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Resource Utilization

Economics is defined in various ways, but scarcity is always part of the definition. We bake an economic pie each year, which is composed of all the goods and services we have produced. No matter how we slice it, there never seems to be enough. Some people feel the main problem is how we slice the pie, while others say we should concentrate on baking a larger pie.

Chapter Objectives

In this chapter you'll learn:

- The definition of economics.
- The central fact of economics.
- The four economic resources.
- The concepts of opportunity cost, full employment, and full production.
- Productive and allocative efficiency.
- What enables an economy to grow.
- The law of increasing costs.

Economics Defined

Economics is the efficient allocation of the scarce means of production toward the satisfaction of human wants.

Economics is the efficient allocation of the scarce means of production toward the satisfaction of human wants. You're probably thinking, *What did he say?* Let's break it down into two parts. The scarce means of production are our resources, which we use to produce all the goods and services we buy. And why do we buy these goods and services? Because they provide us with satisfaction.

The only problem is that we don't have enough resources to produce all the goods and services we desire. Our resources are limited while our wants are relatively unlimited. In the next few pages, we'll take a closer look at the concepts of resources, scarcity, and the satisfaction of human wants. Keep in mind that we can't produce everything we'd like to purchase—there's scarcity. This is where economics comes in. We're attempting to make the best of a less-than-ideal situation. We're trying to use our resources so efficiently that we can maximize our satisfaction. Or, as François Quesnay put it back in the 18th century, "To secure the greatest amount of pleasure with the least possible outlay should be the aim of all economic effort."¹

Economics is the science of greed.

—F. V. Meyer

The Central Fact of Economics: Scarcity

Scarcity and the Need to Economize

Most of us are used to economizing; we save up our scarce dollars and deny ourselves various tempting treasures so we will have enough money for that one big-ticket item—a

¹François Quesnay, *Dialogues sur les Artisans*, quoted in Gide and Rist, *A History of Economic Doctrines*, 1913, pp. 10–11.

new car, a stereo system, a trip to Europe. Since our dollars are scarce and we can't buy everything we want, we economize by making do with some lower-priced items—a Cadillac instead of a Rolls Royce, chicken instead of steak, a videotape rental instead of a neighborhood movie.

If there were no scarcity, we would not need to economize.

If there were no scarcity, we would not need to economize, and economists would need to find other work. Let's go back to our economic pie to see how scarcity works. Most people tend to see scarcity as not enough dollars, but as John Maynard Keynes² pointed out about 60 years ago, this is an illusion. We could print all the money we want and still have scarcity. As Adam Smith noted in 1776, the wealth of nations consists of the goods and services they produce, or, on another level, the resources—the *land*, *labor*, *capital*, and *entrepreneurial ability*—that actually produce these goods and services.

The Economic Problem

In the 1950s, John Kenneth Galbraith coined the term *the affluent society*, which implied that we had the scarcity problem licked. Americans were the richest people in the world (we've since slipped to fourth or fifth). Presumably, we had conquered poverty. But within a few years, Michael Harrington's *The Other America*³ challenged that contention.

The economic problem, however, goes far beyond ending poverty. Even then, nearly all Americans would be relatively poor when they compared what they have with what they would like to have—or with what the Rockefellers, Du Ponts, Mellons, and Gettys have.

Human wants are relatively limitless (see box titled "E.T. and the Satisfaction of Human Wants"). Make a list of all the things you'd like to have. Now add up their entire cost. Chances are you couldn't earn enough in a lifetime to even begin to pay for all the things on your list.

The Four Economic Resources

We need four resources, often referred to as "the means of production," to produce an output of goods and services. Every society, from a tiny island nation in the Pacific to the most complex industrial giant, needs these resources: *land*, *labor*, *capital*, and *entrepreneurial ability*. Let's consider each in turn.

Land

As a resource, land has a much more general meaning than our normal understanding of the word. It includes natural resources (such as timber, oil, coal, iron ore, soil, and water) as well as the ground in which these resources are found. Land is used not only for the extraction of minerals but for farming as well. And, of course, we build factories, office buildings, shopping centers, and homes on land. The basic payment made to the owners of land is rent.

Labor

Labor is the work and time for which employees are paid. The police officer, the computer programmer, the store manager, and the assembly-line worker all supply labor. About two-thirds of the total resource costs are paid to labor in the form of wages and salaries.

Capital

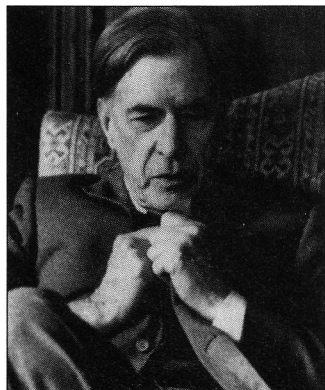
Capital is "man"-made goods used to produce other goods or services. It consists mainly of plant and equipment. The United States has more capital than any other country in the world. This capital consists of factories, office buildings, and stores. Our shopping malls, the Empire State Building, and automobile plants and steel mills (and all the equipment in them) are examples of capital. The return paid to the owners of capital is interest.

Entrepreneurial ability

Entrepreneurial ability is the least familiar of our four basic resources. The entrepreneur sets up a business, assembles the needed resources, risks his or her own money, and reaps the profits or absorbs the losses of this enterprise (see the box titled "The Young Entrepreneur"). Often the entrepreneur is an innovator, such as Andrew Carnegie (U.S.

²Keynes, whose work we'll discuss in later chapters of *Economics* and *Macroeconomics*, was perhaps the greatest economist of the 20th century.

³Michael Harrington, *The Other America* (New York: Macmillan, 1962).



John Kenneth Galbraith, American economist and social critic (UPI/Bettmann)

E.T. and the Satisfaction of Human Wants

Remember the movie *E.T.*? Well, suppose E.T. were to return to Earth and hand each person \$50 million. What would happen when everyone rushed out to spend this money? There simply would not be enough goods and services available. Still, assuming E.T.'s money was good, storekeepers would accept it. But since there would not be enough goods and services to go around, they would have to raise their prices. After all, what would you do if a line eight miles long formed outside *your* store?

Now an extraterrestrial like E.T. would never want to cause inflation, so you can be sure he would have made some provision for more goods and services to be made available. Imagine that he and his friends set up an E.T. shopping mall in every city and town in the world and continued to charge the old prices rather than the new

inflated prices. Everyone would be able to buy as much as he or she desired without having to worry about inflation.

Now we come to the greatest benefit of all. No one would ever have to take a course in economics. Why not? Because E.T. has eliminated the two conflicting forces that made economics necessary in the first place. Since we now have all the goods and services we desire, human wants are finally satisfied. Or, alternatively, the means of production are sufficient to produce everything people desire. We can no longer call them the "scarce means of production."

Of course, there may well be some people who would want even more than \$50 million worth of goods and services. These people would still need to economize. And they'd still need to take courses in economics.

Steel), John D. Rockefeller (Standard Oil), Henry Ford (Ford Motor Company), Steven Jobs (Apple Computer), or William Gates (Microsoft).

We may consider land, labor, and capital passive resources, which are combined by the entrepreneur to produce goods and services. A successful undertaking is rewarded by profit; an unsuccessful one is penalized by loss.

In the American economy, the entrepreneur is the central figure, and our long record of economic success is an eloquent testimonial to the abundance of our entrepreneurial talents. The owners of the nearly 20 million businesses in this country are virtually all entrepreneurs. The vast majority either work for themselves or have just one or two employees. But they have two things in common: each runs a business, and each risks his or her own money.

These resources are scarce because they are limited in quantity. There's a finite amount of land on this planet, and at any given time a limited amount of labor, capital, and entrepreneurial ability is available. Over time, of course, the last three resources can be increased.

Our economic problem, then, is that we have limited resources available to satisfy relatively unlimited wants. The reason why you, and everyone else, can't have three cars, a town house and a country estate with servants, designer clothing, jewels, color TVs in each room, and a \$50,000 sound system is that we just don't have enough resources to produce everything that everyone wants. Therefore, we have to make choices, an option we call opportunity cost.

The Young Entrepreneur

An entrepreneur is a person who sees an opportunity to make a profit and is willing and able to risk his or her funds. I went to school with such a person.

When he was 14, he was standing in line with several hundred other boys waiting for an application for a summer job. He got hungry, so he asked the guy in back of him to hold his place in line while he got a hot dog. On his way back, several boys along the line asked him where he had gotten that hot dog. Dollar signs immediately danced before his eyes.

"I went back to the store and bought as many as I could carry. They gave me a carton of them. I went up and down the line, and I charged 10 cents more than I paid." He quickly ran out. Then, using the money he had collected, he went back to that store again and again.

He made more money working that line than he made for the first two weeks on that summer job. Before he was 30, he became a vice president of Helmsley-Spear, the giant real estate company. I don't know if he's still peddling hot dogs.

The opportunity cost of any choice is the forgone value of the next best alternative.

Even children learn in growing up that "both" is not an admissible answer to a choice of "which one?"

—President Warren G. Harding

Opportunity Cost

Because we can't have everything we want, we must make choices. The thing we give up (i.e., our second choice) is called the opportunity cost of our choice. Therefore, *the opportunity cost of any choice is the forgone value of the next best alternative.*

Suppose a little boy goes into a toy store with \$15. Many different toys tempt him, but he finally narrows his choice to a Monopoly game and a magic set, each costing \$15. If he decides to buy the Monopoly game, the opportunity cost is the magic set. And if he buys the magic set, the opportunity cost is the Monopoly game.

If a town hires an extra police officer instead of repaving several streets, the opportunity cost of hiring the officer is not repaving the streets. Opportunity cost is the cost of giving up the next best alternative.

In some cases the next best alternative—the Monopoly game or the magic set—is virtually equal no matter what choice is made. In other cases, there's no contest. If someone were to offer you, at the same price, your favorite eight-course meal or a Big Mac, you'd have no trouble deciding (unless, of course, your favorite meal *is* a Big Mac).

Perhaps the most vivid example of opportunity cost occurred in the movie *Sophie's Choice*. When Sophie arrived at a concentration camp during World War II, a sadistic official ordered her to make a choice: she could save either her little boy or her little girl. In either case, the opportunity cost was inhumanly high. Fortunately, most choices confronting us are much more mundane.

In the next section we will be dealing with the production possibilities frontier, and once again, we will have to make choices. As we shall see, the more we produce of one product, the less we can produce of another product.

Full Employment and Full Production

Everyone agrees that full employment is a good thing, even if we don't all agree on exactly what full employment means. Does it mean that every single person in the United States who is ready, willing, and able to work has a job? Is *that* full employment?

The answer is no. There will always be some people between jobs. On any given day thousands of Americans quit, get fired, or decide that they will enter the labor force by finding a job. Since it may take several weeks, or even several months, until they find the "right" job, there will always be some people unemployed.⁴

If an unemployment rate of zero does not represent full employment, then what rate does? Economists cannot agree on what constitutes full employment. Some liberals insist that an unemployment rate of 4 percent constitutes full employment, while there are conservatives who feel that an unemployment rate of 6 percent would be more realistic.

Similarly, we cannot expect to fully use all our plant and equipment. A capacity utilization rate of 85 or 90 percent would surely employ virtually all of our usable plant and equipment.⁵ At any given moment there is always some factory being renovated or some machinery under repair. During wartime we might be able to use our capacity more fully, but in normal times 85 to 90 percent is the peak.

In a global economy, not only has it become increasingly difficult to define which goods and services are made in America and which originate abroad, but one may even question the relevance of a plant's location. If our steel industry were operating at full capacity, we could get still more steel from Germany, Japan, Korea, Brazil, and other steel-producing nations. In the context of the global economy, our capacity utilization ratio is clearly much less important than it was just a few decades ago.

As long as all available resources are fully used—given the constraints we have just cited—we are at our production possibilities frontier. A few additional constraints should

⁴See the second part of Chapter 9 in *Economics and Macroeconomics*.

⁵Technically, this is the rate at which the nation's factories, mines, and utilities are operating.

If economists were laid end to end, they would not reach a conclusion.

—George Bernard Shaw

also be considered because they too restrict the quantity of resources available. These are institutional constraints, the laws and customs under which we live.

The so-called blue laws restrict the economic activities that may be carried out in various cities and states, mainly on Sundays. Bars and liquor stores must be closed certain hours. In some places, even retail stores must be closed on Sundays.

State and federal law carefully restrict child labor. Very young children may not be employed at all, and those below a certain age may work only a limited number of hours.

Traditionally, Americans dislike working at night or on weekends, particularly on Sundays. Consequently, we must leave most of our expensive plant and equipment idle except during daylight weekday hours. We don't consider that plant and equipment unemployed, nor do we consider those whose labor is restricted by law or custom unemployed. All of this is already allowed for in our placement of the location of the production possibilities frontier (shown in Figure 1 in the next section).

By full production, we mean that our nation's resources are being allocated in the most efficient manner possible. Not only are we using our most up-to-date technology, but we are using our land, labor, capital, and entrepreneurial ability in the most productive way.

We would not want to use the intersection of Fifth Avenue and 57th Street in Manhattan for dairy farming, nor would we want our M.D.s doing clerical work. But sometimes we do just that.

Until recently in our nation's history, very few blacks were allowed to go to medical school (or law school or business school). Why? Because they were not white (see box titled "The Jackie Robinson Story").

And until recently only a tiny minority of women employed in the offices of American business were not typists or secretaries. In the 1950s and even into the 1960s, virtually every article in *Fortune* was written by a man and researched by a woman. What a waste of labor potential!

These are just a few of the most blatant examples of employment discrimination, a phenomenon that has diminished but has not yet been wiped out. Employment discrimination automatically means that we will have less than full production because we are not efficiently allocating our labor. In other words, there are millions of Americans who really should be doctors, engineers, corporate executives, or whatever but have been condemned to less exalted occupations solely because they happen not to be white Protestant males (see the box titled "The Glass Ceiling: Employment Discrimination at the Top").

Finally, there is the question of using the best available technology. Historically, the American economy has been on the cutting edge of technological development for almost 200 years; the sewing machine, mechanical reaper, telephone, airplane, automobile, assembly line, and computer are all American inventions.

Using the best available technology

The Jackie Robinson Story

Blacks had been banned from almost all professional sports since the turn of the century, but most notoriously by major league baseball. For decades there was a parallel association for blacks called the Negro leagues. Finally, the color barrier was broken in 1947 when Jackie Robinson began playing for the Brooklyn Dodgers.

Looking back, then, to all those years when black ball players were not permitted to play major league baseball, basketball, and football, hundreds of athletes were underemployed. Not only did they suffer economically and psychologically, but the American public was deprived of watching innumerable talented athletes perform.

In 1991 I met a few of the men who played in the Negro leagues when I was visiting Kansas City, where the Negro League Baseball Museum is located. They all knew Satchel Paige, a legendary pitcher whose fastball was so fast, the batters often couldn't even see it, let alone hit it. Sometimes Paige would wind up and pretend to throw a pitch. The catcher pounded his glove and the umpire called a strike. Then the catcher, who had the ball all along, threw it back to Paige. As great as he was, Satchel Paige didn't play in the major leagues until the twilight of his career, when he was in his late forties.

Underemployment of College Graduates

According to the Bureau of Labor Statistics, one in five college graduates has a job that does not require a college degree. And many of the jobs they hold that *do* require a bachelor's degree are dead-end, low-wage positions.

There are about 1 million college graduates working as salesclerks; 1.5 million as typists, file clerks, and receptionists; and another 1.3 million as construction or assembly-line workers.

That's the *good* news. The bad news is that by 2005, according to Labor Department economists, 3 out of every 10 college graduates will have jobs like these.

When I graduated from college, I met a recruiter from the Continental Baking Company who wanted to hire economics majors to be truck drivers. "How will I use my

economics?" I asked. He had a great answer: "You can economize on the gasoline." I told him that I didn't go to college for four years so that I could drive a truck. He might have answered by asking if I would rather be *underemployed* or *unemployed*.

You are spending a great deal of time and money on your education. Unless our economic prospects improve substantially, you and your friends may spend a large part of your working lives underemployed. Who knows, that truck driving job may still be open.

Source: Kristina J. Shelley, "The Future of Jobs for College Graduates," *Monthly Labor Review*, July 1992, p. 13.

The production possibilities frontier represents our economy at full employment and full production.

Similarly, we would not want to use that good Iowa farmland for office parks, nor would we want to locate dairy farms in the middle of our cities' central business districts. And finally, we would certainly not want to use our multimillion-dollar computer mainframes to do simple word processing.

These are all examples of underemployment of resources. Unfortunately, a certain amount is built into our economy, but we need to reduce it if we are going to succeed in baking a larger economic pie.

This brings us, at long last, to the production possibilities frontier. As we've already casually mentioned, the production possibilities frontier represents our economy at full employment and full production. However, a certain amount of underemployment of resources is also built into our model. How much? Although the exact amount is not quantifiable, it is fairly large. But to the degree that employment discrimination has declined since the early 1960s, it may be holding our output to maybe 10 or 15 percent below what it would be if there were a truly efficient allocation of resources.

The Production Possibilities Frontier

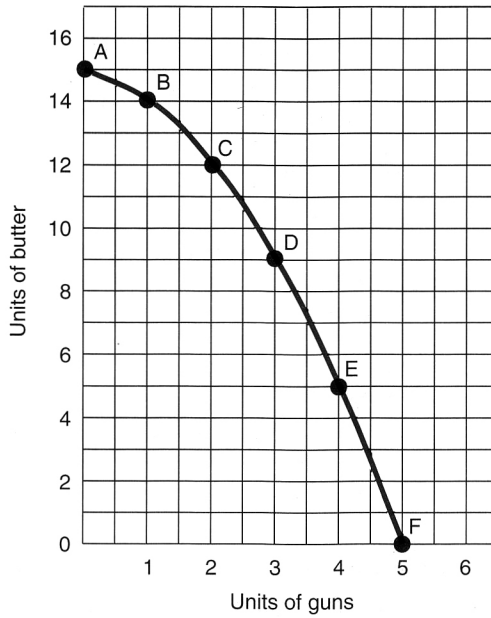
Since scarcity is a fact of economic life, we need to use our resources as efficiently as possible. If we succeed, we are operating at full economic capacity. Usually there's some economic slack, but every so often we *do* manage to operate at peak efficiency. When this happens, we are on our production possibilities frontier (or production possibilities curve).

Often economics texts cast the production possibilities frontier in terms of guns and butter. A country is confronted with two choices: it can produce only military goods or only civilian goods. The more guns it produces, the less butter, and, of course, vice versa.

If we were to use all of our resources—our land, labor, capital, and entrepreneurial ability—to make guns, we would obviously not be able to make butter at all. Similarly, if we made only butter, there would be no resources to make any guns. Virtually every country makes *some* guns and *some* butter. Japan makes relatively few military goods, while the United States devotes a much higher proportion of its resources to making guns.

You will shortly encounter the first graph in this book. This graph, and each one that follows, will have a vertical axis and a horizontal axis. Both axes start at the origin of the graph, which is located in the lower left-hand corner and usually marked with the number 0.

In Figure 1 we measure units of butter on the vertical axis. Each line or box stands for one unit. On the horizontal axis we measure units of guns. As we move to the right, the number of guns increases—1, 2, 3, 4, 5.

Figure 1 Production Possibilities Curve**Table 1** Hypothetical Production Schedule for Two-Product Economy

Point	Units of Butter	Units of Guns
A	15	0
B	14	1
C	12	2
D	9	3
E	5	4
F	0	5

The curve shown in the graph is drawn by connecting points A, B, C, D, E, and F. Where do these points come from? They come from Table 1. Where did we get the numbers in Table 1? They're hypothetical. In other words, I made them up.

Guns and butter

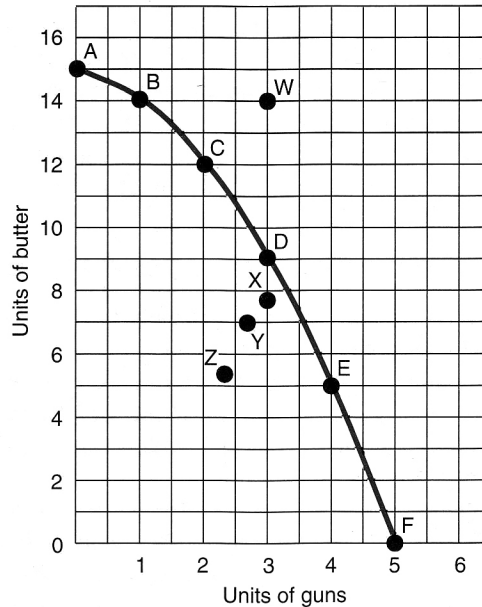
Table 1 shows six production possibilities ranging from point A, where we produce 15 units of butter and no guns, to point F, where we produce 5 units of guns but no butter. This same information is presented in Figure 1, a graph of the production possibilities curve or frontier. We'll begin at point A, where a country's entire resources are devoted to producing butter. If the country were to produce at full capacity (using all its resources) but wanted to make some guns, they could do it by shifting some resources away from butter. This would move them from point A to point B. Instead of producing 15 units of butter, they're making only 14.

Before we go any further on the curve, let's go over the numbers at points A and B. We're figuring out how many guns and how much butter is produced at each of these points. Starting at the origin, or zero, let's check out point A. It's directly above the origin, so no guns are produced. Point A is at 15 on the vertical scale, so 15 units of butter are produced.

Now we'll move on to point B, which is directly above 1 unit on the guns axis. At B we produce 1 unit of guns and 14 units of butter (shown vertically). Incidentally, to locate any point on a graph, first go across, or horizontally, then up, or vertically. Point B is 1 unit to the right, then 14 units up.

Now locate point C: 2 units across and 12 up. At C we have 2 guns and 12 butters. Next is D: 3 across and 9 up (3 guns and 9 butters). At E: 4 across and 5 up (4 guns and 5 butters). And finally F: 5 across and 0 up (5 guns and no butter).

Figure 2 Points Inside and Outside the Production Possibilities Curve



The production possibilities curve represents a two-product economy at full employment.

The production possibilities curve is a hypothetical model of an economy that produces only two products—in this case, guns and butter (or military goods and civilian goods). The curve represents the various possible combinations of guns and butter that could be produced if the economy were operating at capacity, or full employment.

Since we usually do not operate at full employment, we are seldom on the production possibilities frontier. So let's move on to Figure 2, which shows, at point X, where we generally are in a recession, with unemployment rising beyond 8 or 9 percent, represented on the graph by point Y. A depression would be closer to the origin, perhaps shown by point Z. (Remember that the origin is located in the lower left-hand corner of the graph.)

What if we were at the origin? What would that represent? Think about it. What would be the production of guns? How about the production of butter? They would both be zero. Is that possible? During the Great Depression in the 1930s, the U.S. economy sank to point Z, but no economy has ever sunk to the origin.

Move back to the production possibilities curve, say, at point C, where we are producing 2 units of guns and 12 units of butter. Is it possible to produce more guns? Certainly. Just move down the curve to point D. Notice, however, that we now produce fewer units of butter.

At D we have 3 units of guns and 9 units of butter. When we go from C, where we have 2 guns, to D, where we have 3, gun production goes up by 1. But at the same time, butter production declines from 12 at C to only 9 at D (a decline of 3).

If we're at point C, then, we can produce more guns, but only by sacrificing some butter production. The opportunity cost of moving from C to D (i.e., of producing 1 more gun) is giving up 3 units of butter.

Let's try another one, this time moving from C to B. Butter goes up from 12 to 14—a gain of 2. Meanwhile, guns go down from 2 to 1, a loss of 1. Going from C to B, a gain of 2 butters is obtained by sacrificing 1 gun. The opportunity cost of producing 2 more butters is 1 gun.

Except at point A, we can go somewhere else on the production possibilities curve and increase our output of butter. Similarly, anywhere but at point F, we can go somewhere else on the curve and raise our output of guns. It is possible to increase our output of *either* guns *or* butter by moving somewhere else on the curve, but there is an opportunity cost involved. The more we produce of one (by moving along the curve), the less we produce of the other. It is not possible, then, if we are anywhere on the curve, to raise our production of both guns *and* butter.

What if we're somewhere inside the production possibilities frontier? Would it be possible to produce more guns *and* more butter? The answer is yes. At point Z we have an output of 2 guns and 4 butters. By moving to point D we would have 3 guns and 9 butters. Or, by going to point E, output would rise to 4 guns and 5 butters.

We are able to increase our output of both guns and butter when we move from Z to D or E because we are now making use of previously unused resources. We are moving from depression conditions to those of full employment. But when we go from C to D, we stay at full employment. The only way we can produce more guns is to produce less butter, because resources will have to be diverted from butter to gun production.

Productive Efficiency and Allocative Efficiency

So far we've seen that our economy generally falls short of full production. Now we'll tie that failure in to our definition of economics.

At the beginning of this chapter, we defined economics as *the efficient allocation of the scarce means of production toward the satisfaction of human wants*. The scarce means of production are our resources, land, labor, capital, and entrepreneurial ability. So how efficiently do we use our resources?

An economy is efficient whenever it is producing the maximum output allowed by a given level of technology and resources. *Productive efficiency is attained when the maximum possible output of any one good is produced, given the output of other goods*. This state of grace occurs only when we are operating on our production possibilities curve. Attainment of productive efficiency means that we can't increase the output of one good without reducing the output of some other good.

As we've seen, our economy rarely attains productive efficiency, or full production. The last time our economy actually operated on its production possibilities frontier was during the Vietnam War, in 1968 and 1969. The closest we have come in recent years was in late 1994 and early 1995, when the unemployment rate dipped below 6 percent.

Now we come to allocative efficiency, which occurs when no resources are wasted. *When an efficient allocation of resources is attained, it is not possible to make any person better off without making someone else worse off*. No society has ever come anywhere close to allocative efficiency.

In our hypothetical examples of production possibilities curves, we assumed that our economy produced just two goods or services. If our economy limited its production to two goods or services—or even 10—would this be an *efficient* allocation of our resources? Remember that the goal of economics is to satisfy human wants. Could *your* wants be satisfied with just 10 goods and services? Most people could easily make up lists totaling dozens of different goods and services which they consider basic necessities, and perhaps hundreds of additional goods and services which they would *like* to have.

Economists have long puzzled over the question of allocative efficiency, but we have more pressing things to consider—such as economic growth, which happens to be the subject of the next section.

Economic Growth

If the production possibilities curve represents the economy operating at full employment, then it would be impossible to produce at point W (of Figure 2). To go from C to W would mean producing more guns *and* more butter, something that would be beyond our economic capabilities, given the current state of technology and the amount of resources available.

Every economy will use the best available technology. At times, because a country cannot afford the most up-to-date equipment, it will use older machinery and tools. That country really has a capital problem rather than a technological one.

As the level of available technology improves, the production possibilities curve moves outward, as it does in Figure 3. A faster paper copier, a more smoothly operating assembly line, or a new-generation computer system are examples of technological

Productive efficiency is attained when the maximum possible output of one good is produced, given the output of other goods.

When an efficient allocation of resources is attained, it is not possible to make any person better off without making someone else worse off.

The best available technology

advances. And increasingly, industrial robots and bank money machines are replacing human beings at relatively routine jobs.

Our economic capacity is also expanded when there is an expansion of labor or capital. More (or better trained) labor and more (or improved) plant and equipment would also push the production possibilities curve outward. This is illustrated in Figure 3, as we go from PPC_1 to PPC_2 , and from PPC_2 to PPC_3 .

In the 1950s, when Nikita Khrushchev, then the head honcho of the Politburo, said, "We will bury you," he wasn't trying to drum up business for his funeral parlor. He meant that the Soviet Union would overtake the United States in output of goods and services. At that time the USSR was growing much faster than we were. But in the 1960s, our rate of economic growth sped up, while the Soviet rate slowed down.

However, since the early 1970s, our rate of growth, which had averaged over 3 percent a year during the last two centuries, slowed to only a little more than 2 percent.

There is no question that the American economy is in trouble. Another indication is the huge trade deficits that we have been running for more than a decade. What it all comes down to is that Americans are consuming too much and producing too little.

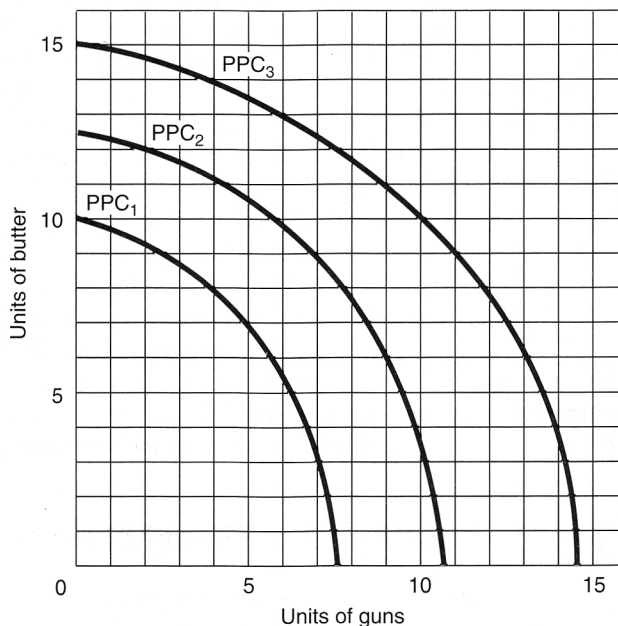
Another way of putting this is that Americans are not saving enough and business firms are not investing enough. This is shown by the two alternate graphs of Figure 4.

Why can't we operate at point B of Figure 4 rather than at point A? That's a very good question. Probably the best answer is that Americans, for whatever reason, have come to believe in the adage "Buy today, pay tomorrow."

Buying "on time" became popular after World War II, along with relatively easy-to-obtain home mortgages, federal income tax preferential treatment for home ownership and personal borrowing,⁶ and, over the last two decades, the tremendous expansion in the use of credit cards. In addition, Americans are bombarded by more than \$125 billion worth of advertising a year. The products may vary, but the message remains the same: Buy! Buy! Buy!

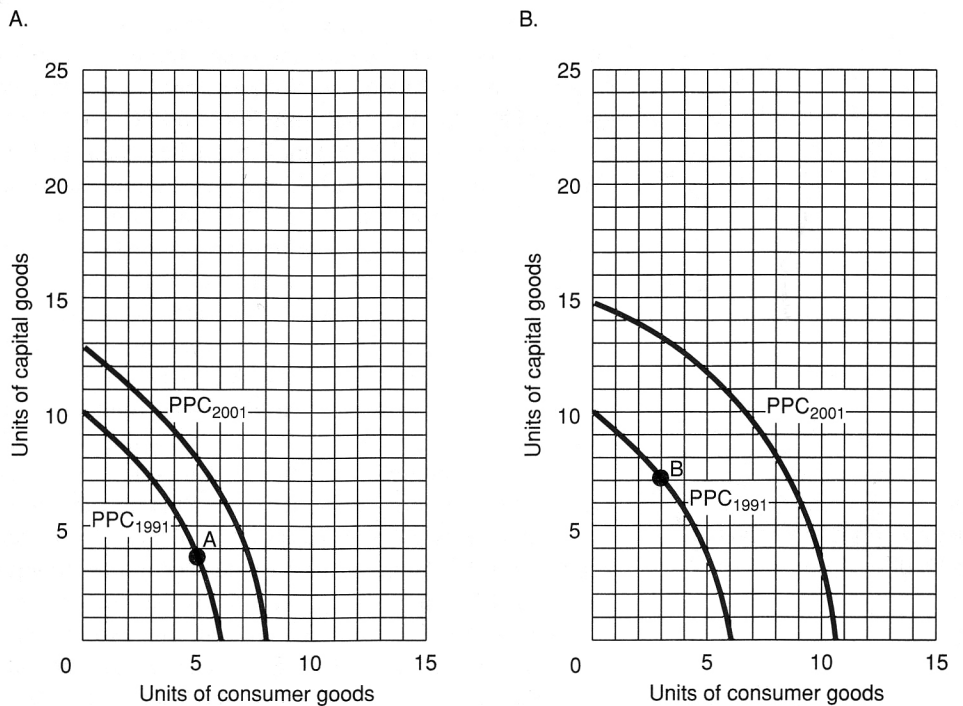
Americans are not saving enough.

Figure 3 Production Possibilities Curves



⁶Until 1987, interest paid on all consumer loans—for example, car loans, credit card loans, bank personal loans, and installment loans—was deductible from federal personal income taxes.

People who own their homes can deduct mortgage interest and property taxes from their federal personal income tax.

Figure 4 Production Possibilities Curves over Time

The more we buy, the less we save. In fact, by 1986, Americans were saving only about 2 percent of their incomes after taxes, which was just one-third the rate of the 1960s. Also contributing to our shortfall of savings has been the federal government, which ran budget deficits approaching \$300 billion by the early 1990s.

It all came down to this: The funds needed by business firms for investment in plant and equipment were no longer being provided in sufficient quantity by private savers, and the federal government was sopping up much of the savings that were available. Foreign investors, who had been accumulating surplus dollars from our trade deficits, were lending us back some of our own money. But this was insufficient to provide all of the investment funds needed to spur our rate of economic growth.⁷

We noted earlier in the chapter (in the full-employment and full-production section) that our investment in new technology was lagging. The United States, which had always been on the cutting edge of technological advance, was giving up this leadership role as well. Although American inventors were no less inventive, the application of their technological discoveries required investments that we were sometimes unable to make. I'll come back to this problem from time to time in subsequent chapters.

Before we get to the law of diminishing returns in the appendix to this chapter, let's go back again to the days of World War II when our economy began to expand at an extremely rapid rate. The question I raise in the box titled "The Production Possibilities Frontier during World War II" is this: Can we have more guns *and* more butter?

Questions for Further Thought and Discussion

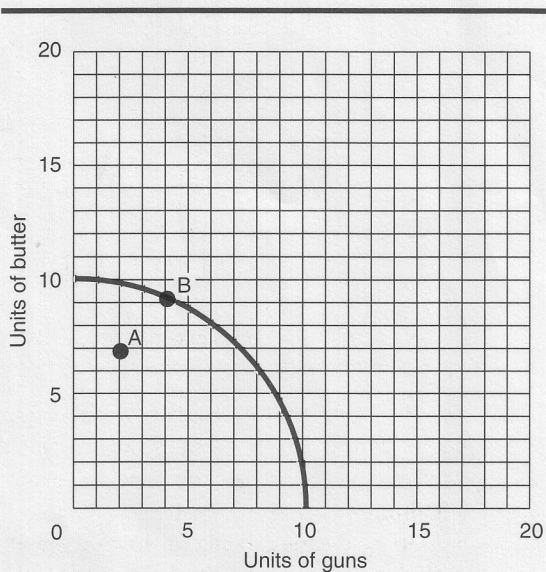
1. If you were in a position to run our economy, what steps would you take to raise our rate of economic growth?
2. Under what circumstances can we operate outside our production possibilities curve?
3. Give an example of an opportunity cost for an individual and a nation.
4. Would it be harder for a nation to attain full employment or full production? Explain.

⁷Economic growth is the subject of Chapter 16 in *Economics and Macroeconomics*.

The Production Possibilities Frontier during World War II

World War II was a classic case of guns and butter, or, more accurately, guns *or* butter. Almost two years before we became actively involved in the war, we began increasing our arms production and drafting millions of young men into the armed services. Did this increase in military goods production mean a decrease in the production of consumer goods?

Gee, that's a very good question. And the answer is found when you go from point A to point B on the first figure shown here.



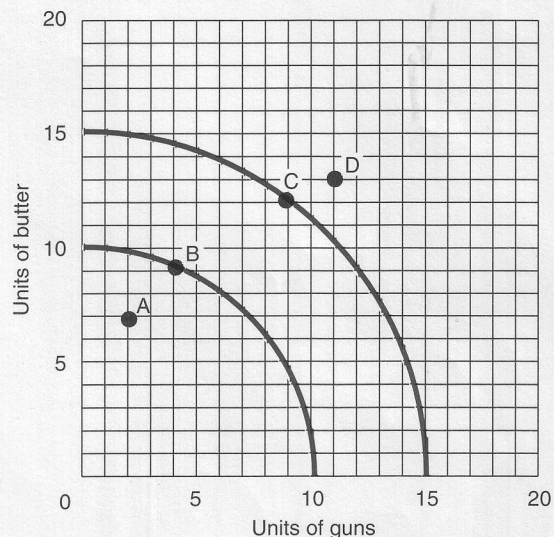
How were we able to increase the production of both guns and butter in 1940 and 1941? Because there was still a great deal of economic slack in those years. It was the tail end of the Great Depression described so eloquently in Chapter 1, and there were still millions of people out of work and a great deal of idle plant and equipment that could be pressed into use.

Now we're in the war, and we're at point B in the first figure. Is it possible to further expand our output of both guns and butter? Think about it.

Is there any way we could do it? How about if there's economic growth? In the second figure shown here, we went from point B to point C by moving to a higher production possibilities curve. Is this *possible*? Over a considerable period of time, yes. But in just a couple of years? Well, remember what they used to say: There's a *war* going on. So a move from point B to point C in just a couple of years is possible during a war.

Now we're really going to push it. How about a move from point C to point D in the second figure? Is *this* move

possible? Can we raise our production of both guns *and* butter to a point beyond our production possibilities frontier without jumping to a still higher production possibilities curve?



Well, what do you think? Remember, there's a war going on. The answer is yes. In 1942, 1943, and 1944 we did push our official unemployment rate under 3 percent, well below the 5 percent rate we would consider full employment today. Employers were so desperate for workers that they would hire practically anybody, and people who wouldn't ordinarily be in the labor market—housewives, retired people, and teenagers—were flocking to the workplace.

Meanwhile, business firms were pressing older machinery and equipment into use, because it was impossible to get new machinery and equipment built during the war. And so we were not only operating at full capacity, but well beyond that point.

How long were we able to stay at point D? Only as long as there was a war going on. Point D represents an output of guns and butter that our economy can produce temporarily if it operates beyond its production possibilities frontier. It's almost like bowling 300. You can't expect to go out and do it every night.*

*One can argue that we were temporarily operating on a higher production possibilities frontier and, at the end of the war, we returned to the lower production possibilities frontier.