

# Introduction part chapter



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## INTRODUCTION PART CHAPTER Getting Started CHAPTER 1 1 CHECKLIST

When you have completed your study of this chapter, you will be able to 1

Define economics, distinguish between microeconomics and

macroeconomics, and explain the questions of microeconomics. 2 Describe

the work of economists as social scientists. 3 Explain five core ideas that

define the economic way of thinking. 4 Explain why economics is worth

studying. You are studying microeconomics at a time of enormous change.

After a decade of technological change that brought e-commerce, MP3music,

DVD movies, cell phones, Palm Pilots, and host of other gadgets and toys

that have transformed the way we work and play, our lives were changed by

the terrorist attacks of September 11, 2001. The shock waves from that day

will pulsate through our economy for many years. They have shrunk our

airlines, expanded our security and defense industries, and created huge

uncertainty about the future. Outside the United States, more than 1 billion

of the world's 6. 3 billion people survive on \$1 a day or less. Disturbed by the

combination of increasing wealth and persistent poverty, some people are

pointing to globalization as the source of growing economic inequality.

Your course in microeconomics will help you to understand the powerful

forces that are shaping our economic world and help you to navigate it in

your everyday life and work. 1 2 Part 1 • INTRODUCTION 1 . 1 DEFINITIONS

AND QUESTIONS Scarcity The condition that arises because the available

resources are insufficient to satisfy wants. Incentive A reward or a penalty—a

“ carrot” or a “ stick”—that encourages or discourages an action. All

economic questions and problems arise because human wants exceed the

resources available to satisfy them. We want good health and long lives. We

ant spacious and comfortable homes. We want a huge range of sports and recreational equipment from running shoes to jet skis. We want the time to enjoy our favorite sports, video games, novels, music, and movies; to travel to exotic places; and to just hang out with friends. In the world of politics, it is easy to get carried away with the idea that we can have it all. Politicians tell us they will provide all the extra public services that we want, and at the same time, they will cut our taxes so that we can spend more on the things that we enjoy. Despite the promises of politicians, we cannot have it all.

The ability of each of us to satisfy our wants is limited by time and by the incomes we earn and the prices we pay for the things we buy. These limits mean that everyone has unsatisfied wants. Our ability as a society to satisfy our wants is limited by the productive resources that exist. These resources include the gifts of nature, our own labor and ingenuity, and tools and equipment that we have produced. Our inability to satisfy all our wants is called scarcity. The poor and the rich alike face scarcity. A child wants a \$1.00 can of soda and two 50¢ packs of gum but has only \$1.00 in his pocket. He faces scarcity. A millionaire wants to spend the weekend playing golf and spend the same weekend at the office attending a business strategy meeting. She faces scarcity. A society wants to provide vastly improved health care, install an Internet connection in every classroom, explore space, clean polluted lakes and rivers, and so on. Society also faces scarcity. Faced with scarcity, we must make choices. We must choose among the available alternatives. The child must choose the soda or the gum. The millionaire must choose the golf game or the meeting.

As a society, we must choose among health care, computers, space exploration, the environment, and so on. The choices we make depend on the incentives we face. An incentive is a reward or a penalty—a “ carrot” or a “ stick”—that encourages or discourages an action. If the price of gum rises and the price of soda falls, the child has an incentive. Even parrots face scarcity! Not only do I want a cracker—we all want a cracker! ©The New Yorker Collection 1985 Frank Modell from cartoonbank. com. All Rights Reserved. Chapter 1 • Getting Started to choose less gum and more soda.

If a profit of \$10 million is at stake, the millionaire has an incentive to attend the meeting and skip the golf game. As computer prices tumble, school boards have a stronger incentive to connect more classrooms to the Internet. Economics is the social science that studies the choices that we make as we cope with scarcity and the incentives that influence and reconcile our choices. The subject divides into two main parts: • Microeconomics • Macroeconomics 3 Economics The social science that studies the choices that we make as we cope with scarcity and the incentives that influence and reconcile our choices.

**Microeconomics** Microeconomics is the study of the choices that individuals and businesses make and the way these choices respond to incentives, interact, and are influenced by governments. Some examples of microeconomic questions are: Why are more people buying SUVs and fewer people buying minivans? How will a cut in the price of the Sony PlayStation and Microsoft Xbox affect the quantities of these items that people buy? **Microeconomics** The study of the choices that individuals and businesses

make and the way these choices respond to incentives, interact, and are influenced by governments. Macroeconomics

Macroeconomics is the study of the aggregate (or total) effects on the national economy and the global economy of the choices that individuals, businesses, and governments make. Some examples of macroeconomic questions are: Why did production and jobs expand so rapidly in the United States during the 1990s? Why has Japan been in a long period of economic stagnation? Why did the Federal Reserve cut interest rates during 2001 and keep them low through 2002? Macroeconomics The study of the aggregate (or total) effects on the national economy and the global economy of the choices that individuals, businesses, and overnments make. Microeconomic Questions The economic choices that individuals, businesses, and governments make and the interactions of those choices answer the three major questions: • What? • How? • For whom? The distinction between microeconomics and macroeconomics is similar to the distinction between two views of a display of national flags in an Olympic stadium. The micro view (left) is of a single participant and the actions he or she is taking. The macro view (right) is the patterns formed by the joint actions of all the people participating in the entire display. 4 Part 1 • INTRODUCTION What? Goods and services

The objects that people value and produce to satisfy human wants. Goods are physical objects and services are tasks performed for people. What goods and services get produced and in what quantities? Goods and services are the objects that people value and produce to satisfy human wants. Goods are physical objects such as golf balls. Services are tasks performed

for people such as haircuts. The nation's farms, factories, construction sites, shops, and offices produce a dazzling array of goods and services that range from necessities such as food, houses, and apartments to leisure items such as ocean cruises, SUVs, and DVD players.

What determines the quantities of corn we grow, homes we build, and DVD players we produce? How do these quantities change over time? And how are they affected by the ongoing changes in technology that make an ever-wider array of goods and services available to us? How? How are goods and services produced? In a vineyard in France, basket-carrying workers pick the annual grape crop by hand. In a vineyard in California, a huge machine and a few workers do the same job that a hundred French grape pickers do. Look around you and you will see many examples of this phenomenon? The same job being done in different ways. In some supermarkets, checkout clerks key in prices. In others, they use a laser scanner. One farmer keeps track of his livestock feeding schedules and inventories by using paper-and-pencil records, while another uses a personal computer. GM hires workers to weld auto bodies in some of its plants and uses robots to do the job in others. Why do we use machines in some cases and people in others? Do mechanization and technological change destroy more jobs than they create? Do they make us better off or worse off? For Whom?

In a California vineyard a machine and a few workers do the same job as a hundred French grape pickers. A doctor gets more of the goods and services produced than a nurse or a medical assistant gets. For whom are goods and services produced? The answer to this question depends on the incomes that people earn and the prices they pay for the goods and services they buy. At

given prices, a person who has a high income is able to buy more goods and services than a person who has a low income. Doctors earn much higher incomes than do nurses and medical assistants.

So doctors get more of the goods and services produced than nurses and medical assistants get. You probably know about many other persistent differences in incomes. Men, on the average, earn more than women. Whites, on the average, earn more than minorities. College graduates, on the average, earn more than high school graduates. Americans, on the average, earn more than Europeans, who in turn earn more, on the average, than Asians and Africans earn. But there are some significant exceptions. The people of Japan and Hong Kong now earn an average income similar to that of Americans.

And there is a lot of income inequality throughout the world. What determines the incomes we earn? Why do doctors earn larger incomes than nurses? Why do white male college graduates earn more than minority female high school graduates? Why do Americans earn more, on the average, than Africans? Microeconomics explains how the economic choices that individuals, businesses, and governments make and the interactions of those choices end up determining what, how, and for whom goods and services get produced. Chapter 1 • Getting Started CHECKPOINT 1 5 1. 1

Define economics, distinguish between microeconomics and macroeconomics, and explain the questions of microeconomics. Study Guide pp. 2–5 Practice Online 1. 1 Practice Problems 1. 1 1. Economics studies choices that arise from one fact. What is that fact? 2. Provide three examples of wants in the United States today that are especially pressing but not

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satisfied. 3. Provide an example of an incentive that is like a carrot and one that is like a stick. 4. Sort the following issues into microeconomic and macroeconomic issues: a. People must install catalytic converters in their cars. . U. S. unemployment should be much lower. c. Your local county opens a neighborhood gym for teenagers. 5. Match the following headlines with the What, How, and For whom questions: a. With more research, we will cure cancer. b. A good education is the right of every child. c. What will the government do with its budget surplus? Exercises 1. 1 1. 2. 3. 4. 5. Every day, we make many choices. Why can't we avoid having to make choices? Look at today's newspaper and find an example of a want that is not satisfied. What is the incentive that Venus Williams and Tiger Woods face each day?

Check your local media for headlines that concern three microeconomic issues and three macroeconomic issues. Check your local media for headlines that ask two of each of the What, How, and For whom questions. Solutions to Practice Problems 1. 1 1. The fact is scarcity—human wants exceed the resources available. 2. Security from international terrorism, cleaner air in our cities, and better public schools. (You can perhaps think of some more. ) 3. If your economics instructor offers you an opportunity to earn 5 bonus points by completing an assignment on time, your incentive is a carrot.

If your economics instructor warns you that there is a 5-point penalty for a late assignment, your incentive is a stick. 4a. Microeconomic issue because it deals with the choices made by individual people. 4b. Macroeconomic issue because it refers to the national economy. 4c. Microeconomic issue because



the government's decision interacts with teenagers' decisions. 5a. More research is a How question, and a cure for cancer is a What question. 5b. Good education is a What question, and every child is a For whom question. 5c. Who will get the budget surplus is a For whom question. 6 Part 1 • INTRODUCTION 1 . ECONOMICS: A SOCIAL SCIENCE We've defined economics as the social science that studies the choices that individuals and societies make as they cope with scarcity. We're now going to look at the way economists go about their work as social scientists and at some of the problems they encounter. The major goal of economists is to discover how the economic world works. In pursuit of this goal, economists (like all scientists) distinguish between two types of statements: • What is • What ought to be Statements about what is are called positive statements. They say what is currently understood about the way the world operates.

A positive statement might be right or wrong. And we can test a positive statement by checking it against the data. When a chemist does an experiment in her laboratory, she is attempting to check a positive statement against the facts. Statements about what ought to be are called normative statements. These statements depend on values and cannot be tested. When Congress debates a motion, it is ultimately trying to decide what ought to be. It is making a normative statement. To see the distinction between positive and normative statements, consider the controversy about global warming.

Some scientists believe that 200 years of industrial activity and the large quantities of coal and oil that we burn are increasing the carbon dioxide content of the earth's atmosphere with devastating consequences for life on

this planet. Other scientists disagree. The statement “ Our planet is warming because of an increased carbon dioxide buildup in the atmosphere” is a positive statement. It can (in principle and with sufficient data) be tested. The statement “ We should cut back on our use of carbon-based fuels such as coal and oil” is a normative statement.

You may agree with or disagree with this statement, but you can’t test it. It is based on values. Health-care reform provides another economic example of the distinction. “ Universal health care will cut the amount of work time lost to illness” is a positive statement. “ Every American should have equal access to health care” is a normative statement. The task of economic science is to discover and catalog positive statements that are consistent with what we observe in the world and that enable us to understand how the economic world works. This task is a large one that can be broken into three steps: Observing and measuring • Model building • Testing

Observing and Measuring The first step toward understanding how the economic world works is to observe and measure it. Economists keep track of huge amounts of economic data. Some examples are the amounts and locations of natural and human resources; wages and work hours; the prices and quantities of the different goods and services produced; taxes and government spending; and the volume of international trade.

Chapter 1 • Getting Started 7 Model Building The second step is to build models.

An economic model is a description of some aspect of the economic world that includes only those features of the world that are needed for the purpose at hand. A model is simpler than the reality it describes. What a model includes and what it leaves out result from assumptions about what

are essential and what are inessential details. You can see how ignoring details is useful—even essential—to our understanding by thinking about a model that you see every day: the TV weather map. The weather map is a model that helps to predict the temperature, wind speed and direction, and precipitation over a future period.

The weather map shows lines called isobars? lines of equal barometric pressure. It doesn't show the interstate highways. The reason is that we think the location of the highways has no influence on the weather but the air pressure patterns do have an influence. An economic model is similar to a weather map. It tells us how a number of variables are determined by a number of other variables. For example, an economic model of Boston's "Big Dig"—a \$15 billion project to place the city's major highways underground—might tell us the impact of the project on house prices, apartment rents, jobs, and commuting times.

Economists use a variety of methods to describe their economic models. Most commonly, the method is mathematical. And if you plan on a career in economics, you will study a good deal of math. But the basic ideas of all economic models can be described using words and pictures or diagrams. That is how economic models are described in this text. A rare exception is a model called the Phillips Economic Hydraulic Computer, shown here. Bill Phillips, a New Zealand-born engineer-turned-economist, created this model using plastic tubes and Plexiglas tanks at the London School of Economics in 1949.

The model still works today in a London museum. Testing The third step is testing models. A model's predictions might correspond to or conflict with

the data. If there is a conflict, the model needs to be modified or rejected. A model that has repeatedly passed the test of corresponding well with real-world data is the basis of an economic theory. An economic theory is a generalization that summarizes what we understand about the economic choices that people make and the economic performance of industries and nations. The process of building and testing models creates theories.

For example, meteorologists have a theory that if the isobars form a particular pattern at a particular time of the year (a model), then it will snow (reality). They have developed this theory by repeated observation and by carefully recording the weather that follows specific patterns of isobars. Economics is a young science. Although philosophers have written about economic issues since the time of the ancient Greeks, it is generally agreed that as a modern social science, economics was born in 1776 with the publication of Adam Smith's *The Wealth of Nations*. Over the years since then, economists have discovered many useful theories.

But in many areas, economists are still looking for answers. The gradual accumulation of economic knowledge gives most economists some faith that their methods will eventually provide usable answers. But progress in economics comes slowly. A major reason is that it is difficult in economics to unscramble cause and effect. Economic model A description of some aspect of the economic world that includes only those features of the world that are needed for the purpose at hand. The Phillips Economic Hydraulic Computer: Colored water in plastic tubes and Plexiglas tanks illustrates the effects of government actions on incomes and expenditures. This model economy is in a

London museum. Economic theory A generalization that summarizes what we understand about the economic choices that people make and the economic performance of industries and nations based on models that have repeatedly passed the test of corresponding well with real-world data. Eye on the Past Adam Smith and the Birth of Economics as a Modern Social Science Many people had written about economics before Adam Smith, but he made economics a social science. Born in 1723 in Kirkcaldy, a small fishing town near Edinburgh, Scotland, Smith was the only child of the town's customs officer. Lured from his professorship (he was a full professor at 28) by a wealthy Scottish duke who gave him a pension of ? 300 a year— ten times the average income at that time—he devoted ten years to writing his masterpiece, *An Inquiry into the Nature and Causes of the Wealth of Nations*, published in 1776. Why, Adam Smith asked in that book, are some nations wealthy while others are poor? He was pondering these questions at the height of the Industrial Revolution. During these years, new technologies were applied to the manufacture of textiles, iron, transportation, and agriculture. Adam Smith answered his questions by emphasizing the role of the division of labor and free markets. To illustrate his argument, he used the example of a pin factory. He guessed that one person, using the hand tools available in the 1770s, might make 20 pins a day. Yet, he observed, by using those same hand tools but breaking the process into a number of individually small operations in which people specialize—by the division of labor—ten people could make a staggering 48, 000 pins a day.

One draws out the wire, another straightens it, a third cuts it, a fourth points it, a fifth grinds it. Three specialists make the head, and a fourth attaches it.

Finally, the pin is polished and packaged. But a large market is needed to support the division of labor: One factory employing ten workers would need to sell more than 15 million pins a year to stay in business! Unscrambling Cause and Effect Are computers getting cheaper because people are buying them in greater quantities? Or are people buying computers in greater quantities because they are getting cheaper?

Or is some third factor causing both the price of a computer to fall and the quantity of computers to increase? Economists want to answer questions like these, but doing so is often difficult. The central idea that economists (and all scientists) use to unscramble cause and effect is *ceteris paribus*. *Ceteris Paribus* *Ceteris paribus* Other things remaining the same (often abbreviated as *cet. par.* ). <sup>8</sup> *Ceteris paribus* is a Latin term (often abbreviated as *cet. par.* ) that means “ other things being equal” or “ if all other relevant things remain the same. Ensuring that other things are equal is crucial in many activities, and all successful attempts to make scientific progress use this device. By changing one factor at a time and holding all the other relevant factors constant, we isolate the factor of interest and are able to investigate its effects in the clearest possible way. Economic models, like the models in all other sciences, enable the influence of one factor at a time to be isolated in the imaginary world of the model. When we use a model, we are able to imagine what would happen if only one factor changed.

But *ceteris paribus* can be a problem in economics when we try to test a model. Chapter 1 • Getting Started <sup>9</sup> Laboratory scientists, such as chemists and physicists, perform controlled experiments by holding all the relevant factors constant except for the one under investigation. In economics, we

observe the outcomes of the simultaneous operation of many factors. Consequently, it is hard to sort out the effects of each individual factor and to compare the effects with what a model predicts. To cope with this problem, economists take three complementary approaches:

- Natural experiments
- Statistical investigations
- Economic experiments

**Natural Experiments** A natural experiment is a situation that arises in the ordinary course of economic life in which the one factor of interest is different and other things are equal (or similar). For example, Canada has higher unemployment benefits than the United States, but the people in the two nations are similar. So to study the effects of unemployment benefits on the unemployment rate, economists might compare the United States with Canada.

**Statistical Investigations** Statistical investigations look for correlations.

Correlation is the tendency for the values of two variables to move in a predictable and related way. For example, there is a correlation between the amount of cigarettes smoked and the incidence of lung cancer. There is also a correlation between the size of a city's police force and the city's crime rate. Two economic examples are the correlation between household income and spending and the correlation between the price of a telephone call and the number of calls made. We must be careful to interpret a correlation correctly. Sometimes a correlation shows the strength of a causal influence of one variable on the other.

For example, smoking causes lung cancer, and higher incomes cause higher spending. Sometimes the direction of causation is hard to determine. For example, does a larger police force detect more crimes or does a higher

crime rate cause a larger police force to be hired? And sometimes a third factor causes both correlated variables. For example, advances in communication technology have caused both a fall in the price of phone calls and an increase in the quantity of calls. So the correlation between the price and quantity of phone calls has a deeper cause.

Sometimes, the direction of cause and effect can be determined by looking at the timing of events. But this method must be handled with care because of a problem known as the post hoc fallacy. Post Hoc Fallacy Another Latin phrase—post hoc ergo propter hoc—means “after this, therefore because of this.” The post hoc fallacy is the error of reasoning that a first event causes a second event because the first occurred before the second. Suppose you are a visitor from a far-off world. You observe lots of people shopping in early December, and then you see them opening gifts and celebrating on Christmas Day.

Does the shopping cause Christmas, you wonder? After a deeper study, you discover that Christmas causes the shopping. A later event causes an earlier event. Just looking at the timing of events often doesn't help to unravel cause and effect in economics. For example, the stock market booms, and some months later the economy expands—jobs and incomes grow. Correlation The tendency for the values of two variables to move in a predictable and related way. Post hoc fallacy The error of reasoning that a first event causes a second event because the first occurred before the second. 10 Part 1 • INTRODUCTION

the economy expands—jobs and incomes grow. Did the stock market boom cause the economy to expand? Possibly, but perhaps businesses started to plan the expansion of production because a



new technology that lowered costs had become available. As knowledge of the plans spread, the stock market reacted to anticipate the economic expansion. To disentangle cause and effect, economists use economic models to interpret correlations. And when they can do so, economists perform experiments. Economic Experiments Economic experiments put real subjects in a decision-making situation and vary the influence of interest to discover how the subjects respond to one factor at a time.

Most economic experiments are done using students as the subjects. But some use the actual people whose behavior economists want to understand and predict. An example of an economic experiment on actual subjects is one designed to discover the effects of changing the way welfare benefits are paid in New Jersey. Another experiment was conducted to discover how telecommunications companies would bid in different types of auctions for the airwave frequencies they use to transmit cellular telephone messages. Governments have made billions of dollars using the results of this experiment.

CHECKPOINT Study Guide pp. 5–6 Practice Online 1. 2 2 1. 2 Describe the work of economists as social scientists. Practice Problems 1. 2 1. Classify each of the following statements as positive or normative: a. There is too much poverty in the United States. b. An increase in the gas tax will cut pollution. c. Cuts to social security in the United States have been too deep. 2. Provide two examples of the post hoc fallacy. Exercises 1. 2 1. Classify each of the following statements as positive or normative: a. More scholarships to students from poor families will reduce U. S. overty. b. Free trade will harm developing countries. c. Cuts to public education in the

United States have been too high. 2. How might an economist test one of the positive statements in exercise 1? Solutions to Practice Problems 1. 2 1a. A normative statement. It cannot be tested. 1b. A positive statement. An experiment will test it. 1c. A normative statement. It cannot be tested. 2. Examples are: New Year celebrations cause January sales. A booming stock market causes a Republican president to be elected. Chapter 1 • Getting Started 11 1. 3 THE ECONOMIC WAY OF THINKING

You've seen that to understand what, how, and for whom goods and services are produced, economists build and test models of peoples' choices and the interactions of those choices. Five core ideas summarize the economic way of thinking about people's choices, and these ideas form the basis of all microeconomic models. The ideas are

- People make rational choices by comparing costs and benefits.
- Cost is what you must give up to get something.
- Benefit is what you gain when you get something and is measured by what you are willing to give up to get it.
- A rational choice is made on the margin. People respond to incentives.

Rational Choice The most basic idea of economics is that in making choices, people act rationally. A rational choice is one that uses the available resources to most effectively satisfy the wants of the person making the choice. Only the wants and preferences of the person making a choice are relevant to determine its rationality. For example, you might like chocolate ice cream more than vanilla ice cream, but your friend prefers vanilla. So it is rational for you to choose chocolate and for your friend to choose vanilla.

A rational choice might turn out to have been not the best choice after the event. A farmer might decide to plant wheat rather than soybeans. Then,

when the crop comes to market, the price of soybeans might be much higher than the price of wheat. The farmer's choice was rational when it was made, but subsequent events made it less profitable than a different choice. The idea of rational choice provides an answer to the first question: What goods and services will get produced and in what quantities? The answer is: Those that people rationally choose to produce! But how do people choose rationally?

Why have we chosen to build an interstate highway system and not an interstate high-speed railroad system? Why have most people chosen to use Microsoft's Windows operating system rather than another? Why do more people today choose to drink bottled water and sports energy drinks than in the past? We make rational choices by comparing costs and benefits. But economists think about costs and benefits in a special and revealing way. Let's look at the economic concepts of cost and benefit. Rational choice A choice that uses the available resources to most effectively satisfy he wants of the person making the choice. Cost: What You Must Give Up Whatever you choose to do, you could have done something else instead. You could have done lots of things other than what you actually did. But one of these other things is the best alternative given up. This alternative that you must give up to get something is the opportunity cost of the thing that you get. The thing that you could have chosen—the highest-valued alternative forgone—is the cost of the thing that you did choose. “ There's no such thing as a free lunch” is not a clever but empty saying.

It expresses the central idea of economics: that every choice involves a cost. Opportunity cost The opportunity cost of something is the best thing you

must give up to get it. 12 Part 1 • INTRODUCTION Sunk cost A previously incurred and irreversible cost. We use the term opportunity cost to emphasize that when we make a choice in the face of scarcity, we give up an opportunity to do something else. You can quit school right now, or you can remain in school. Suppose that if you quit school, the best job you can get is at McDonald's, where you can earn \$10,000 during the year.

The opportunity cost of remaining in school includes the things that you could have bought with this \$10,000. The opportunity cost also includes the value of the leisure time that you must forgo to study. Opportunity cost is only the alternative forgone. It does not include all the expenditures that you make. For example, when you contemplate whether to remain in school, your expenditure on tuition is part of the opportunity cost of remaining in school. But the cost of your school meal voucher is not part of the opportunity cost of remaining in school. You must buy food whether you remain in school or not.

Also, past expenditures that cannot be reversed are not part of opportunity cost. Suppose you've paid your term's tuition and it is nonrefundable. If you now contemplate quitting school, the paid tuition is irrelevant. It is called a sunk cost. A sunk cost is a previously incurred and irreversible cost. Whether you remain in school or quit school, having paid the tuition, the tuition is not part of the opportunity cost of remaining in school. Benefit: Gain Measured by What You Are Willing to Give Up Benefit The benefit of something is the gain or pleasure that it brings.

The benefit of something is the gain or pleasure that it brings. Benefit is how a person feels about something. You might be extremely anxious to get the

latest version of a video game. It will bring you a large benefit. And you might have almost no interest in the latest Yo Yo Ma cello concerto CD. It will bring you a small benefit. Economists measure the benefit of something by what a person is willing to give up to get it. You can buy CDs, sodas, or magazines. The sodas or magazines that you are willing to give up to get a CD measure the benefit you get from a CD.

For these students, the opportunity cost of being in school is worth bearing. For the fast-food worker, the opportunity cost of remaining in school is too high. Chapter 1 • Getting Started 13 On the Margin A choice on the margin is a choice that is made by comparing all the relevant alternatives systematically and incrementally. For example, you must choose how to divide the next hour between studying and e-mailing your friends. To make this choice, you must evaluate the costs and benefits of the alternative possible allocations of your next hour.

You choose on the margin by considering whether you will be better off or worse off if you spend an extra few minutes studying or an extra few minutes e-mailing. The margin might involve a small change, as it does when you're deciding how to divide an hour between studying and e-mailing friends. Or it might involve a large change, as it does, for example, when you're deciding whether to remain in school for another year. Attending school for part of the year is no better (and might be worse) than not attending at all—it is not a relevant alternative. So you likely will want to commit the entire year to school or to something else.

But you still choose on the margin. It is just that the marginal change is now a change for one year rather than a change for a few minutes. Margin A

choice on the margin is a choice that is made by comparing all the relevant alternatives systematically and incrementally. **Marginal Cost** The opportunity cost of a one-unit increase in an activity is called marginal cost. Marginal cost is what you must give up to get one more unit of something. Think about your marginal cost of going to the movies for a third time in a week. Your marginal cost is what you must give up to see that one additional movie.

It is not what you give up to see all three movies. The reason is that you've already given up something for two movies, so you don't count this cost as resulting from the decision to see the third movie. The marginal cost of any activity usually increases as you do more of it. You know that going to the movies decreases your study time and lowers your grade. Suppose that seeing a second movie in a week lowers your grade by five percentage points. Seeing a third movie will lower your grade by more than five additional percentage points. Your marginal cost of moviegoing is increasing.

#### Marginal cost

The opportunity cost that arises from a one-unit increase in an activity. The marginal cost of something is what you must give up to get one more unit of it. **Marginal Benefit** The benefit of a one-unit increase in an activity is called marginal benefit. Marginal benefit is what you gain when you get one more unit of something. Think about your marginal benefit from the movies. You've been to the movies twice this week, and you're contemplating going for a third time. Your marginal benefit is the benefit you will get from the one additional movie. It is not the benefit you get from all three movies.

The reason is that you already have had the benefit from two movies, so you don't count this benefit as resulting from the third movie. Marginal benefit is measured by the most you are willing to give up to get one more unit of something. And a fundamental feature of marginal benefit is that it usually diminishes. The benefit from seeing the first movie in the week is greater than the benefit from seeing the second movie in the week. Because the marginal benefit decreases as you see more movies in the week, you are willing to give up less to see one more movie.

You know that going to the movies decreases your study time and lowers your grade. Suppose that you were willing to give up ten percentage points to see your second movie. You won't be willing to take such a big hit on your grades to see the third movie in a week. Your marginal benefit of moviegoing is decreasing. Marginal benefit The benefit that arises from a one-unit increase in an activity. The marginal benefit of something is measured by what you are willing to give up to get one more unit of it. 14 Part 1 • INTRODUCTION Making a Rational Choice

So will you go to the movies for that third time in a week? If the marginal cost is less than the marginal benefit, your rational choice will be to see the third movie. If the marginal cost exceeds the marginal benefit, your rational choice will be to spend the evening studying. We make a rational choice and use our scarce resources in the way that makes us as well off as possible when we take those actions for which marginal cost is less than or equal to marginal benefit. Responding to Incentives Changes in marginal benefit and marginal cost change the incentive to study or to enjoy a movie.

In making our choices, we respond to incentives—we respond to “ carrots” and “ sticks. ” The carrots that we face are marginal benefits. The sticks are marginal costs. A change in marginal benefit or a change in marginal cost brings a change in the incentives that we face and leads us to change our actions. Most students believe that the payoff from studying just before a test is greater than the payoff from studying a month before a test. In other words, as a test date approaches, the marginal benefit of studying increases and the incentive to study becomes stronger. For this reason, we observe an increase in study time and a decrease in leisure pursuits during the last few days before a test. And the more important the test, the greater is this effect. A change in marginal cost also changes incentives. For example, suppose that last week, you found your course work easy. You scored 100 percent on all your practice quizzes. The marginal cost of taking off an evening to enjoy a movie was low. Your grade on this week’s test will not suffer. So you have an incentive to enjoy a movie feast. But this week, suddenly, the going has gotten tough. You are just not getting it.

Your practice test scores are low, and you know that if you take off even one evening, your grade on next week’s test will suffer. The marginal cost of seeing a movie is higher this week than last week. So you now have an incentive to give the movies a miss and study. The central idea of economics is that we can measure changes in incentives, and these measurements enable us to predict the choices that people make as their circumstances change. Chapter 1 • Getting Started CHECKPOINT 3 15 1. 3 Explain five core ideas that define the economic way of thinking. Practice Problem 1. 3



Kate usually plays tennis for two hours a week, and her grade on each math test is usually 70 percent. Last week, after playing two hours of tennis, Kate thought long and hard about playing for another hour. She decided to play another hour of tennis and cut her study time by one additional hour. But the grade on last week's math test was 60 percent.

a. What was Kate's opportunity cost of the third hour of tennis? b. Given that Kate made the decision to play the third hour of tennis, what can you conclude about the comparison of her marginal benefit and marginal cost of the second hour of tennis? . Was Kate's decision to play the third hour of tennis rational? d. Did Kate make her decision on the margin?

Exercises 1. 3 1. Bill Gates gives away a lot of money: \$200 million to put computers in libraries that can't afford them and \$135 million to universities, cancer research, a children's hospital, and the Seattle Symphony. Doesn't Bill Gates experience scarcity? Are his donations rational? In making these donations, might Bill Gates have responded to any incentive? 2. Steve Fossett spent a lot of money trying to be the first person to circumnavigate the world in a hot-air balloon.

Anheuser-Busch offered a prize of \$1 million for the first balloonist to do so in 15 days nonstop. What was the opportunity cost of Steve Fossett's adventure? But Steve Fossett was not the first person to circumnavigate the world in a balloon, so did he get any benefits? Why did Anheuser-Busch offer the prize? 3. Tony is an engineering student, and he is considering taking an extra course in history. List the things that might be part of his costs and benefits of the history course. Think of an incentive that might encourage him to take the course.

Solution to Practice Problem 1. 3 a.

Kate's opportunity cost of the third hour of tennis was the ten percentage point drop in her grade. If Kate had not played tennis for the third hour, she would have studied and her grade would not have dropped. The best alternative forgone is her opportunity cost of the third hour of tennis. b. The marginal benefit from the second hour of tennis must have exceeded the marginal cost of the second hour because Kate chose to play tennis for the third hour. If the marginal benefit did not exceed the marginal cost, she would have chosen to study and not play tennis for the third hour. c.

If for Kate marginal benefit exceeded marginal cost, her decision was rational. d. Kate made her decision on the margin because she considered the benefit and cost of one additional hour. Study Guide pp. 7–9 Practice Online 1. 3 16 Part 1 • INTRODUCTION 1. 4 WHY ECONOMICS IS WORTH STUDYING In 1961, Mick Jagger, then the 19-year-old lead singer with a group that would become the Rolling Stones, enrolled in an economics degree program at the London School of Economics. During the day, he was learning about opportunity cost, and each night, his rock group was earning today's equivalent of \$120.

Mick soon realized that his opportunity cost of remaining in school was too high, and so he dropped out. (A faculty advisor is reputed to have told Mick that he would not make much money in a rock band. But within a few months, the Rolling Stones, along with the Beatles, shot to international stardom and multimilliondollar recording contracts! ) Mick Jagger used one of the big ideas of economics to make his own rational decision. And you can do the same. Let's look at the benefits and costs of studying economics and check that the benefits outweigh the costs. Two main benefits from studying

economics are Understanding • Expanded career opportunities

Understanding George Bernard Shaw, the great Irish dramatist and thinker, wrote, “ Economy is the art of making the most of life. ” Life is certainly full of economic problems, some global or national in scope and some personal. Every day, on television, on the Internet, and in newspapers and magazines, we hear and read about global or national economic issues: Should Nike pay higher wages to its workers in Asia? Is there too much economic inequality in the world today? How can we improve health care, welfare, and education? Are taxes too high or too low?

Will the Federal Reserve increase interest rates next week? And every day in your own life, you’re confronted with personal economic choices: Will you buy pizza or pasta? Will you skip class today? Will you put your summer earnings in the bank or the stock market? Studying economics equips you with tools and insights that help you to understand the world’s problems, to participate in the political debate that surrounds them, and to understand and solve your personal economic problems. John Maynard Keynes, a famous British economist of the twentieth century, wrote, “ The ideas of economists . . . , both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men [and women, he would have written today], who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. ” Keynes was correct. You can’t ignore economic ideas. They are all around you. You use them every day in your personal life and in your work. You use them when you vote and when

you argue with your friends. But you don't need to be the slave of some defunct economist.

By studying economics, you will learn how to develop your own ideas and to test them against the ideas of others. As you progress with your study of economics, you will start to listen to the news and read your newspaper with a deeper understanding of what's going on. You will also find yourself increasingly using the economics that you are learning when you make your own economic choices. Chapter 1 • Getting Started 17 Expanded Career Opportunities Robert Reich, a former U. S. Secretary of Labor, predicts that the three big jobs of the twenty-first century will be what he calls problem identifying, problem solving, and strategic brokering.

The people who are good at these tasks command soaring incomes. And there is no better way to train yourself in these skills than to study economics. You can think of economics as a workout regimen for your brain. Almost everything that you study in economics is practice at thinking abstractly and rigorously about concrete things. You will constantly be asking, " What if? " Although students of economics learn many useful economic concepts, it is the training and practice in abstract thinking that really pays off. Most students of economics don't go on to major in the subject.

And even those who do major in economics don't usually go on to become economists. Rather, they work in fields such as banking, business, management, finance, insurance, real estate, marketing, law, government, journalism, health care, and the arts. A course in economics is a very good choice for a pre-med, pre-law, or pre-MBA student. Economics graduates are

not the highest-paid professionals. But they are close to the top, as you can see in Figure 1. 1. Engineers and computer scientists, for example, earn up to 20 percent more than economics graduates.

Economics graduates earn more than most others, and significantly, they earn more than business graduates. FIGURE 1. 1 Practice Online Average Incomes Graduates in disciplines that teach problem identifying, problem solving, and strategic brokering (engineering, computer science, and economics) are at the top of the earnings distribution. Engineering Agriculture and forestry Computer science Chemistry Economics Mathematics and statistics Accounting Business administration Biology Physical and earth sciences Liberal arts Psychology Social sciences Health sciences English and journalism Education 0 20 40 60 0 100 120 Average income (percent of economist's income) SOURCES: U. S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-70, No. 32, “ Educational Background and Economic Status: Spring 1990,” and Statistical Abstract of the United States, 1994, Table 246, and authors’ calculations. 18 Part 1 • INTRODUCTION The Costs of Studying Economics Regardless of what you study, you must buy textbooks and supplies and pay tuition. So these expenses are not part of the opportunity cost of studying economics. One cost of studying economics is forgone knowledge of some other subject.

If you work hard at studying economics, you must forgo learning some other subject. You can’t study everything. Another cost, and the main cost of studying economics, is forgone leisure time. Economics is a demanding subject, and it takes time to master. Most students say that they find it

difficult. They often complain that they understand the subject when they read the textbook or listen to their instructor but then, when they take an exam, they just can't figure out the correct answers. The trick is practice, or learning-by-doing. Economics is not a subject that you learn by memorizing things.

You must memorize definitions and technical terms. But beyond that, memory is not your main mental tool. Working problems and learning how to analyze and solve problems are the key. And this activity is time consuming.

**Benefits Versus Costs** So which is larger: the benefit or the cost? Economics says that only you can decide. You are the judge of value or benefit to yourself. So you must weigh the benefits and the costs that we've identified (and consider any others that are important to you). If you're clear that the benefits outweigh the costs, you're well on your way to having a good time in your economics course.

If the costs outweigh the benefits, don't waste your time. Life is too short. If you're on the fence, try to get more information. But if you remain on the fence, complete this one course in economics and then decide.

**CHECKPOINT**

Study Guide pp. 9–10 Practice Online 1. 4 4 1. 4 Explain why economics is worth studying. Practice Problem 1. 4 A student is choosing between an economics course and a popular music course. List two opportunity costs and two benefits from taking a course in economics. Exercise 1. 4 Why did Mick Jagger quit his economics course? What are some of the benefits that Mick Jagger might have given up?

**Solution to Practice Problem 1. 4** Opportunity costs include the leisure forgone and forgone appreciation of popular music. Benefits include

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expanded career opportunities, better understanding of the world, and better problem-solving skills. Chapter 1 • Getting Started CHAPTER CHECKPOINT

Key Points 1 Define economics, distinguish between microeconomics and macroeconomics, and explain the questions of microeconomics. • Economics is the social science that studies the choices that we make as we cope with scarcity and the incentives that influence and reconcile our choices. Microeconomics is the study of the choices that individuals and businesses make and the way these choices respond to incentives, interact, and are influenced by governments. • Macroeconomics is the study of the aggregate effects on the national economy and the global economy of the choices that individuals, businesses, and governments make. • Choices that individuals, businesses, and governments make and the interactions of those choices end up determining what goods and services get produced, how they get produced, and for whom they get produced. 2 Describe the work of economists as social scientists. Positive statements are about what is, and they can be tested. Normative statements are about what ought to be, and they cannot be tested. • To explain the economic world, economists build and test economic models. • Economists use the ceteris paribus assumption to try to disentangle cause and effect, and they use natural experiments, statistical investigations, and economic experiments. 3 Explain five core ideas that define the economic way of thinking. • People make rational choices by comparing costs and benefits. • Cost is what you must give up to get something. Benefit is what you gain when you get something and is measured by what you are willing to give up to get it. • A rational choice is made on the margin. • People respond to incentives. 4 Explain why economics is worth studying. • The benefits of studying economics are

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understanding of the economic world and expanded career opportunities. • The costs of studying economics are forgone knowledge of some other subject and leisure time. Key Terms Practice Online Benefit, 12 Ceteris paribus, 8 Correlation, 9 Economic model, 7 Economic theory, 7 Economics, 3 Goods and services, 4 Incentive, 2 Macroeconomics, 3

Margin, 13 Marginal benefit, 13 Marginal cost, 13 Microeconomics, 3 Opportunity cost, 11 Post hoc fallacy, 9 Rational choice, 11 Scarcity, 2 Sunk cost, 12 19 20 Part 1 • INTRODUCTION Exercises 1. Provide three examples

of scarcity that illustrate why even the wealthiest people who live in the most lavish luxury still face scarcity. 2. Provide two examples of incentives, one a carrot and the other a stick, that have influenced major government decisions during the past few years. 3. Think about the following news items and label each one as involving a microeconomic or macroeconomic issue: a.

An increase in the tax on cigarettes will decrease teenage smoking. b. It would be better if the United States spent more on cleaning up the environment and less on space exploration. c. A government scheme called “work for welfare” will reduce the number of people who are unemployed. d.

An increase in the number of police on inner-city streets will reduce the crime rate. 4. Think about the following news items and label each one as involving a What, How, or For whom question: a. Today most stores use computers to keep their inventory records, whereas 20 years ago most stores used paper records. b.

Health care professionals and drug companies say that Medicaid drug rebates should be available to everyone in need. c. A doubling of the gas tax might lead to a better public transit system. 5. Think about the following

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news items and label each one as a positive or a normative statement. In the United States, a. The poor pay too much for housing. b. The number of farms has decreased over the last 50 years. c. The population in rural areas has remained constant over the past decade. 6. Explain how economists try to unscramble cause and effect. Explain why economists use the ceteris paribus assumption. 7.

What is correlation? What approaches do economists use to try to sort out the cause and effect relationship that correlation might indicate? Describe each of these approaches. 8. What is the post hoc fallacy? Provide two examples of the post hoc fallacy. 9. Pam, Pru, and Pat are deciding how they will celebrate the New Year. Pam prefers to go on a cruise, is happy to go to Hawaii, but does not want to go skiing. Pru prefers to go skiing, is happy to go to Hawaii, but does not want to go on a cruise. Pat prefers to go to Hawaii or to take a cruise but does not want to go skiing. Their decision is to go to Hawaii.

Is this decision rational? What is the opportunity cost of the trip to Hawaii for each of them? What is the benefit each person gets? 10. Your school has decided to increase the intake of new students next year. What economic concepts would your school consider in reaching its decision? Would the school make its decision at the margin? 11. In California, most vineyards use machines and a few workers to pick grapes, while some vineyards use no machines and many workers. Which vineyards have made a rational choice? Explain. Chapter 1 • Getting Started Critical Thinking 12. The largest lottery jackpot prizes in U.

S. history were \$363 million and \$331 million, both won in the Big Game Jackpot. a. Do the people who buy lottery tickets face scarcity? b. Do the winners of big prizes face scarcity after receiving their winners' checks? c. Do you think lotteries have both microeconomic effects and macroeconomic effects or only microeconomic effects? Explain. d. How do you think lotteries change what and for whom goods and services are produced? e. Think about the statement " Lotteries create more problems than they solve and should be banned. " Which part of this statement is positive and how might it be tested?

Which part of this statement is normative? f. Do people face a marginal cost and a marginal benefit when they decide to buy a lottery ticket? g. Does a person who buys a lottery ticket make a rational choice? h. Do the people who buy lottery tickets respond to incentives? i. How do you think the size of the jackpot affects the number of lottery tickets sold? What role do incentives play in this response? 13. " Spider-Man" was the most successful movie of 2002, with box office receipts of more than \$400 million. Creating a successful movie brings pleasure to millions, generates work for thousands, and makes a few people rich. . What contribution does a movie like " Spider-Man" make to coping with scarcity? b. Does the decision to make a blockbuster movie mean that some other, more desirable activities get fewer resources than they deserve? c. Was your answer to part b a positive or a normative answer? Explain. d. Who decides whether a movie is going to be a blockbuster? e. How do you think the creation of a blockbuster movie influences what, how, and for whom goods and services are produced? f.

What do you think are some of the marginal costs and marginal benefits that the producer of a movie faces? g.

Suppose that Tobey Maguire had been offered a bigger and better part in another movie and that to hire him for “ Spider-Man,” the producer had to double Tobey’s pay. What incentives were changed? How might the changed incentives have changed the choices that people made? 14. Think about each of the following situations and explain how they affect incentives and might change the choices that people make. a. Drought hits the Midwest. b. The World Series begins tonight, and there is a thunderstorm warning in effect for the stadium. c. The price of a personal computer falls to \$50. d.

Political instability in the Middle East cuts world oil production and sends the price of gasoline to \$2 a gallon. e. Your school builds a new parking garage that increases the number of parking places available but doubles the price of parking on campus. f. A math professor awards grades based on the percentage of questions answered correctly and an economics professor awards grades based on rank in class—the top 10 percent get As, the bottom 10 percent get Cs, and the rest of the class get Bs regardless of the percentage of questions answered correctly. 21 22 Part 1 • INTRODUCTION

Practice Online Web Exercises If you haven’t already done so, take a few minutes to visit your Foundations Web site, sign in, and obtain your username and password. Browse the site and become familiar with its structure and content. You’ll soon appreciate that this Web site is a very useful and powerful learning tool. For each chapter, you will find quizzes, e-text, e-study guide, interactive tutorials and graphics, and animations of your textbook figures. You will also find the links you need to work the Web

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exercises. Use the links on your Foundations Web site to work the following exercises. 5. Visit some news Web sites and review today's economic news. Summarize a news article that deals with an economic issue that interests you. Say whether the story deals with a microeconomic or a macroeconomic issue. 16. Visit the Campaign for Tobacco-Free Kids. Obtain data on changes in state tobacco taxes and changes in state tobacco consumption. a. Calculate the percentage change in tobacco taxes in each of the states for which you have data. b. Make a graph that plots the percentage change in the tobacco tax on the x-axis and the percentage change in state tobacco consumption on the y-axis. . Describe the relationship between these two variables. (Look at pages 23, 24, and 25 if you need help with making and interpreting your graph. ) d. How would you expect a rise in the tobacco tax to influence the incentive for a young person to smoke cigarettes? e. Do the data that you've obtained confirm what you expected or were you surprised by the data? Explain your answer. f. What can you infer about cause and effect in the data on tobacco taxes and tobacco consumption? g. What is the main obstacle to drawing a strong conclusion about the effect of tobacco taxes on tobacco consumption? 17.

Visit the Statistical Abstract of the United States and obtain data on the levels of average annual pay and the percentage of persons with a bachelor's degree in each of the states. a. Which state has the highest average pay and which has the lowest? b. Where in the ranking of average pay does your state stand? c. Which state has the highest percentage of people with a bachelor's degree and which has the lowest? d. Where in the ranking of people with a bachelor's degree does your state stand? e. What

do you think these numbers tell us about what, how, or for whom goods and services are produced? f.

What is the difficulty in using these numbers to determine whether education levels influence pay levels? APPENDIX: MAKING AND USING GRAPHS When you have completed your study of this appendix, you will be able to

- 1 Interpret a scatter diagram, a time-series graph, and a cross-section graph.
- 2 Interpret the graphs used in economic models.
- 3 Define and calculate slope.
- 4 Graph relationships among more than two variables.

Basic Idea A graph represents a quantity as a distance and enables us to visualize the relationship between two variables. To make a graph, we set two lines called axes perpendicular to each other, like those in Figure A1. . The vertical line is called the y-axis, and the horizontal line is called the x-axis. The common zero point is called the origin. In Figure A1. 1, the x-axis measures temperature in degrees Fa