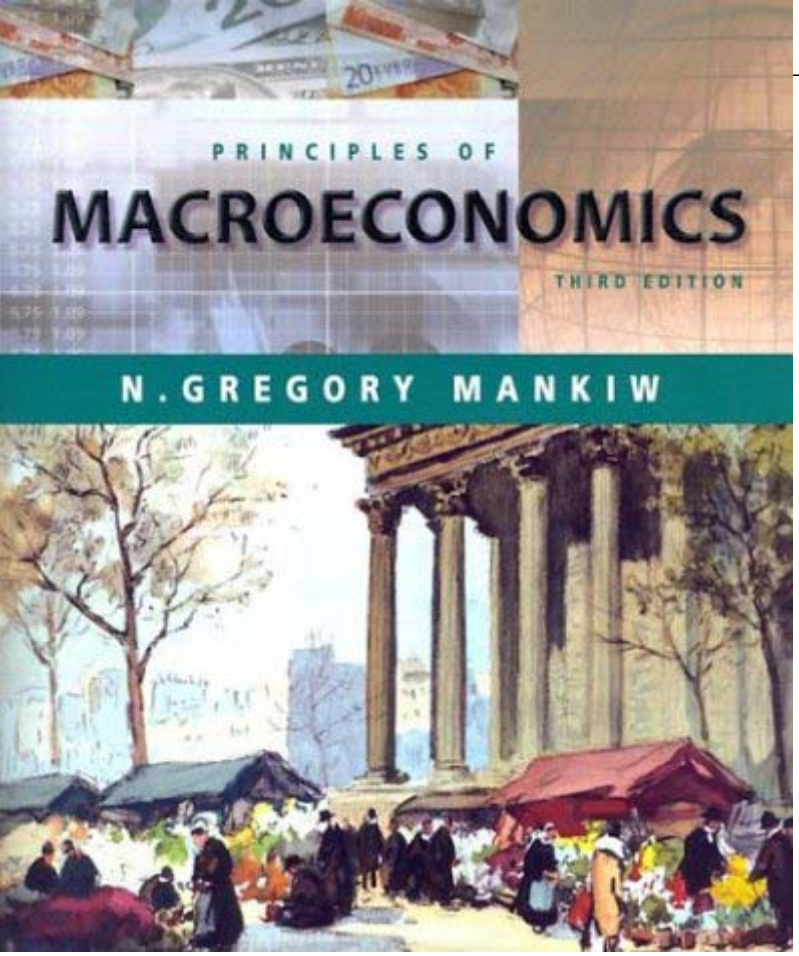
PRINCIPLES OF
MACROECONOMICS
THIRD EDITION
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TEN PRINCIPLES OF ECONOMICS

IN THIS CHAPTER YOU WILL . . .

- ***Learn that economics is about the allocation of scarce resources***
- ***Examine some of the tradeoffs that people face***
- ***Learn the meaning of opportunity cost***
- ***See how to use marginal reasoning when making decisions***
- ***Discuss how incentives affect people's behavior***
- ***Consider why trade among people or nations can be good for everyone***
- ***Discuss why markets are a good, but not perfect, way to allocate resources***
- ***Learn what determines some trends in the overall economy***

The word *economy* comes from the Greek word for "one who manages a household." At first, this origin might seem peculiar. But, in fact, households and economies have much in common.

A household faces many decisions. It must decide which members of the household do which tasks and what each member gets in return: Who cooks dinner? Who does the laundry? Who gets the extra dessert at dinner? Who gets to choose what TV show to watch? In short, the household must allocate its scarce resources among its various members, taking into account each member's abilities, efforts, and desires.

Like a household, a society faces many decisions. A society must decide what jobs will be done and who will do them. It needs some people to grow food, other people to make clothing, and still others to design computer software. Once society has allocated people (as well as land, buildings, and machines) to various jobs,

it must also allocate the output of goods and services that they produce. It must decide who will eat caviar and who will eat potatoes. It must decide who will drive a Porsche and who will take the bus.

scarcity
the limited nature of society's resources

The management of society's resources is important because resources are scarce. **Scarcity** means that society has limited resources and therefore cannot produce all the goods and services people wish to have. Just as a household cannot give every member everything he or she wants, a society cannot give every individual the highest standard of living to which he or she might aspire.

economics
the study of how society manages its scarce resources

Economics is the study of how society manages its scarce resources. In most societies, resources are allocated not by a single central planner but through the combined actions of millions of households and firms. Economists therefore study how people make decisions: how much they work, what they buy, how much they save, and how they invest their savings. Economists also study how people interact with one another. For instance, they examine how the multitude of buyers and sellers of a good together determine the price at which the good is sold and the quantity that is sold. Finally, economists analyze forces and trends that affect the economy as a whole, including the growth in average income, the fraction of the population that cannot find work, and the rate at which prices are rising.

Although the study of economics has many facets, the field is unified by several central ideas. In the rest of this chapter, we look at *Ten Principles of Economics*. These principles recur throughout this book and are introduced here to give you an overview of what economics is all about. You can think of this chapter as a "preview of coming attractions."

HOW PEOPLE MAKE DECISIONS

There is no mystery to what an "economy" is. Whether we are talking about the economy of Los Angeles, of the United States, or of the whole world, an economy is just a group of people interacting with one another as they go about their lives. Because the behavior of an economy reflects the behavior of the individuals who make up the economy, we start our study of economics with four principles of individual decisionmaking.

PRINCIPLE #1: PEOPLE FACE TRADEOFFS

The first lesson about making decisions is summarized in the adage: "There is no such thing as a free lunch." To get one thing that we like, we usually have to give up another thing that we like. Making decisions requires trading off one goal against another.

Consider a student who must decide how to allocate her most valuable resource—her time. She can spend all of her time studying economics; she can spend all of her time studying psychology; or she can divide her time between the two fields. For every hour she studies one subject, she gives up an hour she could have used studying the other. And for every hour she spends studying, she gives up an hour that she could have spent napping, bike riding, watching TV, or working at her part-time job for some extra spending money.

Or consider parents deciding how to spend their family income. They can buy food, clothing, or a family vacation. Or they can save some of the family income for retirement or the children's college education. When they choose to spend an extra dollar on one of these goods, they have one less dollar to spend on some other good.

When people are grouped into societies, they face different kinds of tradeoffs. The classic tradeoff is between "guns and butter." The more we spend on national defense to protect our shores from foreign aggressors (guns), the less we can spend on consumer goods to raise our standard of living at home (butter). Also important in modern society is the tradeoff between a clean environment and a high level of income. Laws that require firms to reduce pollution raise the cost of producing goods and services. Because of the higher costs, these firms end up earning smaller profits, paying lower wages, charging higher prices, or some combination of these three. Thus, while pollution regulations give us the benefit of a cleaner environment and the improved health that comes with it, they have the cost of reducing the incomes of the firms' owners, workers, and customers.

Another tradeoff society faces is between efficiency and equity. **Efficiency** means that society is getting the most it can from its scarce resources. **Equity** means that the benefits of those resources are distributed fairly among society's members. In other words, efficiency refers to the size of the economic pie, and equity refers to how the pie is divided. Often, when government policies are being designed, these two goals conflict.

efficiency
the property of society getting the most it can from its scarce resources

equity
the property of distributing economic prosperity fairly among the members of society

Consider, for instance, policies aimed at achieving a more equal distribution of economic well-being. Some of these policies, such as the welfare system or unemployment insurance, try to help those members of society who are most in need. Others, such as the individual income tax, ask the financially successful to contribute more than others to support the government. Although these policies have the benefit of achieving greater equity, they have a cost in terms of reduced efficiency. When the government redistributes income from the rich to the poor, it reduces the reward for working hard; as a result, people work less and produce fewer goods and services. In other words, when the government tries to cut the economic pie into more equal slices, the pie gets smaller.

Recognizing that people face tradeoffs does not by itself tell us what decisions they will or should make. A student should not abandon the study of psychology just because doing so would increase the time available for the study of economics. Society should not stop protecting the environment just because environmental regulations reduce our material standard of living. The poor should not be ignored just because helping them distorts work incentives. Nonetheless, acknowledging life's tradeoffs is important because people are likely to make good decisions only if they understand the options that they have available.

PRINCIPLE #2: THE COST OF SOMETHING IS WHAT YOU GIVE UP TO GET IT

Because people face tradeoffs, making decisions requires comparing the costs and benefits of alternative courses of action. In many cases, however, the cost of some action is not as obvious as it might first appear.

Consider, for example, the decision whether to go to college. The benefit is intellectual enrichment and a lifetime of better job opportunities. But what is the cost? To answer this question, you might be tempted to add up the money you

spend on tuition, books, room, and board. Yet this total does not truly represent what you give up to spend a year in college.

The first problem with this answer is that it includes some things that are not really costs of going to college. Even if you quit school, you would need a place to sleep and food to eat. Room and board are costs of going to college only to the extent that they are more expensive at college than elsewhere. Indeed, the cost of room and board at your school might be less than the rent and food expenses that you would pay living on your own. In this case, the savings on room and board are a benefit of going to college.

The second problem with this calculation of costs is that it ignores the largest cost of going to college—your time. When you spend a year listening to lectures, reading textbooks, and writing papers, you cannot spend that time working at a job. For most students, the wages given up to attend school are the largest single cost of their education.

opportunity cost
whatever must be given up to obtain some item

The **opportunity cost** of an item is what you give up to get that item. When making any decision, such as whether to attend college, decisionmakers should be aware of the opportunity costs that accompany each possible action. In fact, they usually are. College-age athletes who can earn millions if they drop out of school and play professional sports are well aware that their opportunity cost of college is very high. It is not surprising that they often decide that the benefit is not worth the cost.

PRINCIPLE #3: RATIONAL PEOPLE THINK AT THE MARGIN

Decisions in life are rarely black and white but usually involve shades of gray. When it's time for dinner, the decision you face is not between fasting or eating like a pig, but whether to take that extra spoonful of mashed potatoes. When exams roll around, your decision is not between blowing them off or studying 24 hours a day, but whether to spend an extra hour reviewing your notes instead of watching TV. Economists use the term **marginal changes** to describe small incremental adjustments to an existing plan of action. Keep in mind that "margin" means "edge," so marginal changes are adjustments around the edges of what you are doing.

marginal changes
small incremental adjustments to a plan of action

In many situations, people make the best decisions by thinking at the margin. Suppose, for instance, that you asked a friend for advice about how many years to stay in school. If he were to compare for you the lifestyle of a person with a Ph.D. to that of a grade school dropout, you might complain that this comparison is not helpful for your decision. You have some education already and most likely are deciding whether to spend an extra year or two in school. To make this decision, you need to know the additional benefits that an extra year in school would offer (higher wages throughout life and the sheer joy of learning) and the additional costs that you would incur (tuition and the forgone wages while you're in school). By comparing these *marginal benefits* and *marginal costs*, you can evaluate whether the extra year is worthwhile.

As another example, consider an airline deciding how much to charge passengers who fly standby. Suppose that flying a 200-seat plane across the country costs the airline $100,000. In this case, the average cost of each seat is $100,000/200, which is $500. One might be tempted to conclude that the airline should never sell a ticket for less than $500. In fact, however, the airline can raise its profits by

thinking at the margin. Imagine that a plane is about to take off with ten empty seats, and a standby passenger is waiting at the gate willing to pay $300 for a seat. Should the airline sell it to him? Of course it should. If the plane has empty seats, the cost of adding one more passenger is minuscule. Although the *average* cost of flying a passenger is $500, the *marginal* cost is merely the cost of the bag of peanuts and can of soda that the extra passenger will consume. As long as the standby passenger pays more than the marginal cost, selling him a ticket is profitable.

As these examples show, individuals and firms can make better decisions by thinking at the margin. A rational decisionmaker takes an action if and only if the marginal benefit of the action exceeds the marginal cost.

PRINCIPLE #4: PEOPLE RESPOND TO INCENTIVES

Because people make decisions by comparing costs and benefits, their behavior may change when the costs or benefits change. That is, people respond to incentives. When the price of an apple rises, for instance, people decide to eat more pears and fewer apples, because the cost of buying an apple is higher. At the same time, apple orchards decide to hire more workers and harvest more apples, because the benefit of selling an apple is also higher. As we will see, the effect of price on the behavior of buyers and sellers in a market—in this case, the market for apples—is crucial for understanding how the economy works.

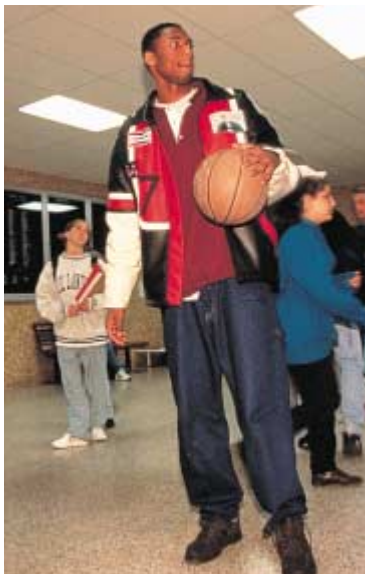
Public policymakers should never forget about incentives, for many policies change the costs or benefits that people face and, therefore, alter behavior. A tax on gasoline, for instance, encourages people to drive smaller, more fuel-efficient cars. It also encourages people to take public transportation rather than drive and to live closer to where they work. If the tax were large enough, people would start driving electric cars.

When policymakers fail to consider how their policies affect incentives, they can end up with results that they did not intend. For example, consider public policy regarding auto safety. Today all cars have seat belts, but that was not true 40 years ago. In the late 1960s, Ralph Nader's book *Unsafe at Any Speed* generated much public concern over auto safety. Congress responded with laws requiring car companies to make various safety features, including seat belts, standard equipment on all new cars.

How does a seat belt law affect auto safety? The direct effect is obvious. With seat belts in all cars, more people wear seat belts, and the probability of surviving a major auto accident rises. In this sense, seat belts save lives.

But that's not the end of the story. To fully understand the effects of this law, we must recognize that people change their behavior in response to the incentives they face. The relevant behavior here is the speed and care with which drivers operate their cars. Driving slowly and carefully is costly because it uses the driver's time and energy. When deciding how safely to drive, rational people compare the marginal benefit from safer driving to the marginal cost. They drive more slowly and carefully when the benefit of increased safety is high. This explains why people drive more slowly and carefully when roads are icy than when roads are clear.

Now consider how a seat belt law alters the cost–benefit calculation of a rational driver. Seat belts make accidents less costly for a driver because they reduce the probability of injury or death. Thus, a seat belt law reduces the benefits to slow and careful driving. People respond to seat belts as they would to an improvement



BASKETBALL STAR KOBE BRYANT UNDERSTANDS OPPORTUNITY COST AND INCENTIVES. DESPITE GOOD HIGH SCHOOL GRADES AND SAT SCORES, HE DECIDED TO SKIP COLLEGE AND GO STRAIGHT TO THE NBA, WHERE HE EARNED ABOUT $10 MILLION OVER FOUR YEARS.

in road conditions—by faster and less careful driving. The end result of a seat belt law, therefore, is a larger number of accidents.

How does the law affect the number of deaths from driving? Drivers who wear their seat belts are more likely to survive any given accident, but they are also more likely to find themselves in an accident. The net effect is ambiguous. Moreover, the reduction in safe driving has an adverse impact on pedestrians (and on drivers who do not wear their seat belts). They are put in jeopardy by the law because they are more likely to find themselves in an accident but are not protected by a seat belt. Thus, a seat belt law tends to increase the number of pedestrian deaths.

At first, this discussion of incentives and seat belts might seem like idle speculation. Yet, in a 1975 study, economist Sam Peltzman showed that the auto-safety laws have, in fact, had many of these effects. According to Peltzman's evidence, these laws produce both fewer deaths per accident and more accidents. The net result is little change in the number of driver deaths and an increase in the number of pedestrian deaths.

Peltzman's analysis of auto safety is an example of the general principle that people respond to incentives. Many incentives that economists study are more straightforward than those of the auto-safety laws. No one is surprised that people drive smaller cars in Europe, where gasoline taxes are high, than in the United States, where gasoline taxes are low. Yet, as the seat belt example shows, policies can have effects that are not obvious in advance. When analyzing any policy, we must consider not only the direct effects but also the indirect effects that work through incentives. If the policy changes incentives, it will cause people to alter their behavior.

QUICK QUIZ: List and briefly explain the four principles of individual decisionmaking.

HOW PEOPLE INTERACT

The first four principles discussed how individuals make decisions. As we go about our lives, many of our decisions affect not only ourselves but other people as well. The next three principles concern how people interact with one another.

PRINCIPLE #5: TRADE CAN MAKE EVERYONE BETTER OFF

You have probably heard on the news that the Japanese are our competitors in the world economy. In some ways, this is true, for American and Japanese firms do produce many of the same goods. Ford and Toyota compete for the same customers in the market for automobiles. Compaq and Toshiba compete for the same customers in the market for personal computers.

Yet it is easy to be misled when thinking about competition among countries. Trade between the United States and Japan is not like a sports contest, where one

side wins and the other side loses. In fact, the opposite is true: Trade between two countries can make each country better off.

To see why, consider how trade affects your family. When a member of your family looks for a job, he or she competes against members of other families who are looking for jobs. Families also compete against one another when they go shopping, because each family wants to buy the best goods at the lowest prices. So, in a sense, each family in the economy is competing with all other families.

Despite this competition, your family would not be better off isolating itself from all other families. If it did, your family would need to grow its own food, make its own clothes, and build its own home. Clearly, your family gains much from its ability to trade with others. Trade allows each person to specialize in the activities he or she does best, whether it is farming, sewing, or home building. By trading with others, people can buy a greater variety of goods and services at lower cost.

Countries as well as families benefit from the ability to trade with one another. Trade allows countries to specialize in what they do best and to enjoy a greater variety of goods and services. The Japanese, as well as the French and the Egyptians and the Brazilians, are as much our partners in the world economy as they are our competitors.

"For $5 a week you can watch baseball without being nagged to cut the grass!"

PRINCIPLE #6: MARKETS ARE USUALLY A GOOD WAY TO ORGANIZE ECONOMIC ACTIVITY

The collapse of communism in the Soviet Union and Eastern Europe may be the most important change in the world during the past half century. Communist countries worked on the premise that central planners in the government were in the best position to guide economic activity. These planners decided what goods and services were produced, how much was produced, and who produced and consumed these goods and services. The theory behind central planning was that only the government could organize economic activity in a way that promoted economic well-being for the country as a whole.

Today, most countries that once had centrally planned economies have abandoned this system and are trying to develop market economies. In a **market economy,** the decisions of a central planner are replaced by the decisions of millions of firms and households. Firms decide whom to hire and what to make. Households decide which firms to work for and what to buy with their incomes. These firms and households interact in the marketplace, where prices and self-interest guide their decisions.

market economy
an economy that allocates resources through the decentralized decisions of many firms and households as they interact in markets for goods and services

At first glance, the success of market economies is puzzling. After all, in a market economy, no one is looking out for the economic well-being of society as a whole. Free markets contain many buyers and sellers of numerous goods and services, and all of them are interested primarily in their own well-being. Yet, despite decentralized decisionmaking and self-interested decisionmakers, market economies have proven remarkably successful in organizing economic activity in a way that promotes overall economic well-being.

In his 1776 book *An Inquiry into the Nature and Causes of the Wealth of Nations,* economist Adam Smith made the most famous observation in all of economics: Households and firms interacting in markets act as if they are guided by an "invisible hand" that leads them to desirable market outcomes. One of our goals in

FYI

Adam Smith and the Invisible Hand

It may be only a coincidence that Adam Smith's great book, *An Inquiry into the Nature and Causes of the Wealth of Nations,* was published in 1776, the exact year American revolutionaries signed the Declaration of Independence. But the two documents do share a point of view that was prevalent at the time—that individuals are usually best left to their own devices, without the heavy hand of government guiding their actions. This political philosophy provides the intellectual basis for the market economy, and for free society more generally.

Why do decentralized market economies work so well? Is it because people can be counted on to treat one another with love and kindness? Not at all. Here is Adam Smith's description of how people interact in a market economy:

> Man has almost constant occasion for the help of his brethren, and it is vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favor, and show them that it is for their own advantage to do for him what he requires of them. . . . It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. . . .
>
> Every individual . . . neither intends to promote the public interest, nor knows how much he is promoting it. . . . He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.

ADAM SMITH

Smith is saying that participants in the economy are motivated by self-interest and that the "invisible hand" of the marketplace guides this self-interest into promoting general economic well-being.

Many of Smith's insights remain at the center of modern economics. Our analysis in the coming chapters will allow us to express Smith's conclusions more precisely and to analyze fully the strengths and weaknesses of the market's invisible hand.

this book is to understand how this invisible hand works its magic. As you study economics, you will learn that prices are the instrument with which the invisible hand directs economic activity. Prices reflect both the value of a good to society and the cost to society of making the good. Because households and firms look at prices when deciding what to buy and sell, they unknowingly take into account the social benefits and costs of their actions. As a result, prices guide these individual decisionmakers to reach outcomes that, in many cases, maximize the welfare of society as a whole.

There is an important corollary to the skill of the invisible hand in guiding economic activity: When the government prevents prices from adjusting naturally to supply and demand, it impedes the invisible hand's ability to coordinate the millions of households and firms that make up the economy. This corollary explains why taxes adversely affect the allocation of resources: Taxes distort prices and thus the decisions of households and firms. It also explains the even greater harm caused by policies that directly control prices, such as rent control. And it explains the failure of communism. In communist countries, prices were not determined in the marketplace but were dictated by central planners. These planners lacked the information that gets reflected in prices when prices are free to respond to market

forces. Central planners failed because they tried to run the economy with one hand tied behind their backs—the invisible hand of the marketplace.

PRINCIPLE #7: GOVERNMENTS CAN SOMETIMES IMPROVE MARKET OUTCOMES

Although markets are usually a good way to organize economic activity, this rule has some important exceptions. There are two broad reasons for a government to intervene in the economy: to promote efficiency and to promote equity. That is, most policies aim either to enlarge the economic pie or to change how the pie is divided.

The invisible hand usually leads markets to allocate resources efficiently. Nonetheless, for various reasons, the invisible hand sometimes does not work. Economists use the term **market failure** to refer to a situation in which the market on its own fails to allocate resources efficiently.

market failure
a situation in which a market left on its own fails to allocate resources efficiently

One possible cause of market failure is an externality. An **externality** is the impact of one person's actions on the well-being of a bystander. The classic example of an external cost is pollution. If a chemical factory does not bear the entire cost of the smoke it emits, it will likely emit too much. Here, the government can raise economic well-being through environmental regulation. The classic example of an external benefit is the creation of knowledge. When a scientist makes an important discovery, he produces a valuable resource that other people can use. In this case, the government can raise economic well-being by subsidizing basic research, as in fact it does.

externality
the impact of one person's actions on the well-being of a bystander

Another possible cause of market failure is market power. **Market power** refers to the ability of a single person (or small group of people) to unduly influence market prices. For example, suppose that everyone in town needs water but there is only one well. The owner of the well has market power—in this case a *monopoly*—over the sale of water. The well owner is not subject to the rigorous competition with which the invisible hand normally keeps self-interest in check. You will learn that, in this case, regulating the price that the monopolist charges can potentially enhance economic efficiency.

market power
the ability of a single economic actor (or small group of actors) to have a substantial influence on market prices

The invisible hand is even less able to ensure that economic prosperity is distributed fairly. A market economy rewards people according to their ability to produce things that other people are willing to pay for. The world's best basketball player earns more than the world's best chess player simply because people are willing to pay more to watch basketball than chess. The invisible hand does not ensure that everyone has sufficient food, decent clothing, and adequate health care. A goal of many public policies, such as the income tax and the welfare system, is to achieve a more equitable distribution of economic well-being.

To say that the government *can* improve on markets outcomes at times does not mean that it always *will*. Public policy is made not by angels but by a political process that is far from perfect. Sometimes policies are designed simply to reward the politically powerful. Sometimes they are made by well-intentioned leaders who are not fully informed. One goal of the study of economics is to help you judge when a government policy is justifiable to promote efficiency or equity and when it is not.

QUICK QUIZ: List and briefly explain the three principles concerning economic interactions.

HOW THE ECONOMY AS A WHOLE WORKS

We started by discussing how individuals make decisions and then looked at how people interact with one another. All these decisions and interactions together make up "the economy." The last three principles concern the workings of the economy as a whole.

PRINCIPLE #8: A COUNTRY'S STANDARD OF LIVING DEPENDS ON ITS ABILITY TO PRODUCE GOODS AND SERVICES

The differences in living standards around the world are staggering. In 1997 the average American had an income of about $29,000. In the same year, the average Mexican earned $8,000, and the average Nigerian earned $900. Not surprisingly, this large variation in average income is reflected in various measures of the quality of life. Citizens of high-income countries have more TV sets, more cars, better nutrition, better health care, and longer life expectancy than citizens of low-income countries.

Changes in living standards over time are also large. In the United States, incomes have historically grown about 2 percent per year (after adjusting for changes in the cost of living). At this rate, average income doubles every 35 years. Over the past century, average income has risen about eightfold.

productivity
the amount of goods and services produced from each hour of a worker's time

What explains these large differences in living standards among countries and over time? The answer is surprisingly simple. Almost all variation in living standards is attributable to differences in countries' **productivity**—that is, the amount of goods and services produced from each hour of a worker's time. In nations where workers can produce a large quantity of goods and services per unit of time, most people enjoy a high standard of living; in nations where workers are less productive, most people must endure a more meager existence. Similarly, the growth rate of a nation's productivity determines the growth rate of its average income.

The fundamental relationship between productivity and living standards is simple, but its implications are far-reaching. If productivity is the primary determinant of living standards, other explanations must be of secondary importance. For example, it might be tempting to credit labor unions or minimum-wage laws for the rise in living standards of American workers over the past century. Yet the real hero of American workers is their rising productivity. As another example, some commentators have claimed that increased competition from Japan and other countries explains the slow growth in U.S. incomes over the past 30 years. Yet the real villain is not competition from abroad but flagging productivity growth in the United States.

The relationship between productivity and living standards also has profound implications for public policy. When thinking about how any policy will affect living standards, the key question is how it will affect our ability to produce goods and services. To boost living standards, policymakers need to raise productivity by ensuring that workers are well educated, have the tools needed to produce goods and services, and have access to the best available technology.

In the 1980s and 1990s, for example, much debate in the United States centered on the government's budget deficit—the excess of government spending over government revenue. As we will see, concern over the budget deficit was based largely on its adverse impact on productivity. When the government needs to finance a budget deficit, it does so by borrowing in financial markets, much as a student might borrow to finance a college education or a firm might borrow to finance a new factory. As the government borrows to finance its deficit, therefore, it reduces the quantity of funds available for other borrowers. The budget deficit thereby reduces investment both in human capital (the student's education) and physical capital (the firm's factory). Because lower investment today means lower productivity in the future, government budget deficits are generally thought to depress growth in living standards.

PRINCIPLE #9: PRICES RISE WHEN THE GOVERNMENT PRINTS TOO MUCH MONEY

In Germany in January 1921, a daily newspaper cost 0.30 marks. Less than two years later, in November 1922, the same newspaper cost 70,000,000 marks. All other prices in the economy rose by similar amounts. This episode is one of history's most spectacular examples of **inflation,** an increase in the overall level of prices in the economy.

inflation
an increase in the overall level of prices in the economy

Although the United States has never experienced inflation even close to that in Germany in the 1920s, inflation has at times been an economic problem. During the 1970s, for instance, the overall level of prices more than doubled, and President Gerald Ford called inflation "public enemy number one." By contrast, inflation in the 1990s was about 3 percent per year; at this rate it would take more than

"Well it may have been 68 cents when you got in line, but it's 74 cents now!"

20 years for prices to double. Because high inflation imposes various costs on society, keeping inflation at a low level is a goal of economic policymakers around the world.

What causes inflation? In almost all cases of large or persistent inflation, the culprit turns out to be the same—growth in the quantity of money. When a government creates large quantities of the nation's money, the value of the money falls. In Germany in the early 1920s, when prices were on average tripling every month, the quantity of money was also tripling every month. Although less dramatic, the economic history of the United States points to a similar conclusion: The high inflation of the 1970s was associated with rapid growth in the quantity of money, and the low inflation of the 1990s was associated with slow growth in the quantity of money.

PRINCIPLE #10: SOCIETY FACES A SHORT-RUN TRADEOFF BETWEEN INFLATION AND UNEMPLOYMENT

If inflation is so easy to explain, why do policymakers sometimes have trouble ridding the economy of it? One reason is that reducing inflation is often thought to cause a temporary rise in unemployment. The curve that illustrates this tradeoff between inflation and unemployment is called the **Phillips curve,** after the economist who first examined this relationship.

Phillips curve
a curve that shows the short-run tradeoff between inflation and unemployment

The Phillips curve remains a controversial topic among economists, but most economists today accept the idea that there is a short-run tradeoff between inflation and unemployment. This simply means that, over a period of a year or two, many economic policies push inflation and unemployment in opposite directions. Policymakers face this tradeoff regardless of whether inflation and unemployment both start out at high levels (as they were in the early 1980s), at low levels (as they were in the late 1990s), or someplace in between.

Why do we face this short-run tradeoff? According to a common explanation, it arises because some prices are slow to adjust. Suppose, for example, that the government reduces the quantity of money in the economy. In the long run, the only result of this policy change will be a fall in the overall level of prices. Yet not all prices will adjust immediately. It may take several years before all firms issue new catalogs, all unions make wage concessions, and all restaurants print new menus. That is, prices are said to be *sticky* in the short run.

Because prices are sticky, various types of government policy have short-run effects that differ from their long-run effects. When the government reduces the quantity of money, for instance, it reduces the amount that people spend. Lower spending, together with prices that are stuck too high, reduces the quantity of goods and services that firms sell. Lower sales, in turn, cause firms to lay off workers. Thus, the reduction in the quantity of money raises unemployment temporarily until prices have fully adjusted to the change.

The tradeoff between inflation and unemployment is only temporary, but it can last for several years. The Phillips curve is, therefore, crucial for understanding many developments in the economy. In particular, policymakers can exploit this tradeoff using various policy instruments. By changing the amount that the government spends, the amount it taxes, and the amount of money it prints, policymakers can, in the short run, influence the combination of inflation and unemployment that the economy experiences. Because these instruments of

monetary and fiscal policy are potentially so powerful, how policymakers should use these instruments to control the economy, if at all, is a subject of continuing debate.

QUICK QUIZ: List and briefly explain the three principles that describe how the economy as a whole works.

CONCLUSION

You now have a taste of what economics is all about. In the coming chapters we will develop many specific insights about people, markets, and economies. Mastering these insights will take some effort, but it is not an overwhelming task. The field of economics is based on a few basic ideas that can be applied in many different situations.

Throughout this book we will refer back to the *Ten Principles of Economics* highlighted in this chapter and summarized in Table 1-1. Whenever we do so, a building-blocks icon will be displayed in the margin, as it is now. But even when that icon is absent, you should keep these building blocks in mind. Even the most sophisticated economic analysis is built using the ten principles introduced here.

Table 1-1

TEN PRINCIPLES OF ECONOMICS

HOW PEOPLE MAKE DECISIONS	#1:	People Face Tradeoffs
	#2:	The Cost of Something Is What You Give Up to Get It
	#3:	Rational People Think at the Margin
	#4:	People Respond to Incentives
HOW PEOPLE INTERACT	#5:	Trade Can Make Everyone Better Off
	#6:	Markets Are Usually a Good Way to Organize Economic Activity
	#7:	Governments Can Sometimes Improve Market Outcomes
HOW THE ECONOMY AS A WHOLE WORKS	#8:	A Country's Standard of Living Depends on Its Ability to Produce Goods and Services
	#9:	Prices Rise When the Government Prints Too Much Money
	#10:	Society Faces a Short-Run Tradeoff between Inflation and Unemployment

Summary

- The fundamental lessons about individual decisionmaking are that people face tradeoffs among alternative goals, that the cost of any action is measured in terms of forgone opportunities, that rational people make decisions by comparing marginal costs and marginal benefits, and that people change their behavior in response to the incentives they face.
- The fundamental lessons about interactions among people are that trade can be mutually beneficial, that markets are usually a good way of coordinating trade among people, and that the government can potentially improve market outcomes if there is some market failure or if the market outcome is inequitable.
- The fundamental lessons about the economy as a whole are that productivity is the ultimate source of living standards, that money growth is the ultimate source of inflation, and that society faces a short-run tradeoff between inflation and unemployment.

Key Concepts

scarcity, p. 4
economics, p. 4
efficiency, p. 5
equity, p. 5
opportunity cost, p. 6
marginal changes, p. 6
market economy, p. 9
market failure, p. 11
externality, p. 11
market power, p. 11
productivity, p. 12
inflation, p. 13
Phillips curve, p. 14

Questions for Review

1. Give three examples of important tradeoffs that you face in your life.
2. What is the opportunity cost of seeing a movie?
3. Water is necessary for life. Is the marginal benefit of a glass of water large or small?
4. Why should policymakers think about incentives?
5. Why isn't trade among countries like a game with some winners and some losers?
6. What does the "invisible hand" of the marketplace do?
7. Explain the two main causes of market failure and give an example of each.
8. Why is productivity important?
9. What is inflation, and what causes it?
10. How are inflation and unemployment related in the short run?

Problems and Applications

1. Describe some of the tradeoffs faced by the following:
   a. a family deciding whether to buy a new car
   b. a member of Congress deciding how much to spend on national parks
   c. a company president deciding whether to open a new factory
   d. a professor deciding how much to prepare for class
2. You are trying to decide whether to take a vacation. Most of the costs of the vacation (airfare, hotel, forgone wages) are measured in dollars, but the benefits of the vacation are psychological. How can you compare the benefits to the costs?
3. You were planning to spend Saturday working at your part-time job, but a friend asks you to go skiing. What is the true cost of going skiing? Now suppose that you had been planning to spend the day studying at the library. What is the cost of going skiing in this case? Explain.
4. You win $100 in a basketball pool. You have a choice between spending the money now or putting it away for a year in a bank account that pays 5 percent interest. What is the opportunity cost of spending the $100 now?
5. The company that you manage has invested $5 million in developing a new product, but the development is not quite finished. At a recent meeting, your salespeople report that the introduction of competing products has reduced the expected sales of your new product to $3 million. If it would cost $1 million to finish

development and make the product, should you go ahead and do so? What is the most that you should pay to complete development?

6. Three managers of the Magic Potion Company are discussing a possible increase in production. Each suggests a way to make this decision.

   HARRY: We should examine whether our company's productivity—gallons of potion per worker—would rise or fall.

   RON: We should examine whether our average cost—cost per worker—would rise or fall.

   HERMIONE: We should examine whether the extra revenue from selling the additional potion would be greater or smaller than the extra costs.

   Who do you think is right? Why?

7. The Social Security system provides income for people over age 65. If a recipient of Social Security decides to work and earn some income, the amount he or she receives in Social Security benefits is typically reduced.
   a. How does the provision of Social Security affect people's incentive to save while working?
   b. How does the reduction in benefits associated with higher earnings affect people's incentive to work past age 65?

8. A recent bill reforming the government's antipoverty programs limited many welfare recipients to only two years of benefits.
   a. How does this change affect the incentives for working?
   b. How might this change represent a tradeoff between equity and efficiency?

9. Your roommate is a better cook than you are, but you can clean more quickly than your roommate can. If your roommate did all of the cooking and you did all of the cleaning, would your chores take you more or less time than if you divided each task evenly? Give a similar example of how specialization and trade can make two countries both better off.

10. Suppose the United States adopted central planning for its economy, and you became the chief planner. Among the millions of decisions that you need to make for next year are how many compact discs to produce, what artists to record, and who should receive the discs.
    a. To make these decisions intelligently, what information would you need about the compact disc industry? What information would you need about each of the people in the United States?
    b. How would your decisions about CDs affect some of your other decisions, such as how many CD players to make or cassette tapes to produce? How might some of your other decisions about the economy change your views about CDs?

11. Explain whether each of the following government activities is motivated by a concern about equity or a concern about efficiency. In the case of efficiency, discuss the type of market failure involved.
    a. regulating cable-TV prices
    b. providing some poor people with vouchers that can be used to buy food
    c. prohibiting smoking in public places
    d. breaking up Standard Oil (which once owned 90 percent of all oil refineries) into several smaller companies
    e. imposing higher personal income tax rates on people with higher incomes
    f. instituting laws against driving while intoxicated

12. Discuss each of the following statements from the standpoints of equity and efficiency.
    a. "Everyone in society should be guaranteed the best health care possible."
    b. "When workers are laid off, they should be able to collect unemployment benefits until they find a new job."

13. In what ways is your standard of living different from that of your parents or grandparents when they were your age? Why have these changes occurred?

14. Suppose Americans decide to save more of their incomes. If banks lend this extra saving to businesses, which use the funds to build new factories, how might this lead to faster growth in productivity? Who do you suppose benefits from the higher productivity? Is society getting a free lunch?

15. Suppose that when everyone wakes up tomorrow, they discover that the government has given them an additional amount of money equal to the amount they already had. Explain what effect this doubling of the money supply will likely have on the following:
    a. the total amount spent on goods and services
    b. the quantity of goods and services purchased if prices are sticky
    c. the prices of goods and services if prices can adjust

16. Imagine that you are a policymaker trying to decide whether to reduce the rate of inflation. To make an intelligent decision, what would you need to know about inflation, unemployment, and the tradeoff between them?

2

THINKING LIKE AN ECONOMIST

Every field of study has its own language and its own way of thinking. Mathematicians talk about axioms, integrals, and vector spaces. Psychologists talk about ego, id, and cognitive dissonance. Lawyers talk about venue, torts, and promissory estoppel.

Economics is no different. Supply, demand, elasticity, comparative advantage, consumer surplus, deadweight loss—these terms are part of the economist's language. In the coming chapters, you will encounter many new terms and some familiar words that economists use in specialized ways. At first, this new language may seem needlessly arcane. But, as you will see, its value lies in its ability to provide you a new and useful way of thinking about the world in which you live.

The single most important purpose of this book is to help you learn the economist's way of thinking. Of course, just as you cannot become a mathematician, psychologist, or lawyer overnight, learning to think like an economist will take

IN THIS CHAPTER YOU WILL . . .

See how economists apply the methods of science

Consider how assumptions and models can shed light on the world

Learn two simple models—the circular flow and the production possibilities frontier

Distinguish between microeconomics and macroeconomics

Learn the difference between positive and normative statements

Examine the role of economists in making policy

Consider why economists sometimes disagree with one another

some time. Yet with a combination of theory, case studies, and examples of economics in the news, this book will give you ample opportunity to develop and practice this skill.

Before delving into the substance and details of economics, it is helpful to have an overview of how economists approach the world. This chapter, therefore, discusses the field's methodology. What is distinctive about how economists confront a question? What does it mean to think like an economist?

THE ECONOMIST AS SCIENTIST

Economists try to address their subject with a scientist's objectivity. They approach the study of the economy in much the same way as a physicist approaches the study of matter and a biologist approaches the study of life: They devise theories, collect data, and then analyze these data in an attempt to verify or refute their theories.

To beginners, it can seem odd to claim that economics is a science. After all, economists do not work with test tubes or telescopes. The essence of science,

"I'm a social scientist, Michael. That means I can't explain electricity or anything like that, but if you ever want to know about people I'm your man."

however, is the *scientific method*—the dispassionate development and testing of theories about how the world works. This method of inquiry is as applicable to studying a nation's economy as it is to studying the earth's gravity or a species' evolution. As Albert Einstein once put it, "The whole of science is nothing more than the refinement of everyday thinking."

Although Einstein's comment is as true for social sciences such as economics as it is for natural sciences such as physics, most people are not accustomed to looking at society through the eyes of a scientist. Let's therefore discuss some of the ways in which economists apply the logic of science to examine how an economy works.

THE SCIENTIFIC METHOD: OBSERVATION, THEORY, AND MORE OBSERVATION

Isaac Newton, the famous seventeenth-century scientist and mathematician, allegedly became intrigued one day when he saw an apple fall from an apple tree. This observation motivated Newton to develop a theory of gravity that applies not only to an apple falling to the earth but to any two objects in the universe. Subsequent testing of Newton's theory has shown that it works well in many circumstances (although, as Einstein would later emphasize, not in all circumstances). Because Newton's theory has been so successful at explaining observation, it is still taught today in undergraduate physics courses around the world.

This interplay between theory and observation also occurs in the field of economics. An economist might live in a country experiencing rapid increases in prices and be moved by this observation to develop a theory of inflation. The theory might assert that high inflation arises when the government prints too much money. (As you may recall, this was one of the *Ten Principles of Economics* in Chapter 1.) To test this theory, the economist could collect and analyze data on prices and money from many different countries. If growth in the quantity of money were not at all related to the rate at which prices are rising, the economist would start to doubt the validity of his theory of inflation. If money growth and inflation were strongly correlated in international data, as in fact they are, the economist would become more confident in his theory.

Although economists use theory and observation like other scientists, they do face an obstacle that makes their task especially challenging: Experiments are often difficult in economics. Physicists studying gravity can drop many objects in their laboratories to generate data to test their theories. By contrast, economists studying inflation are not allowed to manipulate a nation's monetary policy simply to generate useful data. Economists, like astronomers and evolutionary biologists, usually have to make do with whatever data the world happens to give them.

To find a substitute for laboratory experiments, economists pay close attention to the natural experiments offered by history. When a war in the Middle East interrupts the flow of crude oil, for instance, oil prices skyrocket around the world. For consumers of oil and oil products, such an event depresses living standards. For economic policymakers, it poses a difficult choice about how best to respond. But for economic scientists, it provides an opportunity to study the effects of a key natural resource on the world's economies, and this opportunity persists long after the wartime increase in oil prices is over. Throughout this book, therefore, we consider many historical episodes. These episodes are valuable to study because they

give us insight into the economy of the past and, more important, because they allow us to illustrate and evaluate economic theories of the present.

THE ROLE OF ASSUMPTIONS

If you ask a physicist how long it would take for a marble to fall from the top of a ten-story building, she will answer the question by assuming that the marble falls in a vacuum. Of course, this assumption is false. In fact, the building is surrounded by air, which exerts friction on the falling marble and slows it down. Yet the physicist will correctly point out that friction on the marble is so small that its effect is negligible. Assuming the marble falls in a vacuum greatly simplifies the problem without substantially affecting the answer.

Economists make assumptions for the same reason: Assumptions can make the world easier to understand. To study the effects of international trade, for example, we may assume that the world consists of only two countries and that each country produces only two goods. Of course, the real world consists of dozens of countries, each of which produces thousands of different types of goods. But by assuming two countries and two goods, we can focus our thinking. Once we understand international trade in an imaginary world with two countries and two goods, we are in a better position to understand international trade in the more complex world in which we live.

The art in scientific thinking—whether in physics, biology, or economics—is deciding which assumptions to make. Suppose, for instance, that we were dropping a beach ball rather than a marble from the top of the building. Our physicist would realize that the assumption of no friction is far less accurate in this case: Friction exerts a greater force on a beach ball than on a marble. The assumption that gravity works in a vacuum is reasonable for studying a falling marble but not for studying a falling beach ball.

Similarly, economists use different assumptions to answer different questions. Suppose that we want to study what happens to the economy when the government changes the number of dollars in circulation. An important piece of this analysis, it turns out, is how prices respond. Many prices in the economy change infrequently; the newsstand prices of magazines, for instance, are changed only every few years. Knowing this fact may lead us to make different assumptions when studying the effects of the policy change over different time horizons. For studying the short-run effects of the policy, we may assume that prices do not change much. We may even make the extreme and artificial assumption that all prices are completely fixed. For studying the long-run effects of the policy, however, we may assume that all prices are completely flexible. Just as a physicist uses different assumptions when studying falling marbles and falling beach balls, economists use different assumptions when studying the short-run and long-run effects of a change in the quantity of money.

ECONOMIC MODELS

High school biology teachers teach basic anatomy with plastic replicas of the human body. These models have all the major organs—the heart, the liver, the kidneys, and so on. The models allow teachers to show their students in a simple way how the important parts of the body fit together. Of course, these plastic models

are not actual human bodies, and no one would mistake the model for a real person. These models are stylized, and they omit many details. Yet despite this lack of realism—indeed, because of this lack of realism—studying these models is useful for learning how the human body works.

Economists also use models to learn about the world, but instead of being made of plastic, they are most often composed of diagrams and equations. Like a biology teacher's plastic model, economic models omit many details to allow us to see what is truly important. Just as the biology teacher's model does not include all of the body's muscles and capillaries, an economist's model does not include every feature of the economy.

As we use models to examine various economic issues throughout this book, you will see that all the models are built with assumptions. Just as a physicist begins the analysis of a falling marble by assuming away the existence of friction, economists assume away many of the details of the economy that are irrelevant for studying the question at hand. All models—in physics, biology, or economics—simplify reality in order to improve our understanding of it.

OUR FIRST MODEL: THE CIRCULAR-FLOW DIAGRAM

The economy consists of millions of people engaged in many activities—buying, selling, working, hiring, manufacturing, and so on. To understand how the economy works, we must find some way to simplify our thinking about all these activities. In other words, we need a model that explains, in general terms, how the economy is organized and how participants in the economy interact with one another.

circular-flow diagram
a visual model of the economy that shows how dollars flow through markets among households and firms

Figure 2-1 presents a visual model of the economy, called a **circular-flow diagram.** In this model, the economy has two types of decisionmakers—households and firms. Firms produce goods and services using inputs, such as labor, land, and capital (buildings and machines). These inputs are called the *factors of production*. Households own the factors of production and consume all the goods and services that the firms produce.

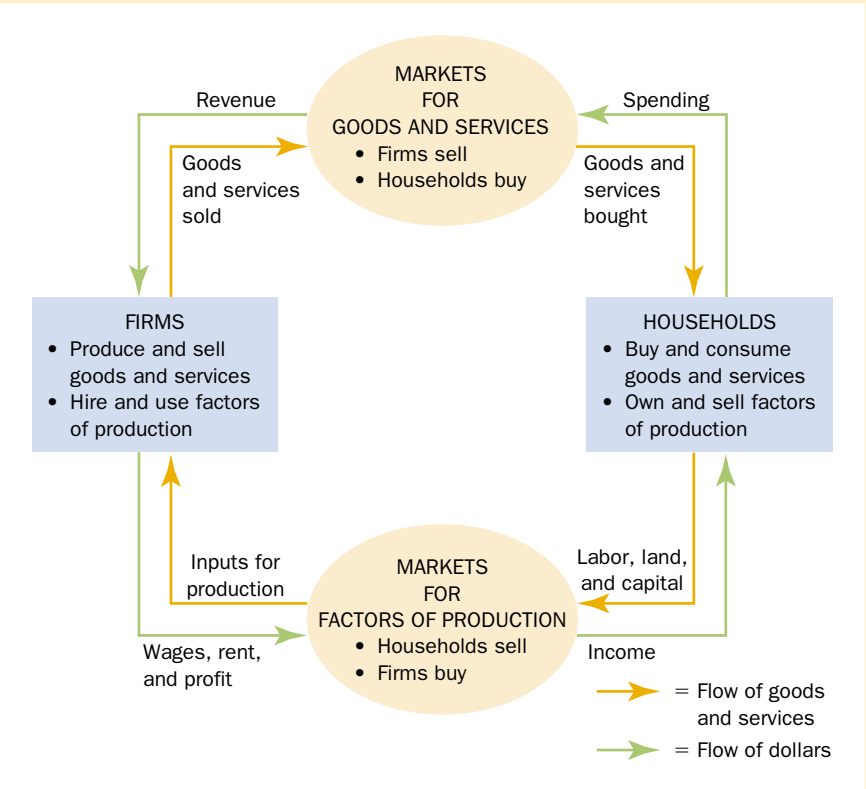
Households and firms interact in two types of markets. In the *markets for goods and services*, households are buyers and firms are sellers. In particular, households buy the output of goods and services that firms produce. In the *markets for the factors of production*, households are sellers and firms are buyers. In these markets, households provide firms the inputs that the firms use to produce goods and services. The circular-flow diagram offers a simple way of organizing all the economic transactions that occur between households and firms in the economy.

The inner loop of the circular-flow diagram represents the flows of goods and services between households and firms. The households sell the use of their labor, land, and capital to the firms in the markets for the factors of production. The firms then use these factors to produce goods and services, which in turn are sold to households in the markets for goods and services. Hence, the factors of production flow from households to firms, and goods and services flow from firms to households.

The outer loop of the circular-flow diagram represents the corresponding flow of dollars. The households spend money to buy goods and services from the firms. The firms use some of the revenue from these sales to pay for the factors of

Figure 2-1

THE CIRCULAR FLOW. This diagram is a schematic representation of the organization of the economy. Decisions are made by households and firms. Households and firms interact in the markets for goods and services (where households are buyers and firms are sellers) and in the markets for the factors of production (where firms are buyers and households are sellers). The outer set of arrows shows the flow of dollars, and the inner set of arrows shows the corresponding flow of goods and services.



production, such as the wages of their workers. What's left is the profit of the firm owners, who themselves are members of households. Hence, spending on goods and services flows from households to firms, and income in the form of wages, rent, and profit flows from firms to households.

Let's take a tour of the circular flow by following a dollar bill as it makes its way from person to person through the economy. Imagine that the dollar begins at a household, sitting in, say, your wallet. If you want to buy a cup of coffee, you take the dollar to one of the economy's markets for goods and services, such as your local Starbucks coffee shop. There you spend it on your favorite drink. When the dollar moves into the Starbucks cash register, it becomes revenue for the firm. The dollar doesn't stay at Starbucks for long, however, because the firm uses it to buy inputs in the markets for the factors of production. For instance, Starbucks might use the dollar to pay rent to its landlord for the space it occupies or to pay the wages of its workers. In either case, the dollar enters the income of some household and, once again, is back in someone's wallet. At that point, the story of the economy's circular flow starts once again.

The circular-flow diagram in Figure 2-1 is one simple model of the economy. It dispenses with details that, for some purposes, are significant. A more complex

and realistic circular-flow model would include, for instance, the roles of government and international trade. Yet these details are not crucial for a basic understanding of how the economy is organized. Because of its simplicity, this circular-flow diagram is useful to keep in mind when thinking about how the pieces of the economy fit together.

OUR SECOND MODEL: THE PRODUCTION POSSIBILITIES FRONTIER

Most economic models, unlike the circular-flow diagram, are built using the tools of mathematics. Here we consider one of the simplest such models, called the production possibilities frontier, and see how this model illustrates some basic economic ideas.

Although real economies produce thousands of goods and services, let's imagine an economy that produces only two goods—cars and computers. Together the car industry and the computer industry use all of the economy's factors of production. The **production possibilities frontier** is a graph that shows the various combinations of output—in this case, cars and computers—that the economy can possibly produce given the available factors of production and the available production technology that firms can use to turn these factors into output.

production possibilities frontier
a graph that shows the combinations of output that the economy can possibly produce given the available factors of production and the available production technology

Figure 2-2 is an example of a production possibilities frontier. In this economy, if all resources were used in the car industry, the economy would produce 1,000 cars and no computers. If all resources were used in the computer industry, the economy would produce 3,000 computers and no cars. The two end points of the production possibilities frontier represent these extreme possibilities. If the

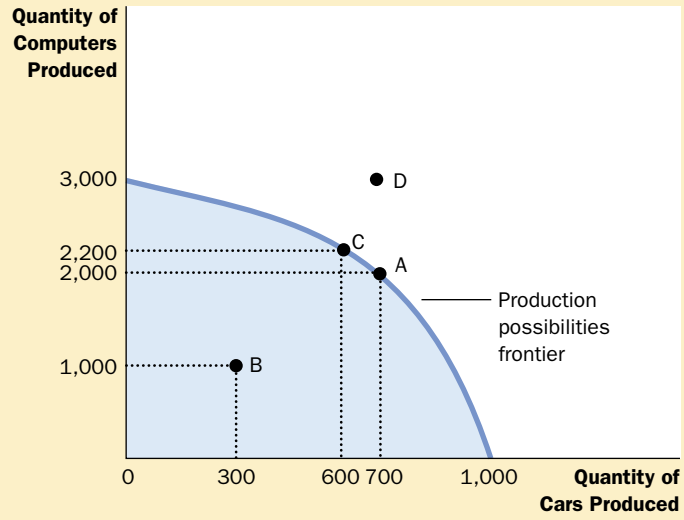


Figure 2-2

THE PRODUCTION POSSIBILITIES FRONTIER. The production possibilities frontier shows the combinations of output—in this case, cars and computers—that the economy can possibly produce. The economy can produce any combination on or inside the frontier. Points outside the frontier are not feasible given the economy's resources.