CHAPTER

# 1 Five Foundations of Economics

## Economics is the dismal science.

Perhaps you have heard of the "dismal science"? This derogatory description of economics was first used by historian and essayist Thomas Carlyle in the nineteenth century. He called economics the dismal science after economist Thomas Malthus predicted that population growth combined with the planet's limited resources would ultimately lead to widespread starvation.

MISCONCEPTION

Malthus was a respected thinker, but he was unduly pessimistic. The world population was 1 billion in 1800, and it is over 7 billion today. One of the things that Malthus did not take into account was increases in technology and productivity. Today, the efficiency of agricultural production enables more than 7 billion people to live on this planet. Far from being the dismal science, economics in the twenty-first century is a vital social science that helps world leaders improve their citizens' lives.

This textbook provides the tools you need to make your own assessments about the economy. What other discipline helps you discover how the world works, how to be an informed citizen, and how to live your life to the fullest? Economics can improve your understanding of the stock market and help you make better decisions. If you are concerned about Social Security, this textbook explains how it works. If you are interested in learning more about the economics of health care and some of the challenges it faces, the answers are here.

In this chapter, you will learn about five foundations of economics—incentives, trade-offs, opportunity cost, marginal thinking, and the principle that trade creates value. You will find that many of the more complex problems presented later in the text are based on these foundations, either singly or in combination. Think of this chapter as a road map that provides a broad overview of your first journey into economics. Let's get started!

# What Is Economics?

Economists study how decisions are made. Examples of economic decisions include whether you should buy or lease a car, sublet your apartment, or buy that Gibson guitar you've been eyeing. And just as individuals must choose what to buy within the limits of their income, society as a whole must determine what to produce from its limited set of resources.

Of course, life would be a lot easier if we could have whatever we wanted whenever we wanted it. Unfortunately, life does not work that way. Our wants and needs are nearly unlimited, but the resources available to satisfy these wants and needs are always limited. The term used to describe the limited nature of society's resources is **scarcity**. Even the most abundant resources, like the water we drink and the air we breathe, are not always abundant enough everywhere to meet the wants and needs of every person. So how do individuals and societies make decisions about scarce resources? This is the basic question economists seek to answer. **Economics** is the study of how individuals and societies allocate their limited resources to satisfy their nearly unlimited wants.

Water is scarce . . .

. . . and so are diamonds!

## Microeconomics and Macroeconomics

The study of economics is divided into two subfields: microeconomics and macroeconomics. **Microeconomics** is the study of the individual units that make up the economy, such as households and businesses. **Macroeconomics** is the study of the overall aspects and workings of an economy, such as inflation (an overall increase in prices), growth, employment, interest rates, and the productivity of the economy as a whole. To understand the difference, consider a worker who gets laid off and becomes unemployed. Is this an issue that would be addressed in microeconomics or macroeconomics? The question seems to fit parts of both definitions. The worker is an individual, which is micro, but employment is one of the broad areas of concern for the economy as a whole, which is macro. However, because only one worker is laid off, this is a micro issue. If many workers were laid off and the result was a higher unemployment rate across the entire economy, the issue would be broad enough to be studied by macroeconomists. However, macroeconomics is more than just an aggregation of microeconomics. Macroeconomists examine, among other things, government policies regarding the federal budget and money supply, the reasons for inflation and unemployment, economic growth, international trade, and government borrowing—topics that are too complex to be understood using only microeconomic analysis.

# What Are Five Foundations of Economics?

The study of economics can be complicated, but we can make it very accessible by breaking it down into a set of component parts. The five foundations presented here are key components of economics. They are a bit like the natural laws of physics or chemistry. Almost every economic subject can be analyzed through the prism of one of these foundations. By mastering the five foundations, you will be on your way to succeeding in this course and thinking like an economist.

The five foundations of economics are:

- Incentives
- Trade-offs
- Opportunity cost
- Marginal thinking
- The principle that trade creates value

Each of these five foundations reappears throughout the book and enables you to solve complex problems. Every time you encounter one of the five concepts, you will see an icon of a house in the margin. As you become more adept at economic analysis, you will often use two or more of these foundational ideas to understand the economic world around you.

## Incentives

When you are faced with making a decision, you usually make the choice that you think will most improve your situation. In making your decision, you respond to **incentives**—factors that motivate you to act or exert effort. For example, your choice to study for an exam you have tomorrow instead of spending the evening with your friends is based on your belief that doing well on the exam will provide a greater benefit. You have an incentive to study because you know that an A in the course will raise your grade-point average and make you a more attractive candidate on the job market when you are finished with school. We can further divide incentives into two paired categories: positive and negative and direct and indirect.

## Positive and Negative Incentives

*Positive incentives* encourage action by offering rewards or payments. For example, end-of-year bonuses motivate employees to work hard throughout the year, higher oil prices cause suppliers to extract more oil, and tax rebates encourage citizens to spend more money. *Negative incentives* discourage action by providing undesirable consequences or punishments. For instance, the fear of receiving a speeding ticket keeps motorists from driving too fast, higher oil prices might spur some consumers to use less oil, and the dread of a trip to the dentist motivates people to brush their teeth regularly. In each case, we see that incentives spur individuals to action.

Conventional wisdom tells us that "learning is its own reward," but try telling that to most students. Teachers are aware that incentives, both positive and negative, create additional interest among their students to learn the course material. Positive incentives include bonus points, gold stars, public praise, and extra credit. Many students respond to these encouragements by studying more. However, positive incentives are not enough. Suppose that your instructor never gave any grade lower than an A. Your incentive to participate actively in the course, do assignments, or earn bonus points would be small. For positive incentives to work, they generally need to be coupled with negative incentives. This is why instructors require students to complete assignments, take exams, and write papers. Students know that if they do not complete these requirements, they will get a lower grade, perhaps even fail the class.

### Direct and Indirect Incentives

Incentives can also be direct or indirect. For instance, if one gas station lowers its prices, it most likely will get business from customers who would not usually stop there. This is a *direct incentive*. Lower gasoline prices also work as an *indirect incentive*, because lower prices might encourage consumers to use more gas.

Public assistance: a hand in time of need or an incentive not to work?

Direct incentives are easy to recognize. "Cut my grass and I'll pay you $30" is an example of a direct incentive. Indirect incentives are more difficult to recognize. But learning to recognize them is one of the keys to mastering economics. For instance, consider the indirect incentives at work in welfare programs. Almost everyone agrees that societies should provide a safety net for those without employment or whose income isn't enough to meet their basic needs. In other words, a society has a direct incentive to alleviate suffering caused by poverty. But how does a society provide this safety net without taking away the incentive to work? If the amount of welfare a person receives is higher than the amount that person can hope to make from a job, the welfare recipient might decide to stay on welfare rather than go to work. The indirect incentive to stay on welfare creates an *unintended consequence*: people who were supposed to use government assistance as a safety net until they can find a job use it instead as a permanent source of income.

Policymakers have the tough task of deciding how to balance such conflicting incentives. To decrease the likelihood that a person will stay on welfare, policymakers could cut benefits. But this decision might leave some people without enough to live on. For this reason, many government programs specify limits on the amount of time people can receive benefits. Ideally, this limit allows the welfare programs to continue meeting people's basic needs while creating incentives that encourage recipients to search for a job and acquire skills that will help them get a job. We'll learn more about welfare issues in Chapter 15.

## Incentives and Innovation

Incentives also play a vital role in innovation, the engine of economic growth. An excellent example is Steve Jobs. He and the company he founded, Apple, held over 300 patents at the time of his death in 2011.

In the United States, the patent system and copyright laws guarantee inventors a specific period of time in which they have the exclusive right to sell their work. This system encourages innovation by creating a powerful financial reward for creativity. Without patents and copyright laws, inventors would bear all the costs, and almost none of the rewards, for their efforts. Why would firms invest in research and development or artists create new music if others could immediately copy and sell their work? To reward the perspiration and inspiration required for innovation, society allows patents and copyrights to create the right incentives for economic growth.

In recent years, new forms of technology have made the illegal sharing of copyrighted material quite easy. As a result, illegal downloads of books, music, and movies are widespread. When writers, musicians, actors, and studios cannot effectively protect what they have created, they earn less. So illegal downloads reduce the incentive to produce new content. Will the next John Lennon or Jay-Z work so hard? Will the next Suzanne Collins (author of *The Hunger Games*) or J. K. Rowling (author of the Harry Potter books) hone their writing craft so diligently if there is so much less financial reward for success? Is the "I want it for free" culture causing the truly gifted to be less committed to their craft, thus depriving society of excellence? Maintaining the right rewards, or incentives, for hard work and innovation is essential for making sure that inventors and other creative people are compensated for their creativity and vision.

## Incentives Are Everywhere

There are many sides to incentives. However, financial gain almost always plays a prominent role. In the film *All the President's Men*, the story of the Watergate scandal that led to the unraveling of the Nixon administration in the early 1970s, a secret source called "Deep Throat" tells Bob Woodward, an investigative reporter at the *Washington Post*, to "follow the money." Woodward responds, "What do you mean? Where?" Deep Throat responds, "Just . . . follow the money." That is exactly what Woodward did. He eventually pieced everything together and followed the money trail all the way to President Nixon.

## Trade-offs

In a world of scarcity, each and every decision incurs a cost. Even time is a scarce resource; after all, there are only 24 hours in a day. So deciding to read one of the *Hunger Games* books now means that you won't be able to read one of the Harry Potter books until later. More generally, doing one thing often means that you will not have the time, resources, or energy to do something else. Similarly, paying for a college education can require spending tens of thousands of dollars that might be used elsewhere instead.

Understanding the trade-offs that exist in life can completely change how you view the world. Let's look at Psy's song "Gangnam Style." The video for this song has been viewed over 2 billion times on YouTube, making it the most watched video of all time. Imagine what could have been accomplished if people had used that time differently. *The Economist* magazine considered this question and came up with a list of the trade-offs. "Gangnam Style" is 4 minutes and 12 seconds long, which means that more than 140 million hours have been spent watching the video. In the same amount of time, six Burj Khalifas (the world's tallest building, located in Dubai, United Arab Emirates) or four Great Egyptian Pyramids could have been built or the entire contents of Wikipedia entered! 140 million hours also would have been enough time to build three aircraft carriers, an example that brings us to the trade-offs involved in fighting a war. Dwight Eisenhower was aware of trade-offs in 1953 when he stated:


What might have been achieved in the time it has taken to watch this video 2.5 billion times?

> The cost of one modern heavy-duty bomber is this: a modern brick school in more than 30 cities. It is two electric power plants each serving a town of 60,000 people. It is two fine, fully equipped hospitals. It is some 50 miles of concrete highways. We pay for a single fighter with a half million bushels of wheat. We pay for a single destroyer with new homes that could have housed more than 8,000 people.

Ultimately, thinking about trade-offs means that we will make more informed decisions about how to utilize our scarce resources.

## Opportunity Cost

The existence of trade-offs requires making hard decisions. Choosing one thing means giving up something else. Suppose that you receive two invitations—the first to spend the day hiking and the second to go to a concert—and both events occur at the same time. No matter which event you choose, you have to sacrifice the other option. In this example, you can think of the cost of going to the concert as the lost opportunity to go on the hike. Likewise, the cost of going hiking is the lost opportunity to go to the concert. No matter what choice you make, there is an opportunity cost, or next-best alternative, that must be sacrificed. **Opportunity cost** is the highest-valued alternative that must be sacrificed to get something else.

Every time we make a choice, we experience an opportunity cost. The key to making the best possible decision is to minimize your opportunity cost by selecting the option that gives you the largest benefit. If you prefer going to a concert, you should go to the concert. What you give up (the hike) has less value to you than the concert, so it has a lower opportunity cost.

The hiking/concert choice is a simple and clear example of opportunity cost. Usually, it takes deliberate effort to see the world through the opportunity cost prism. But it is a worthwhile practice because it will help you make better decisions. For example, imagine you are a small business owner. Your financial officer informs you that you have had a successful year and made a sizable profit. So everything is good, right? Not so fast. An economist will tell you to ask yourself, "Could I have made *more* profit doing something else?" Good economic thinkers ask this question all the time. "Could I be using my time, talents, or energy on another activity that would be even more profitable for me?"

Do you have the moves like Jagger?

Profits on an official income statement are only part of the story, because they only measure how well a business does relative to the bottom line. Accountants cannot measure what *might* have been better. For example, suppose that you had decided not to open a new store. A few months later, a rival opened a very successful store in the same location you had considered. Your profits were good for the year, but if you had opened the new store, your profits could have been even better. So when economists talk about opportunity cost, they are assessing whether the alternatives are better than what you are currently doing, which considers a larger set of possible outcomes.

Mick Jagger thought about opportunity cost. Before joining the Rolling Stones, he had been attending the London School of Economics. For Mick, the opportunity cost of becoming a musician was forgoing a degree in economics. Given the success of the Rolling Stones, it is hard to fault his decision!

## Marginal Thinking

The process of systematically evaluating a course of action is called economic thinking. **Economic thinking** involves a purposeful evaluation of the available opportunities to make the best decision possible. In this context, economic thinkers use a process called *marginal analysis* to break down decisions into smaller parts. Often, the choice is not between doing and not doing something, but between doing more or less of something. For instance, if you take on a part-time job while in school, you probably wrestle with the question of how many hours to work. If you work a little more, you can earn additional income. If you work a little less, you have more time to study. Working more has a tangible benefit (more money) and a tangible cost (lower grades). All of this should sound familiar from our earlier discussion about trade-offs. The work-study trade-off affects how much money you have and what kind of grades you earn.

An economist would say that your decision—weighing how much money you want against the grades you want—is a decision at the *margin*. What exactly does the word "margin" mean as used in economics? In economics, **marginal thinking** requires decision-makers to evaluate whether the benefit of one more unit of something is greater than its cost. Understanding how to analyze decisions at the margin is essential to thinking like a good economist.

For example, have you ever wondered why people vacuum, dust, scrub the bathrooms, clean out their garages, and wash their windows, but leave the dust bunnies under the refrigerator? The answer lies in thinking at the margin. Moving the refrigerator out from the wall to clean requires a significant effort for a small benefit. Guests who enter the kitchen can't see under the refrigerator. So most of us ignore the dust bunnies and just clean the visible areas of our homes. In other words, when economists say that you should think at the margin, what they really mean is that you should weigh the costs and benefits of your actions and choose to do the things with the greatest payoff. For most of us, that means being willing to live with dust bunnies. The *marginal cost* of cleaning under the refrigerator (or on top of the cabinets or even behind the sofa cushions) is too high, and the added value of making the effort, or the *marginal benefit*, is too low to justify the additional cleaning.

## Trade

Imagine trying to find food in a world without grocery stores. The task of getting what you need to eat each day would require visiting many separate locations. Traditionally, this need to bring buyers and sellers together was met by weekly markets, or bazaars, in central locations like town squares. **Markets** bring buyers and sellers together to exchange goods and services. As commerce spread throughout the ancient world, trade routes developed. Markets grew from infrequent gatherings, where exchange involved trading goods and services for other goods and services, into more sophisticated systems that use cash, credit, and other financial instruments. Today, when we think of markets, we often think of eBay or Craigslist. For instance, if you want to find a rare DVD of season 1 of *Entourage*, an excellent place to look is eBay, which allows users to search for just about any product, bid on it, and then have it sent directly to their home.

### The Circular Flow

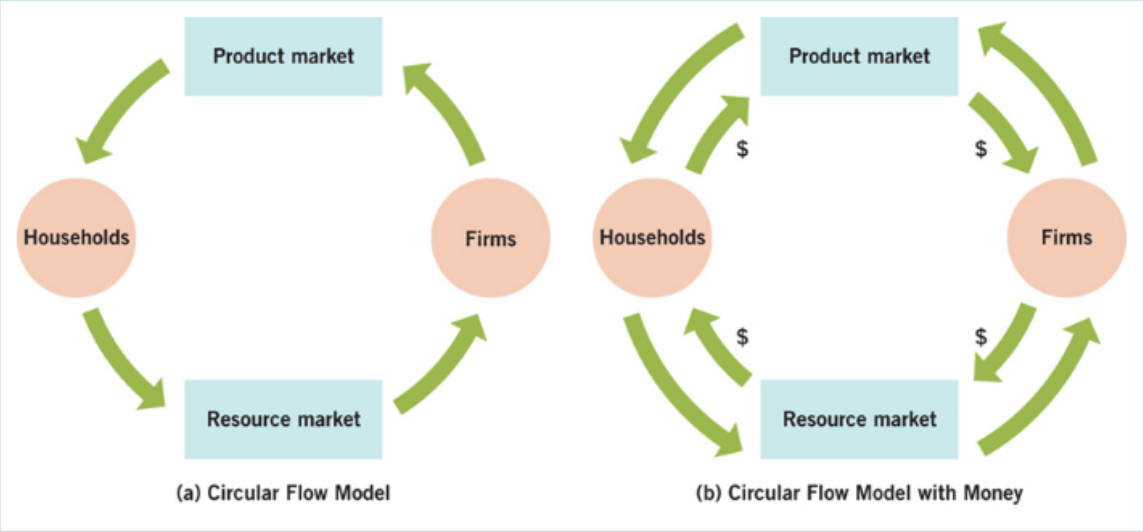
The **circular flow** shows how resources and final goods and services flow through the economy. There are two groups in the circular flow, *households* and firms, which want to trade with each other. Households are the people we usually think of as consumers. *Firms* are businesses. Households want the goods and services produced by the firms, and firms want the resources owned by the households in order to make goods and provide services. The circular flow shows how households get the things firms produce and how firms acquire the resources to produce those things. Both of these trades happen in a market.

The circular flow contains two markets. The first market is the *product market*. In this market, households are the buyers and firms are the sellers. This is the type of market you're probably most familiar with. When you go to the gas station or the mall, you are acting as a buyer. The store is the seller.

The second market is the *resource market*, and here the roles are reversed. In this market, the household acts as the seller and the firm is the buyer. The market for labor is a resource market. When you go on the job market, you are basically selling yourself. Firms are looking for employees to help them produce goods and services. They are buying labor.

Figure 1.2 shows the circular flow. The households and firms are the actors. They interact in the two different markets. The arrows show the flow of goods, services, and resources through the economy. This basic view of how things work is actually incredibly accurate. However, we can add one more thing to make the picture of economic activity more complete. At this point we are assuming that the households and the firms trade goods for resources. In other words, they barter. **Barter** involves individuals trading a good they already have or providing a service in exchange for something they want. The problem is that barter requires a **double coincidence of wants**, in which each party in an exchange transaction has what the other party desires.

**FIGURE 1.2**




**The Circular Flow**

**(a) Circular Flow Model:** Goods and services move counterclockwise from one part of the economy to another. Firms produce goods and services and send them to the product market. Households buy these goods and services in the product market, but households provide the inputs necessary to make goods and services. Households sell these inputs in the resource market, where firms buy them and turn them into goods and services.

**(b) Circular Flow Model with Money:** Instead of bartering for goods and services, people use money to make the transactions much easier. Money acts as a medium of exchange, enabling the economy to avoid the double-coincidence-of-wants problem.

A double coincidence of wants is pretty unusual. Consider how you would get what you want in a barter economy. Let's say you are hungry. To get something to eat, you get a job at a Subway restaurant. At the end of the day you get paid. You eagerly choose a foot-long meatball sub as payment for your day's work. Satisfied, you walk home, where you find that your landlord is demanding payment for the rent you owe him. You agree to pay him with a six-inch turkey sub every other day for the next month. Fortunately, the landlord likes Subway sandwiches. In this situation, there is a double coincidence of wants. Unfortunately for you, when you get upstairs there is a message from the cable company. It needs to be paid as well. You call the company and offer food from Subway, but the company doesn't want food. Instead, it wants to be paid with gasoline because its service trucks don't run on sandwiches. To pay your cable bill, you need to find someone who will trade sandwiches for gasoline so you can trade gasoline for cable TV.

You probably see where this is going, and you probably already understand what is missing in our simple model: money. We'll discuss money in a later chapter, but for now it is clear that having some common commodity that buyers and sellers both want will increase the efficiency of the market. Thus, we see societies develop some form of money. Adding money to our model, as we do in Figure 1.2(b), makes it look more like reality. Money flows in the opposite direction of the goods, services, and resources, illustrating that money is being used as a medium of exchange. Now we have two flows, one of goods and services, and one of money, moving in a circle. Hence, the term "circular flow."

### Trade Creates Value

**Trade** is the voluntary exchange of goods and services between two or more parties. Voluntary trade among rational individuals creates value for everyone involved. Imagine you are on your way home from class and you want to pick up a gallon of milk. You know that milk will be more expensive at a convenience store than at the grocery store 5 miles away, but you are in a hurry to study for your economics exam and are willing to pay up to $5 for the convenience of getting the milk quickly. At the store, you find that the price is $4 and you happily purchase the milk. This ability to buy for less than the price you are willing to pay provides a positive incentive to make the purchase. But what about the seller? If the store owner paid $3 to buy the milk from a supplier, and you are willing to pay the $4 price that he has set in order to make a profit, the store owner has an incentive to sell. This simple voluntary transaction has made both of you better off.

By fostering the exchange of goods, trade helps to create additional growth through specialization. **Comparative advantage** refers to the situation in which an individual, business, or country can produce at a lower opportunity cost than a competitor can. Comparative advantage harnesses the power of specialization, a topic we discuss in more detail in Chapter 2. As a result, it is possible to be a physician, teacher, or plumber and not worry about how to do everything yourself. The physician becomes proficient at dispensing medical advice, the teacher at helping students, and the plumber at fixing leaks. The physician and the teacher call the plumber when they need work on their plumbing. The teacher and the plumber see the doctor when they are sick. The physician and the plumber send their children to school to learn from the teacher. Likewise, Mick Jagger made a decision to specialize in music instead of pursuing a career in economics. This decision makes sense because he was better at music than he was at economics.

The same process is at work among businesses. For instance, Starbucks specializes in making coffee, Honda in making automobiles. You would not want to get your morning cup of joe at Honda any more than you would want to buy a car from Starbucks!

On a broader scale, specialization and trading of services exist at the international level as well. Some countries have highly developed workforces capable of managing and solving complex processes. Other countries have large pools of relatively unskilled labor. As a result, businesses that need skilled labor gravitate to countries where they can easily find the workers they need. Likewise, firms with production processes that rely on unskilled labor look for employees in less developed countries, where workers are paid less. By harnessing the power of increased specialization, global companies and economies create value through increased production and growth.

However, globalized trade is not without controversy. When goods and jobs are free to move across borders, not everyone benefits equally, nor should we expect this outcome. Consider the case of a U.S. worker who loses her job when her position is outsourced to a call center in India. The jobless worker now has to find new employment—a process that requires significant time and energy. In contrast, the new position in the call center in India provides a job and an income that improve the life of another worker. Also, the U.S. firm enjoys the advantage of being able to hire lower-cost labor elsewhere. The firm's lower costs often translate into lower prices for domestic consumers. None of those advantages make the outsourcing of jobs any less painful for affected workers, but outsourcing is an important component of economic growth in the long run.

# Conclusion

Is economics the dismal science?

Our economy depends on specialization.

Now that you have begun your exploration of economics, you know that economics is not dismal. Economists ask, and answer, big questions about life. This is what makes the study of economics so fascinating. Understanding how an entire economy functions may seem like a daunting task, but it is not nearly as difficult as it sounds. If you remember learning to drive a car, the process is similar. When you are first learning to drive, everything seems difficult and unfamiliar. But once you learn and practice a few key principles, you can become a good driver quite quickly. With experience, you can drive any car on the road. Learning economics is similar; once you have learned the fundamentals of economics, you can use them to analyze almost any problem. In the next chapter, we use the ideas developed in this chapter to explore trade in greater depth.

## ANSWERING THE BIG QUESTIONS

**What is economics?**

- Economics is the study of how people allocate their limited resources to satisfy their nearly unlimited wants. Because of the limited nature of society's resources, even the most abundant resources are not always plentiful enough everywhere to meet the wants and needs of every person. So how do individuals and societies make decisions about how to use the scarce resources at their disposal? This is the basic question economists seek to answer.

**What are five foundations of economics?**

Five foundations of economics are incentives, trade-offs, opportunity cost, marginal thinking, and the principle that trade creates value.

- Incentives are important because they help explain how rational decisions are made.
- Trade-offs exist when a decision-maker has to choose a course of action.
- Each time we make a choice, we experience an opportunity cost, or a lost chance to do something else.
- Marginal thinking requires a decision-maker to weigh the extra benefits against the extra costs.
- Trade creates value because participants in markets are able to specialize in the production of goods and services that they have a comparative advantage in making.