

What is economics

[Economics](#), [Macroeconomics](#)



The word conjures up all sorts of images: manic stock traders on Wall Street, an economic summit meeting in a European capital, a somber television news anchor announcing good or bad news about the economy. . . . You probably hear about economics several times each day. What exactly is economics? First, economics is a social science, so it seeks to explain something about society. In this sense, it has something in common with psychology, sociology, and political science. But economics is different from these other social sciences, because of what economists study and how they study it. Economists ask fundamentally different questions, and they answer them using tools that other social scientists find rather exotic.

ECONOMICS, SCARCITY, AND CHOICE

A good definition of economics, which stresses the difference between economics and other social sciences, is the following: Economics is the study of choice under conditions of scarcity. This definition may appear strange to you. Where are the familiar words we ordinarily associate with economics: " money, " " stocks and bonds, " " prices, " " budgets, " . . .? As you will soon see, economics deals with all of these things and more. But first, let's take a closer look at two important ideas in this definition: scarcity and choice.

SCARCITY AND INDIVIDUAL CHOICE

Think for a moment about your own life—your daily activities, the possessions you enjoy, the surroundings in which you live. Is there anything you don't have right now that you'd like to have? Anything that you already have but that you would like more of? If your answer is " no, " congratulations! Either you are well advanced on the path of Zen self-denial, or else you are a close relative of Bill Gates. The rest of us, however, feel the pinch of limits to our material standard of living. This simple truth is at the very core of

economics. It can be restated this way: We all face the problem of scarcity. Scarcity A situation in which the amount of something available is insufficient to satisfy the desire for it. 2 Chapter 1 What Is Economics? <http://> To make good use of the Internet, you will need the Adobe Acrobat Reader. It can be downloaded from <http://www.adobe.com/prodindex/acrobat/readstep.html>. An economic question is: Why does Adobe give the Reader away free? At first glance, it may seem that you suffer from an infinite variety of scarcities. There are so many things you might like to have right now—a larger room or apartment, a new car, more clothes . . . the list is endless. But a little reflection suggests that your limited ability to satisfy these desires is based on two other, more basic limitations: scarce time and scarce spending power. As individuals, we face a scarcity of time and spending power. Given more of either, we could each have more of the goods and services that we desire. The scarcity of spending power is no doubt familiar to you. We've all wished for higher incomes so that we could afford to buy more of the things we want. But the scarcity of time is equally important. So many of the activities we enjoy—seeing a movie, taking a vacation, making a phone call—require time as well as money. Just as we have limited spending power, we also have a limited number of hours in each day to satisfy our desires. Because of the scarcities of time and spending power, each of us is forced to make choices. We must allocate our scarce time to different activities: work, play, education, sleep, shopping, and more. We must allocate our scarce spending power among different goods and services: housing, food, furniture, travel, and many others. And each time we choose to buy something or do something, we are also choosing not to buy or do something

else. Economists study the choices we make as individuals and how those choices shape our economy.

For example, over the next decade, we may each—as individuals—decide to make more of our purchases over the Internet. Collectively, this decision will determine which firms and industries will expand and hire new workers (such as Internet consulting firms and manufacturers of Internet technology) and which firms will contract and lay off workers (such as traditional “brick and mortar” retailers). Economists also study the more subtle and indirect effects of individual choice on our society. Will most Americans continue to live in houses, or—like Europeans—will most of us end up in apartments? Will we have an educated and wellinformed citizenry? Will traffic congestion in our cities continue to worsen, or is there relief in sight? Will the Internet create faster economic growth and more rapidly rising living standards for years to come or just a short burst of economic activity that will soon subside? These questions hinge, in large part, on the separate decisions of millions of people. To answer them requires an understanding of how individuals make choices under conditions of scarcity.

SCARCITY AND SOCIAL CHOICE Now let’s think about scarcity and choice from society’s point of view. What are the goals of our society? We want a high standard of living for our citizens, clean air, safe streets, good schools, and more. What is holding us back from accomplishing all of these goals in a way that would satisfy everyone? You already know the answer: scarcity. In society’s case, the problem is a scarcity of resources—the things we use to make goods and services that help us achieve our goals. Economists classify resources into three categories: 1. Labor is the time human beings spend producing goods and

services. 2. Capital consists of the long-lasting tools people use to produce goods and services. This includes physical capital, such as buildings, machinery, and equipment, as well as human capital—the skills and training that workers possess. Resources The land, labor, and capital that are used to produce goods and services. Labor The time human beings spend producing goods and services. Capital Long-lasting tools used in producing goods and services. Human capital The skills and training of the labor force. Economics, Scarcity, and Choice 3 Land The physical space on which production occurs, and the natural resources that come with it. 3. Land is the physical space on which production takes place, as well as the natural resources found under it or on it, such as oil, iron, coal, and lumber. Anything produced in the economy comes, ultimately, from some combination of these resources. Think about the last lecture you attended at your college. You were consuming a service—a college lecture. What went into producing that service? Your instructor was supplying labor. Many types of capital were used as well. The physical capital included desks, chairs, a chalkboard or transparency projector, and the classroom building itself. It also included the computer your instructor may have used to compose lecture notes. In addition, there was human capital—your instructor’s specialized knowledge and lecturing skills. Finally, there was land—the property on which your classroom building sits. Besides the three resources, other things were used to produce your college lecture. Chalk, for example, is a tool used by your instructor, so you might think it should be considered capital, but it is not. Why not? Because it is not long lasting. Typically, economists consider a tool to be capital only if it lasts for a few years or longer. Chalk is used up as the

lecture is produced, so it is considered a raw material rather than capital. But a little reflection should convince you that a piece of chalk is itself produced from some combination of the three resources (labor, capital, and land). In fact, all of the raw materials needed to produce the lecture—the energy used to heat or cool your building, the computer paper used for your instructor’s lecture notes, and so on—come, ultimately, from society’s three resources. And the scarcity of these resources, in turn, causes the scarcity of all goods and services produced from them. As a society, our resources—land, labor, and capital—are insufficient to produce all the goods and services we might desire. In other words, society faces a scarcity of resources. This stark fact about the world helps us understand the choices a society must make. Do we want a more educated citizenry? Of course. But that will require more labor—construction workers to build more classrooms and teachers to teach in them. It will require more natural resources—land for classrooms and lumber to build them. And it will require more capital—cement mixers, trucks, and more. These very same resources, however, could instead be used to produce other things that we find desirable—things such as new homes, hospitals, automobiles, or feature films. As a result, every society must have some method of allocating its scarce resources—choosing which of our many competing desires will be fulfilled and which will not be. Many of the big questions of our time center on the different ways in which resources can be allocated. The cataclysmic changes that rocked Eastern Europe and the former Soviet Union during the early 1990s arose from a very simple fact: The method these countries used for decades to allocate resources was not working. Closer to home, the never-ending debates between Democrats and

Republicans in the United States reflect subtle but important differences of opinion about how to allocate resources. Often, these are disputes about whether the private sector can handle the allocation of resources on its own or whether the government should be involved.

SCARCITY AND ECONOMICS

The scarcity of resources—and the choices it forces us to make—is the source of all of the problems you will study in economics. Households have limited incomes for satisfying their desires, so they must choose carefully how they allocate their spending

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among different goods and services. Business firms want to make the highest possible profit, but they must pay for their resources, so they carefully choose what to produce, how much to produce, and how to produce it. Federal, state, and local government agencies work with limited budgets, so they must carefully choose which goals to pursue. Economists study these decisions made by households, firms, and governments to explain how our economic system operates, to forecast the future of our economy, and to suggest ways to make that future even better.

THE WORLD OF ECONOMICS

The field of economics is surprisingly broad. It extends from the mundane—why does a pound of steak cost more than a pound of chicken?—to the personal and profound—how do couples decide how many children to have? With a field this broad, it is useful to have some way of classifying the different types of problems economists study and the different methods they use to analyze them.

MICROECONOMICS AND MACROECONOMICS

Microeconomics

The study of the behavior of individual households, firms, and governments; the choices they make; and their interaction in specific markets.

Macroeconomics

The study of the economy as a whole. The field of

economics is divided into two major parts: microeconomics and macroeconomics. Microeconomics comes from the Greek word mikros, meaning “ small. ” It takes a close-up view of the economy, as if looking through a microscope. Microeconomics is concerned with the behavior of individual actors on the economic scene—households, business firms, and governments. It looks at the choices they make, and how they interact with each other when they come together to trade specific goods and services. What will happen to the cost of movie tickets over the next five years? How many jobs will open up in the fast-food industry? How would U. S. phone companies be affected by a tax on imported cell phones? These are all microeconomic questions because they analyze individual parts of an economy, rather than the whole. Macroeconomics—from the Greek word makros, meaning “ large”—takes an overall view of the economy. Instead of focusing on the production of carrots or computers, macroeconomics lumps all goods and services together and looks at the economy’s total output. Instead of focusing on employment in the fast-food industry or the manufacturing sector, it considers total employment in the economy. Instead of asking why credit card loans carry higher interest rates than home mortgage loans, it asks what makes interest rates in general rise or fall. In all of these cases, macroeconomics focuses on the big picture and ignores the fine details.

POSITIVE AND NORMATIVE ECONOMICS

Positive economics The study of what is, of how the economy works.

Normative economics The study of what should be; it is used to make value judgments, identify problems, and prescribe solutions. The micro versus macro distinction is based on the level of detail we want to consider. Another useful distinction has to do with

the purpose in analyzing a problem. Positive economics deals with what is— with how the economy works, plain and simple. If we lower income tax rates in the United States next year, will the economy grow faster? If so, by how much? And what effect will this have on total employment? These are all positive economic questions. We may disagree about the answers, but we can all agree that the correct answers to these questions do exist— we just have to find them. Normative economics concerns itself with what should be. It is used to make judgments about the economy, identify problems, and prescribe solutions. While positive economics is concerned with just the facts, normative economics requires us to make value judgments.

When an economist advises that we cut government spending—an action that will benefit some citizens and harm others—the economist is engaging in normative analysis. Positive and normative economics are intimately related in practice. For one thing, we cannot properly argue about what we should or should not do unless we know certain facts about the world. Every normative analysis is therefore based on an underlying positive analysis. But while a positive analysis can, at least in principle, be conducted without value judgments, a normative analysis is always based, at least in part, on the values of the person conducting it.

Why Economists Disagree. The distinction between positive and normative economics can help us understand why economists sometimes disagree. Suppose you are watching a television interview in which two economists are asked whether the United States should eliminate all government-imposed barriers to trading with the rest of the world. The first economist says, “ Yes, absolutely, ” but the other says, “ No, definitely not. ” Why the sharp

disagreement? The difference of opinion may be positive in nature: The two economists may have different views about what would actually happen if trade barriers were eliminated. Differences like this sometimes arise because our knowledge of the economy is imperfect, or because certain facts are in dispute. More likely, however, the disagreement will be normative.

Economists, like everyone else, have different values. In this case, both economists might agree that opening up international trade would benefit most Americans, but harm some of them. Yet they may still disagree about the policy move because they have different values. The first economist might put more emphasis on benefits to the overall economy, while the second might put more emphasis on preventing harm to a particular group. Here, the two economists have come to the same positive conclusion, but their different values lead them to different normative conclusions. In the media, economists are rarely given enough time to express the basis for their opinions, so the public hears only the disagreement. People may then conclude—wrongly—that economists cannot agree about how the economy works when the real disagreement is over which goals are most important for our society.

WHY STUDY ECONOMICS? Students take economics courses for all kinds of reasons. <http://> TO UNDERSTAND THE WORLD BETTER

Applying the tools of economics can help you understand global and cataclysmic events such as wars, famines, epidemics, and depressions. But it can also help you understand much of what happens to you locally and personally—the worsening traffic conditions in your city, the raise you can expect at your job this year, or the long line of people waiting to buy tickets for a popular concert. Economics has the power to help us understand these

phenomena because they result, in large part, from the choices we make under conditions of scarcity. Economics has its limitations, of course. But it is hard to find any aspect of life about which economics does not have something important to say. Economics cannot explain why so many Americans like to watch television, but it can explain how TV networks decide which programs to offer. Economics cannot protect you from a The Federal Reserve Bank of Minneapolis asked some Nobel Prize winners how they became interested in economics. Their stories can be found at <http://woodrow.mpls.frb.fed.us/pubs/rqion/98-12/quotes.html>. 6 Chapter 1 What Is Economics? robbery, but it can explain why some people choose to become thieves and why no society has chosen to eradicate crime completely. Economics will not improve your love life, resolve unconscious conflicts from your childhood, or help you overcome a fear of flying, but it can tell us how many skilled therapists, ministers, and counselors are available to help us solve these problems. TO GAIN SELF-CONFIDENCE Those who have never studied economics often feel that mysterious, inexplicable forces are shaping their lives, buffeting them like the bumpers in a pinball machine, determining whether or not they'll be able to find a job, what their salary will be, whether they'll be able to afford a home, and in what kind of neighborhood. If you've been one of those people, all that is about to change. After you learn economics, you may be surprised to find that you no longer toss out the business page of your local newspaper because it appears to be written in a foreign language. You may no longer lunge for the remote and change the channel the instant you hear " And now for news about the economy. . . . " You may find yourself listening to economic reports

with a critical ear, catching mistakes in logic, misleading statements, or out-and-out lies. When you master economics, you gain a sense of mastery over the world, and thus over your own life as well.

TO ACHIEVE SOCIAL CHANGE

If you are interested in making the world a better place, economics is indispensable. There is no shortage of serious social problems worthy of our attention—unemployment, hunger, poverty, disease, child abuse, drug addiction, violent crime. Economics can help us understand the origins of these problems, explain why previous efforts to solve them have failed, and enable us to design new, more effective solutions.

TO HELP PREPARE FOR OTHER CAREERS

Economics has long been the most popular college major for individuals intending to work in business. But in the last two decades it has also become popular among those planning careers in politics, international relations, law, medicine, engineering, psychology, and other professions. This is for good reason: Practitioners in each of these fields often find themselves confronting economic issues. For example, lawyers increasingly face judicial rulings based on the principles of economic efficiency. Doctors will need to understand how new laser technologies or changes in the structure of HMOs will affect their practices. Industrial psychologists need to understand the economic implications of workplace changes they may advocate, such as flexible scheduling or on-site child care.

TO BECOME AN ECONOMIST

Only a tiny minority of this book's readers will decide to become economists. This is welcome news to the authors, and after you have studied labor markets in your microeconomics course, you will understand why. But if you do decide to become an economist—obtaining a master's degree or even a Ph. D.—you will find many possibilities for

employment. Of 16,780 members of the American Economic Association who responded to a recent survey, 165 percent were employed at colleges or universities. The rest were engaged in a variety of activities in both the private sector (21 percent) and government (14 percent).

Economists are hired by banks to assess the risk of investing abroad; by manufacturing companies, to help them determine new methods of producing, marketing, and pricing their products; by government agencies, to help design policies to fight crime, disease, poverty, and pollution; by international organizations, to help create aid programs for less developed countries; by the media to help the public interpret global, national, and local events; and even by nonprofit organizations, to provide advice on controlling costs and raising funds more effectively.

THE METHODS OF ECONOMICS

One of the first things you will notice as you begin to study economics is the heavy reliance on models. Indeed, the discipline goes beyond any other social science in its insistence that every theory be represented by an explicit, carefully constructed model. You've no doubt encountered many models in your life. As a child, you played with model trains, model planes, or model people-dolls. In a high school science course, you probably saw a model of an atom—one of those plastic and wire contraptions with red, blue, and green balls representing protons, neutrons, and electrons. You may have also seen architects' cardboard models of buildings. These are physical models, three-dimensional replicas that you can pick up and hold. Economic models, on the other hand, are built not with cardboard, plastic, or metal but with words, diagrams, and mathematical statements. What, exactly, is a

model? A model is an abstract representation of reality. The two key words in this definition are abstract and representation. A model is not supposed to be exactly like reality. Rather, it represents the real world by abstracting, or taking from the real world that which will help us understand it. In any model, many real-world details are left out. Model An abstract representation of reality. THE ART OF BUILDING ECONOMIC MODELS When you build a model, how do you know which details to include and which to leave out? There is no simple answer to this question. The right amount of detail depends on your purpose in building the model in the first place. There is, however, one guiding principle: A model should be as simple as possible to accomplish its purpose. This means that a model should contain only the necessary details. To understand this a little better, think about a map. A map is a model—it represents a part of the earth’s surface. But it leaves out many details of the real world. First, maps are two-dimensional, so they leave out the third dimension—height—of the real world. Second, maps always ignore small details, such as trees and houses and potholes. Third, a map is much smaller than the area it represents. But when you buy a map, how much detail do you want it to have? Let’s say you are in Boston, and you need a map (your purpose) to find the best way to drive from Logan Airport to the downtown convention center. In this case, you would want a very detailed city map, with every street, park, and plaza in Boston clearly illustrated and labeled. A highway map, which ignores these details, wouldn’t do at all. 8 Chapter 1 What Is Economics? But now suppose your purpose is different: to select the best driving route from Boston to Cincinnati. Now you want a highway map. A map that shows every street between Boston and

Cincinnati would have too much detail. All of that extraneous information would only obscure what you really need to see. Although economic models are more abstract than road maps, the same principle applies in building them: The level of detail that would be just right for one purpose will usually be too much or too little for another. When you feel yourself objecting to a model in this text because something has been left out, keep in mind the purpose for which the model is built. In introductory economics, the purpose is entirely educational. The models are designed to help you understand some simple, but powerful, principles about how the economy operates. Keeping the models simple makes it easier to see these principles at work and remember them later. Of course, economic models have other purposes besides education. They can help businesses make decisions about pricing and production, help households decide how and where to invest their savings, and help governments and international agencies formulate policies. Models built for these purposes will be much more detailed than the ones in this text, and you will learn about them if you take more advanced courses in economics. But even complex models are built around a very simple framework—the same framework you will be learning here. These maps are models. But each would be used for a different purpose.

ASSUMPTIONS AND CONCLUSIONS Every economic model begins with assumptions about the world. There are two types of assumptions in a model: simplifying assumptions and critical assumptions. A simplifying assumption is just what it sounds like—a way of making a model simpler without affecting any of its important conclusions. The purpose of a simplifying assumption is to rid a model of extraneous detail so its essential

features can stand out more clearly. A road map, for example, makes the simplifying assumption, “ There are no trees, ” because trees on a map would only get in the way. Similarly, in an economic model, we might assume that there are only two goods that households can choose from or that there are only two nations in the world. We make such assumptions not because they are true, but because they make a model easier to follow and do not change any of the important insights we can get from it. A critical assumption, by contrast, is an assumption that affects the conclusions of a model in important ways. When you use a road map, you make the critical assumption, “ All of these roads are open. ” If that assumption is wrong, your conclusion—the best route to take—might be wrong as well. In an economic model, there are always one or more critical assumptions. You don’t have to look very hard to find them, because economists like to make these assumptions explicit right from the outset. For example, when we study the behavior of business firms, our model will assume that firms try to earn the highest possible profit for their owners. By stating this assumption up front, we can see immediately where the model’s conclusions spring from.

Simplifying assumption Any assumption that makes a model simpler without affecting any of its important conclusions. **Critical assumption** Any

assumption that affects the conclusions of a model in an important way. **THE**

FOUR-STEP PROCESS As you read this textbook, you will learn how

economists use economic models to address a wide range of problems. In

Chapter 2, for example, you will see how a simple economic model can give

us important insights about society’s production choices.\n\nAnd subsequent

chapters will present still different models that help us understand the U. S.

economy and the global economic environment in which it operates. As you read, it may seem to you that there are a lot of models to learn and remember . . . and, indeed, there are. How to Study Economics 9 But there is an important insight about economics that—once mastered—will make your job easier than you might think. The insight is this: There is a remarkable similarity in the types of models that economists build, the assumptions that underlie those models, and what economists actually do with them. In fact, you will see that economists follow the same four-step procedure to analyze almost any economic problem. The first two Key Steps explain how economists build an economic model, and the second two Key Steps explain how they use the model. What are these four steps that underlie the economic approach to almost any problem? Sorry for the suspense, but you'll have to wait a bit—until the end of Chapter 3—for the answer. By that time, you'll have learned a little more about economics, and the four-step procedure will make more sense to you.

MATH, JARGON, AND OTHER CONCERNS . . . Economists often express their ideas using mathematical concepts and a special vocabulary. Why? Because these tools enable economists to express themselves more precisely than with ordinary language. For example, someone who has never studied economics might say, " When used textbooks are available, students won't buy new textbooks. " That statement might not bother you right now. But once you've finished your first economics course, you'll be saying it something like this: " When the price of used textbooks falls, the demand curve for new textbooks shifts leftward. " Does the second statement sound strange to you? It should. First, it uses a special term—a demand curve—that you haven't yet learned.

Second, it uses a mathematical concept—a shifting curve—with which you might not be familiar. But while the first statement might mean a number of different things, the second statement— as you will see in Chapter 3—can mean only one thing. By being precise, we can steer clear of unnecessary confusion. If you are worried about the special vocabulary of economics, you can relax. All of the new terms will be defined and carefully explained as you encounter them. Indeed, this textbook does not assume you have any special knowledge of economics. It is truly meant for a “ first course” in the field. But what about the math? Here, too, you can relax. While professional economists often use sophisticated mathematics to solve problems, only a little math is needed to understand basic economic principles. And virtually all of this math comes from high school algebra and geometry. Still, you may have forgotten some of your high school math. If so, a little brushing up might be in order. This is why we have included an appendix at the end of this chapter. It covers some of the most basic concepts—such as the equation for a straight line, the concept of a slope, and the calculation of percentage changes— that you will need in this course. You may want to glance at this appendix now, just so you’ll know what’s there. Then, from time to time, you’ll be reminded about it when you’re most likely to need it. [http:// syllabus. syr. edu/cid/graph/book. html](http://syllabus.syr.edu/cid/graph/book.html). HOW TO STUDY ECONOMICS As you read this book or listen to your instructor, you may find yourself nodding along and thinking that everything makes perfect sense. Economics may even seem easy. Indeed, it is rather easy to follow economics, since it’s based so heavily on simple logic. But following and learning are two different things. You will

eventually discover (preferably before your first exam) that economics must be studied actively, not passively. 10 Chapter 1 What Is Economics? If you are reading these words lying back on a comfortable couch, a phone in one hand and a remote control in the other, you are going about it in the wrong way. Active studying means reading with a pencil in your hand and a blank sheet of paper in front of you. It means closing the book periodically and reproducing what you have learned. It means listing the steps in each logical argument, retracing the cause-and-effect steps in each model, and drawing the graphs that represent the model. It means thinking about the basic principles of economics and how they relate to what you are learning. It is hard work, but the payoff is a good understanding of economics and a better understanding of your own life and the world around you.

S U M M A R Y

Economics is the study of choice under conditions of scarcity. As individuals, and as a society, we have unlimited desires for goods and services. Unfortunately, the resources—land, labor, and capital—needed to produce those goods and services are scarce. Therefore, we must choose which desires to satisfy and how to satisfy them. Economics provides the tools that explain those choices. The field of economics is divided into two major areas. Microeconomics studies the behavior of individual households, firms, and governments as they interact in specific markets.

Macroeconomics, by contrast, concerns itself with the behavior of the entire economy. It considers variables such as total output, total employment, and the overall price level. Economics makes heavy use of models—abstract representations of reality. These models are built with words, diagrams, and mathematical statements that help us understand how the economy

operates. All models are simplifications, but a good model will have just enough detail for the purpose at hand. When analyzing almost any problem, economists follow a four-step procedure in building and using economic models. This four-step procedure will be introduced at the end of Chapter 3.

K E Y economics scarcity resources labor **T E R M S** capital human capital land microeconomics macroeconomics positive economics normative economics model simplifying assumption critical assumption **R E V I E W Q U**

E S T I O N S b. The goal of any country's economic policy should be to increase the well-being of its poorest, most vulnerable citizens. c. Excess regulation of small business is stifling the economy. Small business has been responsible for most of the growth in employment over the last 10 years, but regulations are putting a severe damper on the ability of small businesses to survive and prosper. d. The 1990s were a disastrous decade for the U. S. economy. Income inequality increased to its highest level since before World War II. 4. What determines the level of detail that an economist builds into a model? 5. What is the difference between a simplifying assumption and a critical assumption? 1. Discuss (separately) how scarcity arises for households, businesses, and governments. 2. Would each of the following be classified as microeconomics or macroeconomics? Why? a. Research into why the growth rate of total production increased during the 1990s. b. A theory of how consumers decide what to buy. c. An analysis of Dell Computer's share of the personal computer market. d. Research on why interest rates were unusually high in the late 1970s and early 1980s. 3. Discuss whether each statement is an example of positive economics or normative economics or if it contains elements of both: a. An increase in the

personal income tax will slow the growth rate of the economy. Experiential Exercise 11 P R O B L E M 1. Come up with a list of critical assumptions that could lie behind each of the following statements. Discuss whether each assumption would be classified as normative or positive. a. The United States is a democratic society. b. European movies are better than American movies. c. The bigger the city, the higher the quality of the newspaper. E X P E R I E N T I A L E X E R C I S E 1. Go to the Bank of Sweden's Web page on the Nobel Prize in economic science at <http://www.ee.nobel.se/prize/memorial>.

<http://www.ee.nobel.se/prize/memorial>. <http://www.ee.nobel.se/prize/memorial>. Review the descriptions of some recent awards and try to determine whether each of those awards was primarily for work in microeconomics or macroeconomics. APPENDIX GRAPHS AND OTHER USEFUL TOOLS TABLES AND GRAPHS A brief glance at this text will tell you that graphs are important in economics. Graphs provide a convenient way to display data. Take the example of Len & Harry's, an up-and-coming manufacturer of high-end ice cream products, located in Texas. Suppose that you've just been hired to head Len & Harry's advertising department, and you want to learn as much as you can about how advertising can help the company's sales. Table A. 1 records the company's total advertising outlay per month in the left-hand column, and the company's ice cream sales during that same month are shown in the right-hand column. Notice that the data are organized so that advertising outlay increases as we move down the first column. Often, just looking at such a table can reveal useful patterns. In this case, it seems that higher advertising outlays are associated with higher monthly sales. This suggests that there may be some causal relationship between advertising and sales. To explore this relationship

further, we might decide to plot the data and draw a graph (see Figure A. 1). First, we need to choose units for our two variables. We'll measure both advertising and sales in thousands of dollars. Different values of one variable are then measured along the horizontal axis, increasing as we move rightward from the origin. The corresponding values of the other variable are measured along the vertical axis, increasing as we move upward, away from the origin. Using the data in the table, let X stand for advertising outlay per month, and let Y stand for sales per month. Notice that each row of the table gives us a pair of numbers: The first is always the value of the variable we are calling X, and the second is the value of the variable we are calling Y. We often write such pairs in the form (X, Y). For example, we would write the first three rows of the table as (2, 46), (3, 49), and (6, 58), respectively. To plot the pair (X, Y) on a graph, begin at the origin, where the axes meet. Count rightward X units along the horizontal axis, then count upward Y units parallel to the vertical axis, and then mark the spot. For example, to plot the pair (2, 46), we go rightward 2 units along the horizontal axis and then upward 46 units along the vertical axis, arriving at the point marked A in Figure A. 1. To plot the next pair, (3, 49), we go rightward from the origin 3 units and then upward 49 units, arriving at the point marked B. Carrying on in just this way, we can plot all remaining pairs in Table A. 1 as the points C, D, E, and F. If we connect points A through F, we see that they all lie along the same straight line. Now we are getting somewhere. The relationship we've discovered appears from the graph to be very regular, indeed. Study the graph closely. You will notice that each time advertising increases (moves rightward) by \$1, 000, TABLE A.

For example, when advertising

rises from \$2, 000 to \$3, 000, sales rise from \$46, 000 to \$49, 000. By checking between any other two points on the graph, you will see that every time X increases horizontally by one unit (here, a unit is \$1, 000), Y increases vertically by three units (here, by \$3, 000). Thus, we conclude that the rate of change in Y is three units of Y for every one-unit increase in X. The slope of a graph tells us the rate at which the Y-variable changes for every one-unit change in the X-variable. The slope of a straight line between any two points (X_1, Y_1) and (X_2, Y_2) is defined as the change in Y—the vertical “rise”—divided by the change in X—the horizontal “run.” This is why the slope is often described as “rise over run.” Supposing we start at (X_1, Y_1) and end at (X_2, Y_2) ; then the change in the X-variable is $(X_2 - X_1)$. The corresponding change in the Y-variable is $(Y_2 - Y_1)$. We therefore compute the slope as follows: Slope of the line from (X_1, Y_1) to (X_2, Y_2) Rise along vertical axis Run along horizontal axis $\frac{Y_2 - Y_1}{X_2 - X_1}$ in Y. We then could write that same formula for the slope more compactly as Slope of the line from (X_1, Y_1) to (X_2, Y_2) $\frac{Y_2 - Y_1}{X_2 - X_1}$.

NONLINEAR GRAPHS Although many of the relationships we encounter in economics have straight-line graphs, many do not. Still, graphs can help us understand the underlying relationships, and the concept of slope remains very useful. As an example, look at the data in Table A. 2, which records the price of a share of Len and Harry’s stock at different points in time since the stock first appeared on the market. To understand how the price of this stock has behaved over time, we might again start by plotting a graph of the data in the table. It seems natural to measure time—in “weeks since launch”—on the X-axis and stock price—in “dollars per share”—on the Y-axis. As you can see in Figure A. 2, Len and Harry’s has had a rocky ride

since it came on the market. In its first 10 weeks, the stock's price rose, so the slope of the underlying relationship was positive during that time. Over the next 10 weeks, the story changed: The stock's price decreased, so the slope of the relationship was negative then. Between weeks 20 and 30, things leveled off: There was no change in the stock's price, so the slope of the

We sometimes use the capital Greek letter, ("delta"), to denote a change in a variable. Here we would write ΔX to denote the change in X, and ΔY to denote the corresponding change in Y.

14 Appendix Graphs and Other Useful Tools

TABLE A. 2 PRICE OF LEN & HARRY'S STOCK SINCE LAUNCH

Weeks Since Launch	3	10	18	20	25	30	40	Stock Price
	\$20	50	35	20	20	75		

graph was zero during that time. However, between weeks 30 and 40 things picked up, and once again the slope turned positive, since the price of the stock increased. From this example, we can see the following: - -

- The slope is positive whenever an increase in X is associated with an increase in Y. The slope is negative whenever an increase in X is associated with a decrease in Y. The slope is equal to zero whenever an increase in X is associated with no change in Y.

How do you answer questions like this without having to pull out tables and graphs to do it? As it turns out, anytime the relationship you are studying has a straight-line graph, it is easy to figure out the equation for the entire relationship. You then can use the equation to answer any such question that might be put to you. All straight lines have the same general form. If Y stands for the variable on the vertical axis and X for the variable on the horizontal axis, every straight line has an equation of the form $Y = a + bX$.

LINEAR EQUATIONS Let's go back to the relationship between advertising and sales, as shown in Table A. 1. What if you need to know how

much sales the firm could expect if it spent \$5,000 on advertising next month? What if it spent \$8,000, or \$9,000? Wouldn't it be nice to be able to

an- where a stands for some number and b for another number. The number a is called the vertical intercept, because it marks the point where the graph of this equation hits (intercepts) the vertical axis; this occurs when X takes the value zero. (If you plug $X = 0$ into the equation, you will see that, indeed, $Y = a$.) The number b is the slope of the line, telling us how much Y will change every time X changes by one unit. To confirm this, note that as X increases from 0 to 1, Y goes from a to $a + b$. The number b is therefore the change in Y corresponding to a one-unit change in X —exactly what the slope of the graph should tell us. More generally, if X changes from some value X_1 to some other value X_2 , Y will change from Y_1 to $Y_2 = a + bX_2$. $Y_2 - Y_1 = (a + bX_2) - (a + bX_1) = b(X_2 - X_1)$. $Y_2 - Y_1 = b(X_2 - X_1)$. If we divide both sides of the equation by $X_2 - X_1$, we get $\frac{Y_2 - Y_1}{X_2 - X_1} = b$. If we subtract Y_1 from Y_2 to compute how much Y has changed ($Y_2 - Y_1$), we find that confirming that b really does measure the slope. If b is a positive number, a one-unit increase in X causes Y to increase by b units, so the graph of our line would slope upward, as illustrated by the red line in panel (a) of Figure A. 3. If b is a negative number, then a one-unit increase in X will cause Y to decrease by b units, so

FIGURE A. 3 (a) $b > 0$ $a > 0$ $b = 0$ $b < 0$ $a = 0$ $0 < a$ MU_x / P_x , a consumer is made better off by shifting spending away from x and toward y . This leads us to an important conclusion: A utility-maximizing consumer will choose the point on the budget line where marginal utility per dollar is the same for both goods

($MU_x/P_x = MU_y/P_y$). At that point, there is no further gain from reallocating expenditures in either direction. 132 Chapter 5 Consumer Choice We can generalize even further. Suppose there are more In finding the utility-maximizing combination of goods for a consumer, why do we use marginal utility per dollar instead of just marginal utility? than two goods an individual Shouldn't the consumer always shift spending wherever marginal utility can buy. For example, we is greater? The answer is no. The following thought experiment will help could imagine that Max wants you see why. Imagine that you like to ski and you like going out for dinner. to divide his entertainment Further, given your current combination of skiing and dining out, your marginal budget among movies, conutility for one more skiing trip is 2, 000 utils, and your marginal utility for an additional certs, plays, football games, dinner is 1, 000 utils. Should you shift your spending from dining out to skiing? It might seem so, and what have you. Or we can think of a consumer who must since skiing has the higher marginal utility. But what if skiing costs \$200 per trip, while a dinner out costs only \$20? Then, while it's true allocate her entire income that another skiing trip will give you twice as much utility as another dinner out, it's also true that among thousands of different skiing costs ten times as much. You would have to sacrifice ten restaurant meals for one skiing trip, goods and services each and that would make you worse off. Instead, you should shift your spending in the other direction: month: different types of food, from skiing to dining out. Money spent on additional skiing trips will give you 1, 000 utils/\$200 5 clothing, entertainment, transutils per dollar, while money spent on additional dinners will give you 1, 000 utils/\$20 50 utils portation, and so on. Does our per

dollar. Dining out clearly gives you “ more bang for the buck” than skiing. The lesson of this ex- description of the optimal ample: When trying to find the utility-maximizing combination of goods, compare marginal utilities choice for the consumer still hold? Indeed, it does. No matter how many goods there are to choose from, when the consumer is doing as well as possible, it must be true that $MU_x / P_x = MU_y / P_y$ for any pair of goods x and y. If this condition is not satisfied, the consumer will be better off consuming more of one and less of the other good in the pair.

2 WHAT HAPPENS WHEN THINGS CHANGE?

If every one of our decisions had to be made only once, life would be much easier. But that’s not how life is. Just when you think you’ve figured out what to do, things change. In a market economy, as you’ve learned, prices can change for any number of reasons. (See Chapter 3.) A consumer’s income can change as well. He may lose a job or find a new one; she may get a raise or a cut in pay. Changes in our incomes or the prices we face cause us to rethink our spending decisions: What maximized utility before the change is unlikely to maximize it afterward. The result is a change in our behavior.

CHANGES IN INCOME

Figure 5 illustrates how an increase in income might affect Max’s choice between movies and concerts. As before, we assume that movies cost \$10 each, that concerts cost \$30 each, and that these prices will remain constant. Initially, Max has \$150 in income to spend on the two goods, so his budget line is the line from point A to point F. As we’ve already seen, under these conditions, Max would choose point D (3 concerts and 6 movies) to maximize utility. If Max’s income increases to \$300, his budget line will shift upward and outward in the figure. How will he respond? As always, he will

search along his budget There is one exception to this statement:

Sometimes the optimal choice is to buy none of some good. For example, if $MU_y / P_y < MU_x / P_x$, no matter how small a quantity of good x a person consumes, it will always pay to reduce consumption of good x further, until its quantity is zero. Economists call this a “corner solution,” because—when there are only two goods being considered—the individual will locate at one of the endpoints of the budget line in a corner of the diagram.

2 What Happens When Things Change?

133 EFFECTS OF AN INCREASE IN INCOME

FIGURE 5

Number of Movies per Month	Number of Concerts per Month	Point
30	0	H
27	3	G
12	6	F
9	9	E
6	12	D
3	15	C
0	18	B
0	0	A

A doubling of Max’s income causes a parallel, rightward shift of his budget line. More combinations of movies and concerts are now available to him. He will choose the point on the new budget line at which marginal utilities per dollar are equal for the two goods.

15 12 9 6 3 A B C D E F 1 2 3 4 5 6 7 8 9 10 H

Number of Concerts per Month line until he finds the point where the marginal utility per dollar spent on both goods is the same. Without more information—such as that provided in the table in Figure 4—we can’t be certain which point will satisfy this condition. But we can discuss some of the possibilities. Figure 5 illustrates three alternative possibilities. If Max’s best combination ends up being point H, he would attend 12 movies and 6 concerts. If we compare his initial choice (point D) with this new choice (point H), we see that the rise in income has caused him to consume more of both goods. As you learned in Chapter 3, when an increase in income causes a consumer to buy more of something, we call that thing a normal good. If, for Max, point H happens to be where the marginal utilities per dollar for the two goods are equal, then, for him, both movies and concerts are normal goods. Alternatively, Max’s

marginal utilities per dollar might be equal at a point like H, with 9 concerts and 3 movies. In this case, the increase in income would cause Max's consumption of concerts to increase (from 3 to 9), but his consumption of movies to fall (from 6 to 3). It's tempting to think that inferior goods are of lower quality than normal. If so, movies would be an inferior good. But economists don't define normal or inferior based on the intrinsic properties of a good, but rather by the choices people make when their incomes increase. For example, Max may think that both movies and concerts are high-quality goods. When his income is low, he may see movies while concerts would be a normal good. Finally, let's consider entertainment every weekend. But if his income increases, he can afford to switch other possible outcome for from movies to concerts on some of his weekends. If Max makes this choice—and attends fewer movies—then his behavior tells us that movies are inferior for him. If instead he chose to see more movies and fewer concerts when his income increased, then concerts would be the inferior good. fewer concerts compared to point D. If point H is where Max's marginal utilities per dollar are equal after the increase in income, then concerts would be the inferior good, and movies would be normal.

CHANGES IN PRICE In Chapter 3, you were introduced to the law of demand, which holds that a rise in the price of a good reduces the quantity demanded, and a fall in price increases quantity demanded. In this section, we use the tools of consumer theory to analyze what is behind the law of demand, to see why

consumers behave as they do when a price changes. In the process, you will learn why exceptions to the law of demand are so rare. Let's explore what happens to Max when the price of a concert decreases from \$30 to \$10, while his income remains at \$150 and the price of a movie remains \$10. The drop in the price of concerts rotates Max's budget line rightward, pivoting around its vertical intercept, as illustrated in the upper panel of Figure 6.

What will Max do after his budget line rotates in this way? Again, he will select the combination of movies and concerts on his budget line that makes him as well off as possible. This will be the combination at which the marginal utility per dollar spent on both goods is the same. In the figure, we assume that this occurs at point J on the new budget line, where Max consumes 4 concerts and 11 movies. If the price of a concert drops once again, to \$5, the budget line rotates rightward again. In the figure, Max will now choose point K, attending 6 concerts and 12 movies.

THE INDIVIDUAL'S DEMAND CURVE You've just seen that each time the price of concerts changes, so does the quantity of concerts Max will want to see. The lower panel of Figure 6 highlights this relationship by plotting the quantity of concerts demanded on the horizontal axis and the price of concerts on the vertical axis. For example, in both the upper and lower panels, point D tells us that when the price of concerts is \$30, Max will see three of them. When we connect points like D, J, and K in the lower panel, we get Max's individual demand curve, which shows the quantity of a good he demands at each different price. Notice that Max's demand curve for concerts slopes downward—a fall in the price of concerts increases the quantity demanded—showing that Max's responses to price changes obey the law of demand. But

if Max's preferences had been different, could his response to a price change have violated the law of demand? In particular, could he have chosen points such as J and K instead of J and K in panel (a) of Figure 6? If he did, a fall in the price of Individual demand curve A curve showing the quantity of a good or service demanded by a particular individual at each different price. What Happens When Things Change? 135 DERIVING THE DEMAND CURVE FIGURE 6 (a) Number of Movies 15 per Month 12 11 9 6 3 D K' J' J K 0 1 2 3 4 5 6 15 30 Number of Concerts per Month (b) Price per Concert \$30 D 10 5 J K Max's Demand Curve for Concerts Number of Concerts per Month 1 2 3 4 5 6 In panel (a), a decrease in the price of concerts causes Max's budget lines to rotate outward. At \$30 per concert, he maximizes utility at point D in both panels and attends 3 concerts. If the price falls to \$10 per concert, he increases 00-049 Hall/Lieberman Art his consumption to 4 concerts per month, at point J. At a price of \$5 each, he attends 6 concerts, shown at point K. Max's demand curve in panel (b) is obtained by connecting points such as D, J, and K. South-Western (Economics) 31 3 id 37 11 d 136 Chapter 5 Consumer Choice concerts would have led him to want fewer of them, and his demand curve (which you are invited to draw for yourself) would have sloped upward. Is that possible? The answer is . . . and no. Yes, it is theoretically possible, but no, it does not seem to happen in practice. To understand why, we must look deeper into the effects of a price change on quantity demanded. In doing so, we'll gain more insight into the process of consumer decision making. Substitution effect As the price of a good falls, the consumer substitutes that good in place of other goods whose prices have not changed. The Substitution Effect. When the price of a good

changes, we can identify two separate effects on quantity demanded. As you will see, these two effects sometimes work together and sometimes work in opposite directions. Suppose the price of a good falls. Then it becomes less expensive relative to other goods whose prices have not fallen. Some of these other goods are substitutes for the now cheaper good—they are different goods, but they are used to satisfy the same general desire. (For example, Coke and Pepsi are very close substitutes for each other, since they both satisfy the same desire for a carbonated cola drink with a little caffeine.) When one of the ways of satisfying a desire becomes relatively cheaper, consumers will purchase more of it, and purchase less of the substitute good. In Max's case, concerts and movies, while different, both satisfy his desire to be entertained. When the price of concerts falls, so does its relative price (relative to movies). Max can now get more entertainment from his budget by substituting concerts in place of movies, so he will demand more concerts. This impact of a price decrease is called a substitution effect—the consumer substitutes toward the good whose price has decreased, and away from other goods whose prices have remained unchanged. The substitution effect of a price change arises from a change in the relative price of a good, and it always moves quantity demanded in the opposite direction to the price change. When price decreases, the substitution effect works to increase quantity demanded; when price increases, the substitution effect works to decrease quantity demanded. The substitution effect is a powerful force in the marketplace. For example, while the price of cellular phone calls has fallen in recent years, the price of pay phone calls has remained more or less the same. This fall in the relative

price of cell phone calls has caused consumers to substitute toward them and away from using regular pay phones. As a result, many private providers of pay phones are having financial difficulty. The substitution effect is also important from a theoretical perspective: It is the main factor responsible for the law of demand. Indeed, if the substitution effect were the only effect of a price change, the law of demand would be more than a law; it would be a logical necessity. But as we are about to see, a price change has another effect as well. Cheaper cell phone calls, and the substitution effect, may soon drive pay phones out of the market.

The Income Effect. In Figure 6, when the price of concerts decreases from \$30 to \$10, Max's budget line rotates rightward. Max now has a wider range of options than before: He can consume more concerts, more movies, or more of both. The price decline of one good has increased Max's total purchasing power over both goods. A price cut gives the consumer a gift, which is rather like an increase in income. Indeed, in an important sense, it is an increase in available income: Point D (3 concerts and 6 movies) originally cost Max \$150, but after the decrease in the price of concerts, the same combination would cost him just $(6 \times \$10) + (3 \times \$10) = \$90$, leaving him with \$60 in available income to spend on more movies or concerts or both. This leads to the second effect of a change in price: The income effect of a price change is the impact on quantity demanded that arises from a change in purchasing power over both goods. A drop in price increases purchasing power, while a rise in price decreases purchasing power. How will a change in purchasing power influence the quantity of a good demanded? That depends. Recall that an increase in income will increase the demand for

normal goods and decrease the demand for inferior goods. The same is true for the income effect of a price cut: It can work to either increase or decrease the quantity of a good demanded, depending on whether the good is normal or inferior. For example, if concerts are a normal good for Max, then the income effect of a price cut will lead him to consume more of them; if concerts are inferior, the income effect will lead him to consume fewer.

Income effect As the price of a good decreases, the consumer's purchasing power increases, causing a change in quantity demanded for the good.

Combining Substitution and Income Effects. Now let's look again at the impact of a price change, considering the substitution and income effects together. A change in the price of a good changes both the relative price of the good (the substitution effect) and the overall purchasing power of the consumer (the income effect). The ultimate impact of the price change on quantity demanded will depend on both of these effects. In most cases, these two effects work together to push quantity demanded in the same direction, but they can occasionally oppose each other. To help clarify this, we'll consider the total impact of a price change on different types of goods.

Normal Goods. Normal goods are the easier category to consider. When the price of a normal good falls, the substitution effect increases quantity demanded. The price drop will also increase the consumer's purchasing power, and—for a normal good—increase quantity demanded even further. The opposite occurs when price increases: The substitution effect decreases quantity demanded, and the decline in purchasing power further decreases it. Figure 7 summarizes how the substitution and income effects combine to make the price and quantity of a normal good move in opposite directions:

For normal goods, the substitution and income effects work together, causing quantity demanded to move in the opposite direction of the price. Normal goods, therefore, must always obey the law of demand. Inferior Goods. Now let's see how a price change affects the demand for inferior goods. As an example, consider ground beef. For many people, ground beef is an inferior good: A rise in income would decrease demand for it, since it would make steak—a preferable alternative—more affordable. If the price of ground beef falls, the substitution effect would work, as always, to increase quantity demanded. The price cut will also, as always, increase the consumer's purchasing power. But if ground beef is inferior, the rise in purchasing power will decrease quantity demanded. Thus, we have two opposing effects: the substitution effect, increasing quantity demanded, and the income effect, decreasing quantity demanded. In theory, either of these effects could dominate the other, so the quantity demanded could move in either direction. In practice, however, the substitution effect almost always dominates for inferior goods.

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FIGURE 7
INCOME AND SUBSTITUTION EFFECTS

Price Decrease: P Substitution Effect QD QD QD if normal if inferior Ultimate Effect (Almost Always) ↑ QD

Purchasing Power Price Increase: P Substitution Effect QD QD QD if normal if inferior ↓ QD

Purchasing Power Why does the substitution effect almost always dominate? Because we consume such a wide variety of goods and services that a price cut in any one of them changes our purchasing power by only a small amount. For example, suppose you have an income of \$20,000 per year, and you spend \$500 per year on ground beef. If the price of ground beef falls by, say, 20 percent, this would save