

Economics and Life

LEARNING OBJECTIVES

- LO 1.1 Explain the economic concept of scarcity.
 - LO 1.2 Explain the economic concepts of opportunity cost and marginal decision making.
 - LO 1.3 Explain the economic concept of incentives.
 - LO 1.4 Explain the economic concept of efficiency.
 - LO 1.5 Distinguish between correlation and causation.
 - LO 1.6 List the characteristics of a good economic model.
 - LO 1.7 Distinguish between positive and normative analysis.
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MAKING AN IMPACT WITH SMALL LOANS

On the morning of October 13, 2006, Bangladeshi economist Muhammad Yunus received an unexpected telephone call from Oslo, Norway. Later that day, the Nobel committee announced that Yunus and the Grameen Bank, which he founded in 1976, would share the 2006 Nobel Peace Prize. Past recipients of the Nobel Peace Prize include Mother Teresa, who spent over 50 years ministering to beggars and lepers; Martin Luther King, Jr., who used peaceful protest to oppose racial segregation; and the Dalai Lama, an exiled Tibetan Buddhist leader who symbolizes the struggle for religious and cultural tolerance. What were an economist and his bank doing in such company?

Grameen is not a typical bank. Yes, it makes loans and offers savings accounts, charging customers for its services, just like other banks. But it serves some of the poorest people in the poorest villages in one of the poorest countries in the world. It makes loans so small that it's hard for people in wealthy countries to imagine what good they can do: The first group of loans Yunus made totaled only \$27. Before Grameen came along, other banks had been unwilling to work in these poor communities. They believed it wasn't worth bothering to lend such small amounts; many believed the poor could not be counted on to repay their loans.

Yunus disagreed. He was convinced that even very small loans would allow poor villagers to expand their small businesses—maybe buying a sewing machine, or a cow to produce milk for the local market—and earn more money. As a result, their lives would be more comfortable and secure, and their children would have a better future. Yunus claimed that they would be able to repay the loan, and that his new bank would earn a profit.

Yunus proved the skeptics wrong, and today Grameen Bank serves more than 8 million customers. The bank reports that 98 percent of its loans are repaid—a better rate than



some banks in rich countries can claim. Grameen also reports steady profits, which has inspired other banks to start serving poor communities on nearly every continent, including recent start-ups in New York City and Omaha, Nebraska.

Muhammad Yunus was trained as an economist. He earned a PhD at Vanderbilt University in Nashville, and then taught in Tennessee before becoming a professor in Bangladesh. When a devastating famine struck Bangladesh, Yunus became disillusioned with teaching. What did abstract equations and stylized graphs have to do with the suffering he saw all around him?

Ultimately, Yunus realized that economic thinking holds the key to solving hard problems that truly matter. The genius of Grameen

Bank is that it is neither a traditional charity nor a traditional bank. Instead, it is a business that harnesses basic economic insights to make the world a better place.¹

In this book, we'll introduce you to the tools economists are using to tackle some of the world's biggest challenges, from health care reform, to climate change, to lifting people out of poverty. Of course, these tools are not just for taking on causes worthy of Nobel Prizes. Economics can also help you become a savvy consumer, successfully launch a new cell phone app, or simply make smarter decisions about how to spend your time and money. Throughout this book, we promise to ask you not just to memorize theories, but also to apply the ideas you read about to the everyday decisions you face in your own life.

economics the study of how people, individually and collectively, manage resources

microeconomics the study of how individuals and firms manage resources

macroeconomics the study of the economy on a regional, national, or international scale

The Basic Insights of Economics

When people think of economics, they often think of the stock market, the unemployment rate, or media reports saying things like “the Federal Reserve has raised its target for the federal funds rate.” Although economics does include these topics, its reach is much broader.

Economics is the study of how people manage resources. Decisions about how to allocate resources can be made by individuals, but also by groups of people in families, firms, governments, and other organizations. In economics, *resources* are not just physical things like cash and gold mines. They are also intangible things, such as time, ideas, technology, job experience, and even personal relationships.

Traditionally, economics has been divided into two broad fields: microeconomics and macroeconomics. **Microeconomics** is the study of how individuals and firms manage resources. **Macroeconomics** is the study of the economy on a regional, national,

or international scale. Microeconomics and macroeconomics are highly related and interdependent; we need both to fully understand how economies work.

Economics starts with the idea that people compare the choices available to them and purposefully behave in the way that will best achieve their goals. As human beings, we have ambitions and we make plans to realize them. We strategize. We marshal our resources. When people make choices to achieve their goals in the most effective way possible, economists say they are exhibiting **rational behavior**. This assumption isn't perfect. As we'll see later in the book, people can sometimes be short-sighted or poorly informed about their choices. Nevertheless, the assumption of rational behavior helps to explain a lot about the world.

People use economics every day, from Wall Street to Walmart, from state capitol buildings to Bangladeshi villages. They apply economic ideas to everything from shoe shopping to baseball, from running a hospital to running for political office. What ties these topics together is a common approach to problem solving.

Economists tend to break down problems by asking a set of four questions:

1. What are the wants and constraints of those involved?
2. What are the trade-offs?
3. How will others respond?
4. Why isn't everyone already doing it?

Underneath these questions are some important economics concepts, which we will begin to explore in this chapter. Although the questions, and the underlying concepts, are based on just a few common-sense assumptions about how people behave, they offer a surprising amount of insight into tough problems of all sorts. They are so important to economic problem solving that they will come up again and again in this book. In this chapter we'll take a bird's-eye view of economics, focusing on the fundamental concepts and skimming over the details. Later in the book, we'll return to each question in more depth.

Scarcity

Question 1: What are the wants and constraints of those involved?

LO 1.1 Explain the economic concept of scarcity.

For the most part, most people make decisions that are aimed at getting the things they want. Of course, you can't always get what you want. People want a lot of things, but they are *constrained* by limited resources. Economists define **scarcity** as the condition of wanting more than we can get with available resources. Scarcity is a fact of life. You have only so much time and only so much money. You can arrange your resources in a lot of different ways—studying or watching TV, buying a car or traveling to Las Vegas—but at any given time, you have a fixed range of possibilities. Scarcity also describes the world on a collective level: As a society, we can produce only so many things, and we have to decide how those things are divided among many people.

The first question to ask in untangling a complex economic problem is, "What are the wants and constraints of those involved?" Given both rational behavior and scarcity, we can expect people to work to get what they want, but to be constrained in their choices by the limited resources available to them. Suppose you *want* to spend as much time as possible this summer taking road trips around the country. You are *constrained* by the three months of summer vacation and by your lack of money to pay for gas, food, and places to stay. Behaving rationally, you might choose to work double-shifts for two months to

rational behavior
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earn enough to spend one month on the road. Since you are now *constrained* by having only one month to travel, you'll have to prioritize your time, activities, and expenses.

Now put yourself in Muhammad Yunus's shoes, back in 1976. He sees extremely poor but entrepreneurial Bangladeshi villagers and thinks that they could improve their lives with access to loans. Why aren't banks providing financial services for these people? We can apply the first of the economists' questions to start to untangle this puzzle: *What are the wants and constraints of those involved?* In this case, those involved are traditional Bangladeshi banks and poor Bangladeshi villagers.

Let's look at both:

- The banks *want* to make profits by lending money to people who will pay them back with interest. They are *constrained* by having limited funds available to loan or to run branch banks. We can therefore expect banks to prioritize making loans to customers they believe are likely to pay them back. Before 1976, that meant wealthier, urban Bangladeshis, not the very poor in remote rural villages.
- The villagers *want* the chance to increase their incomes. They have energy and business ideas but are *constrained* in their ability to borrow start-up money by the fact that most banks believe they are too poor to repay loans.

Analyzing the wants and constraints of those involved gives us some valuable information about why poor Bangladeshis didn't have access to loans. Banks *wanted* to earn profits and managed their *constrained* funds to prioritize those they thought would be profitable customers. Bangladeshi villagers *wanted* to increase their incomes but couldn't follow up on business opportunities due to *constrained* start-up money. That's good information, but we haven't yet come up with the solution that Dr. Yunus was looking for. To take the next step in solving the puzzle, we turn to another question economists often ask.

Opportunity cost and marginal decision making

Question 2: What are the trade-offs?

LO 1.2 Explain the economic concepts of opportunity cost and marginal decision making.

Every decision in life involves weighing the *trade-off* between costs and benefits. We look at our options and decide whether it is worth giving up one in order to get the other. We choose to do things only when we think that the benefits will be greater than the costs. The potential *benefit* of taking an action is often easy to see: You can have fun road-tripping for a month; bank customers who take out a loan have the opportunity to expand their businesses. The *costs* of a decision, on the other hand, are not always clear.

You might think it *is* clear—that the cost of your road trip is simply the amount of money you spend on gas, hotels, and food. But something is missing from that calculation. The true cost of something is not just the amount you have to pay for it, but also the opportunity you lose to do something else instead. Suppose that if you hadn't gone on your road trip, your second choice would have been to spend that same time and money to buy a big-screen TV and spend a month at home watching movies with friends. The true cost of your road trip is the enjoyment you would have had from owning the TV and hanging out with friends for a month. Behaving rationally, you should go on the road trip only if it will be more valuable to you than the best alternative use for your

time and money. This is a matter of personal preference. Because people have different alternatives and place different values on things like a road trip or a TV, they will make different decisions.

Economists call this true cost of your choice the **opportunity cost**, which is equal to the value of what you have to give up in order to get something. Put another way, opportunity cost is the value of your next best alternative—the “opportunity” you have to pass up in order to take your first choice.

Let’s return to the road trip. Say you’re going with a friend, and her plan B would have been buying a new computer, taking a summer class, and visiting her cousins. The opportunity cost of her vacation is different from yours. For her, the opportunity cost is the pleasure she would have had from a new computer, plus whatever benefits she might have got from the course, plus the fun she would have had with her cousins. If she’s behaving rationally, she will go with you on the road trip only if she believes it will be more valuable to her than what she’s giving up.

Opportunity cost helps us think more clearly about trade-offs. If someone asked you how much your road trip cost and you responded by adding up the cost of gas, hotels, and food, you would be failing to capture some of the most important and interesting aspects of the trade-offs you made. Opportunity cost helps us to see why, for example, a partner at a law firm and a paralegal at the firm face truly different trade-offs when they contemplate taking the same vacation for the same price. The partner makes a higher salary and therefore forgoes more money when taking unpaid time off from work. The opportunity cost of a vacation for the paralegal is therefore lower than it is for the lawyer, and the decision the paralegal faces is truly different.

Economists often express opportunity cost as a dollar value. Suppose you’ve been given a gift certificate worth \$15 at a restaurant. The restaurant has a short menu: pizza or spaghetti, each of which costs \$15. The gift certificate can be used only at this particular restaurant, so the only thing you give up to get pizza is spaghetti, and vice versa. If you didn’t have the certificate, you would be willing to pay as much as \$15 for the pizza but no more than \$10 for the spaghetti.

What is the opportunity cost of choosing the pizza? Even though the price on the menu is \$15, the opportunity cost is only \$10, because that is the value you place on your best (and only) alternative, the spaghetti. What is the opportunity cost of choosing the spaghetti? It’s \$15, the value you place on the pizza. Which do you choose? One choice has an opportunity cost of \$10, the other \$15. Behaving rationally, you should choose the pizza, because it has the lower opportunity cost.

A simpler way of describing this trade-off would be simply to say that you prefer pizza over spaghetti. The opportunity cost of spaghetti is higher because to get it, you have to give up something you like more. But putting it in terms of opportunity cost can be helpful when there are more choices, or more nuances to the choices.

For example, suppose the gift certificate could be used only to buy spaghetti. Now what is the opportunity cost of choosing the spaghetti? It is \$0, because you can’t do anything else with the gift certificate—your alternative choices are spaghetti or nothing. The opportunity cost of pizza is now \$15 because you’d have to pay for it with money you could have spent on \$15 worth of other purchases outside the restaurant. So even though you like pizza better, you might now choose the spaghetti because it has a lower opportunity cost in this particular situation.

Once you start to think about opportunity costs, you see them everywhere. For an application of opportunity cost to a serious moral question, read the What Do You Think? box “The opportunity cost of a life.”

opportunity cost
the value of what you
have to give up in
order to get something;
the value of your next-
best alternative

WHAT DO YOU THINK?

The opportunity cost of a life

Throughout the book, *What Do You Think?* boxes ask for your opinion about an important policy or life decision. These boxes will present questions that require you to combine facts and economic analysis with values and moral reasoning. They are the sort of tough questions that people face in real life. There are many correct answers, depending on your values and goals.

The philosopher Peter Singer writes that opportunity costs can be a matter of life or death. Imagine you are a salesperson, and on your way to a meeting on a hot summer day, you drive by a lake. Suddenly, you notice that a child who has been swimming in the lake is drowning. No one else is in sight.

You have a choice. If you stop the car and dive into the lake to save the child, you will be late for your meeting, miss out on making a sale, and lose \$250. The *opportunity cost* of saving the child's life is \$250.

Alternatively, if you continue on to your meeting, you earn the \$250 but you lose the opportunity to dive into the lake and save the child's life. The *opportunity cost* of going to the meeting is one child's life.

What would you do? Most people don't hesitate. They immediately say they would stop the car, dive into the lake, and save the drowning child. After all, a child's life is worth more than \$250.

Now suppose you're thinking about spending \$250 on a new iPod. That \$250 could instead have been used for some charitable purpose, such as immunizing children in another country against yellow fever. Suppose that for every \$250 donated, an average of one child's life ends up being saved. (In fact, \$250 to save one child's life is not far from reality in many cases.) What is the opportunity cost of buying an iPod? According to Peter Singer, it is the same as the opportunity cost of going straight to the meeting: a child's life.

These two situations are not exactly the same, of course, but why does the first choice (jump in the lake) seem so obvious to most people, while the second seems much less obvious?

What do you think?

1. In what ways do the two situations presented by Singer—the sales meeting and the drowning child versus the iPod and the unvaccinated child—differ?
2. Singer argues that even something like buying an iPod is a surprisingly serious moral decision. Do you agree? What sort of opportunity costs do you typically consider when making such a decision?
3. What might be missing from Singer's analysis of the trade-offs people face when making a decision about how to spend money?

marginal decision making comparison of additional benefits of a choice against the additional costs it would bring, without considering related benefits and costs of past choices

Another important principle for understanding trade-offs is the idea that rational people make decisions *at the margin*. **Marginal decision making** describes the idea that rational people compare the *additional* benefits of a choice against the *additional* costs, without considering related benefits and costs of past choices.

For example, suppose an amusement park has a \$20 admission price and charges \$2 per ride. If you are standing outside the park, the cost of the first ride is \$22, because you will have to pay the admission price and buy a ticket to go on the ride. Once you are inside the park, the *marginal* cost of each additional ride is \$2. When deciding whether to go on the roller coaster a second or third time, then, you should compare only the benefit or enjoyment you will get from one more ride to the opportunity cost of that additional ride.

This may sound obvious, but in practice, many people don't make decisions on the margin. Suppose you get into the amusement park and start to feel sick shortly thereafter. If doing something else with your \$2 and 20 minutes would bring you more enjoyment than another rollercoaster ride while feeling sick, the rational thing to do would be to leave. The relevant trade-off is between the *additional* benefits that going on another ride would bring, versus the additional costs. You cannot get back the \$20 admission fee or any of the other money you've already spent on rides. Economists call costs that have already been incurred and cannot be recovered **sunk costs**. Sunk costs should not have any bearing on your *marginal* decision about what to do next. But many people feel the need to go on a few more rides to psychologically justify the \$20 admission.

Trade-offs play a crucial role in businesses' decisions about what goods and services to produce. Let's return to the example that started this chapter and apply the idea to a bank in Bangladesh: *What are the trade-offs involved in making a small loan?*

- For traditional banks, the opportunity cost of making small loans to the poor was the money that the bank could have earned by making loans to wealthier clients instead.
- For poor borrowers, the opportunity cost of borrowing was whatever else they would have done with the time they spent traveling to the bank and with the money they would pay in fees and interest on the loan. The benefit, of course, was whatever the loan would enable them to do that they could not have done otherwise, such as starting a small business or buying food or livestock.

Based on this analysis of trade-offs, we can see why traditional banks made few loans to poor Bangladeshis. Because banks perceived the poor to be risky clients, the opportunity cost of making small loans to the poor seemed to outweigh the benefits—unless the banks charged very high fees. From the perspective of poor rural villagers, high fees meant that the opportunity cost of borrowing was higher than the benefits, so they chose not to borrow under the terms offered by banks.

Notice that the answer to this question built off the answer to the first: We had to know the wants and constraints of each party before we could assess the trade-offs they faced. Now that we understand the motivations and the trade-offs that led to the situation Dr. Yunus observed, we can turn to a third question he might have asked himself when considering what would happen when he founded the Grameen Bank.

Incentives

Question 3: How will others respond?

LO 1.3 Explain the economic concept of incentives.

You're in the mood for pizza, so you decide to go back to the restaurant with the short menu. When you get there, you discover that the prices have changed. Pizza now costs \$50 instead of \$15.

What will you do? Remember that your gift certificate is good for only \$15. Unless you can easily afford to shell out \$50 for a pizza or just really hate spaghetti, you probably won't be ordering the pizza. We're sure that you can think of ways to spend \$35 that are worth more to you than your preference for pizza over spaghetti. But what if the prices had changed less drastically—say, \$18 for pizza? That might be a tougher call.

As the trade-offs change, so will the choices people make. When the restaurant owner considers how much to charge for each dish, she must consider *how others will respond* to changing prices. If she knows the pizza is popular, she might be tempted to try charging more to boost her profits. But as she increases the price, fewer diners will decide to order it.

sunk costs costs that have already been incurred and cannot be recovered or refunded

If a trade-off faced by a lot of people changes, even by a small amount, the combined change in behavior by everyone involved can add up to a big shift. The collective reaction to a changing trade-off is a central idea in economics and will come up in almost every chapter of this book. Asking “How will others respond?” to a trade-off that affects a lot of people gives us a complete picture of how a particular decision affects the world. What happens when prices change? What happens when the government implements a new policy? What happens when a company introduces a new product? Answering any of these questions requires us to consider a large-scale reaction, rather than the behavior of just one person, company, or policy-maker.

incentive
something that causes people to behave in a certain way by changing the trade-offs they face

In answering this question about trade-offs, economists commonly make two assumptions. The first is that people respond to incentives. An **incentive** is something that causes people to behave in a certain way by changing the trade-offs they face. A positive incentive (sometimes just called an *incentive*) makes people *more likely* to do something. A negative incentive (sometimes called a *disincentive*) makes them *less likely* to do it. For example, lowering the price of spaghetti creates a positive incentive for people to order it, because it lowers the opportunity cost—when you pay less for spaghetti, you give up fewer other things you could have spent the money on. Charging people more for pizza is a negative incentive to buy pizza, because they now have to give up more alternative purchases.

The second assumption economists make about trade-offs is that nothing happens in a vacuum. That is, you can’t change just one thing in the world without eliciting a response from others. If you change your behavior—even if only in a small way—that action will change the incentives of the people around you, causing them to change their behavior in response. If you invent a new product, competitors will copy it. If you raise prices, consumers will buy less. If you tax a good or service, people will produce less of it.

Asking *how others will respond* can help prevent bad decisions by predicting the undesirable side-effects of a change in prices or policies. The question can also be used to design changes that elicit positive responses. When Muhammad Yunus was setting up Grameen Bank, he had to think carefully about the incentives that both rural villagers and traditional banks faced and to consider how those incentives could be changed without incurring negative side-effects.

One reason that banks saw rural villagers as risky customers is that they were too poor to have anything to offer to the bank as collateral. *Collateral* is a possession pledged by a borrower to a lender, like a house or a car. If the borrower cannot repay the loan, the lender keeps the collateral. The threat of losing the collateral increases the cost of choosing to not repay the loan, giving the borrower a positive incentive to repay. When traditional banks thought about lending to poor Bangladeshis, they concluded that without the threat of losing collateral, the villagers would be less likely to repay their loans.

Yunus needed to think up a different way of creating a positive incentive for poor customers to repay their loans. His best-known solution was to require borrowers to apply for loans in five-person groups. Every person in the group would have a stake in the success of the other members. If one person didn’t repay a loan, no one else in the group could borrow from the bank again.

Yunus’s idea, called *group responsibility*, was simple, but hugely significant. Yunus concluded that borrowers would have a strong incentive to repay their loans: They wouldn’t want to ruin relationships with other members of the group—their fellow villagers, whom they live with every day and rely on for mutual support in hard times. This, in turn, changed the trade-off faced by banks, and they responded by being more willing to lend to the poor at lower rates. By asking himself how villagers would respond to the new kind of loan and how banks in turn would respond to the villagers’ response, Yunus was able to predict that his idea could be the key to spreading banking services to the poor.

Dr. Yunus's predictions proved to be correct. Seeing that poor villagers nearly always repaid their loans under Grameen's system gave other banks confidence that small borrowers could be reliable customers. Banks offering microloans, savings accounts, and other services to the very poor have spread around the world. As a result of Yunus's creativity and thoughtfulness about incentives, the poor have better access to financial services and banks earn money from providing them. Today, other ideas have proved even more effective in providing the right incentives for small borrowers, continuing in the tradition of experimentation and innovation pioneered by Yunus and Grameen Bank.

Throughout this book, you will see many examples of how the power of incentives can be harnessed to accomplish everything from increasing a company's profits to protecting the environment. But before we get carried away with brilliant economic innovations, we have to ask ourselves one more question, the final test of any solutions that come out of our problem-solving process.

Efficiency

Question 4: Why isn't everyone already doing it?

LO 1.4 Explain the economic concept of efficiency.

People tend to behave rationally. We clip coupons, compare car models before buying, and think hard about which major to choose in college. Although people are not calculating machines, we usually weigh trade-offs, respond to incentives, and are on the lookout for opportunities to get what we want in the most effective way possible.

The same goes for businesses. There are millions of businesses in the world, each trying to make a profit. When consumers want a good or service, some business will take the opportunity to earn money by providing it. That fact leads to our final assumption: *Under normal circumstances, individuals and firms will act to provide the things people want.* If a genuine profit-making opportunity exists, someone will take advantage of it, and usually sooner rather than later.

This final assumption comes from the idea of **efficiency**. Efficiency describes a situation in which resources are used in the most productive way possible to produce the goods and services that have the greatest total economic value to society. Increasing efficiency means finding a way to better use resources to produce the things that people want.

The definition of efficiency might raise some questions. How do we determine *value*, for example? What exactly do we mean by *resources*? Over the course of the book, we'll dive deeper into these issues. For now, we'll take a broad view: Something is valuable if someone wants it, and a resource is anything that can be used to make something of value, from natural resources (such as water and trees) to human resources (such as talents and knowledge). This broad view leads to an important idea: When the economy is working efficiently, resources are *already* getting allocated to valuable ends.

So when you think you see a big, unexploited opportunity—a new product, policy, technology, or business model that could change the world or earn you millions of dollars—ask yourself: If it's such a great idea, *why isn't everyone already doing it?* One possible answer is simply that nobody has thought of it before. That's possible. But, if *you* have seen the opportunity, doesn't it seem likely that at least one of the billions of other smart, rational people in the world will have seen it too?

Don't get us wrong: We're not saying there is never an opportunity to do something new in the world. Great new ideas happen all the time—they drive progress. But there's a strong possibility that other people have already thought about the idea, and if they chose not to take advantage of it, that's a hint that you might be missing something. The first thing to do is backtrack to the first three economists' questions: Have you

efficiency use of resources in the most productive way possible to produce the goods and services that have the greatest total economic value to society

misjudged people's wants and constraints, miscalculated the trade-offs they face, or misunderstood how people will respond to incentives?

If you think back through those questions and still think you're on to something, here are some more possibilities to consider. We said that *under normal circumstances*, the economy is operating efficiently, and individuals or firms provide the things people want. What are some ways in which circumstances might not be normal?

- **Innovation:** Innovation is the explanation you're hoping is correct. Maybe your idea has not been used yet because it is too new. If you have come up with a truly new idea, whether it is new technology or a new business model, people cannot have taken advantage of it yet, because it didn't exist before.
- **Market failure:** Market failures are an important cause of inefficiency. Sometimes people and firms fail to take advantage of opportunities because something prevents them from capturing the benefits of the opportunity, or imposes additional costs on them. For instance, maybe your great new idea won't work because it would be impossible to prevent others from quickly copying it or because a few big companies have already got the market sewn up. Economists call such situations *market failure*, and we will discuss them in much greater depth later in the book.
- **Intervention:** If a powerful force—often the government—intervenes in the economy, transactions cannot take place the way they normally would. We'll see later in this book that many government economic policies intentionally or unintentionally interfere with people's ability to take advantage of profit-making opportunities.
- **Goals other than profit:** Maybe your idea won't produce a profit. Individuals and governments have goals other than profit, of course—for example, creating great art or promoting social justice. But if your idea doesn't also generate a profit, then it is less surprising that no one has taken advantage of it.

When Muhammad Yunus asked himself the question, “Why isn't everyone already lending to the poor?” he first identified a market failure involving lack of collateral and came up with the idea of group responsibility to fix it. But then he had to ask himself, “Why aren't all the banks already using the group responsibility idea?”

Maybe there was another market failure Yunus hadn't spotted. Maybe some government policy prevented it. Maybe traditional banks had considered it and decided it still wouldn't generate a profit. Yunus wasn't primarily interested in making profit, of course—he was interested in helping the poor. But if microloans weren't going to earn a profit for the banks even with group responsibility, then that would explain why no one was already doing it.

Fortunately, none of those answers were correct. This was a case in which the answer to *why isn't everyone already doing it?* was that the idea was genuinely new. Grameen Bank was able to help very poor people in Bangladesh by lending them money, while making enough profit to expand and serve more customers. Today, over 20 million people in Bangladesh can get small loans from Grameen Bank and other organizations. Around the world, over 200 million low-income customers enjoy the same opportunity. Sometimes, something that seems like a great new idea really is exactly that.

✓ CONCEPT CHECK

In every chapter of this book you will find a few Concept Checks. These questions test your understanding of the concepts presented in the preceding section. If you have trouble answering any of the questions, go back and review the section. Don't move forward until you understand these ideas.

- How do constraints affect decision making? [LO 1.1]
- What do opportunity costs represent? [LO 1.2]
- What is the name for something that changes the trade-offs that people face when making a decision? [LO 1.3]
- Give four reasons that might explain why a product isn't already in the market. [LO 1.4]

An Economist's Problem-Solving Toolbox

The four questions we've just discussed are some of the fundamental insights of economics. Using them to understand how the world *might* work is only half the battle. In the second part of this chapter we will describe some tools economists use to apply these insights to real situations.

Accurately spotting the fundamental economic concepts at work in the world is sometimes less obvious than you might think. Throughout history, people have observed the world around them and drawn conclusions that have proved hilariously—or sometimes tragically—wrong. We now know that the sun doesn't revolve around the earth. Droughts are not caused by witches giving people the evil eye. Yet, intelligent people once believed these things. It's human nature to draw meaning from the patterns we observe around us, but our conclusions are not always correct.

Economic analysis requires us to combine theory with observations and to subject both to tough scrutiny before drawing conclusions. In this section we will see how to put theories and facts together to determine what causes what. We will also distinguish between the way things *are* and the way we think they *should be*. You can apply these tools to all sorts of situations, from personal life choices to business decisions and policy analysis.

Correlation and causation

LO 1.5 Distinguish between correlation and causation.

Many sports fans have a lucky jersey that they wear to help their team win a game. A die-hard fan might insist that his jersey is obviously lucky, because he was wearing it when his team won the NBA finals or the Super Bowl. This superstition is an exaggeration of a common human tendency: When we see that two events occur together, we tend to assume that one causes the other. Economists, however, try to be particularly careful about what causes what.

To differentiate between events that simply occur at the same time and events that share a clear cause-and-effect relationship, we use two different terms. When we observe a consistent relationship between two events, we can say there is a **correlation** between them. If both tend to occur at the same time, we say they are *positively correlated*. For example, wearing raincoats is positively correlated with rain. When two events tend *not* to occur together, we say they are *negatively correlated*. High temperatures are negatively correlated with people wearing down jackets. If there is no consistent relationship between two events, we say they are *uncorrelated*.

Correlation differs from causation. **Causation** means that one event brings about the other. As the preceding examples show, causation and correlation often go together. Weather and clothing are often correlated, because weather *causes* people to make certain choices about the clothing they wear.

Unfortunately, correlation and causation do not always go together in a straightforward way. Correlation and causation can be confused in three major ways: correlation without causation, omitted variables, and reverse causation.

correlation

a consistently observed relationship between two events

causation

a relationship between two events in which one brings about the other

Economists try to be particularly careful to differentiate between correlation and causation.



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Correlation without causation. Does the result of the Super Bowl predict the performance of the stock market? A few years ago, some people started to think it might. The Super Bowl pits the top team from the American Football Conference against the top team from the National Football Conference. For a long time, when a team from the AFC won, the stock market had a bad year; when a team from the NFC won, the stock market had a great year. In fact, this pattern held true 85 percent of the time between 1967 and 1997.

Would it have been a good idea to base your investment strategy on the results of the Super Bowl? We think not. There is no plausible cause-and-effect relationship here. Stock market outcomes happened to be *correlated with* Super Bowl outcomes for a number of years, but there is no logical way they could be *caused by* them. If you search long enough for odd coincidences, you will eventually find some.

Omitted variables. Consider the following statement: There is a positive correlation between the presence of firefighters and people with serious burn injuries. Does this statement mean that firefighters cause burn injuries? Of course not. We know that firefighters are not burning people; they're trying to save them. Instead, there must be some common underlying factor, or *variable*, behind both observed outcomes—fires, in this case.

Sometimes, two events that are correlated occur together because both are caused by the same underlying factor. Each has a causal relationship with a third factor, but not with each other. The underlying factor is called an *omitted variable*, because despite the fact that it is an important part of the cause-and-effect story, it has been left out of the analysis. The From Another Angle box “Does ice cream cause polio?” tells the story of an omitted variable that convinced some doctors to mistakenly campaign against a staple of summer fun: ice cream.

FROM ANOTHER ANGLE

Does ice cream cause polio?

From Another Angle boxes show you a different way of looking at an economic concept. Sometimes they will be a humorous story, sometimes a different way of thinking about a situation, and sometimes just an unusual application of a standard idea. We find that a little bit of weirdness goes a long way in helping us to remember things, and we hope it will work for you too.

A disease called polio once crippled or killed thousands of children in the United States every year. Before it was known what caused polio, doctors observed that polio infections seemed to be more common in children who had been eating lots of ice cream. Observing this *correlation* led some people to assume that there was a *causal* relationship between the two. Some doctors recommended an anti-polio diet that avoided eating ice cream. Many fearful parents understandably took their advice.

We now know that polio is caused by a virus that is transmitted from one person to another. The virus was spread through contaminated food and water—for example, dirty swimming pools or water fountains. It had nothing at all to do with how much ice cream a child ate. A polio vaccine was developed in 1952.

The ice cream confusion was caused by an *omitted variable*: warm weather. In warm weather, children are more likely to use swimming pools and water fountains. And in warm weather, children are also more likely to eat ice cream. Polio was therefore *correlated* with eating ice cream, but it certainly wasn't *caused* by it.

Source: http://www.nytimes.com/2009/08/06/technology/06stats.html?_r=1.

Reverse causation. A third common source of confusion between correlation and causation is called *reverse causation*: Did A cause B, or did B cause A? When two events always happen together, it can be hard to say which caused the other.

Let's return to the correlation between rain and raincoats. If we knew nothing about rain, we might observe that it often appears together with raincoats, and we might conclude that wearing a raincoat (A) causes rain (B). In this case, we all know that the causation goes the other way, but observation alone does not tell us that.

Looking at the timing of two correlated events can sometimes provide clues. Often, if A happens before B, it hints that A causes B rather than vice versa. But grabbing a raincoat as you leave home in the morning frequently happens *before* it rains in the afternoon. The timing notwithstanding, taking your raincoat with you in the morning clearly does not *cause* rain later in the day. In this case, your *anticipation* of B causes A to happen.

An important lesson for economists and noneconomists alike is never to take observations at face value. Always make sure you can explain *why* two events are related. To do so, you need another tool in the economist's toolbox: a model.

Models

LO 1.6 List the characteristics of a good economic model.

A **model** is a simplified representation of a complicated situation. In economics, models show how people, firms, and governments make decisions about managing resources, and how their decisions interact. An economic model can represent a situation as basic as how people decide what car to buy or as complex as what causes a global recession.

Because models simplify complex problems, they allow us to focus our attention on the most important parts. Models rarely include every detail of a given situation, but that is a good thing. If we had to describe the entire world with perfect accuracy before solving a problem, we'd be so overwhelmed with details that we'd never get the answer. By carefully simplifying the situation to its essentials, we can get useful answers that are *approximately* right.

One of the most basic models of the economy is the **circular flow model**. The economy involves billions of transactions every day, and the circular flow model helps show how all of those transactions work together. The model slashes through complexity to show important patterns. Figure 1-1 shows the circular flow of economic transactions in a graphic format called the *circular flow diagram*.

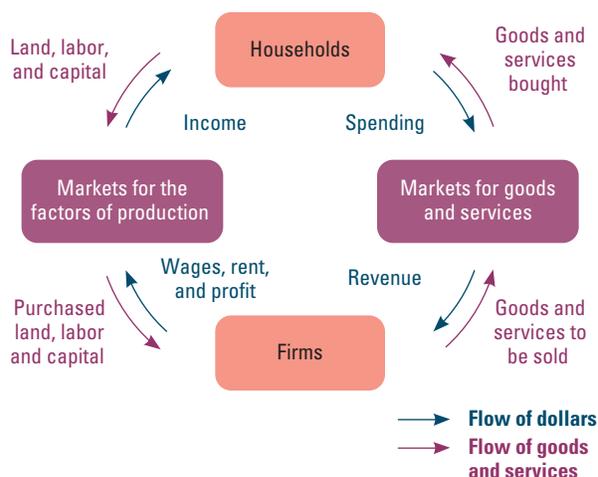
The first simplification of the circular flow model is to narrow our focus to the two most important types of actors in the economy, households and firms:

- *Households* are vital in two ways. First, they supply land and labor to firms and invest capital in firms. (Land, labor, and capital are called the *factors of production*.) Second they buy the goods and services that firms produce.

model a simplified representation of the important parts of a complicated situation

circular flow model a simplified representation of how the economy's transactions work together

FIGURE 1-1
Circular flow diagram



- *Firms* too are vital, but do the opposite of households: They buy or rent the land, labor, and capital supplied by households, and they produce and sell goods and services. The model shows that firms and households are tightly connected through both production and consumption.

In another helpful simplification, the circular flow model narrows the focus to two markets that connect households and firms:

- The *market for goods and services* is exactly what it sounds like: It reflects all of the activity involved in the buying and selling of goods and services. In this market, households spend their wages from labor and their income from land and capital, and firms earn revenue from selling their goods and services.
- The second market is the *market for the factors of production*. Here, households supply land, labor, and capital, and firms hire and purchase or rent these inputs.

The model puts all of this together. The transactions we have described are part of two loops. One is a loop of inputs and outputs as they travel throughout the economy. The *inputs* are the land, labor, and capital firms use to produce goods. The *outputs* are the goods and services that firms produce using the factors of production.

Another loop represents the flow of dollars. Households buy goods and services using the money they get from firms for using their factors of production. Firms get revenues from selling these goods and services—and, in turn, firms can then use the money to buy or rent factors of production.

You might be a little dizzy at this point, with everything spinning in loops. To help straighten things out, let's follow \$5 from your wallet as it flows through the economy. You could spend this \$5 in any number of ways. As you're walking down the street, you see a box of donuts sitting in the window of your local bakery. You head in and give the baker your \$5, a transaction in the market for goods. The money represents revenue for the baker and spending by you. The donuts are an output of the bakery.

The story of your \$5 is not over, though. In order to make more donuts, the baker puts that \$5 toward buying inputs in the market for the factors of production. This might include paying rent for the bakery or paying wages for an assistant. The baker's spending represents income for the households that provide the labor in the bakery or rent out the space. Once the baker pays wages or rent with that \$5, it has made it through a cycle in the circular flow.

As the circular flow model shows, an economic model approximates what happens in the real economy. Later in the book, we'll discuss other models that focus on specific questions—like how much gasoline prices will go up when the government raises taxes or how fast the economy is likely to grow in the next decade. The best models lead us to clearer answers about complicated questions. What makes a good economic model? We have already said that good models can leave out details that are not crucial, and focus on the important aspects of a situation. To be useful, a model *should* also do three things:

1. ***A good model predicts cause and effect.*** The circular flow model gives a useful description of the basics of the economy. Often, though, we want to go further. Many times we want a model not only to describe economic connections but also to predict how things will happen in the future. To do that, we have to get cause and effect right. If your model says that A causes B, you should be able to explain why. In Chapter 3 we'll learn about a central model in economics that shows that for most goods and services, the quantity people want to buy goes down as the price goes up. Why? As the cost of an item rises but the benefit of owning it remains the same, more people will decide that the trade-off is not worth it.
2. ***A good model makes clear assumptions.*** Although models are usually too simple to fit the real world perfectly, it's important that they be clear about the simplifying assumptions. Doing so helps us to know when the model will predict real events accurately and when it will not. For example, we said earlier that economists often assume that people behave rationally. We know that isn't always true, but we accept it as an assumption because it is *approximately* accurate in many situations. As long as we are clear that we are making this assumption, we will know that the model will not be accurate when people fail to behave rationally.
3. ***A good model describes the real world accurately.*** If a model does not describe what actually happens in the real world, something about the model is wrong. We've admitted that models are not perfectly accurate, because they are intentionally simpler than the real world. But if a model predicts things that are not usually or approximately true, it is not useful. How do we tell if a model is realistic? Economists test their models by observing what happens in the real world and collecting data, which they use to verify or reject the model. In the Real Life box "Testing models against history," take a look at a model that has been tested over and over again in the last few hundred years.

REAL LIFE

Testing models against history

Real Life boxes show how the concept you're reading about relates to the real world. They are your chance to test models against the data. Often these boxes will describe a situation in which people used an economic idea to solve a business or policy question, or they present interesting research ideas or experiences. Watch for links to online content, such as videos or news stories.

Thomas Malthus, an early nineteenth-century economist, created a model that described the relationship between population growth and food production. The model predicted that mass starvation would occur as populations outgrew food supplies. In his famous work, *An Essay on the Principle of Population*, Malthus wrote:

The power of population is so superior to the power of the earth to produce subsistence for man, that premature death must in some shape or other visit the human race. . . . [G]igantic inevitable famine stalks . . .

Since Malthus wrote these words, famines have in fact killed millions of people. However, they have not been related to population growth in the way that Malthus predicted. Instead, the population of the world has increased from under a billion in 1800 to almost seven billion today. At the same time, nutrition standards have risen in almost every country.

Malthus's model left out a crucial part of the story: human ingenuity and technological progress. As the world's population has grown, people have found new ways to grow better food more efficiently, on more land. They have also found better ways to limit population growth.

Malthus's idea has not died out, though. Today, neo-Malthusian theory predicts that population will still outstrip the world's productive capacity. This theory updates Malthus's model to address more modern concerns, such as increasing environmental degradation which makes land unfit for farming. Others argue that nonrenewable resources, such as oil, will be depleted. Still others warn that even if the world's farmers can produce enough food, unequal access to resources like fresh water will cause local famines and wars.

Critics of these arguments point out that human ingenuity has somehow averted catastrophe at every point in recent history when a Malthusian disaster seemed imminent. The population boom that followed World War II was supposed to lead to starvation, but it was counteracted by the Green Revolution, which increased food production manyfold.

Is the neo-Malthusian model accurate, then, or is it too missing some critical factor? Time will provide the data to answer this question.

Source: T. R. Malthus, *An Essay on the Principle of Population*, 1798.

Positive and normative analysis

LO 1.7 Distinguish between positive and normative analysis.

Economics is a field of study in which people frequently confuse facts with judgments that are based on beliefs. Think about the following example:

Statement #1: Income taxes reduce the number of hours that people want to work.

Statement #2: Income taxes should be reduced or abolished.

Many people have trouble separating these two statements. Some feel that the second statement flows logically from the first. Others disagree with the second statement, so they assume the first can't possibly be true.

If you read carefully, however, you'll see that the first sentence is a statement about cause and effect. Thus, it can be proved true or false by data and evidence. A statement that makes a factual claim about how the world *actually* works is called a **positive statement**.

The second sentence, on the other hand, cannot be proved true or false. Instead, it indicates what *should be* done—but only if we share certain goals, understandings, and moral beliefs. A statement that makes a claim about how the world *should be* is called a **normative statement**.

To see how important the distinction between positive and normative statements can be, consider two claims that a physicist might make:

Positive statement: A nuclear weapon with the explosive power of 10 kilotons of TNT will have a fallout radius of up to 6 miles.

Normative statement: The United States was right to use nuclear weapons in World War II.

positive statement a factual claim about how the world actually works

normative statement a claim about how the world should be

Although people could disagree about both of these statements, the first is a question of scientific fact, while the second depends heavily on a person's ethical and political beliefs. The first statement may inform your opinion of the second, but you can still agree with one and not the other.

Earlier in this chapter, we introduced a feature called What Do You Think? that asks for your opinion about an important policy or life decision. From this point forward, you can use your understanding of the differences between normative and positive analysis to untangle the questions asked in these boxes and combine the two kinds of analysis to arrive at a conclusion. Begin trying your hand at this with the What Do You Think? box "The cost of college cash."

WHAT DO YOU THINK?

The cost of college cash

In 2009–2010, the average yearly cost of a college education ranged from \$12,804 at public universities to \$32,184 at private universities. Students have a number of options for paying the bill. They can take out federal loans, private loans, or a combination of the two to defer payments until later, or they can use savings or earnings to foot the bill.

Students who qualify for federal loans enjoy benefits such as limits on the interest rate they can be charged or the total payments they can be expected to make, and the possibility of loan forgiveness if they enter certain fields after graduation.

Lending to students is a controversial topic. Some people argue for more controls on private lending institutions, such as interest-rate caps and greater protection for students who default. They reason that lending programs should support students who would not otherwise be able to afford college. Furthermore, they argue, graduating with a lot of debt discourages students from going into lower-paid public service jobs.

Other people maintain that the existing lending system is fine. Getting a college degree, they argue, increases a person's future earning power so much that graduates should be able to handle the debt, even at high interest rates. They worry that over-regulation will discourage private lenders from offering student loans, defeating the purpose of giving students better access to financial assistance.

What do you think?

Use the four basic questions economists ask to break down the problem. Remember that your answer can draw on both positive analysis (what *will* happen if a certain policy is followed) and normative analysis (what *should* be done, given your values and goals). You should be able to say which parts of your answers fall into each category.

1. What motivations and constraints apply to students who are considering different schools and loan options? What motivations and constraints apply to private lenders?
2. What opportunity costs do students face when deciding how to pay for college? Should they avoid loans by skipping college altogether or by working their way through college?
3. How would prospective students respond to government limits on the interest rate on student loans? How would private banks that offer student loans respond?
4. Why do you think the federal government has not yet implemented interest-rate caps on private student loans? Do you anticipate any unintended side effects of that policy?
5. Consider your arguments in response to questions 1 through 4. Which parts were based on normative statements and which on positive statements?

Sources: "Trends in college pricing," <http://nces.ed.gov/fastfacts/display.asp?id=76>; "How much student debt is too much?" <http://roomfordebate.blogs.nytimes.com/2009/06/14/how-much-student-debt-is-too-much/?scp=1&sq=student%20loans&st=cse>.

Throughout this book, remember that *you don't have to buy into a particular moral or political outlook in order for economics to be useful to you*. Our goal is to provide you with a toolbox of economic concepts that you can use to engage in positive analysis. We will also highlight important decisions you may face that will require you to engage in normative thinking, informed by economic analysis. Economics can help you to make better decisions and design more effective policies regardless of your goals and beliefs.

✓ CONCEPT CHECK

- What does it mean when two variables are positively correlated? [LO 1.5]
- What are the characteristics of a good economic model? [LO 1.6]
- What is the difference between a positive statement and a normative statement? [LO 1.7]

Conclusion

Economists approach problems differently from many other people. Underlying economics is the basic principle of rational behavior—that people make choices to achieve their goals in the most effective way possible.

In this chapter we have introduced the basic concepts economists use, as well as four questions they ask to break down problems. Throughout this book, you will see these concepts and questions over and over again:

1. Scarcity: *What are the wants and constraints of those involved?*
2. Opportunity cost: *What are the trade-offs?*
3. Incentives: *How will others respond?*
4. Efficiency: *Why isn't everyone already doing it?*

In later chapters, as we progress to more complicated problems, try using these four questions to break down problems into manageable pieces, ones you can understand using the fundamental concepts presented in this chapter.



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Visit your mobile app store and download the Karlan and Morduch Study Econ app. ▶



Key Terms

economics, p. 4
microeconomics, p. 4
macroeconomics, p. 4
rational behavior, p. 5
scarcity, p. 5
opportunity cost, p. 7

marginal decision making, p. 8
sunk costs, p. 9
incentive, p. 10
efficiency, p. 11
correlation, p. 13
causation, p. 13

model, p. 15
circular flow model, p. 15
positive statement, p. 18
normative statement, p. 18

Summary

LO 1.1 Explain the economic concept of scarcity.

Economists usually assume that people behave rationally and live within a condition of scarcity. Answering the question, *What are the wants and constraints of those involved?* tells you what to expect from each player in the situation you are analyzing. Given rational behavior and scarcity, you can expect people to work to get what they want (their motivations) using the limited resources at their disposal (their constraints).

LO 1.2 Explain the economic concepts of opportunity cost and marginal decision making.

Trade-offs arise when you must give up something to get something else. Answering *What are the trade-offs?* will tell you about the costs and benefits associated with a decision. The full cost of doing something is the *opportunity cost*. Economists assume that rational people make decisions “at the margin,” by comparing any additional benefits from a choice to the extra costs it brings. If people are behaving rationally when they face trade-offs, they will always choose to do something if the marginal benefit is greater than the opportunity cost. They will never do it if the opportunity cost is greater than the marginal benefit.

LO 1.3 Explain the economic concept of incentives.

The collective reaction to changing trade-offs is a central idea in economics. Asking *How will others respond?* will give you a complete picture of how a particular decision affects the world. You can assume that any action will bring a response, because people react to changes in their incentives.

LO 1.4 Explain the economic concept of efficiency.

Efficiency occurs when resources are used in the most productive way possible to produce the goods and services that have the greatest total economic value to society. In other words, efficiency means using resources to produce the things that people want. Under normal circumstances, markets are efficient.

So when you see what seems to be unexploited opportunity, you should ask: If it’s such a great idea, *Why isn’t everyone already doing it?* Markets usually allocate resources efficiently. When they don’t, a market failure may have occurred, government may have intervened in the economy, there may be goals

other than profit involved, or there may be a genuine opportunity for innovation.

LO 1.5 Distinguish between correlation and causation.

When there is a consistently observed relationship between two events, we say they are *correlated*. This is different from a *causal* relationship, in which one event brings about the other. Three common ways in which correlation and causation are confused are correlation without causation, omitted variables, and reverse causation.

LO 1.6 List the characteristics of a good economic model.

A model is a simplified representation of the important parts of a complicated situation. In economics, models usually show how people, firms, and governments make decisions about managing resources and how their decisions interact. The circular flow model is a representation of how the transactions of households and firms flow through the economy. A good economic model should predict cause and effect, describe the world accurately, and state its assumptions clearly. Economists test their models by observing what happens in the world and collecting data that can be used to support or reject their models.

LO 1.7 Distinguish between positive and normative analysis.

A statement that makes a factual claim about how the world actually works is called a *positive* statement. A statement that makes a claim about how the world should be is called a *normative* statement. Economics is a field in which people frequently confuse positive statements with normative statements. However, you do not have to adopt a particular moral or political point of view to use economic concepts and models.

Review Questions

1. Suppose you are shopping for new clothes to wear to job interviews, but you’re on a tight budget. In this situation, what are your wants and constraints? What does it mean to behave rationally in the face of scarcity? [LO 1.1]

2. You are a student with a demanding schedule of classes. You also work part-time and your supervisor allows you to determine your schedule. In this situation, what is your scarce resource? How do you decide how many hours to work? [LO 1.1]
3. Think about the definition of scarcity that you learned in this chapter. Name three ways that you confront scarcity in your own life. [LO 1.1]
4. When shopping for your interview clothes, what are some trade-offs you face? What is the opportunity cost of buying new clothes? What are the benefits? How do you balance the two? [LO 1.2]
5. You have an 8:30 class this morning but you are feeling extremely tired. How do you decide whether to get some extra sleep or go to class? [LO 1.2]
6. It's Friday night. You already have a ticket to a concert, which cost you \$30. A friend invites you to go out for a game of paintball instead. Admission would cost you \$25, and you think you'd get \$25 worth of enjoyment out of it. Your concert ticket is nonrefundable. What is your opportunity cost (in dollars) of playing paintball? [LO 1.2]
7. Suppose you have two job offers and are considering the trade-offs between them. Job A pays \$45,000 per year and includes health insurance and two weeks of paid vacation. Job B pays \$30,000 per year and includes four weeks of paid vacation but no health insurance. [LO 1.2]
 - a. List the benefits of Job A and the benefits of Job B.
 - b. List the opportunity cost of Job A and the opportunity cost of Job B.
8. Your former neighbor gave you his lawnmower when he moved. You are thinking of using this gift to mow lawns in your neighborhood this summer for extra cash. As you think about what to charge your neighbors and whether this idea is worth your effort, what opportunity costs do you need to consider? [LO 1.2]
9. Think of a few examples of incentives in your daily life. How do you respond to those incentives? [LO 1.3]
10. You supervise a team of salespeople. Your employees already receive a company discount. Suggest a positive incentive and a negative incentive you could use to improve their productivity. [LO 1.3]
11. Your boss decides to pair workers in teams and offer bonuses to the most productive team. Why might your boss offer team bonuses instead of individual bonuses? [LO 1.3]
12. Think of a public policy—a local or national law, tax, or public service—that offers an incentive for a particular behavior. Explain what the incentive is, who is offering it, and what they are trying to encourage or discourage. Does the incentive work? [LO 1.3]
13. Why do individuals or firms usually provide the goods and services people want? [LO 1.4]
14. You may have seen TV advertisements for products or programs that claim to teach a surefire way to make millions on the stock market. Apply the *Why isn't everyone already doing it?* test to this situation. Do you believe the ads? Why or why not? [LO 1.4]
15. Describe an innovation in technology, business, or culture that had a major economic impact in your lifetime. [LO 1.4]
16. Why do people confuse correlation with causation? [LO 1.5]
17. Name two things that are positively correlated and two things that are negatively correlated. [LO 1.5]
18. Why is it important for a good economic model to predict cause and effect? [LO 1.6]
19. Why is it important for a good economic model to make clear assumptions? [LO 1.6]
20. Describe an economic model you know. What does the model predict about cause and effect? [LO 1.6]
21. Describe an economic model you know. What assumptions does the model make? Are the assumptions reasonable? [LO 1.6]
22. What is the difference between disagreeing about a positive statement and disagreeing about a normative statement? [LO 1.7]
23. Would a good economic model be more likely to address a positive statement or a normative statement? Why? [LO 1.7]
24. Write a positive statement and a normative statement about your favorite hobby. [LO 1.7]

Problems and Applications



1. Think about how and why goods and resources are scarce. Goods and resources can be scarce for reasons that are inherent to their nature at all times, temporary or seasonal, or that are artificially created. Separate the goods listed below into

two groups; indicate which (if any) are artificially scarce (AS), and which (if any) are inherently scarce (IS). [LO 1.1]

- air of any quality ____
 - land ____
 - patented goods ____
 - original Picasso paintings ____
2. You are looking for a new apartment in Manhattan. Your income is \$4,000 per month, and you know that you should not spend more than 25 percent of your income on rent. You have come across the following listing for one-bedroom apartments on craigslist. You are indifferent about location, and transportation costs are the same to each neighborhood. [LO 1.1]

Chelsea	\$1,200
Battery Park	2,200
Delancey	950
Midtown	1,500

- Which apartments fall within your budget? (Check all that apply.)
 - Suppose that you adhere to the 25 percent guideline but also receive a \$1,000 cost-of-living supplement since you are living and working in Manhattan. Which apartments fall within your budget now?
3. Suppose the price of a sweater is \$15. Julia's benefit from purchasing each additional sweater is given in the table below. Julia gets the most benefit from the first sweater and less benefit from each additional sweater. If Julia is behaving rationally, how many sweaters will she purchase? [LO 1.2]

	Marginal benefit (\$)
1st sweater	50
2nd sweater	35
3rd sweater	30
4th sweater	23
5th sweater	12
6th sweater	8

4. Sweaters sell for \$15 at the crafts fair. Allie knits sweaters and her marginal costs are given in the table below. Allie's costs increase with each additional sweater. If Allie is behaving rationally, how many sweaters will she sell? [LO 1.2]

	Marginal cost (\$)
1st sweater	5
2nd sweater	8
3rd sweater	12
4th sweater	18
5th sweater	25
6th sweater	32

5. Last year, you estimated you would earn \$5 million in sales revenues from developing a new product. So far, you have spent \$3 million developing the product, but it is not yet complete. Meanwhile, this year you have new sales projections that show expected revenues from the new product will actually be only \$4 million. How much should you be willing to spend to complete the product development? [LO 1.2]
- \$0.
 - Up to \$1 million.
 - Up to \$4 million.
 - Whatever it takes.
6. Consider the following examples. For each one, say whether the incentive is positive or negative. [LO 1.3]
- Bosses who offer time-and-a-half for working on national holidays.
 - Mandatory minimum sentencing for drug offenses.
 - Fines for littering.
 - Parents who offer their children extra allowance money for good grades.
7. Consider the following events that change prices. For each one, say whether the opportunity cost of consuming the affected good increases or decreases. [LO 1.3]

	Affected good
a. A local movie theater offers a student discount.	Movie tickets
b. A tax on soft drinks passes in your state.	Soft drinks
c. Subsidies on corn are cut in half.	Corn subsidies
d. Your student health center begins offering flu shots for free.	Flu shots

8. Your best friend has an idea for a drive-thru bar. Indicate the best explanation for why others have not taken advantage of her idea: true innovation, market failure, government intervention, unprofitable. **[LO 1.4]**
9. Your best friend has an idea for a long-distance car service to drive people across the country. Indicate the best explanation for why others have not taken advantage of her idea: true innovation, market failure, intervention, unprofitable. **[LO 1.4]**
10. Determine whether each of the following questionable statements is best explained by correlation without causation, an omitted variable, or reverse causation. **[LO 1.5]**
 - a. In cities that have more police, crime rates are higher.
 - b. Many retired people live in states where everyone uses air conditioning during the summer.
 - c. More people come down with the flu during the Winter Olympics than during the Summer Olympics.
 - d. For the last five years, Punxsutawney Phil has seen his shadow on Groundhog Day, and spring has come late.
11. For each of the pairs below, determine whether they are positively correlated, negatively correlated, or uncorrelated. **[LO 1.5]**
 - a. Time spent studying and test scores
 - b. Vaccination and illness
 - c. Soft drink preference and music preference
 - d. Income and education
12. Each statement below is part of an economic model. Indicate whether the statement is a prediction of cause and effect or an assumption. **[LO 1.6]**
 - a. People behave rationally.
 - b. If the price of a good falls, people will consume more of that good.
 - c. Mass starvation will occur as population outgrows the food supply.
 - d. Firms want to maximize profits.
13. From the list below, select the characteristics that describe a good economic model. **[LO 1.6]**
 - a. Includes every detail of a given situation.
 - b. Predicts that A causes B.
 - c. Makes approximately accurate assumptions.
 - d. Fits the real world perfectly.
 - e. Predicts things that are usually true.
14. Determine whether each of the following statements is positive or normative. (Remember that a positive statement isn't necessarily *correct*; it just makes a factual claim rather than a moral judgment.) **[LO 1.7]**
 - a. People who pay their bills on time are less likely than others to get into debt.
 - b. Hard work is a virtue.
 - c. Everyone should pay his or her bills on time.
 - d. China has a bigger population than any other country in the world.
 - e. China's One-Child Policy (which limits families to one child each) helped to spur the country's rapid economic growth.
 - f. Lower taxes are good for the country.
15. You just received your midterm exam results and your professor wrote the following note: "You received a 70 on this exam, the average score. If you want to improve your grade, you should study more." Evaluate your professor's note. **[LO 1.7]**
 - a. Is the first sentence positive or normative?
 - b. Is the second sentence positive or normative?

Chapter Endnote

1. "Grameen Bank at a glance," Grameen Bank, October 2011, http://www.grameen-info.org/index.php?option=com_content&task=view&id=453&Itemid=527.