward, the more rapid is economic growth. There are other economic models that are used to analyze economic growth; however, they all share the production possibilities curve as a foundation. Economic growth is one of the most important topics in modern economics for good reason. On the one hand, an economic growth rate of 3 percent per year will result in living standards doubling approximately every twenty-three years. On the other hand, in a country experiencing an economic growth rate of only 1 percent, it will take approximately seventy years for living standards to double.

## Trade, Output, and Living Standards

### GAINS FROM TRADE



*Trade makes it possible for people to generate more output through specialization and division of labor, large-scale production processes, and the dissemination of improved products and production methods.*

### Division of labor

A method that breaks down the production of a product into a series of specific tasks, each performed by a different worker.

### Law of comparative advantage

A principle that states that individuals, firms, regions, or nations can gain by specializing in the production of goods that they produce cheaply (at a low opportunity cost) and exchanging them for goods they cannot produce cheaply (at a high opportunity cost).

As we previously discussed, trade creates value by moving goods from people who value them less to people who value them more. However, this is only part of the story. Trade also makes it possible for people to expand their output through specialization and **division of labor**, large-scale production, and the dissemination of better products and production methods.

## Gains from Specialization and Division of Labor

Businesses can achieve higher output levels and greater productivity from their workers through specialization and division of labor. More than 200 years ago, Adam Smith noted the importance of this factor. Observing the operation of a pin manufacturer, Smith noted that when each worker specialized in a separate function needed to make pins, 10 workers together were able to produce 48,000 pins per day, or 4,800 pins per worker. Smith doubted an individual worker could produce even 20 pins per day working alone from start to finish on each pin.<sup>7</sup>

The division of labor separates production tasks into a series of related operations. Each worker performs one or a few of perhaps hundreds of tasks necessary to produce something. This process makes it possible to assign different tasks to those individuals who are able to accomplish them most efficiently (that is, at the lowest cost). Furthermore, a worker who specializes in just one narrow area becomes more experienced and more skilled in that task over time.

Trading partners can also benefit from specialization and the division of labor. The **law of comparative advantage**, developed in the early 1800s by the great English economist David Ricardo, explains why this is true. *The law of comparative advantage states that the total output of a group of individuals, an entire economy, or a group of nations will be*

<sup>7</sup>See Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776; Cannan's ed., Chicago: University of Chicago Press, 1976), 7–16, for additional detail on the importance of the division of labor.

*greatest when the output of each good is produced by the person (or firm) with the lowest opportunity cost for that good.*

Comparative advantage applies to trade among individuals, business firms, regions, and even nations. When trading partners are able to use more of their time and resources to produce the things each is best at, they will be able to produce more together than would otherwise have been possible. In turn, the mutual gains they get from trading will result in higher levels of income for each. It's a win-win situation for both.

If a good or service can be obtained more economically through trade, it makes sense to get it that way rather than producing it for yourself. For example, even though most doctors might be good at record keeping and arranging appointments, it's generally better for them to hire someone to perform these services for them. That's because the time doctors spend keeping records is time they could have spent seeing patients. The revenue forgone, reflecting the services lost to patients as a result of seeing fewer patients, would be greater than the cost of hiring the worker. The issue is not whether doctors are better record keepers than the assistants they could hire, but rather how they should use their time most efficiently.

If you think about it, the law of comparative advantage is common sense. If someone else is willing to supply you with a good at a lower cost than you can produce it yourself, doesn't it make sense to trade for it and use your time and resources to produce more of the things you can produce most efficiently? Consider the situation of Andrea, an attorney who earns \$100 per hour providing legal services. She has several documents that need to be typed, and she is thinking about hiring a typist earning \$15 per hour to do it. Andrea is an excellent typist, much faster than the prospective employee. She could do the job in 20 hours, whereas the typist would take 40 hours.

Because of her greater typing speed, some might think Andrea should handle the job herself. This is not the case. If she types the documents, the job will cost her \$2,000—the opportunity cost of 20 hours of practicing law at \$100 per hour. Alternatively, the cost of having the documents typed by the typist is only \$600 (40 hours at \$15 per hour). Andrea's comparative advantage lies in practicing law. By hiring the typist, she will increase her own productivity for clients and will make more money.

The implications of the law of comparative advantage are universal. Any group will be able to produce more output from its available resources when each good or service is produced by the person with the lowest opportunity cost. This insight is particularly important in understanding the way a market economy works. Purposeful decision making indicates that buyers will try to get the most for their money. They will not knowingly choose a high-cost option when a lower-cost alternative of the same value is available. This places low-cost suppliers at a competitive advantage. Thus, they will generally survive and prosper in a market economy. As a result, the production of goods and resources will naturally tend to be allocated according to comparative advantage.

Most people recognize that Americans benefit from trade among the nation's fifty states. For example, the residents of Nebraska and Florida are able to produce a larger joint output and achieve higher income levels when Nebraskans specialize in producing corn and other grain products and Floridians specialize in producing oranges and other citrus products. The same is true for trade among nations. Like Nebraskans and Floridians, people in different nations will be better off if they specialize in the goods and services they can produce at a low cost and trade them for goods they produce at a high cost. See the addendum to this chapter for additional evidence on this point.

## Gains from Mass Production Methods

Trade also promotes economic progress by making it possible for firms to lower their per-unit costs with mass production. Say a nation isolated itself and refused to trade with other countries. In an economy like this, self-sufficiency and small-scale production would be the norm. If trade were allowed, however, the nation's firms could sell their products to customers around the world. This would make it feasible for the firms to adopt more efficient, large-scale production processes. Mass production often leads to labor and machinery efficiencies that increase enormously the output per worker. But without trade, these gains could not be achieved.

*Trade channels goods to those who value them most. Trade also helps disseminate ideas for improved products and makes production methods such as specialization, the division of labor, and mass production more feasible. Over the years, trade has enabled us to produce more with our limited resources, dramatically improving our living standards.*

Sandra Baker/Photographer's Choice/Getty Images



## Gains from Innovation

Trade also makes it possible to realize gains from the discovery and dissemination of innovative products and production processes. Economic growth involves brain power, innovation, and the application of technology. Without trade, however, the gains derived from the discovery of better ways of doing things would be stifled. Furthermore, observing and interacting with other people using different and better technologies often encourage others to copy successful approaches. People also modify the technology they observe, adapting it for their own purposes. This sometimes results in new, and even better, technologies. Again, gains from these sources would be far more limited in a world without trade.

Can you imagine the difficulty involved in producing your own housing, clothing, and food, to say nothing of radios, television sets, dishwashers, automobiles, and telephone services? Yet, most families in North America, Western Europe, Japan, and Australia enjoy all these conveniences. They are able to do so largely because their economies are organized in such a way that individuals can cooperate, specialize, and trade, thereby reaping the benefits of the enormous increases in output—in both quantity and diversity—that can be generated. In contrast, countries that impose obstacles that retard exchange—either domestic or international—hinder their citizens from achieving these gains and more prosperous lives.

## Human Ingenuity and the Creation of Wealth

### HUMAN INGENUITY



*Economic goods are the result of human ingenuity and action; thus, the size of the “economic pie” is variable, not fixed.*

The size of a country’s “economic pie” is most easily thought of as the total dollar value of all goods and services produced during some period of time. This economic pie is the total amount of wealth (or value) created in the economy. It is not some fixed total waiting to be divided up among people. It is simply a statistic—a grand total, calculated by adding up the wealth created by each of the individuals in the economy.

Errors in economic reasoning often stem from the incorrect notion that the size of the economic pie is fixed. On the contrary, the size of the economic pie reflects the physical effort and ingenuity of human beings. It is not an endowment from nature. Economic output expands as we discover better ways of doing things. So over time, it is human knowledge and ingenuity—perhaps more than anything else—that limit our economic progress. If Jim, a local farmer who normally produces \$30,000 worth of corn each year, finds a better growing method enabling him to produce \$40,000 of corn per year, he has created additional wealth. But Jim has actually created more than the \$10,000 in extra wealth. The \$10,000 is only his share of the gains from the additional trades made possible by the extra corn he grew. Exchange makes both buyer and seller better off, so the total wealth created by Jim includes not only his \$10,000 but also the gains of all of the buyers who purchased corn from him as well.

This highlights an important point: in a market economy, a larger income for one person does not mean a smaller income for a trading partner. In fact, it is just the opposite. When a person earns income, he or she expands the economic pie by more than the amount of the slice that he or she gets, making it possible for the rest of us to have a bigger slice, too. When a wealthy entrepreneur, such as Bill Gates or Henry Ford, has an income of, say, \$1 billion per year earned through voluntary exchanges in the marketplace, he has enlarged the economic pie for others by an even larger amount. Here's how: suppose that Linda, a freelance graphic artist, pays \$175 for a new software program developed by Bill Gates. As a result, she can do twice as much work in the same amount of time. Because she's more productive, Linda can earn more than enough additional income with the software to justify her purchase. In addition, the businesses she serves are also likely to be better off because the software makes it possible for her to give them more and better service and a lower price. More is produced in total. Thus, while Bill Gates gained, so, too, did Linda and her customers.

Similarly, although Henry Ford certainly became rich, he also greatly increased our ability to transport goods, services, and people. In the process, he made it possible for many others to achieve higher living standards than would have been possible in his absence. Had Stephen King never written a novel, not only would he not be as rich, but we would all be poorer for never having had the opportunity to read his novels. When income is acquired through voluntary exchange, people who earn income also help others earn more income and live better, too.

## Economic Organization

Every economy faces three basic questions: (1) What will be produced? (2) How will it be produced? and (3) For whom will it be produced? These questions are highly interrelated. Throughout the book, we will consider how different types of economies solve them. There are two broad ways that an economy can be organized: markets and government (political) planning. Let us briefly consider each.

### Market Organization

Private ownership of productive assets, voluntary contracts (often verbal), and market prices are the distinguishing features of **market organization**. Market organization is also known as **capitalism**.<sup>8</sup> Under market organization, private parties are permitted to buy and sell ownership rights of their assets at mutually acceptable prices. The government plays the limited role of rule maker and referee. It develops the rules, or the legal structure, that recognize, define, and protect private ownership rights. It helps individuals enforce contracts and protects people from violence and fraud. But in this role, the government is not an active player in the economy. Ideally, it avoids modifying market outcomes in an attempt to favor some people at the expense of others. For example, it doesn't prevent sellers from slashing prices or improving the quality of their products to attract customers from other competitors. Nor does it prevent

#### Market organization

A method of organization in which private parties make their own plans and decisions with the guidance of unregulated market prices. The basic economic questions of consumption, production, and distribution are answered through these decentralized decisions.

#### Capitalism

An economic system in which productive resources are owned privately and goods and resources are allocated through market prices.

<sup>8</sup>*Capitalism* is a term coined by Karl Marx.

buyers from outbidding others for products and productive resources. No legal restraints limit potential buyers or sellers from producing, selling, or buying in the marketplace.

Under market organization, no single individual or group of individuals guides the economy. There is no central planning authority, only individual planning. The three basic questions are solved independently in the marketplace by individual buyers and sellers making their own decentralized decisions. Buyers and sellers decide on their own what to produce, how to produce it, and whom to trade it to, based on the prices they themselves decide to charge.

In markets, individual buyers and sellers communicate their desires and preferences both directly and indirectly. They directly voice their desires when they buy or sell by advertising, whether in print or broadcast, or informally by word of mouth, on bulletin boards, and by letters of request and complaint and other means. They communicate indirectly by exiting or entering exchange relationships, as when they stop purchasing Coca-Cola and switch to Pepsi. The indirect, or “exit,” option gives special power to their voiced, or direct, statements. Indeed, sellers, when markets are competitive, often hire experts to seek out the statements and desires of potential buyers. Buyers, too, are eager to know what sellers want—special terms of payment or delivery, for example—hoping that sellers might be willing to reward cooperation with a better deal.

## Political Planning

The major alternative to market organization is **collective decision making**, whereby the government, through the political process, makes decisions for buyers and sellers in an attempt to solve the basic economic questions facing the economy. The government may maintain private ownership but uses taxes, subsidies, and regulations to resolve the basic economic questions. Alternatively, an economic system in which the government also owns the income-producing assets (machines, buildings, and land) and directly determines what goods will be produced is called **socialism**. Either way, individual planning and decisions are replaced by central planning and decisions made through the political process. These decisions can be made by a single dictator or a group of experts, or through democratic voting. Political rather than market forces direct the economy, and government officials and planning boards hand down decisions to expand or contract the output of education, medical services, automobiles, electricity, steel, consumer durables, and thousands of other commodities.

This is not to say that the preferences of individuals carry no weight. If the government officials and central planners are influenced by the democratic process, they must consider how their actions will influence their reelection prospects. That means they will listen to the voices of the voters to win over a majority of them. Otherwise, like the firm in a market economy that produces a product that consumers do not want, their tenure of service is likely to be short. However, under central planning, the indirect exit method of communicating is much more difficult. Although people can use the direct or voice method to communicate their preferences by lobbying government officials or casting votes in an election, they generally cannot use the indirect exit option because they cannot refuse to pay taxes or to quit purchasing a good or service that is provided by government. For example, families who send their children to private school must continue to pay the same amount in taxes to support the public school system as they would if they kept their child in public school. Often, people “vote with their feet” and leave one political jurisdiction to move to another. This is frequently seen when people move to better school districts. It is much easier, however, to move between school districts than between states or nations.

In summary, both market organization and central planning face the same basic economic questions. A basic difference between them is that the market system, with its exit option, allows for a wider variety of products and creates constant competition among suppliers, whereas the central planning system, in a democracy, responds primarily to the votes of the majority. In varying degrees, all economies use a combination of both of these methods of economic organization. Even predominantly market economies will still use taxes, subsidies, and some government ownership to direct and control resources. Similarly, predominantly socialist economies will, to some degree, use markets to allocate certain goods and services.

### Collective decision making

The method of organization that relies on public-sector decision making (voting, political bargaining, lobbying, and so on) to resolve basic economic questions.

### Socialism

A system of economic organization in which (1) the ownership and control of the basic means of production rest with the state, and (2) resource allocation is determined by centralized planning rather than market forces.

## Looking ahead

The next two chapters present an overview of the market sector and explain how supply and demand for goods and services work. Chapters 5 and 6 focus on potential shortcomings of the market and how the collective decision-making process works in a democracy. As we proceed, the tools of economics will be used to analyze both the market and political sectors. We think this approach is important and that you will find it both interesting and enlightening.



## KEY POINTS

- ▼ The highest valued activity sacrificed when a choice is made is the opportunity cost of the choice; differences (or changes) in opportunity costs help explain human behavior.
- ▼ Mutual gain is the foundation of trade. When two parties engage in voluntary exchange, they are both made better off. Trade creates value because it channels goods and resources to those who value them the most.
- ▼ Transaction costs—the time, effort, and other resources necessary to search out, negotiate, and conclude an exchange—hinder the gains from trade in an economy. Middlemen perform a productive function by reducing transaction costs.
- ▼ Private-property rights motivate owners to use their resources in ways that benefit others and avoid doing harm to them. These rights also motivate owners to take proper care of their resources and conserve them.
- ▼ The production possibilities curve shows the maximum combination of any two products that can be produced with a fixed quantity of resources.
- ▼ Over time, the production possibilities curve of an economy can be shifted outward by (1) investment, (2) technological advances, (3) improved institutions, and (4) greater work effort (forgoing leisure). The size of the economic pie is variable, not fixed. It can grow (or shrink) over time.
- ▼ The law of comparative advantage indicates that the joint output of individuals, regions, and nations will be maximized when each productive activity is undertaken by the low-opportunity-cost supplier. When a good can be acquired through trade more economically than it can be produced directly, it makes sense to trade for it.
- ▼ In addition to the gains that occur when goods are moved toward those who value them most, trade also makes it possible to expand output through specialization, division of labor, mass production processes, and innovation. These improved production techniques have contributed greatly to our modern living standards.
- ▼ Economies can either be organized by decentralized markets (capitalism) or they can be centrally planned by government through political decision making. Under central planning, buyers and sellers are more limited in their ability to communicate their desires.



## CRITICAL ANALYSIS QUESTIONS

1. “If Jones trades a used car to Smith for \$5,000, nothing new is created. Thus, there is no way the transaction can improve the welfare of people.” Is this statement true? Why or why not?
- \*2. Economists often argue that wage rates reflect productivity. Yet, the wages of house painters have increased nearly as rapidly as the national average, even though these workers use approximately the same production methods as they did fifty years ago. Can you explain why the wages of painters have risen substantially even though their productivity has changed so little?
3. It takes one hour to travel from New York City to Washington, D.C., by air, but it takes five hours by bus. If the airfare is \$110 and the bus fare is \$70, which would be cheaper for someone whose opportunity cost of travel time is \$6 per hour? For someone whose opportunity cost is \$10 per hour? \$14 per hour?

- \*4. “People in business get ahead by exploiting the needs of their consumers. The gains of business are at the expense of suffering imposed on their customers.” Evaluate this statement.
5. What is the objective of the entrepreneur when it comes to the use of his or her resources? What is the major function of the middleman? Is the middleman an entrepreneur?
6. If you have a private-ownership right to something, what does this mean? Does private ownership give you the right to do anything you want with the things that you own? Explain. How does private ownership influence the incentive of individuals to (a) take care of things, (b) conserve resources for the future, and (c) develop and modify things in ways that are beneficial to others? Explain.
7. What is the law of comparative advantage? According to the law of comparative advantage, what should be the distinguishing characteristics of the goods a nation produces? What should be the distinguishing characteristics of the goods a nation imports? How will international trade influence people’s production levels and living standards? Explain.
- \*8. Does a 60-year-old tree farmer have an incentive to plant and care for Douglas fir trees that will not reach optimal cutting size for another fifty years?
- \*9. What forms of competition does a private-property, market-directed economy authorize? What forms does it prohibit?
10. What are the major sources of gains from trade? Why is exchange important to a nation’s prosperity? How does trade influence the quantity of output that trading partners are able to produce? In a market economy, will there be a tendency for both resources and products to be supplied by low-cost producers? Why or why not? Does this matter? Explain.
- \*11. Chick-fil-A’s “Eat Mor Chikin” advertising campaign features three cows holding signs that say things like: “Save the cows, eat more chicken.” If consumers began eating more chicken and less beef, would the cattle population increase or decrease? Explain.
- \*12. In many states, ticket scalping, or reselling tickets to entertainment events at prices above the original purchase price, is prohibited. Who is helped and who is hurt by such prohibitions? How can owners who want to sell their tickets get around the prohibition? Do you think it would be a good idea to prohibit the resale of other things—automobiles, books, works of art, or stock shares—at prices higher than the original purchase price? Why or why not?
13. Consider the choices of two groups of women ages thirty to fifty. All the women in one group have a college education. All the women in the other group have less than a high school education. Which of the two groups will participate more in the workforce? Which of the two groups will bear a larger number of children on average? Explain your answers based on the concept of opportunity cost.
14. Consider the following questions:
  - a. Do you think that your work effort is influenced by whether there is a close link between personal output and personal compensation (reward)? Explain.
  - b. Suppose the grades in your class were going to be determined by a random drawing at the end of the course. How would this influence your study habits?
  - c. How would your study habits be influenced if everyone in the class was going to be given an A grade? How about if grades were based entirely on examinations composed of the multiple-choice questions in the coursebook for this textbook?
  - d. Do you think the total output of a nation will be influenced by whether or not there is a close link between the productive contribution of individuals and their personal reward? Why or why not?
15. In this chapter, it was stated that a private-property right also involves having the right to transfer or exchange what you own with others. However, selling your organs is a violation of federal law, a felony punishable by up to five years in prison or a \$50,000 fine. In 1999, eBay intervened when a person put one of his kidneys up for sale on the auction site (the bidding reached \$5.7 million before the auction was halted). Does this lack of legal ability to exchange mean that individuals do not own their own organs? Explain.
16. During the last three decades, entrepreneurs like Michael Dell, Sam Walton, and Ted Turner have earned billions of dollars. Do you think the average American is better or worse off as the result of the economic activities of these individuals? Explain your response.
- \*17. As the skill level (and therefore earnings rate) of, say, an architect, computer specialist, or chemist increases, what happens to his or her opportunity cost of doing other things? How is the time spent on leisure likely to change?
18. Two centuries ago, there were more buffalo than cattle in the United States. Even though millions of cattle are killed for beef consumption each year, the

cattle population continues to grow while the buffalo are virtually extinct. Why?

19. This question pertains to the addendum to Chapter 2. The following tables show the production possibilities for two hypothetical countries, Italia and Nire. Which country has the comparative advantage in producing butter? Which country has the comparative advantage in producing guns? What would be a mutually agreeable rate of exchange between the countries?

Italia		Nire	
Guns	Butter	Guns	Butter
12	0	16	0
8	2	12	1
4	4	8	2
0	6	4	3
		0	4

\*Asterisk denotes questions for which answers are given in Appendix B.

## A D D E N D U M

### Comparative Advantage, Specialization, and Gains from Trade

This addendum is for instructors who want to assign a more detailed numerical example demonstrating comparative advantage, specialization, and mutual gains from trade. Students who are uncertain about their understanding of these topics may also find this material enlightening. The international-trade chapter later in the text provides still more information on trade and how it affects our lives.

We begin with hypothetical production possibilities curves for two countries, Slavia and Lebos, shown in **EXHIBIT A-1**. The numerical tables represent selected points from each country's production possibilities curve. To make calculations easier, we have assumed away increasing opportunity costs in production so that the production possibilities curves are linear.

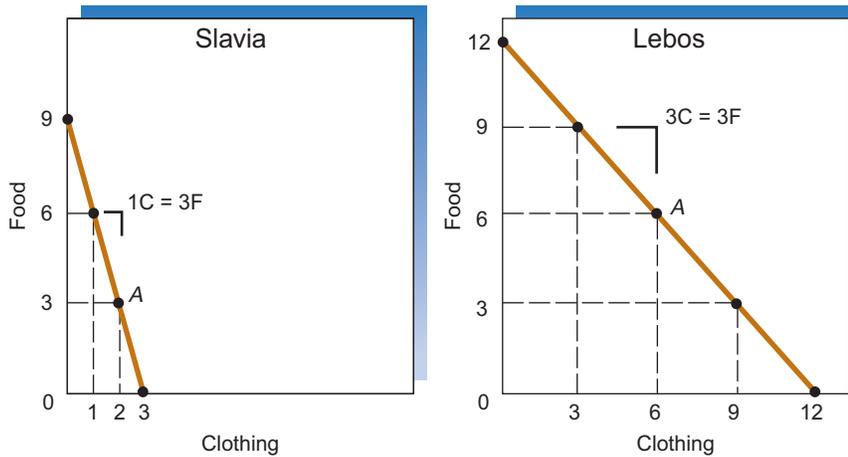
Without trade, each country would be able to consume only what it can produce for itself. Let's arbitrarily assume that for survival, Slavia requires three units of food and Lebos requires six units of food. As can be seen by point A in the exhibit, if Slavia were to produce the three units of food it requires, it would have enough resources remaining to produce two units of clothing. Similarly, if Lebos were to produce the six units of food it requires, it would have enough resources left to produce six units of clothing, again shown by point A in the exhibit. As we proceed, we will use this outcome as our benchmark outcome that occurs in the absence of specialization and trade between the countries.

Economic analysis suggests that both countries could gain if each were to specialize in the production of the good for which it has the comparative advantage and then trade for the other. First, let's figure out which country has a comparative advantage in the production of clothing. Doing so requires calculating the opportunity cost of producing clothing for each country. Because, in this example, the opportunity costs are constant at all points along the production possibilities curve, rather than increasing, this can be found by first selecting any two points on the production possibilities curve (or equivalently by comparing any two rows of numbers in the numerical tables given in the exhibit). For Slavia, moving from the point of producing six

food units and one clothing unit to the alternative point of producing three food units and two clothing units, we see that Slavia gains one clothing unit but must give up three units of food. For simplicity, the opportunity cost for Slavia can be written as  $1C = 3F$ , where C stands for clothing and F for food. You might note that this same numerical trade-off is true for Slavia anywhere along its production possibilities curve (for example, beginning from nine food units and zero clothing units, it would also have to give up three food units to gain one unit of clothing).

Using a similar approach (taking any two points or two rows in the table) for Lebos shows that for every three units of clothing the country wishes to produce, it must give up three units of food ( $3C = 3F$ ). This can be treated as any other mathematical equation, and can be simplified by dividing both sides by three, resulting in an opportunity cost of one clothing unit equals one food unit ( $1C = 1F$ ). Now, compare this to the opportunity cost for Slavia ( $1C = 3F$ ). Slavia must give up the production of three units of food for every one unit of clothing it produces, whereas Lebos must give up only one unit of food for every one unit of clothing it produces. Thus, Lebos gives up the production of *less* food for every unit of clothing. Lebos is the low-opportunity-cost producer of clothing, and thus it has a comparative advantage in the production of clothing.

Because comparative advantage is a relative comparison, if one country has the comparative advantage in the production of one of the products, the other country must have the comparative advantage for the other good. Thus, because Lebos has the comparative advantage in clothing, it will be true that Slavia has the comparative advantage in food. However, it is worthwhile to show this here as well. To produce one unit of food, Lebos must give up one unit of clothing (recall the  $1C = 1F$  opportunity cost). To produce one unit of food, Slavia must give up the production of only one-third of a unit of clothing (recall the  $1C = 3F$  opportunity cost and rewrite the equation as  $1/3 C = 1F$  by dividing both sides of the equation by 3). Thus, Slavia gives up the production of *less* clothing for every unit of food produced. Slavia is the low-opportunity-cost producer of food, and thus has a comparative advantage in the production of food.



SLAVIA	
Food	Clothing
9	0
6	1
3	2
0	3

$$3F = 1C$$

LEBOS	
Food	Clothing
12	0
9	3
6	6
3	9
0	12

$$3F = 3C$$

### EXHIBIT A-1 Production Possibilities for Slavia and Lebos

For Slavia, the opportunity cost of producing one unit of clothing is equal to three units of food ( $1C = 3F$ ). For Lebos, the opportunity cost of producing three units of clothing is equal to three units of food ( $3C = 3F$  or  $1C = 1F$ ). The difference in the opportunity costs of production will make possible mutually beneficial trade between the countries, with each specializing in its area of comparative advantage.

Suppose that, according to their comparative advantages, Lebos specializes in producing clothing and Slavia in food. From the last row of the table for Lebos, you can see that it can produce twelve units of clothing (and zero food) if it specializes in producing only clothing. From the top row of the table for Slavia, you can see that it can produce nine units of food (and zero clothing) if it specializes in producing only food. Note that this joint output (nine food and twelve clothing) is greater than the benchmark joint output (nine food and eight clothing) produced and consumed without trade.

If they are to trade, the countries now must find a mutually agreeable rate of exchange. Any rate of exchange *between* the two opportunity costs of  $1C = 3F$  and  $3C = 3F$  would be mutually agreeable. Here we will use  $2C = 3F$ .

Recall that Slavia requires three units of food for survival. Now, however, they are specializing and producing nine units of food. Using this rate of exchange, Slavia would send its extra six units of food to Lebos in exchange for four units of clothing. After trade, Slavia would then have three units of food and four units of clothing. Compare this to the situation that existed before specialization and trade, in which Slavia had only three units of food and two units of clothing to consume. Specialization and trade have created two additional units of clothing for Slavia that it would not have had without trade.

With specialization, Lebos is producing twelve units of clothing. In the trade with Slavia, Lebos gave up four units of clothing to obtain six units of food. After trade, Lebos has eight units of clothing remaining and six units of food imported from Slavia. Compare this to the situation that existed before specialization and trade, in which Lebos had only six units of food and six units of clothing to consume. For Lebos, specialization and trade have also created two additional units of clothing that it would not have had without trade.

As this simple example shows, total output is greater and *both* countries are better off when they specialize in the area in which they have a comparative advantage. By doing so, each is able to consume a bundle of goods and services that exceeds what it could have achieved in the absence of trade. This concept applies equally to individuals, states, or nations. The typical worker could not begin to produce alone all of the things he or she can afford to buy with the money earned in a year by specializing and working in a single occupation. As our world has become more integrated over the past several hundred years, the gains that have occurred from specialization and trade are at the root of the significant improvements in well-being that we have experienced.