

The **Art and Science** of Economic Analysis

Learning Outcomes

- 1-1 Explain the economic problem of scarce resources and unlimited wants
- 1-2 Describe the forces that shape economic choices
- 1-3 Explain the relationship between economic theory and economic reality
- 1-4 Identify some pitfalls of economic analysis
- 1-5 Describe several reasons to study economics

“Why are comic-strip and TV characters like those in *Foxtrot*, *The Simpsons*, and *Family Guy* missing a finger on each hand?”

Why are comic-strip and TV characters like those in *Foxtrot*, *The Simpsons*, and *Family Guy* missing a finger on each hand? Why do the kids on *South Park* have hands that look like mittens? And where is *Dilbert's* mouth? Which college majors pay the most right after college and during mid-career? In what way are people who pound on vending machines relying on theory? Why is a good theory like a California Closet? What's the big idea with economics? Finally, how can it be

said that in economics “what goes around comes around”? These and other questions are answered in this chapter, which introduces the art and science of economic analysis.

You have been reading and hearing about economic issues for years—unemployment, inflation, poverty, recessions, federal deficits, college tuition, airfares, stock prices, computer prices, gas prices. When explanations of such issues go into any depth, your eyes may glaze over and you may tune out, the same way you do when a weather forecaster tries to provide an in-depth analysis of high-pressure fronts colliding with moisture carried in from the coast.

What many people fail to realize is that economics is livelier than the dry accounts offered by the news media. Economics is about making choices, and you make economic choices every day—choices about whether to get a part-time job or focus on your studies, live in a dorm or off campus, take a course in accounting or one in history, get married or stay single, pack a lunch or buy a sandwich. You already know much more about economics than you realize. You bring to the subject a rich personal experience, an experience that will be tapped throughout the book to reinforce your understanding of the basic ideas.

What do think?

Economics is a science, not an art.

Strongly Disagree

Strongly Agree

1 2 3 4 5 6 7

Topics discussed in Chapter 1 include

- The economic problem
- Scientific method
- Marginal analysis
- Normative versus positive analysis
- Rational self-interest
- Pitfalls of economic thinking

1-1 The Economic Problem: Scarce Resources, Unlimited Wants

Would you like a new car, a nicer home, better meals, more free time, a more interesting social life, more spending money, more leisure, more sleep? Who wouldn't? But even if you can satisfy some of these desires, others keep popping up. *The problem is that although your wants, or desires, are virtually unlimited, the resources available to satisfy these wants are scarce.* A resource is scarce when it is not freely available—that is, when its price exceeds zero. Because resources are scarce, you must choose from among your many

wants, and whenever you choose, you must forgo satisfying some other wants. The problem of scarce resources but unlimited wants exists to a greater or lesser extent for each of the 7 billion people on earth. Everybody—cab driver, farmer, brain surgeon, dictator, shepherd, student, politician—faces the problem. For example, a cab driver uses time and other scarce resources, such as the taxi, knowledge of the city, driving skills, and gasoline, to earn income. That income, in turn, buys housing, groceries, clothing, trips to Disney World, and thousands of other goods and services that help satisfy some of the driver's unlimited wants. Economics examines how people use their scarce resources to satisfy their unlimited wants. Let's pick apart the definition, beginning with resources, then goods and services, and finally focus on the heart of the matter—economic choice, which results from scarcity.

1-1a Resources

Resources are the inputs, or factors of production, used to produce the goods and services that people want. Goods and services are scarce

because resources are scarce. Resources sort into four broad categories: labor, capital, natural resources, and entrepreneurial ability. Labor is human effort, both physical and mental. Labor includes the effort of the cab driver and the brain surgeon. Labor itself comes from a more fundamental resource: time. Without time we can accomplish nothing. We allocate our time to alternative uses: We can sell our time as labor, or we can spend our time doing other things, like sleeping, eating, studying, playing sports, going online, attending class, watching TV, or just relaxing with friends.

Capital includes all human creations used to produce goods and services. Economists often distinguish between physical capital and human capital. Physical capital consists of factories, tools, machines, computers, buildings, airports, highways, and other human creations used to produce goods and services. Physical capital includes the cab driver's taxi, the surgeon's scalpel, and the building where your economics class meets (or, if you are taking this course online, your computer and online connectors). Human capital consists of the knowledge and skill people acquire to increase their productivity, such as the cab driver's knowledge of city streets, the surgeon's knowledge of human anatomy, and your knowledge of economics.

Natural resources include all gifts of nature, such as bodies of water, trees, oil reserves, minerals, even animals. Natural resources can be divided into renewable resources and exhaustible resources. A renewable resource can be drawn on indefinitely if used conservatively. Thus, timber is a renewable resource if felled trees are replaced to regrow a steady supply. The air and rivers are renewable resources if they are allowed sufficient time to cleanse themselves of any pollutants. More generally, biological resources like fish, game, livestock, forests, rivers, groundwater, grasslands, and soil are renewable if managed properly. An exhaustible resource—such as oil or coal—does not renew itself and so is available in a limited amount. Once burned, each barrel of oil or ton of coal is gone forever. The world's oil and coal deposits are exhaustible.

A special kind of human skill called entrepreneurial ability is the talent required to dream up a new product or find a better way to produce an existing one. This special skill comes from an entrepreneur. An entrepreneur is a profit-seeking decision maker who starts with an idea, organizes an enterprise to bring that idea to life, and then assumes the risk of operation. An entrepreneur pays resource owners for the opportunity to employ their resources in the firm. Every firm in the world today, such as Ford, Microsoft, Google, and Facebook, began as an idea in the mind of an entrepreneur.

economics

The study of how people use their scarce resources to satisfy their unlimited wants

resources

The inputs, or factors of production, used to produce the goods and services that people want; resources consist of labor, capital, natural resources, and entrepreneurial ability

labor

The physical and mental effort used to produce goods and services

capital

The buildings, equipment, and human skills used to produce goods and services

natural resources

All gifts of nature used to produce goods and services; includes renewable and exhaustible resources

entrepreneurial ability

The imagination required to develop a new product or process, the skill needed to organize production, and the willingness to take the risk of profit or loss

entrepreneur

A profit-seeking decision maker who starts with an idea, organizes an enterprise to bring that idea to life, and assumes the risk of the operation

Resource owners are paid wages for their labor, interest for the use of their capital, and rent for the use of their natural resources. Entrepreneurial ability is rewarded by profit, which equals the revenue from items sold minus the cost of the resources employed to make those items. The word profit comes from the Latin *proficere*, which means "to benefit." The entrepreneur benefits from what's left over after paying other resource suppliers. Sometimes the entrepreneur suffers a loss. Resource earnings are usually based on the time these resources are employed. Resource payments therefore have a time dimension, as in a wage of \$10 per hour, interest of 6 percent per year, rent of \$600 per month, or profit of \$10,000 per year.

1-1b Goods and Services

Resources are combined in a variety of ways to produce goods and services. A farmer, a tractor, 50 acres of land, seeds, and fertilizer combine to grow the

good: corn. One hundred musicians, musical instruments, chairs, a conductor, a musical score, and a music hall combine to produce the service: Beethoven's *Fifth Symphony*. Corn is a good because it is something you can see, feel, and touch; it requires scarce resources to produce; and it satisfies human wants. The book you are now holding, the chair you are sitting in, the clothes you are wearing, and your next meal are all goods. The performance of the *Fifth Symphony* is a service because it is intangible, yet it uses scarce resources to satisfy human wants. Lectures, movies, concerts, phone service, wireless connections, yoga lessons, dry cleaning, and haircuts are all services.

Because goods and services are produced using scarce resources, they are themselves scarce. A good or service is scarce if the amount people desire exceeds the amount available at a zero price. Because we cannot have all the goods and services we would like, we must continually choose among them. We must choose among more pleasant living quarters, better meals, nicer clothes, more reliable transportation, faster computers, and so on. Making choices in a world of scarcity means we must pass up some goods and services. Exhibit 1 shows the options of one individual facing scarcity. But not everything is scarce. In

fact, some things we would prefer to have

Exhibit 1

Scarcity Means You Must Choose among Options



© LAOLA/SHUTTERSTOCK.COM; © COLIA/SHUTTERSTOCK.COM; © UTEKHINA ANNA/SHUTTERSTOCK.COM; © JAMES WESTON/SHUTTERSTOCK.COM; © ELENA ELISSEVA/SHUTTERSTOCK.COM; © ZIMMYTWS/SHUTTERSTOCK.COM

wages

Payment to resource owners for their labor

interest

Payment to resource owners for the use of their capital

rent

Payment to resource owners for the use of their natural resources

profit

Reward for entrepreneurial ability; sales revenue minus resource cost

good

A tangible product used to satisfy human wants

service

An activity, or intangible product, used to satisfy human wants

scarcity

Occurs when the amount people desire exceeds the amount available at a zero price

less of. For example, we would prefer to have less garbage, less spam e-mail, and less pollution. Things we want none of even at a zero price are called *bads*, the opposite of goods.

A few goods and services seem *free* because the amount available at a zero price exceeds the amount people want. For example, air and seawater often seem free because we can breathe all the air we want and have all the seawater we can haul away. Yet, despite the old saying "The best things in life are free," most goods and services are scarce, not free, and even those that appear to be free come with strings attached. For example, clean air and clean seawater have become scarce. Goods and services that are truly free are not the subject matter of economics. Without scarcity, there would be no economic problem and no need for prices.

Sometimes we mistakenly think of certain goods as free because they involve no apparent cost to us. Napkins seem to be free at Starbucks. Nobody stops you from taking a fistful. Supplying napkins, however, costs the company millions each year and prices reflect that cost. Some restaurants make special efforts to keep napkin use down—such as packing them tightly into the dispenser or making you ask for them. And Starbucks recently reduced the thickness of its napkins.

You may have heard the expression "There is no such thing as a free lunch." There is no free lunch because all goods and services involve a cost to someone. The lunch may seem free to you, but it draws scarce resources away from the production of other goods and services, and whoever provides a free lunch often expects something in return. A Russian proverb makes a similar point but with a bit more bite: "The only place you find free cheese is in a mouse-trap." Albert Einstein once observed, "Sometimes one

pays the most for things one gets for nothing."

market

A set of arrangements by which buyers and sellers carry out exchange at mutually agreeable terms

product market

A market in which a good or service is bought and sold

resource market

A market in which a resource is bought and sold

circular-flow model

A diagram that traces the flow of resources, products, income, and revenue among economic decision makers

1-1c Economic Decision Makers

There are four types of decision makers in the economy: households, firms, governments, and the rest of the world. Their interaction determines how an economy's resources are allocated. Households play the starring role. As consumers, households demand the goods and services produced. As resource owners, households

supply labor, capital, natural resources, and entrepreneurial ability to firms, governments, and the rest of the world. Firms, governments, and the rest of the world demand the resources that households supply and then use these resources to supply the goods and services that households demand. The rest of the world includes foreign households, foreign firms, and foreign governments that supply resources and products to U.S. markets and demand resources and products from U.S. markets.

Markets are the means by which buyers and sellers carry out exchange. By bringing together the two sides of exchange, markets determine price, quantity, and quality. Markets are often physical places, such as supermarkets, department stores, shopping malls, or yard sales. But markets also include other mechanisms by which buyers and sellers communicate, such as classified ads, radio and television ads, telephones, bulletin boards, online sites, and face-to-face bargaining. These market mechanisms provide information about the quantity, quality, and price of products offered for sale. Goods and services are bought and sold in **product markets**. Resources are bought and sold in **resource markets**. The most important resource market is the labor, or job, market. Think about your own experience looking for a job, and you'll already have some idea of that market.

1-1d A Simple Circular-Flow Model

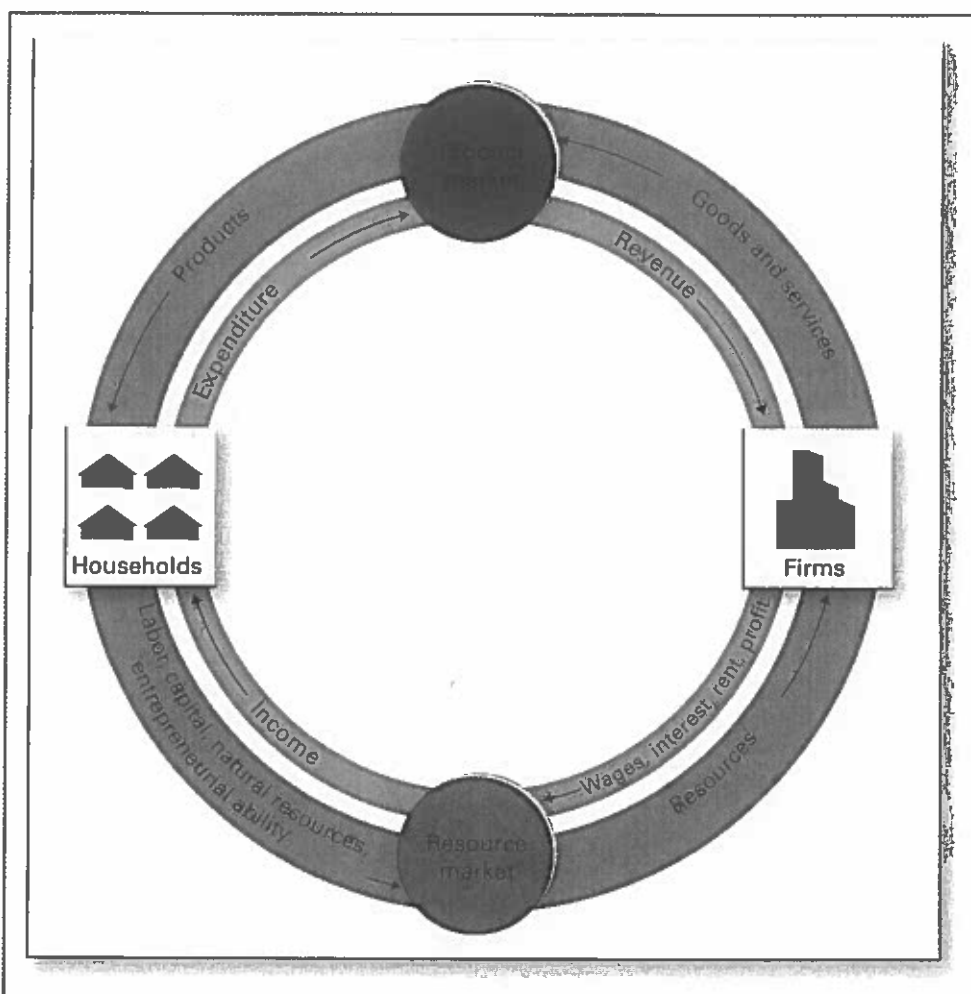
Now that you have learned a bit about economic decision makers, consider how they interact. Such a picture is conveyed by the **circular-flow model**, which describes the flow of resources, products, income, and revenue among economic decision makers. The simple circular-flow model focuses on the primary interaction in a market economy—that between households and firms. Exhibit 2 shows households on the left and firms on the right; please take a look.

Households supply labor, capital, natural resources, and entrepreneurial ability to firms through resource markets, shown in the lower portion of the exhibit. In return, households demand goods and services from firms through product markets, shown on the upper portion of the exhibit. Viewed from the business end, firms demand labor, capital, natural resources, and entrepreneurial ability from households through resource markets, and firms supply goods and services to households through product markets.

The flows of resources and products are supported by the flows of income and expenditure—that is, by the flow of money. So let's add money. The demand and supply of resources come together in resource

Exhibit 2

The Simple Circular-Flow Model for Households and Firms



markets to determine what firms pay for resources. These resource prices—wages, interest, rent, and profit—flow as income to households. The demand and supply of products come together in product markets to determine what households pay for goods and services. These product prices of goods and services flow as revenue to firms. Resources and products flow in one direction—in this case, counterclockwise—and the corresponding payments flow in the other direction—clockwise. What goes around comes around. Take a little time now to trace the logic of the circular flows.

1-2 The Art of Economic Analysis

An economy results as millions of individuals attempt to satisfy their unlimited wants. Because their choices lie at the heart of the economic

problem—coping with scarce resources but unlimited wants—these choices deserve a closer look. Learning about the forces that shape economic choice is the first step toward mastering the art of economic analysis.

1-2a Rational Self-Interest

A key economic assumption is that individuals, in making choices, rationally select what they perceive to be in their best interests. By *rational*, economists mean simply that people try to make the best choices they can, given the available time and information. People may not know with certainty which alternative will turn out to be the best. They simply select the alternatives they *expect* will yield the most satisfaction and happiness. In general, **rational self-interest** means that each individual tries to maximize the expected

benefit achieved with a given cost or to minimize the expected cost of achieving a given benefit. Thus, economists begin with the assumption that people look out for their self-interest. For example, the USA Today weekly football poll asks coaches to list the top 25 teams in the country. It is no surprise that coaches distort their selections to favor their own teams and their own conferences. And, to make their own records look better, coaches inflate the rankings of teams they have beaten.¹

rational self-interest

Each individual tries to maximize the expected benefit achieved with a given cost or to minimize the expected cost of achieving a given benefit

1. Matthew Kotchen and Matthew Potoski, "Conflicts of Interest Distort Public Evaluations: Evidence from the Top 25 Ballots of NCAA Football Coaches," NBER Working Paper 17628 (November 2011).

Rational self-interest should not necessarily be viewed as blind materialism, pure selfishness, or greed. We all know people who are tuned to radio station WIIFM (What's In It For Me?). For most of us, however, self-interest often includes the

welfare of our family, our friends, and perhaps the poor of the world. Even so, our concern for others is influenced by our personal cost of that concern. We may readily volunteer to drive a friend to the airport on Saturday afternoon but are less likely to offer a ride if the flight departs at 6:00 A.M. When we donate clothes to an organization such as Goodwill Industries, they are more likely to be old and worn than brand new. People tend to give more to charities when their contributions are tax deductible and when contributions garner social approval in the community (as when contributor names are made public or when big donors get buildings named after them).² TV stations are more likely to donate airtime for public-service announcements during the dead of night than during prime time (in fact, 80 percent of such announcements air between 11:00 P.M. and 7:00 A.M.). In Asia, some people burn money to soothe the passage of a departed loved one. But they burn fake money, not real money.

The notion of self-interest does not rule out concern for others; it simply means that concern for others is influenced by the same economic forces that affect other economic choices. The lower the personal cost of helping others, the more help we offer. We don't like to think that our behavior reflects our self-interest, but it usually does. As Jane Austen wrote in *Pride and Prejudice*, "I have been a selfish being all my life, in practice, though not in principle."

1-2b Choice Requires Time and Information

Rational choice takes time and requires information, but time and information are themselves scarce and therefore valuable. If you have any doubts about the time and information needed to make choices, talk to someone who recently purchased

"A key economic assumption is that individuals, in making choices, rationally select what they perceive to be in their best interest."

a home, a car, or a personal computer. Talk to a corporate official trying to decide whether to introduce a new product, sell online, build a new factory, or buy another firm. Or think back to your own experience in choosing a college. You probably

talked to friends, relatives, teachers, and guidance counselors. You likely used school catalogs, college guides, and Web sites. You may have even visited some campuses to meet the admissions staff and anyone else willing to talk. The decision took time and money, and it probably involved aggravation and anxiety.

Because information is costly to acquire, we are often willing to pay others to gather and digest it for us. College guidebooks, stock analysts, travel agents, real estate brokers, career counselors, restaurant critics, movie reviewers, specialized Web sites, and *Consumer Reports* magazine attest to our willingness to pay for information that improves our choices. As we'll see next, rational decision makers continue to acquire information as long as the additional benefit expected from that information exceeds the additional cost of gathering it.

1-2c Economic Analysis Is Marginal Analysis

Economic choice usually involves some adjustment to the existing situation, or status quo. Amazon.com must decide whether to add an additional line of products. The school superintendent must decide whether to hire another teacher. Your favorite jeans are on sale, and you must decide whether to buy another pair. You are wondering whether to carry an extra course next term. You just finished lunch and are deciding whether to order dessert.

Economic choice is based on a comparison of the expected marginal benefit and the expected marginal cost of the action under consideration. Marginal means incremental, additional, or extra. Marginal refers to a change in an economic variable, a change in the status quo. A rational decision maker changes the status quo if the expected marginal benefit from the change exceeds the expected marginal cost. For example, Amazon.com compares the marginal benefit expected from adding a new line of products (the additional sales revenue) with the marginal cost (the additional cost of the resources required). Likewise, you compare the marginal benefit you expect from eating dessert (the additional pleasure

marginal

Incremental, additional, or extra; used to describe a change in an economic variable

2. Dean Karlan and Margaret McConnell, "Hey Look at Me: The Effect of Giving Circles on Giving," NBER Working Paper 17737 (January 2012).



or satisfaction) with its marginal cost (the additional money, time, and calories).

Typically, the change under consideration is small, but a marginal choice can involve a major economic adjustment, as in the decision to quit school and find a job. For a firm, a marginal choice might mean building a plant in Mexico or even filing for bankruptcy. By focusing on the effect of a marginal adjustment to the status quo, the economist is able to cut the analysis of economic choice down to a manageable size. Rather than confront a bewildering economic reality head-on, the economist begins with a marginal choice to see how this choice affects a particular market and shapes the economic system as a whole. Incidentally, to the noneconomist, *marginal* usually means relatively inferior, as in “a movie of marginal quality.” Forget that meaning for this course and instead think of *marginal* as meaning incremental, additional, or extra.

1-2d Microeconomics and Macroeconomics

Although you have made thousands of economic choices, you probably seldom think about your own economic behavior. For example, why are you reading this book right now rather than doing something else? Microeconomics is the study of your economic behavior and the economic behavior of others who make choices about such matters as how much to study and how much to party, how much to borrow and how much to save, what

to buy and what to sell. Microeconomics examines individual economic choices and how markets coordinate the choices of various decision makers. Microeconomics explains how price and quantity are determined in individual markets—the market for breakfast cereal, sports equipment, or used cars, for instance.

You have probably given little thought to what influences your own economic choices. You have likely given even less thought to how your choices link up with those made by millions of others in the U.S. economy to determine economy-wide measures such as total production, employment, and economic growth. Macroeconomics studies the performance of the economy as a whole. Whereas microeconomics studies the individual pieces of the economic puzzle, as reflected in particular markets, macroeconomics puts all the pieces together to focus on the big picture. Macroeconomics sees the forest, not the trees; the beach, not the grains of sand; and the Rose Bowl parade float, not the individual flowers.

The national economy usually grows over time, but along the way it sometimes stumbles, experiencing recessions in economic activity, as reflected by a decline in production, employment, and other aggregate measures. Economic fluctuations are the rise and fall of economic activity relative to the long-term growth trend of the economy. These fluctuations, or *business cycles*, vary in length and intensity, but they usually involve the entire nation and often other nations too. For example, the U.S. economy now produces more than four times as much as it did in 1960, despite experiencing eight recessions since then, including the Great Recession of 2007–2009.

To Review: The art of economic analysis focuses on how people use their scarce resources in an attempt to satisfy their unlimited wants. Rational self-interest guides individual choice. Choice requires time and information and involves a comparison of the expected marginal benefit and the expected marginal cost of alternative actions. Microeconomics looks at the individual pieces of the economic puzzle; macroeconomics fits the pieces together to form the big picture.

microeconomics

The study of the economic behavior in particular markets, such as that for computers or unskilled labor

macroeconomics

The study of the economic behavior of entire economies, as measured, for example, by total production and employment

economic fluctuations

The rise and fall of economic activity relative to the long-term growth trend of the economy; also called business cycles

“A good theory helps us understand a messy and confusing world.”

1-3 The Science of Economic Analysis

Economists use scientific analysis to develop theories, or models, that help explain economic behavior. An **economic theory**, or **economic model**, is a simplification of economic reality that is used to make predictions about the real world. A theory, or model, such as the circular-flow model, captures the important elements of the problem under study but need not spell out every detail and interrelation. In fact, adding more details may make a theory more unwieldy and, therefore, less useful. For example, a wristwatch is a model that tells time, but a watch festooned with extra features is harder to read at a glance and is therefore less useful as a time-telling model. The world is so complex that we must simplify it to make sense of things. Store mannequins simplify the human form (some even lack arms and heads). Comic strips and cartoons simplify characters' anatomy—leaving out fingers (in the case of Foxtrot, *The Simpsons*, and *Family Guy*) or a mouth (in the case of *Dilbert*), for instance. You might think of economic theory as a stripped-down, or streamlined, version of economic reality.

A good theory helps us understand a messy and confusing world. Lacking a theory of how things work, our thinking can become cluttered with facts, one piled on another, as in a messy closet. You could think of a good theory as a closet organizer for the mind. A good theory offers a helpful guide to sorting, saving, and understanding information.

1-3a The Role of Theory

Most people don't understand the role of theory. Perhaps you have heard, “Oh, that's fine in theory, but in practice it's another matter.” The implication

is that the theory in question provides little aid in practical matters. People who say this fail to realize that they are merely substituting their own theory for a theory they either do not believe or do not understand. They are really saying, “I have my own theory that works better.”

All of us employ theories, however poorly defined

economic theory, or economic model
A simplification of reality used to make predictions about cause and effect in the real world

variable
A measure, such as price or quantity, that can take on different values at different times



SHIRI STAFFORD/RISE/GETTY IMAGES

A good theory can act like a closet organizer for your mind, helping you understand a messy and confusing word.

or understood. Someone who pounds on the Pepsi machine that just ate a quarter has a crude theory about how that machine works. One version of that theory might be, “The quarter drops through a series of *what-chamacallits*, but sometimes it gets stuck. If I pound on the machine, then I can free up the quarter and send it on its way.” Evidently, this theory is widespread enough that people continue to pound on machines that fail to perform (a real problem for the vending machine industry and one reason newer machines are fronted with glass). Yet, if you were to ask these mad pounders to explain their “theory” about how the machine works, they would look at you as if you were crazy.

1-3b The Scientific Method

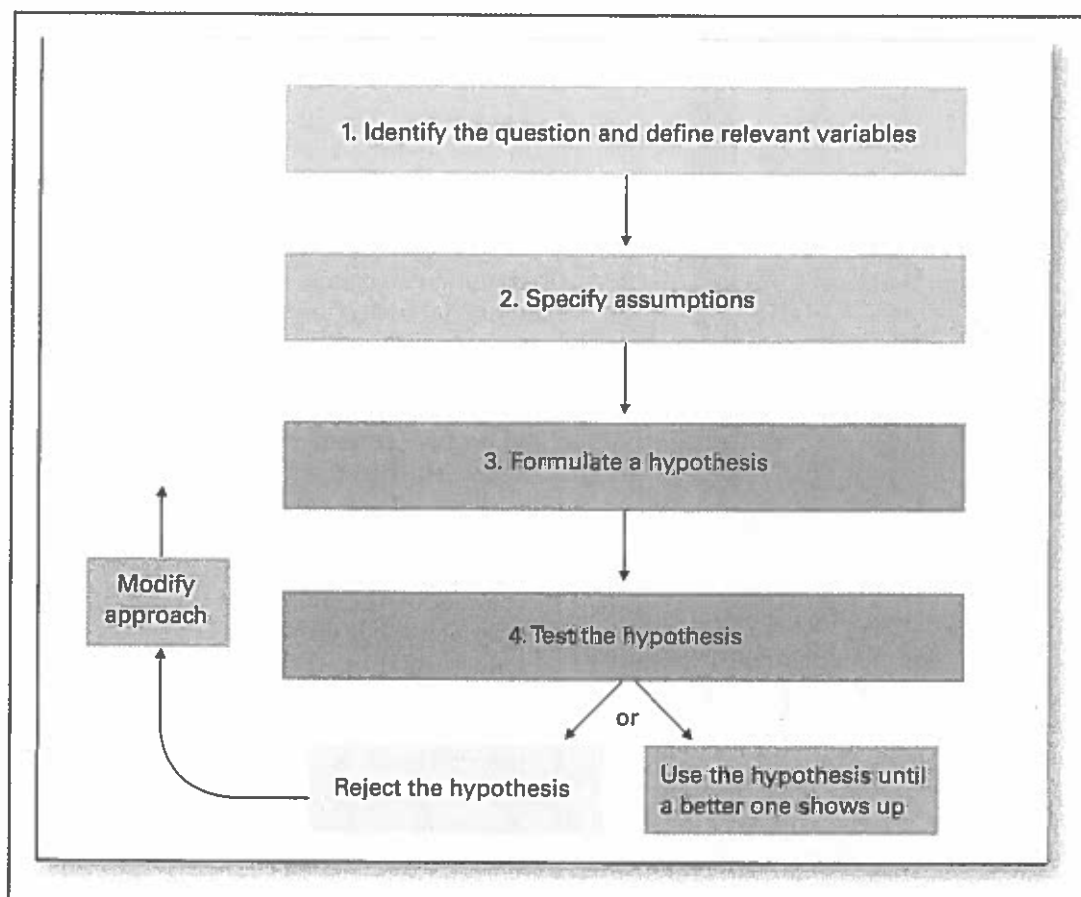
To study economic problems, economists employ a process of theoretical investigation called the **scientific method**, which consists of four steps, as outlined in Exhibit 3.

Step One: Identify the Question and Define Relevant Variables

The scientific method begins with curiosity: Someone wants to answer a question. Thus, the first step is to identify the economic question and define the variables relevant to a solution. For example, the question might be, “What is the relationship between the price of Pepsi and the quantity of Pepsi purchased?” In this case, the relevant variables are price and quantity. A variable is a measure that can take on

Exhibit 3

The Scientific Method: Step-by-Step



© CENGAGE LEARNING 2015

different values at different times. The variables of concern become the elements of the theory, so they must be selected with care.

Step Two: Specify Assumptions

The second step is to specify the assumptions under which the theory is to apply. One major category of assumptions is the **other-things-constant assumption**—in Latin, the *ceteris paribus* assumption. The idea is to identify the variables of interest and then focus exclusively on the relationships among them, assuming that nothing else important changes—that other things remain constant. Again, suppose we are interested in how the price of Pepsi influences the amount purchased. To isolate the relation between these two variables, we assume that there are no changes in other relevant variables such as consumer income, the average temperature, or the price of Coke.

We also make assumptions about how people behave; these are called **behavioral assumptions**. The primary behavioral assumption is rational

self-interest. Earlier we assumed that each decision maker pursues self-interest rationally and makes choices accordingly. Rationality implies that each consumer buys the products expected to maximize his or her level of satisfaction. Rationality also implies that each firm supplies the products expected to maximize the firm's profit. These kinds of assumptions are called **behavioral assumptions** because they specify how we expect economic decision makers to behave—what makes them tick, so to speak.

Step Three: Formulate a Hypothesis

The third step in the scientific method is to formulate a **hypothesis**, which is a theory about how key variables

other-things-constant assumption

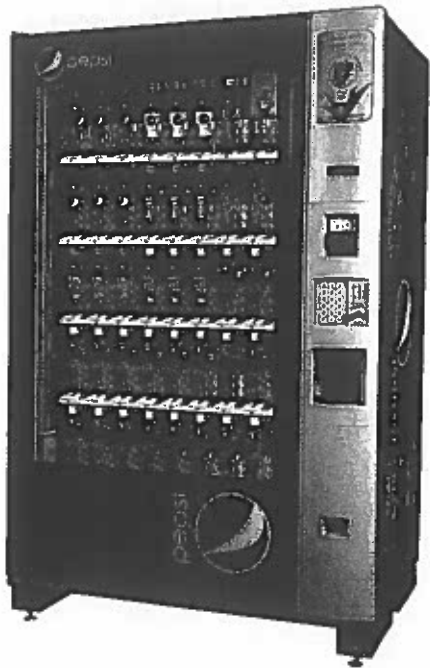
The assumption, when focusing on the relation among key economic variables, that other variables remain unchanged; in Latin, *ceteris paribus*

behavioral assumption

An assumption that describes the expected behavior of economic decision makers—what motivates them

hypothesis

A theory about how key variables relate



AP IMAGES/PRINCESTON PHOTO/PEPSI-COLA NORTH AMERICA BEVERAGES

relate to each other. For example, one hypothesis holds that if the price of Pepsi goes up, other things constant, then the quantity purchased declines. The hypothesis becomes a prediction of what happens to the quantity purchased if the price increases. The purpose of this hypothesis, like that of any theory, is to help make predictions about cause and effect in the real world.

Step Four: Test the Hypothesis

In the fourth step, by comparing its predictions with evidence, we test the validity of a hypothesis. To test a hypothesis, we must focus on the variables in question, while carefully controlling for other effects assumed not to change. The test leads us either to (1) reject the hypothesis, or theory, if it predicts worse than the best alternative theory, or (2) use the hypothesis, or theory, until a better one comes along. If we reject the hypothesis, we can go back and modify our approach in light of the results. Please spend

a moment now reviewing the steps of the scientific method in Exhibit 3.

positive economic statement

A statement that can be proved or disproved by reference to facts

normative economic statement

A statement that reflects an opinion, which cannot be proved or disproved by reference to the facts

1-3c Normative Versus Positive

Economists usually try to explain how the economy works. Sometimes they concern themselves not with how the economy does work

but how it should work. Compare these two statements: "The U.S. unemployment rate is 7.6 percent," and "The U.S. unemployment rate should be lower." The first, called a **positive economic statement**, is an assertion about economic reality that can be supported or rejected by reference to the facts. Positive economics, like physics or biology, attempts to understand the world around us. The second, called a **normative economic statement**, reflects an opinion. And an opinion is merely that—it cannot be shown to be true or false by reference to the facts. Positive statements concern what is; normative statements concern what, in someone's opinion, *should be*. Positive statements need not necessarily be true, but they must be subject to verification or refutation by reference to the facts. Theories are expressed as positive statements such as "If the price of Pepsi increases, then the quantity demanded decreases."

Most of the disagreement among economists involves normative debates—such as the appropriate role of government—rather than statements of positive analysis. To be sure, many theoretical issues remain unresolved, but economists generally agree on most fundamental theoretical principles—that is, about positive economic analysis. For example, in a survey of 464 U.S. economists, only 6.5 percent disagreed with the statement "A ceiling on rents reduces the quantity and quality of housing available." This is a positive statement because it can be shown to be consistent or inconsistent with the evidence. In contrast, there was much less agreement on normative statements such as "The distribution of income in the United States should be more equal." Half the economists surveyed "generally agreed," a quarter "generally disagreed," and a quarter "agreed with provisos."³

Normative statements, or value judgments, have a place in a policy debate such as the proper role of government, provided that statements of opinion are distinguished from statements of fact. In such policy debates, you are entitled to your own opinion, but you are not entitled to your own facts.

1-3d Economists Tell Stories

Despite economists' reliance on the scientific method for developing and evaluating theories, economic analysis is as much art as science. Formulating a question, isolating the key variables, specifying the assumptions, proposing a theory to answer the question, and devising a way to test the predictions all involve more than

330

3. Richard M. Alston et al., "Is There a Consensus among Economists in the 1990s?" *American Economic Review*, 82 (May 1992): 203–209, Table 1.

simply an understanding of economics and the scientific method. Carrying out these steps requires good intuition and the imagination of a storyteller. Economists explain their theories by telling stories about how they think the economy works. To tell a compelling story, an economist relies on case studies, anecdotes, parables, the personal experience of the listener, and supporting data. Throughout this book, you'll hear stories that bring you closer to the ideas under consideration. The stories, such as the one about the Pepsi machine, breathe life into economic theory and help you personalize abstract ideas.



© GORAN DJUKIC/ANOW/SHUTTERSTOCK.COM

1-3e Predicting Average Behavior

The goal of an economic theory is to predict the impact of an economic event on economic choices and, in turn, the effect of these choices on particular markets or on the economy as a whole. Does this mean that economists try to predict the behavior of particular consumers or producers? Not necessarily, because a specific individual may behave in an unpredictable way. But the unpredictable actions of numerous individuals tend to cancel one another out, so the *average behavior* of groups can be predicted more accurately. For example, if the federal government cuts personal income taxes, certain households might decide to save the entire tax cut. On average, however, household spending would increase. Likewise, if Burger King cuts the price of Whoppers, the manager can better predict how much sales will increase than how a specific customer coming through the door will respond. *The random actions of individuals tend to offset one another, so the average behavior of a large group can be predicted more accurately than the behavior of a particular individual.* Consequently, economists tend to focus on the average, or typical, behavior of people in groups—for example, as average taxpayers or average Whopper consumers—rather than on the behavior of a specific individual.

1-4 Some Pitfalls of Faulty Economic Analysis

Economic analysis, like other forms of scientific inquiry, is subject to common mistakes in reasoning that can lead to faulty conclusions. Here are three sources of confusion.

The Fallacy That Association Is Causation

In the past two decades, the number of physicians specializing in cancer treatment increased sharply. At the same time, the incidence of some cancers increased. Can we conclude that physicians cause cancer? No. To assume that event A caused event B simply because the two are associated in time is to commit the **association-is-causation fallacy**, a common error. The fact that one event precedes another or that the two events occur simultaneously does not necessarily mean that one causes the other. Remember: Association is not necessarily causation.

The Fallacy of Composition

Perhaps you have been to a rock concert where everyone stands to get a better view. At some concerts, most people even stand on their chairs. But even standing on chairs does not improve your view if others do the same, unless you are quite tall. Likewise, arriving early to buy game tickets does not work if many have the same idea. These are examples of the **fallacy of composition**, which is an erroneous belief that what is true for the individual, or the part, is also true for the group, or the whole.

association-is-causation fallacy
The incorrect idea that if two variables are associated in time, one must necessarily cause the other

fallacy of composition
The incorrect belief that what is true for the individual, or part, must necessarily be true for the group, or the whole

The Mistake of Ignoring the Secondary Effects

In many cities, public officials have imposed rent controls on apartments. The primary effect of this policy, the effect that policy makers focus on, is to keep rents from rising. Over time, however, fewer new apartments get built because renting them becomes less profitable. Moreover, existing rental units deteriorate because owners have plenty of customers anyway. Thus, the quantity and quality of housing may decline as a result of what appears to be a reasonable measure to keep rents from rising. The mistake was to ignore the **secondary effects**, or the unintended consequences, of the policy. Economic actions have secondary effects that often turn out to be more important than the primary effects. Secondary effects may develop more slowly and may not be immediately obvious, but good economic analysis tries to anticipate them and take them into account.

1-5 If Economists Are So Smart, Why Aren't They Rich?

Why aren't economists rich? Well, some are, earning over \$25,000 per appearance on the lecture circuit. Others top \$2 million a year as consultants and expert witnesses.⁴ Economists have been appointed to federal cabinet posts, as secretaries of commerce, defense, labor, state, and treasury, for example, and to head the U.S. Federal Reserve System. Economics is the only social science and the only business discipline for which the prestigious Nobel Prize is awarded, and pronouncements by economists are reported in the media daily. *The Economist*, a widely respected news weekly from London, has argued that economic ideas have influenced policy "to a degree that would make other social scientists drool."⁵

The economics profession thrives because its models usually do a better job of making economic sense out of a confusing world than do alternative approaches. But not all economists are wealthy, nor is

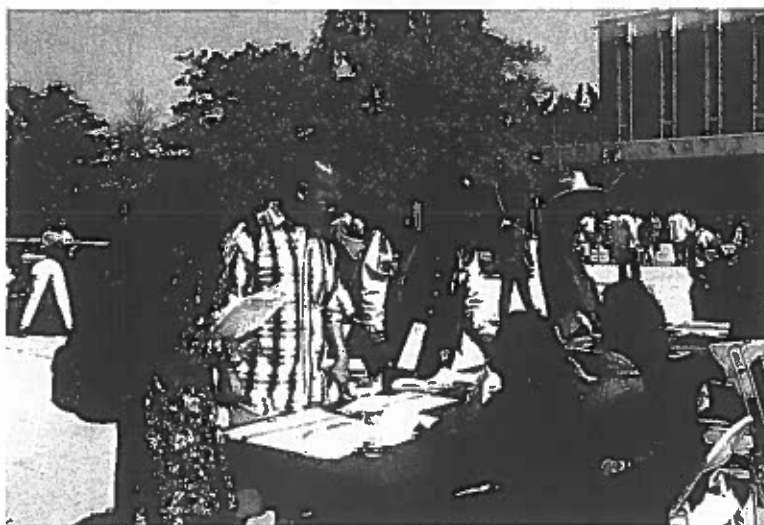
personal wealth the goal of the discipline. In a similar vein, not all doctors are healthy (some even smoke), not all carpenters live in perfectly built homes, not all marriage counselors are happily married, and not all child psychologists have well-adjusted children. Still, those who study economics do reap financial rewards.

Earlier in the chapter, you learned that economic choice involves comparing the expected marginal benefit and the expected marginal cost. Surveys show that students go to college because they believe a college diploma is the ticket to better jobs and higher pay. Put another way, for nearly two-thirds of U.S. high school graduates, the expected marginal benefit of college apparently exceeds the expected marginal cost. The cost of college will be discussed in the next chapter; the focus here is on the benefits of college, particularly expected earnings.

Among college graduates, all kinds of factors affect earnings, such as general ability, effort, occupation, college attended, college major, and highest degree earned. PayScale.com collects real-time information on annual pay from its 10 million users. The site focused on popular college majors. To isolate the effects of a college major on earnings, only workers with a bachelor's as their highest degree were included in the results. Exhibit 4 shows the median earnings in 2011 by major for two groups of college graduates: (1) those with 0 to 5 years of job experience and (2) those with 10 to 20 years of job experience. Majors are listed from the top down by the median annual pay of those with between 0 and 5 years of experience, identified by the grey bars. The top pay of \$62,800 went to those majoring in computer engineering; indeed, the top five slots went to engineering and computer graduates. Economics ranked sixth out of the twenty majors listed, with a median pay of \$47,300, or 25 percent below the top pay. Elementary education majors held

secondary effects
Unintended consequences of economic actions that may develop slowly over time as people react to events

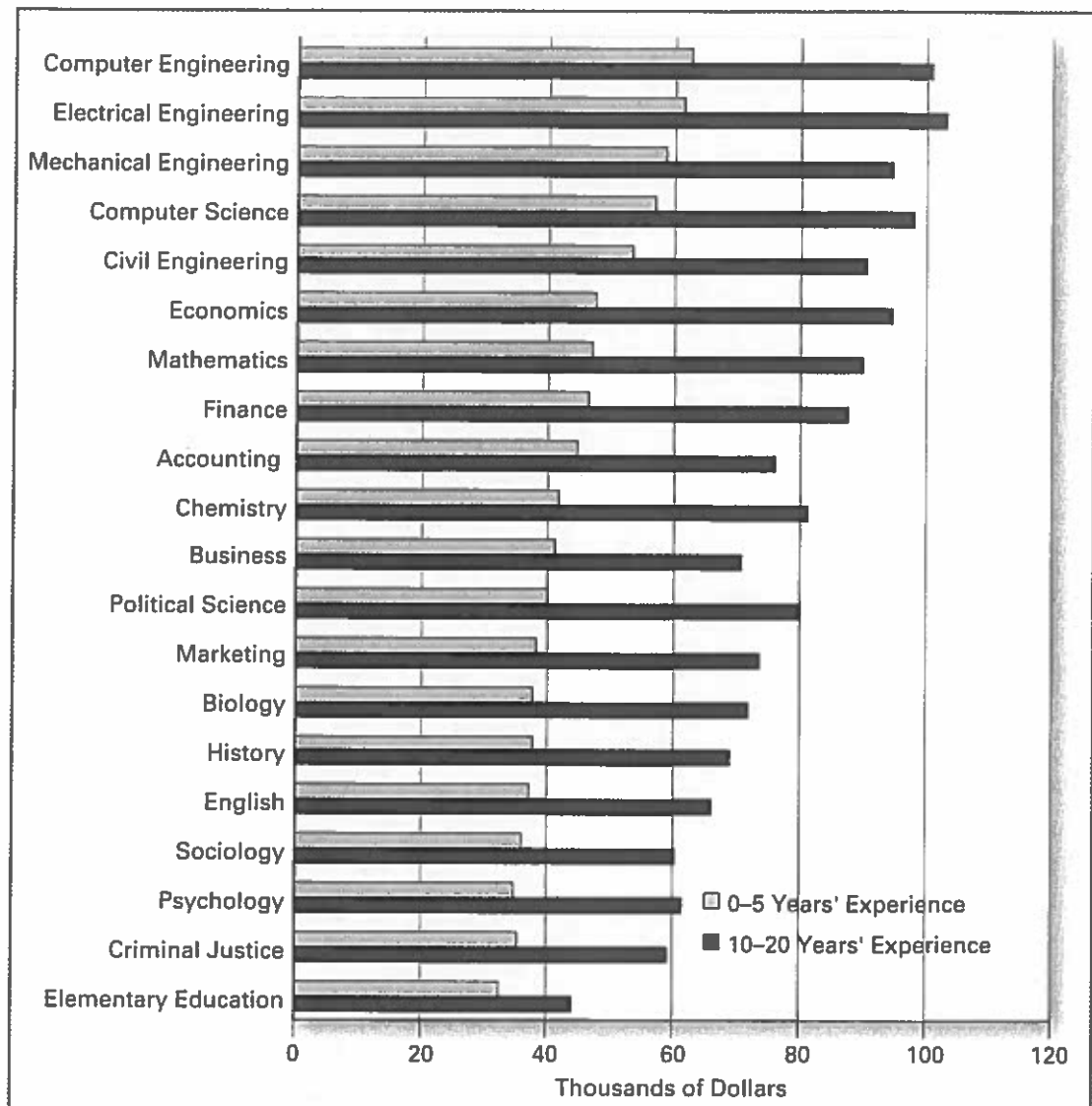
4. As reported by George Anders, "An Economist's Courtroom Bonanza," *Wall Street Journal*, 19 March 2007.
5. "The Puzzling Failure of Economics," *The Economist*, 23 August 1997, p. 11.



AMY ETNA / PHOTOENT

Exhibit 4

Median Annual Pay by College Major



SOURCES: Median pay data for 2011 were found at <http://www.payscale.com/best-colleges/degrees.asp>. For a survey of employment opportunities, go to the U.S. Labor Department's Occupational Outlook Handbook at <http://www.bls.gov/oco/>.

the bottom spot of \$32,400, which was 48 percent below the top pay.

The maroon bars show the median pay by major for those with 10 to 20 years of job experience. Those majoring in electrical engineering led the field with \$103,000, an increase of 68 percent over the pay of newer graduates with that degree. Economics majors with 10 to 20 years of job experience saw a 100 percent pay increase to \$94,700. While economics majors with 0 to 5 years of experience were paid 25 percent less than the top paying major, among those with at least a decade of job experience, the median pay for economics majors moved up to within

8 percent of the top pay. In fact, economics majors saw their median pay grow more in dollar terms than did any other major listed. This suggests that those who study economics acquire skills that appreciate with experience. The bump in median pay based on experience for the 19 other majors averaged 76 percent. Elementary education remained the lowest paying major among those with 10 to 20 years of experience. Note that the majors ranked toward the top of the list tend to be more quantitative and analytical. The selection of a relatively more challenging major such as engineering or economics may send a favorable signal to future employers.

1-6 Final Word

This textbook describes how economic factors affect individual choices and how all these choices come together to shape the economic system. Economics is not the whole story, and economic factors are not always the most important. But economic considerations have important and predictable effects on individual choices, and these choices affect the way we live.

Yes, economics is a challenging discipline, but it is also an exciting and rewarding one. The good news is that you already know a lot about economics. To use this knowledge, however, you must cultivate the art and science of economic analysis. You must be able to simplify the world to formulate questions, isolate the relevant variables, and then tell a persuasive story about how these variables relate.

An economic relation can be expressed in words, represented as a table of quantities, described by a mathematical equation, or illustrated as a graph. The appendix to this chapter introduces graphs. You may find a detailed reading of this appendix unnecessary. If you are already familiar with relations among variables, slopes, tangents, and the like, you can probably just browse. But if you have little recent experience with graphs, you might benefit from a more careful reading with pencil and paper in hand.

The next chapter introduces key tools of economic analysis. Subsequent chapters use these tools to explore economic problems and to explain economic behavior that may otherwise seem puzzling. You must walk before you can run, however, and in the next chapter, you will take your first wobbly steps.

Appendix

A1-1 Understanding Graphs

Take out a pencil and a blank piece of paper. Go ahead. Put a point in the middle of the paper. This is your point of departure, called the **origin**. With your pencil at the origin, draw a straight line off to the right. This line is called the **horizontal axis**. The value of the variable x measured along the horizontal axis increases as you move to the right of the origin. Now mark off this line from 0 to 20, in increments of 5 units each. Returning to the origin, draw another line, this one straight north. This line is called the **vertical axis**. The value of the variable y measured along the vertical axis increases as you move north of the origin. Mark off this line from 0 to 20, in increments of 5 units each.

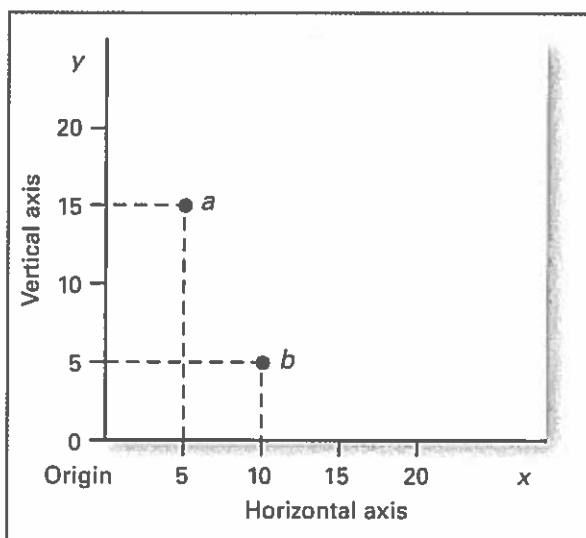
Within the space framed by the two axes, you can plot possible combinations of the variables measured along each axis. Each point identifies a value measured along the horizontal, or x , axis and a value measured along the vertical, or y , axis. For example, place point a in your graph to reflect the combination where x equals 5 units and y equals 15 units. Likewise, place point b in your graph to reflect 10 units of x and 5 units of y . Now compare your results with points shown in Exhibit 5.

A **graph** is a picture showing how variables relate, and a picture can be worth a thousand words. Take a look at Exhibit 6, which shows the U.S. annual

unemployment rate since 1900. The year is measured along the horizontal axis and the unemployment rate is measured as a percentage along the vertical axis. Exhibit 6 is a **time-series graph**, which shows the value of a variable, in this case the percent of the labor force unemployed, over time. If you had to describe the information presented in Exhibit 6, the explanation could take many words. The picture shows not only how one year compares to the next

Exhibit 5

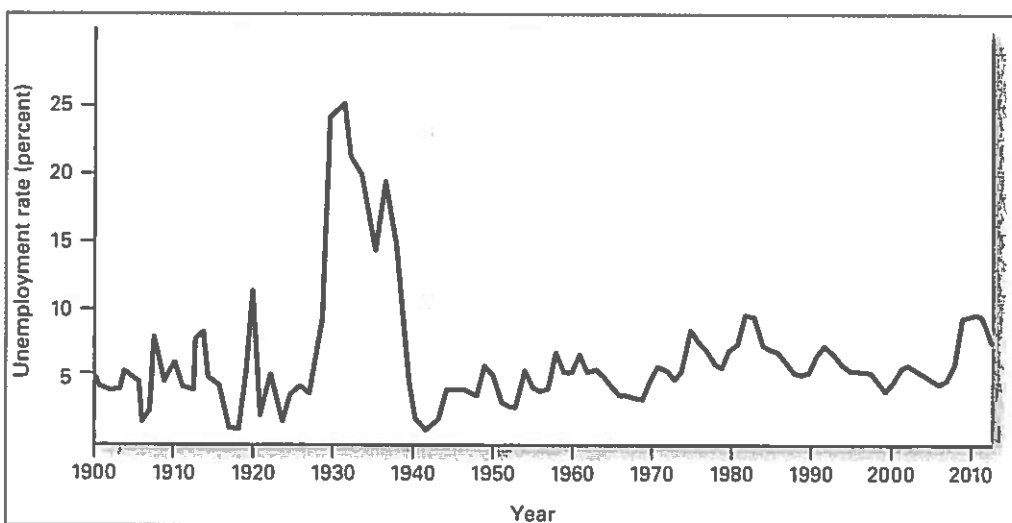
Basics of a Graph



© CENGAGE LEARNING 2015

Exhibit 6

U.S. Unemployment Rate Since 1900



SOURCE: *Historical Statistics of the United States*, 1970; and *Economic Report of the President*, February 2013. The figure for 2013 is an estimate as of November of that year.

origin

on a graph depicting two-dimensional space, the zero point

horizontal axis

line on a graph that begins at the origin and goes to the right and left; sometimes called the x axis

vertical axis

line on a graph that begins at the origin and goes up and down; sometimes called the y axis

graph

a picture showing how variables relate in two-dimensional space; one variable is measured along the horizontal axis and the other along the vertical axis

but also how one decade compares to another and how the unemployment rate trends over time. The sharply higher unemployment rate during the Great Depression of the 1930s is unmistakable. Graphs convey information in a compact and efficient way.

This appendix shows how graphs express a variety of possible relations among variables. Most graphs of interest in this book reflect the relationship between two economic variables, such as the unemployment rate and the year, the price of a product and the quantity demanded, or the price of production and the quantity supplied. Because we focus on just two variables at a time, we usually assume that other relevant variables remain constant.

One variable often depends on another. The time it takes you to drive home depends on your average speed. Your weight depends on how much you eat. The amount of Pepsi you buy depends on the price. A functional relation exists between two variables when the value of one variable depends on the value of another variable. The value of the dependent variable depends on the value of the independent variable. The task of the economist is to isolate economic relations and determine the direction of causality, if any. Recall that one of the pitfalls of economic thinking is the erroneous belief that association is causation. We cannot conclude that, simply because two events relate in time, one causes the other. There may be no relation between the two events.

A1-1a Drawing Graphs

Let's begin with a simple relation. Suppose you are planning to drive across the country and want to figure out how far you will travel

dependent variable
a variable whose value depends on that of the independent variable

independent variable
a variable whose value determines that of the dependent variable

positive relation (direct relation)
occurs when two variables increase or decrease together; the two variables move in the same direction

negative relation (inverse relation)
occurs when two variables move in opposite directions; when one increases, the other decreases

each day. You plan to average 50 miles per hour. Possible combinations of driving time and distance traveled per day appear in Exhibit 7. One column lists the hours driven per day, and the next column lists the number of miles traveled per day, assuming an average speed of 50 miles per hour. The distance traveled, the dependent variable, depends on the number of hours driven, the independent variable. Combinations of hours driven and distance traveled are shown as *a*, *b*, *c*, *d*, and *e*. Each combination is represented by a point in Exhibit 8. For

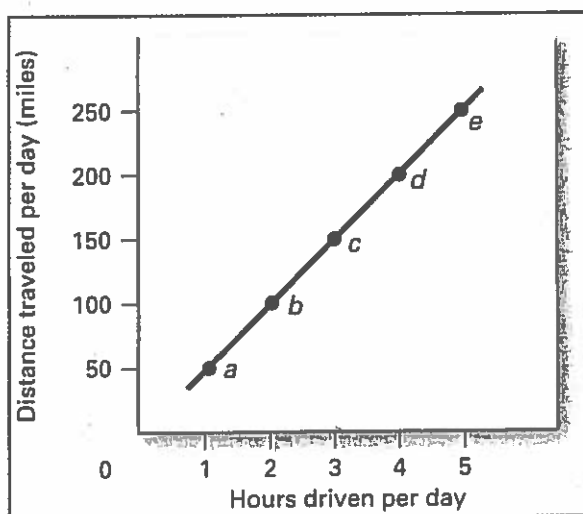
Exhibit 7

Schedule Relating Distance Traveled to Hours Driven

	Hours Driven per Day	Distance Traveled per Day (miles)
<i>a</i>	1	50
<i>b</i>	2	100
<i>c</i>	3	150
<i>d</i>	4	200
<i>e</i>	5	250

Exhibit 8

Graph Relating Distance Traveled to Hours Driven



© CENGAGE LEARNING 2015

example, point *a* shows that if you drive for 1 hour, you travel 50 miles. Point *b* indicates that if you drive for 2 hours, you travel 100 miles. By connecting the points, or possible combinations, we create a line running upward and to the right. This makes sense because, the longer you drive, the farther you travel. Assumed constant along this line is your average speed of 50 miles per hour.

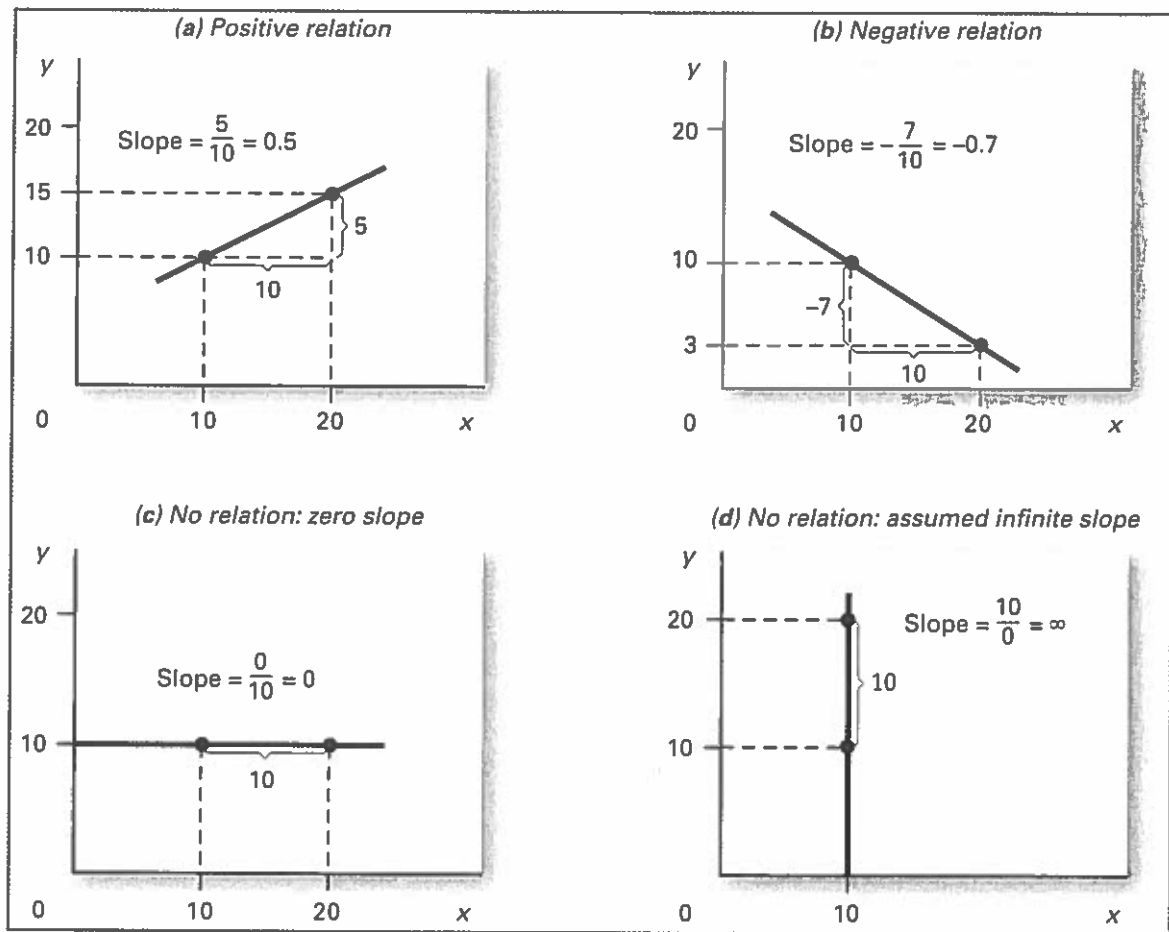
Types of relations between variables include the following:

1. As one variable increases, the other increases—as in Exhibit 8; this is called a positive, or direct, relation between the variables.
2. As one variable increases, the other decreases; this is called a negative, or inverse, relation.
3. As one variable increases, the other remains unchanged; the two variables are said to be independent, or unrelated.

One of the advantages of graphs is that they easily convey the relation between variables. We do not need to examine the particular combinations of numbers; we need only focus on the shape of the curve.

Exhibit 9

Alternative Slopes for Straight Lines



A1-1b The Slope of a Straight Line

A more precise way to describe the shape of a curve is to measure its slope. The **slope** of a line indicates how much the vertical variable changes for a given increase in the horizontal variable. Specifically, the slope between any two points along any straight line is the vertical change between these two points divided by the horizontal increase, or

$$\text{Slope} = \frac{\text{Change in the vertical distance}}{\text{Increase in the horizontal distance}}$$

Each of the four panels in Exhibit 9 indicates a vertical change, given a 10-unit increase in the horizontal variable. In panel (a), the vertical distance increases by 5 units when the horizontal distance increases by 10 units. The slope of the line is therefore $5/10$, or 0.5 . Notice that the slope in this case is a positive number because the relation between the two variables is positive, or direct. This slope

indicates that for every 1-unit increase in the horizontal variable, the vertical variable increases by 0.5 units. The slope, incidentally, does not imply causality; the increase in the horizontal variable does not necessarily cause the increase in the vertical variable. The slope simply measures the relation between an increase in the horizontal variable and the associated change in the vertical variable.

In panel (b) of Exhibit 9, the vertical distance declines by 7 units when the horizontal distance increases by 10 units, so the slope equals $-7/10$, or -0.7 . The slope in this case is a negative number because the two variables have a negative, or inverse, relation. In panel (c), the vertical variable remains unchanged as the horizontal variable increases by 10, so the slope equals $0/10$, or 0 . These two variables are not related. Finally, in panel (d),

slope of a line
a measure of how much the vertical variable changes for a given increase in the horizontal variable; the vertical change between two points divided by the horizontal increase

the vertical variable can take on any value, although the horizontal variable remains unchanged. Again, the two variables are not related. In this case, any change in the vertical measure, for example a 10-unit change, is divided by 0, because the horizontal value does not change. Any change divided by 0 is mathematically undefined, but as the line tilts toward vertical, its slope gets incredibly large. For practical purposes, we will assume that the slope of this line is not undefined but infinitely large.

A1-1c The Slope, Units of Measurement, and Marginal Analysis

The mathematical value of the slope depends on the units measured on the graph. For example, suppose copper tubing costs \$1 a foot. Graphs depicting the relation between total cost and quantity purchased are shown in Exhibit 10. In panel (a), the total cost increases by \$1 for each 1-foot increase in the amount of tubing purchased. Thus, the slope equals $1/1$, or 1. If the cost per foot remains the same but units are measured not in feet but in yards, the relation between total cost and quantity purchased is as depicted in panel (b). Now total cost increases by \$3 for each 1-yard increase in output, so the slope equals $3/1$, or 3. Because different units are used to measure the copper tubing, the two panels reflect different slopes, even though the cost is \$1 per foot in each panel. Keep in mind that the slope depends in part on the units of measurement.

Economic analysis usually involves *marginal analysis*, such as the marginal cost of one more unit of output. The slope is a convenient device for

measuring marginal effects because it reflects the change in total cost, measured along the vertical axis, for each 1-unit change in output, measured along the horizontal axis. For example, in panel (a) of Exhibit 10, the marginal cost of another foot of copper tubing is \$1, which also equals the slope of the line. In panel (b), the marginal cost of another yard of tubing is \$3, which again is the slope of that line. Because of its applicability to marginal analysis, the slope has special relevance in economics.

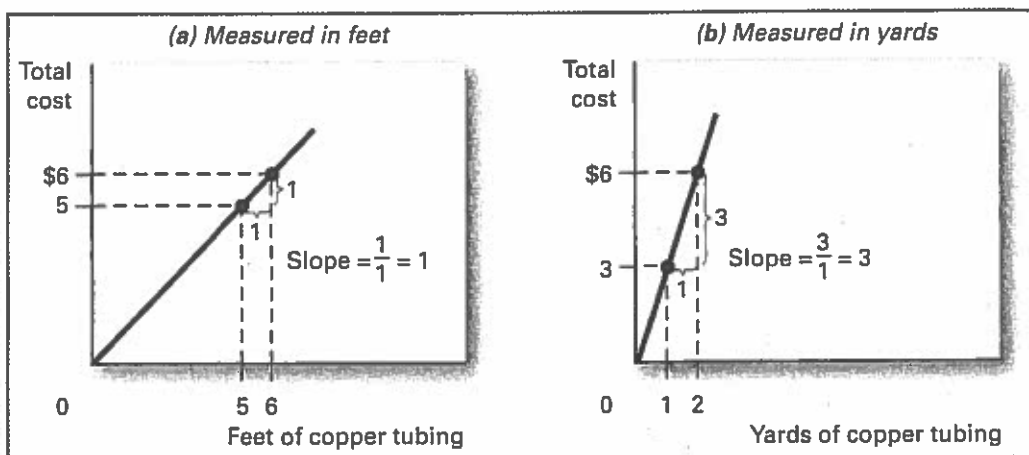
A1-1d The Slopes of Curved Lines

The slope of a straight line is the same everywhere along the line, but the slope of a curved line differs along the curve, as shown in Exhibit 11. To find the slope of a curved line at a particular point, draw a straight line that just touches the curve at that point but does not cut or cross the curve. Such a line is called a *tangent* to the curve at that point. The slope of the tangent gives the slope of the curve at that point. Look at line A, which is tangent to the curve at point a. As the horizontal value increases from 0 to 10, the vertical value drops along A from 40 to 0. Thus, the vertical change divided by the horizontal change equals $-40/10$, or -4 , which is the slope of the curve at point a. This slope is negative because the vertical value decreases as the horizontal value increases. Line B, a line tangent to the curve at point b, has the slope $-10/30$, or -0.33 . As you can see, the curve depicted in Exhibit 11 gets flatter as the horizontal variable increases, so the value of its slope approaches zero.

Other curves, of course, will reflect different slopes as well as different changes in the slope along

Exhibit 10

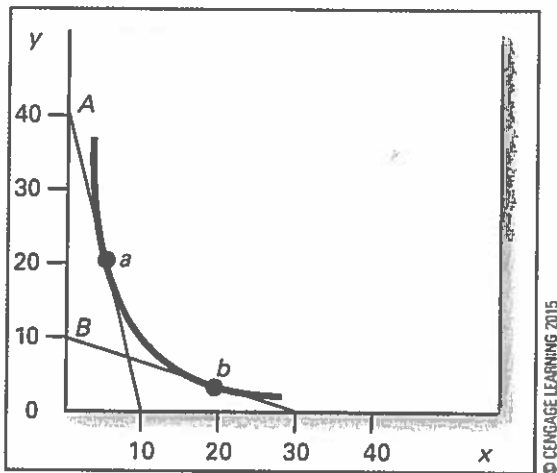
Slope Depends on the Unit of Measure



tangent
a straight line that touches a curve at a point but does not cut or cross the curve; used to measure the slope of a curve at a point

Exhibit 11

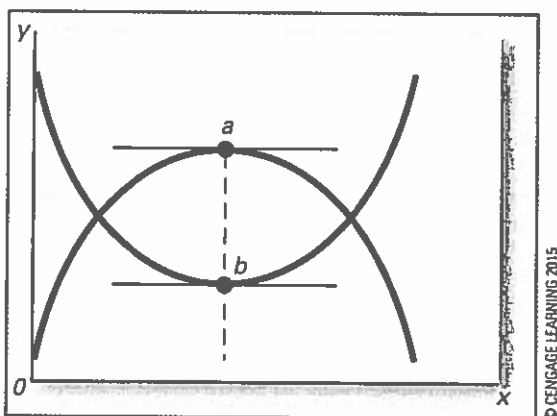
Slopes at Different Points on a Curved Line



the curve. Downward-sloping curves have negative slopes, and upward-sloping curves, positive slopes. Sometimes curves, such as those in Exhibit 12, are more complex, having both positive and negative ranges, depending on the horizontal value. In the hill-shaped curve, for small values of x , there is a positive relation between x and y , so the slope is positive. As the value of x increases, however, the slope declines and eventually becomes negative. We can divide the curve into two segments: (1) the segment between the origin and point a , where the slope is positive; and (2) the segment of the curve to the right of point a , where the slope is negative. The slope of the curve at point a is 0. The U-shaped curve in Exhibit 12 represents the opposite relation: x and y

Exhibit 12

Curves with Both Positive and Negative Slopes



are negatively related until point b is reached; thereafter, they are positively related. The slope equals 0 at point b .

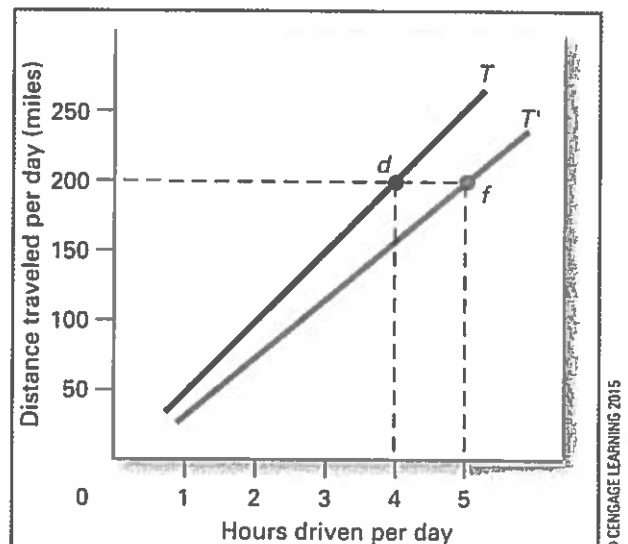
A1-1e Line Shifts

Let's go back to the example of your cross-country trip, where we were trying to determine how many miles you would travel per day. Recall that we measured hours driven per day on the horizontal axis and miles traveled per day on the vertical axis, assuming an average speed of 50 miles per hour. That same relation is shown as line T in Exhibit 13. What happens if the average speed is 40 miles per hour? The entire relation between hours driven and distance traveled would change, as shown by the shift to the right of line T to T' . With a slower average speed, any distance traveled per day now requires more driving time. For example, 200 miles traveled requires 4 hours of driving when the average speed is 50 miles per hour (as shown by point d on curve T), but 200 miles takes 5 hours when your speed averages 40 miles per hour (as shown by point f on curve T'). Thus, a change in the assumption about average speed changes the relationship between the two variables observed. This changed relationship is expressed by a shift of the line that shows how the two variables relate.

That ends our once-over of graphs. Return to this appendix when you need a review.

Exhibit 13

Shift of Line Relating Distance Traveled to Hours Driven



CHAPTER

Learning Outcomes

- 2-1 Describe the relationship between choice and opportunity cost
- 2-2 Explain how comparative advantage, specialization, and exchange affect economic outcomes (output)
- 2-3 Outline how economies function as production systems
- 2-4 Describe different economic systems and the decision-making rules that define them

Economic Tools *and* Economic Systems

“Why is there no sense crying over spilt milk?”

Why are you reading this book right now rather than doing something else? What is college costing you? Why will you eventually major in one subject rather than continue to take courses in different ones? Why is fast food so fast? Why is there no sense crying over spilled milk? Why does common ownership often lead to common neglect?

These and other questions are addressed in this chapter, which introduces some tools of economic analysis—some tools of the trade.

Chapter 1 introduced the idea that scarcity forces us to

make choices, but the chapter said little about how to make economic choices. This chapter develops a framework for evaluating economic alternatives. First, we consider the cost involved in selecting one alternative over others. Next, we develop tools to explore the choices available to individuals and to the economy as a whole. Finally, we examine the questions that different economies must answer—questions about what goods and services to produce, how to produce them, and for whom to produce them.

What do you think?

I have more stuff than I have opportunity to make use of.

Strongly Disagree

Strongly Agree

1 2 3 4 5 6 7

Topics discussed in Chapter 2 include

- Opportunity cost
- Comparative advantage
- Specialization
- Division of labor
- Production possibilities frontier
- Economic systems
- Three economic questions
- Capitalism and command systems

2-1 Choice and Opportunity Cost

Think about a choice you just made: the decision to begin reading this chapter right now rather than use your time to study for another course, play sports, watch TV, play video games, go online, get some sleep, hang with friends, or do something else. Suppose it's late and your best alternative to reading right now is getting some sleep. The cost of reading is passing up the opportunity of sleep. Because of scarcity, whenever you make a choice, you must pass up another opportunity; you must incur an opportunity cost.

2-1a Opportunity Cost

What do we mean when we talk about the cost of something? Isn't it what we must give up—must forgo—to get that thing? The opportunity cost of the chosen item or activity is the *value of the best alternative that is forgone*. You can think of opportunity cost as the opportunity lost. Sometimes opportunity cost can be measured in terms of money, although, as we shall see, money is usually only part of opportunity cost.

How many times have you heard people say they did something because they “had nothing better to do”? They actually mean they had nothing else going on. Yet, according to the idea of opportunity cost, people *always* do what they do because they have nothing better to do. The choice selected seems, at the time, preferable to any other possible alternative. You are reading this chapter right now because you have nothing better to do. In fact, you are attending college for the same reason: College appears more attractive than your best alternative.

2-1b Opportunity Cost Is Subjective

Like beauty, opportunity cost is in the eye of the beholder. It is subjective. Only the individual making the choice can identify the most attractive alternative. But the chooser seldom knows the actual value of what was passed up because that alternative is “the road not taken.” If you give up an evening of pizza and conversation with friends to work on a research paper, you will never know exactly what you gave up. You know only what you expected. Evidently, you expected the benefit of working on that paper to exceed the benefit of the best alternative. (Incidentally, focusing on the best alternative forgone makes all other alternatives irrelevant.)

Calculating Opportunity Cost Requires Time and Information

Economists assume that people rationally choose the most valued alternative. This does not mean you exhaustively assess the value of all possibilities. You assess alternatives as long as the expected marginal benefit of gathering more information about your

opportunity cost
The value of the best alternative forgone when an item or activity is chosen

options exceeds the expected marginal cost (even if you are not aware of making such conscious calculations). In other words, you do the best you can for yourself.

Because learning about alternatives is costly and time consuming, some choices are based on limited or even wrong information. Indeed, some choices may turn out badly (you went for a picnic but it rained; the movie you rented stunk; your new shoes pinch; your new exercise equipment gets no exercise; the stock you bought tanked). Regret about lost opportunities is captured in the common expression “coulda, woulda, shoulda.” At the time you made the selection, however, you thought you were making the best use of all your scarce resources, including the time required to gather and evaluate information about your choices.

Time: The Ultimate Constraint

The Sultan of Brunei is among the richest people on earth, worth billions based on huge oil revenues that flow into his tiny country. He and his royal family (which has ruled since 1405) live in a palace with 1,788 rooms, including 257 bathrooms and a throne room the size of a football field. The family owns hundreds of cars, including dozens of Rolls-Royces; he can drive any of these or pilot one of his seven planes, including the 747 with gold-plated furniture. Supported by such wealth, the Sultan would appear to have overcome the economic problem of scarcity. Yet, though he can buy just about anything he wants, he lacks the time to enjoy all his stuff. If he pursues one activity, he cannot at the same time do something else. Each activity involves an opportunity cost. Consequently, the Sultan must choose from among the competing uses of his scarcest resource, time. Although your alternatives are less exotic, you too face a time constraint, especially as the college term winds down.

Opportunity Cost Varies With Circumstance

Opportunity cost depends on your alternatives. This is why you are more likely to study on a Tuesday night than on a Saturday night. The opportunity cost of studying is lower on a Tuesday night, because your alternatives are less attractive than on a Saturday night, when more is going on. Suppose you go to a movie on Saturday night. Your opportunity cost is the value of your best alternative forgone, which might be attending a college game. For some of you, studying on Saturday night may rank well down the list of alternatives—perhaps ahead of reorganizing your closet but behind doing your laundry.

Opportunity cost is subjective, but in some cases, money paid for goods and services is a reasonable approximation. For example, the opportunity cost

of the new DVD player you bought is the benefit from spending that \$100 on the best forgone alternative. The money measure may leave out some important elements, however, particularly the value of the time involved. For example, watching the latest hit movie costs you not only the \$10 admission price but also the time needed to get there, watch the movie, and return home.

Even religious practices are subject to opportunity cost. For example, about half the U.S. population attends religious services at least once a month. In some states, so-called blue laws prohibit retail activity on Sunday. Some states have repealed these laws in recent years, thus raising the opportunity cost of church attendance. Researchers have found that when a state repeals its blue laws, religious attendance declines, as do church donations. These results do not seem to be linked to any decline in religiosity before the repeal.¹

2-1c Sunk Cost and Choice

Suppose you have just finished grocery shopping and are wheeling your cart toward the checkout counters. How do you decide which line to join? Easy. You pick the one with the shortest expected wait. Suppose that line has barely moved for 10 minutes, when you notice that a cashier has opened a new one and invites you to check out. Do you switch to the open cashier, or do you think, "Since I've already spent 10 minutes in this line, I'm staying put"? The 10 minutes you waited represents a **sunk cost**, which is a cost that has already been incurred and cannot be recovered, regardless of what you do next. You should ignore sunk costs in making economic choices. Hence, you should switch lines. *Economic decision makers should consider only those costs that are affected by the choice. Sunk costs have already been incurred and are not affected by the choice, so they are irrelevant.* Likewise, you should walk out on a bad movie, even if you spent \$10 to get in. Your \$10 is gone, and sitting through that stinker only makes you worse off. The irrelevance of sunk costs is underscored by proverbs such as "Don't throw good money after bad," "Let bygones be bygones," "That's water over the dam,"

1. See Jonathan Gruber and Daniel Hungerman, "The Church vs. the Mall: What Happens When Religion Faces Increased Secular Competition?" *Quarterly Journal of Economics*, 123 (May 2008): 831–862.

AP IMAGES/JAPAN COAST GUARD



You should ignore sunk cost when making economic choices.

and "There's no sense crying over spilled milk." The milk has already spilled, so whatever you do now cannot change that. Or, as Shakespeare's Lady Macbeth put it, "Things without all remedy should be without regard: what's done is done." In other words, get over it.

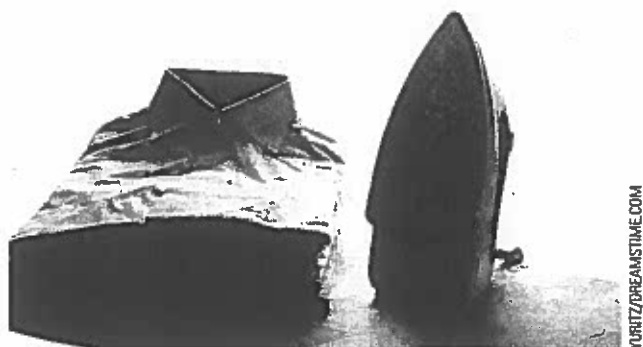
Now that you have some idea about opportunity cost, let's see how it helps solve the economic problem.

2-2 Comparative Advantage, Specialization, and Exchange

Suppose you live in a dormitory. You and your roommate have such tight schedules that you each can spare only about an hour a week for mundane tasks like ironing shirts and typing papers (granted, in reality you may not iron shirts or type papers, but this example will help you understand some important principles). Each of you must turn in a typed three-page paper every week, and you each prefer ironed shirts when you have the time. Let's say it takes you a half hour to type a handwritten paper. Your roommate is from the hunt-and-peck school and takes about an hour. But your roommate is a talented ironer and can iron a shirt in 5 minutes flat (or should that be, iron it flat in 5 minutes?). You take twice as long, or 10 minutes, to iron a shirt.

During the hour set aside each week for typing and

sunk cost
A cost that has already been incurred, cannot be recovered, and thus is irrelevant for present and future economic decisions



YURITZ/DREAMSTIME.COM

Does your absolute advantage in both activities mean specialization is no longer a good idea?

ironing, typing takes priority. If you each do your own typing and ironing, you type your paper in a half hour and iron three shirts in the remaining half hour. Your roommate spends the entire hour typing the paper, leaving no time for ironing. Thus, if you each do your own tasks, the combined output is two typed papers and three ironed shirts.

2-2a The Law of Comparative Advantage

Before long, you each realize that total output would increase if you did all the typing and your roommate did all the ironing. In the hour available for these tasks, you type both papers and your roommate irons 12 shirts. As a result of specialization, total output increases by 9 shirts! You strike a deal to exchange your typing for your roommate's ironing, so you each end up with a typed paper and 6 ironed shirts. Thus, *each of you is better off as a result of specialization and exchange.* By specializing in the task that you

each do better, you rely on the law of comparative advantage, which states that the individual with the lower opportunity cost of producing a particular output should specialize in that output. You face a lower opportunity cost of typing than does your roommate, because in the time it takes to type a paper, you could iron 3 shirts whereas your roommate could iron 12 shirts. And if you face a lower opportunity cost of typing, your roommate must face a lower opportunity cost of ironing (try working that out).

law of comparative advantage

The individual, firm, region, or country with the lowest opportunity cost of producing a particular good should specialize in that good

absolute advantage

The ability to make something using fewer resources than other producers use

comparative advantage

The ability to make something at a lower opportunity cost than other producers face

2-2b Absolute Advantage Versus Comparative Advantage

The gains from specialization and exchange so far are obvious. A more interesting case arises if you are faster at both tasks. Suppose the example changes only in one respect: Your roommate takes 12 minutes to iron a shirt compared with your 10 minutes. You now have an *absolute advantage* in both tasks, meaning each task takes you less time than it does your roommate. More generally, having an *absolute advantage* means making something using fewer resources than other producers require.

Does your absolute advantage in both activities mean specialization is no longer a good idea? Recall that the law of comparative advantage states that the individual with the lower opportunity cost of producing a particular good should specialize in that good. You still take 30 minutes to type a paper and 10 minutes to iron a shirt, so your opportunity cost of typing the paper remains at three ironed shirts. Your roommate takes an hour to type a paper and 12 minutes to iron a shirt, so your roommate could iron five shirts in the time it takes to type a paper. *Because your opportunity cost of typing is lower than your roommate's, you still have a comparative advantage in typing.* Consequently, your roommate must have a comparative advantage in ironing (again, try working this out to your satisfaction). Therefore, you should do all the typing and your roommate, all the ironing. Although you have an absolute advantage in both tasks, your *comparative advantage* calls for specializing in the task for which you have the lower opportunity cost—in this case, typing.

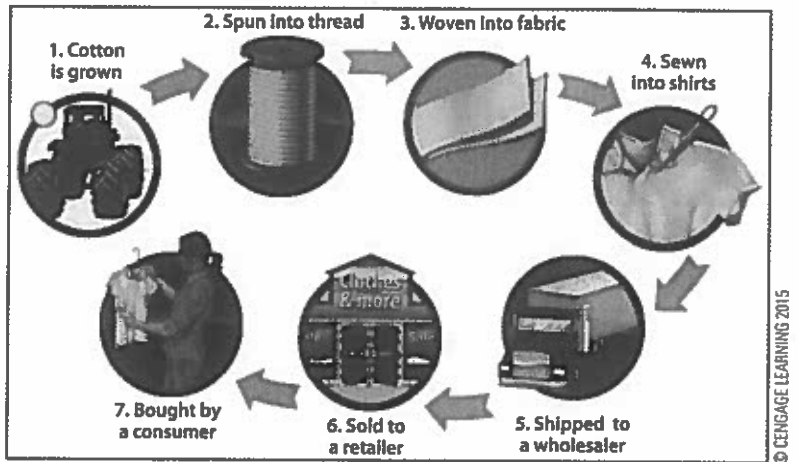
If neither of you specialized, you could type one paper and iron three shirts. Your roommate could still type just the one paper. Your combined output would be two papers and three shirts. If you each specialized according to comparative advantage, in an hour you could type both papers and your roommate could iron five shirts. Thus, specialization increases total output by two ironed shirts. Even though you are better at both tasks than your roommate, you are comparatively better at typing. Put another way, your roommate, although worse at both tasks, is not quite as bad at ironing as at typing.

Don't think that this is just common sense. Common sense would lead you to do your own ironing and typing because you are better at both. *Absolute advantage focuses on who uses the fewest resources, but comparative advantage focuses on what else those resources could produce—that is, on the opportunity cost of those resources.* Comparative advantage is the better guide to who should do what.

The law of comparative advantage applies not only to individuals but also to firms, regions of a country, and entire nations. Individuals, firms, regions, or countries with the lowest opportunity cost of producing a particular good should specialize in producing that good. Because of such factors as climate, workforce skills, natural resources, and capital stock, certain parts of the country and certain parts of the world have a comparative advantage in producing particular goods. From Washington State apples to Florida oranges, from software in India to hardware in Taiwan—resources are allocated most efficiently across the country and around the world when production and trade conform to the law of comparative advantage.

Exhibit 1

Specialization in the Production of Cotton Shirts



2-2c Specialization and Exchange

In the previous example, you and your roommate specialized and then exchanged output. No money was involved. In other words, you engaged in **barter**, where products are traded directly for other products. Barter works best in simple economies with little specialization and few traded goods. But for economies with greater specialization, money facilitates exchange. Money—coins, bills, checks, and debit cards—is a *medium of exchange* because it is the one thing that everyone accepts in return for goods and services.

Because of specialization and comparative advantage, most people consume little of what they produce and produce little of what they consume. Each individual specializes, then exchanges that product for money, which in turn is exchanged for other products. Did you make anything you are wearing? Probably not. Think about the degree of specialization that went into your cotton shirt. A farmer in a warm climate grew the cotton and sold it to someone who spun it into thread, who sold it to someone who wove it into fabric, who sold it to someone who sewed the shirt, who sold it to a wholesaler, who sold it to a retailer, who sold it to you. Many specialists in the chain of production created that shirt. Exhibit 1 traces these steps. *Specialization and exchange create more interdependence in an economy.*

Evidence of specialization is all around us. Shops at the mall specialize in products ranging from luggage to lingerie. Restaurants range from subs to sushi. Or let your fingers do the walking through the help-wanted ads or Craigslist, where you will find

thousands of specializations. Without moving a muscle, you can observe the division of labor within a single industry by watching the credits roll at the end of a movie. The credits list scores of specialists—from gaffer (lighting electrician) to assistant location scout. As an extreme example, more than 3,000 specialists helped create the movie *Avatar*.² Even a typical TV drama, such as *Grey's Anatomy* or *CSI: Crime Scene Investigation*, requires hundreds of specialists.

Some specialties may seem odd. For example, professional mourners in Taiwan are sometimes hired by grieving families to scream, wail, and otherwise demonstrate the deep grief befitting a proper funeral. The sharp degree of specialization is perhaps most obvious online, where the pool of potential customers is so vast that individual sites become finely focused. For example, you can find sites specializing in musical bowls, tongue studs, toe rings, brass knuckles, mouth harps, ferret toys, and cat bandanas—just to name a few of the hundreds of thousands of specialty sites. You won't find such precise specialization at the mall. Adam Smith (1723–1790), who is considered the father of economics, said the degree of specialization is

“The degree of specialization is limited by the extent of market.”

barter

The direct exchange of one product for another without using money

...

2. As reported in Hendrik Hertzberg, “And the Oscar Goes To,” *The New Yorker*, 15 & 22 February 2010.

limited by the extent of the market. Online sellers draw on the broadest customer base in the world to find a market niche.

2-2d Division of Labor and Gains From Specialization

Picture a visit to McDonald's: "Let's see, I'll have a Big Mac, an order of fries, and a chocolate shake." Less than a minute later your order is ready. It would take you much longer to make a homemade version of this meal. Why is the McDonald's meal faster, cheaper, and—for some people—tastier than one you could make yourself? Why is fast food so fast? McDonald's takes advantage of the gains resulting from the division of labor. Each worker, rather than preparing an entire meal, specializes in separate tasks. This division of labor allows the group to produce much more.

How is this increase in productivity possible? First, the manager can assign tasks according to individual preferences and abilities—that is, according to the law of comparative advantage. The worker with the friendly smile and pleasant personality can handle the customers up front; the one with the strong back but few social graces can handle the heavy lifting out back. Second, a worker who performs the same task again and again gets better at it (experience is a good teacher). The worker filling orders at the drive-through, for example, learns to deal with special problems that arise. As another example, consider the experience gained by someone screening bags at airport security. Experience helps the screener distinguish the harmful from the harmless. Third, specialization means no time is lost moving from one task to another. Finally, and perhaps most importantly, the specialization of labor allows for the introduction of more sophisticated production techniques—tech-

division of labor
Breaking down the production of a good into separate tasks

specialization of labor

Focusing work effort on a particular product or a single task

niques that would not make sense on a smaller scale. For example, McDonald's large shake machine would be impractical in the home. Specialized machines make each worker more productive.

To summarize: The specialization of labor (a) takes advantage of individual preferences



© ISTOCKPHOTO.COM/ELLEN MORAN

and natural abilities, (b) allows workers to develop more experience at a particular task, (c) reduces the need to shift among different tasks, and (d) permits the introduction of labor-saving machinery. Specialization and the division of labor occur not only among individuals but also among firms, regions, and, indeed, entire countries. The cotton shirt mentioned

earlier might involve growing cotton in one country, turning it into cloth in another, making the shirt in a third, and selling it in a fourth.

We should also acknowledge the downside of specialization. Doing the same thing all day can become tedious. Consider, for example, the assembly line worker whose sole task is to tighten a particular bolt. Such a monotonous job could drive that worker bonkers or lead to repetitive motion injury. Thus, the gains from dividing production into individual tasks must be weighed against any problems caused by assigning workers to repetitive, tedious, and potentially harmful jobs. Fortunately, today many routine tasks, particularly on assembly lines, can be turned over to robots.

2-3 The Economy's Production Possibilities

The focus, up to this point, has been on how individuals choose to use their scarce resources to satisfy their unlimited wants or, more specifically, how they specialize based on comparative advantage. This emphasis on the individual has been appropriate because the economy is shaped by the choices of individual decision makers, whether they are consumers, producers, or public officials. Just as resources are scarce for the individual, they are also scarce for the economy as a whole (no fallacy of composition here). An economy has millions of different resources that can be combined in all kinds of ways to produce millions of different goods and services. This section steps back from the immense complexity of the real economy to develop another simple model, which explores the economy's production options.

2-3a Efficiency and the Production Possibilities Frontier or PPF

To get an idea of how well the economy works, you need some perspective; you need a place to stand. Let's develop a model to get some idea of how much an economy can produce with the resources available. What are the economy's production capabilities? Here are the model's assumptions:

1. To simplify matters, output is limited to just two broad classes of products: consumer goods and capital goods.
2. The focus is on production during a given period—in this case, a year.
3. The economy's resources are fixed in both quantity and quality during that period.
4. Society's knowledge about how these resources combine to produce output—that is, the available technology—does not change during the year.
5. Also assumed fixed during the period are the "rules of the game" that facilitate production and exchange. These include such things as the legal system, property rights, tax laws, patent laws, and the manners, customs, and conventions of the market.

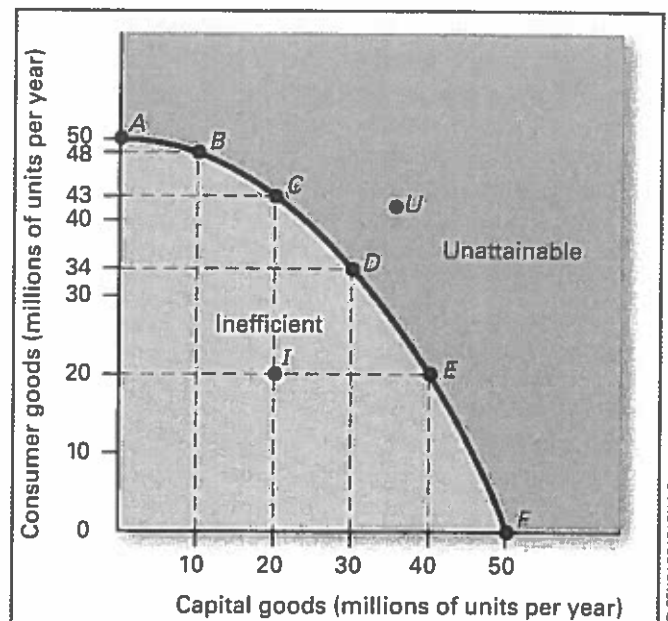
The point of these simplifying assumptions is to freeze in time the economy's resources, technology, and rules of the game so we can focus on the economy's production options. Otherwise, the production possibilities of the economy would be a moving target.

Given the resources, technology, and rules of the game available in the economy, the production possibilities frontier, or PPF, identifies possible combinations of the two types of goods that can be produced when all available resources are employed efficiently. Resources are employed efficiently when there is no change that could increase the production of one good without decreasing the production of the other good. Efficiency involves getting the most from available resources.

The economy's PPF for consumer goods and capital goods is shown by the curve AF in Exhibit 2. Point A identifies the amount produced per year if all the economy's resources are used efficiently to produce consumer goods. Point F identifies the amount produced per year if all the economy's resources are used efficiently to produce capital goods. Points along the curve between A and F identify possible combinations of the two goods that can

Exhibit 2

The Economy's Production Possibilities Frontier



be produced when all the economy's resources are used efficiently.

2-3b Inefficient and Unattainable Production

Points inside the PPF, such as I in Exhibit 2, identify combinations that do not employ resources efficiently. Note that C yields more consumer goods and no fewer capital goods than I. And E yields more capital goods and no fewer consumer goods than I. Indeed, any point along the PPF between C and E, such as D, yields both more consumer goods and more capital goods than I. Hence, combination I is inefficient. By using resources more efficiently, the economy can produce more of at least one good without reducing the production of the other good. Points outside the PPF, such as U in Exhibit 2, identify unattainable combinations, given the availability of resources, technology, and rules of the game. Thus, the PPF not only shows efficient

production possibilities frontier (PPF)

A curve showing alternative combinations of goods that can be produced when available resources are used efficiently; a boundary line between inefficient and unattainable combinations

efficiency

The condition that exists when there is no way resources can be reallocated to increase the production of one good without decreasing the production of another; getting the most from available resources

combinations of production but also serves as the boundary between inefficient combinations inside the frontier and unattainable combinations outside the frontier.

2-3c The Shape of the Production Possibilities Frontier

Any movement along the PPF involves producing less of one good to produce more of the other. Movements down along the curve indicate that the opportunity cost of more capital goods is fewer consumer goods. For example, moving from point A to point B increases capital production from none to 10 million units but reduces consumer units from 50 million to 48 million. Increasing capital goods to 10 million reduces consumer goods only a little. Capital production initially employs resources (such as heavy machinery used to build factories) that add few consumer goods but are quite productive in making capital.

As shown by the dashed lines in Exhibit 2, each additional 10 million units of capital produced reduce consumer goods by successively larger amounts. The resources used to produce more capital are increasingly better suited to producing consumer goods. The opportunity cost of making more capital goods increases, because resources in the economy are not all perfectly adaptable to the production of both types of goods. The shape of the production possibilities frontier reflects the law of increasing opportunity cost. If the economy uses all resources efficiently, the law of increasing opportunity cost states that each additional increment of one good requires the economy to sacrifice successively larger and larger increments of the other good.

The PPF derives its bowed-out shape from the law of increasing opportunity cost. For example, whereas the first 10 million units of capital have an opportunity cost of only 2 million consumer units, the final 10 million units of capital—that is, the increase from E to F—have an opportunity cost of 20 million

consumer units. Notice that the slope of the PPF shows the opportunity cost of an increment of capital. As the economy moves down the curve, the curve becomes steeper, reflecting the higher opportunity cost of capital goods in terms of forgone consumer goods. The law of increasing opportunity cost also applies when moving from capital goods to consumer goods. Incidentally,

law of increasing opportunity cost

To produce more of one good, a successively larger amount of the other good must be sacrificed

economic growth

An increase in the economy's ability to produce goods and services; reflected by an outward shift of the economy's production possibilities frontier

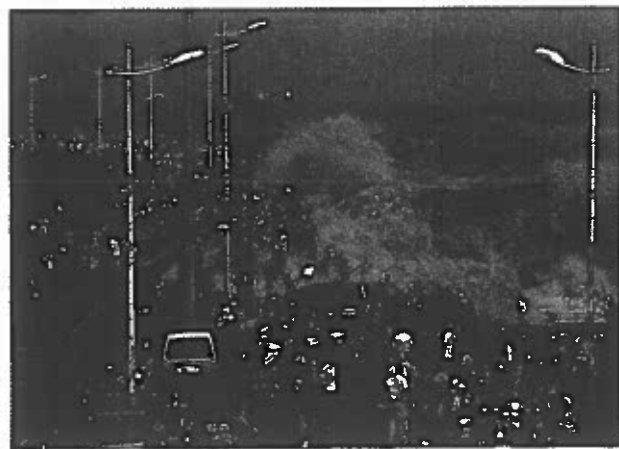
if resources were perfectly adaptable to the production of both consumer goods and capital goods, the PPF would be a straight line, reflecting a constant opportunity cost along the PPF.

2-3d What Can Shift the Production Possibilities Frontier?

Any production possibilities frontier assumes the economy's resources, technology, and rules of the game are fixed during the period under consideration. Over time, however, the PPF may shift if resources, technology, or the rules of the game change. Economic growth is an expansion in the economy's production possibilities as reflected by an outward shift of the PPF.

Changes in Resource Availability

If people decide to work longer hours, the PPF shifts outward, as shown in panel (a) of Exhibit 3. An increase in the size or health of the labor force, an increase in the skills of the labor force, or an increase in the availability of other resources, such as new oil discoveries, also shifts the PPF outward. In contrast, a decrease of resources shifts the PPF inward, as depicted in panel (b). For example, in 1990 Iraq invaded Kuwait, setting oil fields ablaze and destroying much of Kuwait's physical capital. In West Africa, the encroaching sands of the Sahara destroy thousands of square miles of farmland each year. And in northwest China, a rising tide of wind-blown sand has claimed grasslands, lakes, and forests, and swallowed entire villages, forcing tens of thousands of people to flee.

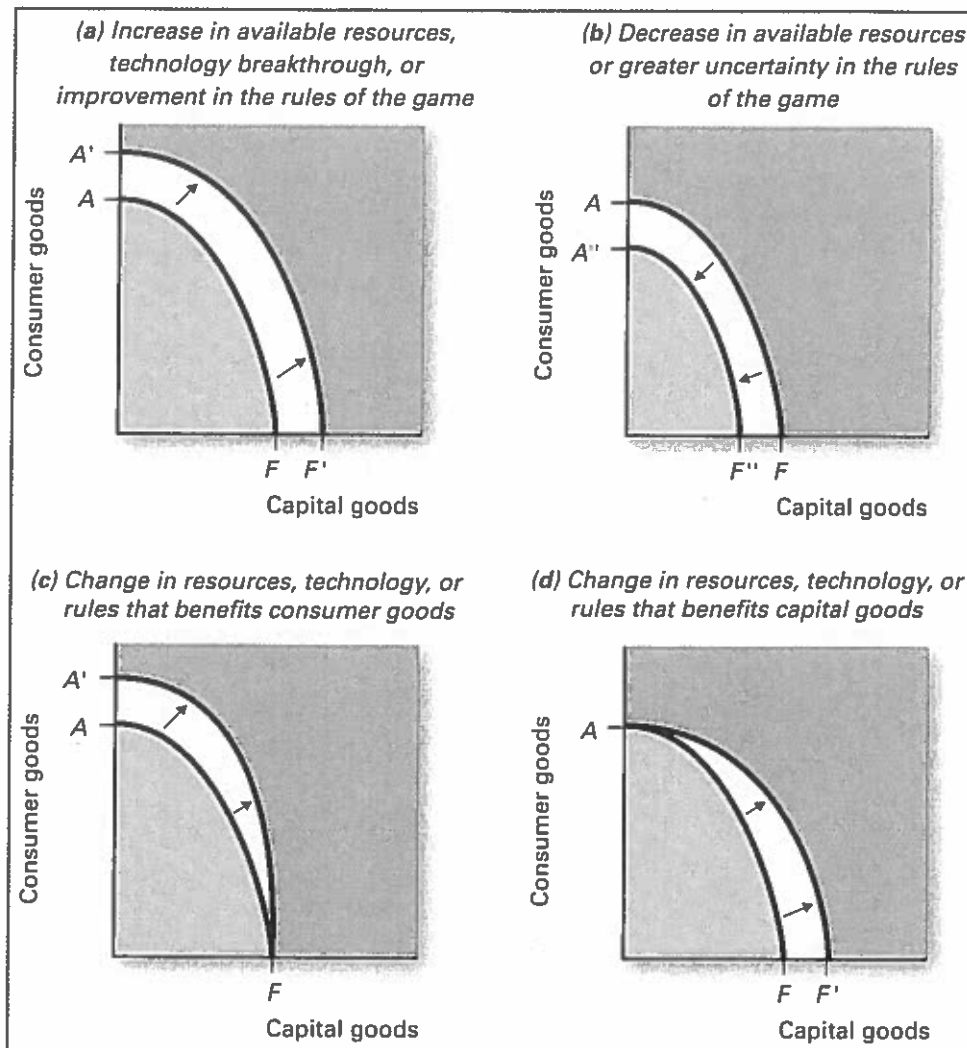


CHINA/GETTY IMAGES/REUTERS

Disasters cause an inward shift or retraction of the PPF.

Exhibit 3

Shifts of the Economy's Production Possibilities Frontier



The new PPFs in panels (a) and (b) appear to be parallel to the original ones, indicating that the resources that changed could produce both capital goods and consumer goods. For example, an increase in electrical power can enhance the production of both, as shown in panel (a). If a resource such as farmland benefits just consumer goods, then increased availability or productivity of that resource shifts the PPF more along the consumer goods axis, as shown in panel (c). Panel (d) shows the effect of an increase in a resource such as construction equipment that is suited only to capital goods.

Increases in the Capital Stock

An economy's PPF depends in part on the stock of human and physical capital. The more capital an economy produces in one period, the more output

can be produced in the next period. Thus, producing more capital goods in this period (for example, more machines in the case of physical capital or more education in the case of human capital) shifts the economy's PPF outward in the next period.

Technological Change

A technological discovery that employs resources more efficiently could shift the economy's PPF outward. Some discoveries enhance the production of both consumer goods and capital goods, as shown in panel (a) of Exhibit 3. For example, the Internet has increased each firm's ability to find available resources. A technological discovery that benefits consumer goods only, such as more disease-resistant crops, is reflected by a rotation outward of the PPF along the consumer goods axis, as shown in panel (c). Note that point F remains unchanged because the breakthrough does not affect the production

of capital goods. Panel (d) shows a technological advance in the production of capital goods, such as better software for designing heavy machinery.

Improvements in the Rules of the Game

The rules of the game are the formal and informal institutions that support the economy—the laws, customs, manners, conventions, and other institutional underpinnings that encourage people to pursue productive activity. A more stable political environment and more reliable property rights increase the incentive to work and to invest, and thus help the economy grow. For example, people have more incentive to work if taxes claim less of their paychecks. People have more incentive to invest if they are confident that their investment will not be appropriated by government, stolen by

thieves, destroyed by civil unrest, or blown up by terrorists. Greater certainty and stability in the rules of the game shift the economy's PPF outward. On the other hand, greater uncertainty about the rules of the game reduces the economy's productive capacity, as reflected by an inward shift of the PPF. For example, during the Great Recession of 2007–2009, trust in U.S. institutions such as banks, newspapers, Congress, and big corporations declined and this reduced the economy's productive ability.³

2-3e What We Learn From the PPF

The PPF demonstrates several ideas introduced so far. The first is *efficiency*: The PPF describes efficient combinations of output, given the economy's resources, technology, and rules of the game. The second idea is *scarcity*: Given the resources, technology, and rules of the game, the economy can produce only so much output per period. The PPF slopes downward, because more of one good means less of the other good, thus demonstrating *opportunity cost*. The PPF's bowed-out shape reflects the *law of increasing opportunity cost*, which arises because some resources are not perfectly adaptable to the production of each type of good. And a shift outward in the PPF reflects *economic growth*.

Finally, because society must somehow select a specific combination of output—a single point—along the PPF, the PPF also underscores the need for *choice*. Selecting a particular combination determines not only the consumer goods available in this period, but also the capital stock available in the next period. One thing the PPF does not tell us is which combination to choose. The PPF tells us only about the costs, not the benefits, of the two goods. To make a selection, we need to know about both costs and benefits. How society goes about choosing a particular combination depends on the nature of the economic system, as you will see next.

economic system
The set of mechanisms and institutions that resolve the what, how, and for whom questions

...

3. Betsey Stevenson and Justin Wolfers, "Trust in Public Institutions Over the Business Cycle," *American Economic Review*, 101 (May 2011): 281–287.

2-4 Economic Systems

Each point along the economy's production possibilities frontier is an efficient combination of outputs. Whether the economy produces efficiently and how the economy selects the most preferred combination depends on the decision-making rules employed. But regardless of how decisions are made, each economy must answer three fundamental questions.

2-4a Three Questions Every Economic System Must Answer

What goods and services are to be produced? How are they to be produced? And for whom are they to be produced? An **economic system** is the set of mechanisms and institutions that resolve the *what*, *how*, and *for whom* questions. Some criteria used to distinguish among economic systems are (1) who owns the resources, (2) what decision-making process is used to allocate resources and products, and (3) what types of incentives guide economic decision makers.

What Goods and Services Are to Be Produced?

Most of us take for granted the incredible number of choices that go into deciding what gets produced—everything from which new kitchen appliances are introduced and which roads get built, to which of the 10,000 movie scripts purchased by U.S. studios each year get to be among the 500 or so movies made.⁴ Although different economies resolve these and millions of other questions using different decision-making rules and mechanisms, all economies must somehow make such choices.



CONISTOCK/JUPITER IMAGES

How Are Goods and Services to Be Produced?

The economic system must determine how output gets produced. Which resources should be used, and how should they be combined to make stuff? How much labor should be used and at what skill levels? What kinds of machines should be used? What new technology should be incorporated into the latest video games? Should the office complex be built in the city or closer to the interstate highway? Millions

...

4. As reported in Ian Parker, "The Real McKee," *New Yorker*, 20 October 2003.

of individual decisions determine which resources are employed and how these resources are combined.

For Whom Are Goods and Services to Be Produced?

Who will actually consume the goods and services produced? The economic system must determine how to allocate the fruits of production among the population. Should everyone receive equal shares? Should the weak and the sick get more? Should it be "first come, first served," so that those willing to wait in line get more? Should goods be allocated according to height? Weight? Religion? Age? Gender? Race? Looks? Strength? Political connections? Lottery? Majority rule? The value of resources supplied? The question "For whom are goods and services to be produced?" is often referred to as the *distribution question*.

Although the three economic questions were discussed separately, they are closely related. The answer to one depends on the answers to the others. For example, an economy that distributes goods and services uniformly to everyone will, no doubt, answer the what-will-be-produced question differently than an economy that somehow allows more personal choice. As we have seen, laws about resource ownership and the role of government determine the "rules of the game"—the set of conditions that shape individual incentives and constraints. Along a spectrum ranging from the freest to the most regimented types of economic systems, *pure capitalism* would be at one end and the *pure command system* at the other.

2-4b Pure Capitalism

Under **pure capitalism**, there is no government. The rules of the game include the private ownership of resources and the market distribution of products. Owners have *property rights* to the use of their resources and are therefore free to supply those resources to the highest bidder. **Private property rights** allow individual owners to use resources or to charge others for their use. Any income from supplying labor, capital, natural resources, or entrepreneurial ability goes to the individual resource owners. Producers are free to make and sell whatever they think will be profitable. Consumers are free to buy whatever goods they can afford. All this voluntary buying and selling is coordinated by unrestricted markets, where buyers and sellers make their intentions known. Market prices guide resources to their most productive use and channel goods and services to the consumers who value them the most.

Under pure capitalism, markets answer the what, how, and for whom questions. That's why capitalism

is also referred to as a *market system*. Markets transmit information about relative scarcity, provide individual incentives, and distribute income among resource suppliers. No individual or small group coordinates these activities. Rather, it is the voluntary choices of many buyers and sellers responding only to their individual incentives and constraints that direct resources and products to those who value them the most.

According to Adam Smith, market forces allocate resources as if by an "invisible hand"—an unseen force that harnesses the pursuit of self-interest to direct resources where they earn the greatest reward. According to Smith, *although each individual pursues his or her self-interest, the "invisible hand" of market forces promotes the general welfare*. Capitalism is sometimes called *laissez-faire*; translated from the French, this phrase means "to let do," or to let people do as they choose without government intervention. Thus, under capitalism, voluntary choices based on rational self-interest are made in unrestricted markets to answer the questions what, how, and for whom.

As we will see in later chapters, pure capitalism has its flaws. The most notable market failures are these:

1. No central authority protects property rights, enforces contracts, and otherwise ensures that the rules of the game are followed.
2. People with no resources to sell could starve.
3. Some producers may try to monopolize markets by eliminating the competition.
4. The production or consumption of some goods involves side effects that can harm or benefit people not involved in the market transaction.
5. Firms have no incentive to produce so-called *public goods*, such as national defense, because private firms cannot prevent nonpayers from enjoying the benefits of public goods.
6. Market economies experience *economic fluctuations*, which are alternating periods of expansions and recessions in their level of economic activity, especially in employment and production.

Because of these limitations, countries have modified pure capitalism to allow some role for government. Even Adam Smith believed government should play a role. The United States is among the most market-oriented economies in the world today.

pure capitalism

An economic system characterized by the private ownership of resources and the use of prices to coordinate economic activity in unregulated markets

private property rights

An owner's right to use, rent, or sell resources or property

2-4c Pure Command System

In a pure command system, resources are directed and production is coordinated not by market forces but by the “command,” or central plan, of government. In theory at least, instead of private property, there is public, or communal, ownership of property. That’s why central planning is sometimes called *communism*. Government planners, as representatives of all the people, answer the three questions through *central plans* spelling out how much steel, how many cars, and how much housing to produce. They also decide how to produce these goods and who gets them.

In theory, the pure command system incorporates individual choices into collective choices, which, in turn, are reflected in the central plans. Command economies often have names that focus on collective choice, such as the People’s Republic of China and the Democratic People’s Republic of Korea (North Korea). In practice, the pure command system also has flaws, most notably the following:

1. Running an economy is so complicated that some resources are used inefficiently.
2. Because nobody in particular owns resources, each person has less incentive to employ them in their highest-valued use, so some resources are wasted.
3. Central plans may be more reflective of the preferences of central planners, who in many cases are unelected dictators, than the preferences of society.
4. Because government is responsible for all production, the variety of products tends to be more limited than in a capitalist economy.
5. Each individual has less personal freedom in making economic choices.
6. Because profit has no place in a command economy, people have less incentive to develop better products or find more efficient ways to make existing products.

pure command system

An economic system characterized by the public ownership of resources and centralized planning

mixed system

An economic system characterized by the private ownership of some resources and the public ownership of other resources; some markets are regulated by government



KCNA VIA KNS/AP/GETTY IMAGES/NEWS.COM

Because of these limitations, countries have modified the pure command system to allow a role for markets. North Korea, a country run for decades by three generations of dictators, is perhaps the most centrally planned economy in the world today.

2-4d Mixed and Transitional Economies

No country on earth exemplifies either type of economic system in its pure form. Economic systems have grown more alike over time, with the role of government increasing in capitalist economies and the role of markets increasing in command economies. The United States represents a **mixed system**, with government directly accounting for a little more than one-third of all economic activity. What’s more, governments at all levels in the United States regulate the private sector in a variety of ways. For example, local zoning boards determine lot sizes, home sizes, and the types of industries allowed. Federal bodies regulate workplace safety, environmental quality, competitive fairness, food and drug quality, and many other activities.

Although both ends of the spectrum have moved toward the center, capitalism has gained the most converts in recent decades. Perhaps the benefits of markets are no better illustrated than where a country, as a result of war or political upheaval, became divided by ideology into a capitalist economy and a command economy, such as with Taiwan and China or South Korea and North Korea. In each case, the economies began with similar human and physical resources, but once they went their separate ways, economic growth diverged sharply, with the capitalist economies

outperforming the command economies. For example, Taiwan's production per capita in 2012 was four times that of China's, and South Korea's production per capita was 18 times that of North Korea.

Consider the experience of the pilgrims in 1620 while establishing Plymouth Colony. They first tried communal ownership of the land. That turned out badly. Crops were neglected and food shortages developed. After three years of near starvation, the system was changed so that each family was assigned a plot of land and granted the fruits of that plot. Yields increased sharply. The pilgrims learned that people take better care of what they own individually; by contrast, common ownership often leads to common neglect.

Recognizing the incentive power of property rights and markets, some of the most die-hard central planners are now allowing a role for markets. For example, about one-fifth of the world's population lives in China, which grows more market oriented each day, even going so far as to give private property constitutional protection on a par with state property. In a poll of Chinese citizens, 74 percent agreed that "the free enterprise system is the best system on which to base the future of the world." Among Americans polled, 71 percent agreed with that statement.⁵ Two decades ago, the former Soviet Union dissolved into 15 independent republics; most converted state-owned enterprises into private firms. From Moscow to Beijing, from Hungary to Mongolia, the transition to mixed economies now

...

5. As reported in "Capitalism, Comrade," *Wall Street Journal*, 18 January 2006.

underway in former command economies will shape the world for decades to come.

2-4e Economies Based on Custom or Religion

Finally, some economic systems are molded largely by custom or religion. For example, caste systems in India and elsewhere restrict occupational choices. Charging interest is banned under Islamic law. Family relations also play significant roles in organizing and coordinating economic activity. In some countries, businesses are reluctant to hire anyone outside the family because outsiders are less trusted. This limits business growth. Even in the United States, some occupations are still dominated by women, and others by men, largely because of tradition. Your own pattern of consumption and choice of occupation may be influenced by some of these considerations.

2-5 Final Word

Although economies can answer the three economic questions in a variety of ways, this book focuses primarily on the mixed market system, such as exists in the United States. This type of economy blends *private choice*, guided by the price system in competitive markets, with *public choice*, guided by democracy in political markets. The study of mixed market systems grows more relevant as former command economies try to develop markets. The next chapter focuses on the economic actors in a mixed economy and explains why and how government gets into the act.