

UNIT 1 Basic Economic Concepts

Many people think of economics as the study of money, wealth, and finance. Those topics are part of economics. But more fundamentally, it is the study of how people choose to use resources to obtain the goods and services they want.

Almost every resource is limited. Because of this, people constantly make choices about what to produce. Similarly, most consumers have only so much money to spend, so they make choices about what to purchase. You might have enough money to go to a movie or to eat at a restaurant, but not enough money to do both.

When people make rational choices, they take into account the additional costs and benefits of their decisions. All decisions have costs and often they involve trade-offs. The cost of something is what you give up in order to get it. It may be money, it may be time, or it may be something else that you want.

Because resources are limited, economics focuses on three basic questions: What goods and services should a society produce? How will it produce them? Who will consume them? Individuals, businesses, and governments make choices to address these questions.

In this unit, you will learn about the basic economic concepts you will use throughout this course.



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Topic 1.5 Cost-Benefit Analysis

- Rational agents consider opportunity costs, whether implicit or explicit, when calculating the total economic costs of any decision.
- Total benefits form the metric "utility" for consumers and total revenue for firms.
- Total net benefits, the difference between total benefits and total costs, are maximized at the optimal choice.
- Some decisions permit rational agents to look at only marginal benefit and marginal cost. Other decisions cannot be broken down into increments in this way and must be evaluated by looking at total benefits and total costs.

Topic 1.6 Marginal Analysis and Consumer Choice

- Consumers face constraints and have to make optimal decisions accounting for these constraints.
- In a model of rational consumer choice, consumers are assumed to make choices so as to maximize their total utility.
- Consumers experience diminishing marginal utility in the consumption of goods and services.
- Consumers allocate their limited income to purchase the combination of goods that maximizes their utility by equating/comparing the marginal utility of the last dollar spent on each good.
- Marginal analysis involves comparing the additional benefit of increasing a given activity with the additional cost. Comparing marginal benefit (MB) with marginal cost (MC) helps individuals (firms) decide whether to increase, decrease, or maintain their consumption (production) levels.
- The optimal quantity at any point in time does not depend on fixed costs (sunk costs) or fixed benefits that have already been determined by past choices.
- The optimal quantity is achieved when marginal benefit is equal to marginal cost or where total benefit is maximized.

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Topic Titles and Essential Knowledge

Topic 1.1 Scarcity

- Economic trade-offs arise from the lack of sufficient resources (scarcity) to meet society's wants and needs.
- Most factors of production (such as land, labor, and capital) are scarce, but some factors of production (such as established knowledge) may not be scarce due to their non-rival nature.

Topic 1.2 Resource Allocation and Economic Systems

- Resource allocation involves answering three basic questions: What goods and services to produce? How to produce those goods and services? And who consumes those goods and services?
- Resource allocation is significantly influenced by the economic system adopted by society, such as command economy, market economy, or mixed economy. Each system involves a particular set of institutional arrangements and a coordinating mechanism for allocating scarce resources and distributing output.

Topic 1.3 Production Possibilities Curve

- The PPC is a model used to show the trade-offs associated with allocating resources.
- The PPC can be used to illustrate the concepts of scarcity, opportunity cost, efficiency, underutilized resources, and economic growth or contraction.
- The shape of the PPC depends on whether opportunity costs are constant, increasing, or decreasing.
- The PPC can shift due to changes in factors of production as well as changes in productivity/technology.
- Economic growth results in an outward shift of the PPC.

Topic 1.4 Comparative Advantage and Trade

- Absolute advantage describes a situation in which an individual, business, or country can produce more of a good or service than any other producer with the same quantity of resources.
- Comparative advantage describes a situation in which an individual, business, or country can produce a good or service at a lower opportunity cost than another producer.
- Production specialization according to comparative advantage, not absolute advantage, results in exchange opportunities that lead to consumption possibilities beyond the PPC.
- Comparative advantage and opportunity costs determine the terms of trade for exchange under which mutually beneficial trade can occur.

Topic 1.1

Scarcity

"There are no solutions; there are only trade-offs."

—Economist Thomas Sowell, 1987

Essential Question: How do individuals and economies confront the problem of scarce resources?

In a perfect world, people would receive everything they wanted or needed at all times. But in the real world, most people have to make choices. Spending money on one thing means having less money to spend on something else. Going out to dinner one night might mean having to skip a movie another night, for instance. That "dinner out tonight or movie later" choice is a **trade-off**. To get something, you need to give up the possibility of getting something else.

You have already made thousands of trade-offs, and you will make hundreds of thousands more. Individuals, groups, organizations, businesses, and governments are constantly making choices about the best uses of their money, time, and attention.

Economics: The Study of Scarcity and Choice

The field of **economics** is the study of how and why people and organizations make the decisions they do to address the gap between limited resources and nearly unlimited desires or wants. The name of that gap is **scarcity**. The concept of scarcity is an essential part of life in general and economics in particular. Because almost everything valuable is limited or scarce, people and groups make choices about what will best satisfy their wants. Here are some examples of how you can see economics at work:

- The price for the new phone and accessories that you want to buy is \$495, but you have only \$190 available to spend. You can choose between keeping your current phone until you have saved enough money to buy the phone you want and buying a less expensive phone.
- A business that makes a profit can decide whether to use that money to expand production or to increase wages.
- The national government can decide whether to use tax revenue to build a new military base or to combat water pollution.

Each of these examples provides two options to choose between. Selecting one means giving up the opportunity to use the other—a trade-off.

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Even when choices are plentiful, scarcity still plays a crucial role. A consumer looking for a new phone may be presented with a wide variety of options, but scarcity of funds may eliminate many of them. At that point, consumers may start weighing trade-offs in order to make certain options possibilities again.

Economic Trade-Offs and Constraints Of course, most situations aren't always either-or. For instance, the national government could spend some money on the military and some on fighting pollution—or it could invest in medical research, cut taxes, or do something else. But money is limited, so eventually there has to be a trade-off. Another word for this type of trade-off is a **constraint**. A person, business, or government is constrained from doing something because it lacks funds or time. When an individual or an organization makes a choice, it has an **opportunity cost**, or a loss of the benefit that would have been gained from choosing the alternative. You will learn more about opportunity costs in later topics.

Who Are Economists? Professionals who study economics are called economists. They use models and data to explain why people, businesses, and governments make the choices they do. Economists do this in specific ways:

- **Tracking Trends** Is the average person spending more these days? Are hardware stores selling more tools? Economists notice and collect information on these changes in behavior.
- **Making Forecasts** Economists use models, data, and trend information to make forecasts, which are predictions of what will happen to people and markets. Businesses, governments, and media outlets pay economists to tell them what is likely to happen.
- **Providing Guidance in Decision-Making** Economists use their own forecasts and those of other economists to help firms and governments in numerous ways. They help businesses decide crucial questions surrounding how many workers to hire, how much to pay their workers, and how much to produce. They also help businesses and governments decide how to best use their resources. For example, a forecast pointing to an upcoming downturn in the economy might lead an economist to advise a manufacturer against constructing and equipping a new, state-of-the-art

resources are actually always limited. You and other consumers need to decide which services and goods you need and which you can live without. In other words, you face constraints and trade-offs that inform your decision making.

On a larger scale, economic trade-offs arise when a society doesn't have enough resources to meet all of its wants and needs. Imagine a country whose citizens highly value national security and a strong military. A majority of the citizens also support generous social welfare benefits, such as free child care, significant jobless benefits, long-term leave for new parents, and other similar social programs. If the country decides that it cannot maintain both its considerable military budget and its generous social welfare program, citizens and policy makers have a choice to make:

- They can maintain current tax rates and choose to reduce defense spending and/or spending on social programs.
- They can maintain current tax rates and choose to cut funding to other areas of government, such as infrastructure or business development.
- They can increase taxes to allow full funding of both national priorities.

The trade-offs inherent in each of these options are clear. The scarcity of tax revenue means that one or more programs will suffer. And even if taxes are raised and each is “fully funded,” there will always be some citizens who want more funding for each: A new missile system or higher pay for soldiers, expanded job training, free healthcare for seniors, or other social programs. Scarcity and trade-offs are unavoidable.

Economic Resources: Factors of Production

The ingredients that go into the making of goods and services are called **economic resources**, which are also known as **factors of production**. Economists identify three types: land, labor, and capital. These resources are the building blocks of the economy, and producers put them together to produce goods and services.

Land All natural resources that the earth provides and that humans use to make goods are referred to as **land**. It includes not just the soil, but the water that flows on it, the minerals underneath it, and the right to use the air above it. Every physical good that is produced uses some type of natural resource. Even though some people and countries have huge supplies of a particular resource, no person or country has an unlimited supply.



Oil is a nonrenewable natural resource. These nodding donkey rigs are pulling crude oil out of the ground. **TOPIC 11 SCARCITY** 7

facility. Or, a forecast of increasing tax revenues might lead an economist to suggest a city undertake its plan to upgrade its water-filtration plant.

As economists carry out these tasks, they sometimes make mistakes. What has happened in the past can reveal what may happen in the future. However, past performance is no guarantee of future results. That's why economists' predictions don't always come true—and why people sometimes joke that economists have predicted nine of the last five economic downturns. In other words, economists may forecast that difficult times are ahead, but those difficult times may not arrive. Further, economists often disagree with one another about the best ways to improve the economy.

What Are the Branches of Economics?

Economics has two main branches, but each branch affects the other. For that reason, separating them completely is impossible.

Microeconomics The focus of this book is **microeconomics**—the examination of how economic forces affect individual parts of the economy. (*Micro-* is a prefix meaning “small.”) Microeconomics focuses on economic decisions by you, your family, workers in your community, governments, and businesses in your neighborhood. You will also learn about similar decisions elsewhere in the world. A business owner wondering, “What will happen to our sales if we raise our prices?” is an example of a microeconomic challenge.

Macroeconomics In contrast, **macroeconomics** is the study of how changes affect the economy as a whole instead of its individual parts. (*Macro-* is a prefix meaning “large.”) The president of a country wondering, “What effect will an increase in taxes have on consumer spending?” is an example of a macroeconomic challenge.

Goods, Services, and Other Terms Economists Use

Using the same terms economists do will help you describe difficult concepts precisely. Here are a few basic terms to understand.

Goods and Services Items that you can see or touch and that have value are **goods**. Clothes, cars, computers, and books are all examples of goods. **Services** are things that have value even though you can't see or touch them. If you get a haircut, see a doctor, or take a college course, you are receiving a service.

Consumers and Consumption Anyone who buys goods and services for his or her personal use is a **consumer**. You may be many things—a human being, a student, an athlete, or a fan of ukulele music. Economics, though, views you primarily as a consumer or a producer. Buying goods and services is called **consumption**.

How do these terms fit in with the issues of trade-offs and scarcity? The

Labor The people who create goods and services are referred to as **labor**. Other terms for labor are “human resources,” “human capital,” and “the workforce.” Both the number of workers and their degree of productivity are key factors in making choices. A community, state, or country with too few people of working age will be unable to use its other resources effectively.

For example, in 2015, Italy reached a population of almost 61 million. But because its birth rate was so low compared to its death rate, the population began to decrease, and its percentage of retired elderly increased. To increase the size of its working population, the government considered steps to encourage people to have more children and to immigrate into the country. A company can increase its production by hiring more employees.

The productivity of those workers depends on their level of skill, the quantity and quality of tools available to them, and the technology available to them. For example, the European country of Luxembourg is tiny and has a small population, but according to the Organization for Economic Cooperation and Development, it had the most productive workers in the world in 2015. Economists determine a community's or country's productivity by adding up the value of all the goods and services a country produced in a year and dividing it by the number of hours that all employees worked in that year. A company can increase its productivity by investing in training its employees or updating its technology.

Capital The tools, machines, buildings, and factories that are used in the creation of goods or services are known as **capital**. These ingredients are sometimes referred to as capital resources or physical capital. A manufacturing plant where people produce cars is an example of capital. So is a school because it is the site of a service industry (education). At times, people use the term “capital” to mean money used for investment, but economists usually use the term in this broader sense.

One trait that all capital has in common is that it eventually wears out or is used up. For instance, machines and tools break down, and buildings age so much that they have to be repaired or abandoned. The owners of capital must consider how to make the best, most profitable use of the capital that is available to them. If the owner doesn't replace capital that has been used up, then the amount of goods produced will decline.

For example, a bicycle factory is an example of capital. If the factory owners don't repair or replace machinery that breaks down, then the factory will produce fewer bicycles than before and will most likely bring in less money. This reduction in capital can have ripple effects, such as lost jobs and fewer tax revenues to pay for government services.

In addition to physical capital of the kind already discussed, economists often talk about the human capital that labor offers to any organization—a business, a nonprofit organization, or a government. **Human capital** refers to the knowledge, skills, abilities, experiences, and creativity, that help people maintain and increase their productivity.



Skilled workers with high-quality tools and training are more productive than workers without those tools and training. This welder has the training as well as the angle grinder and safety equipment she needs to complete complex tasks.

Entrepreneurship Putting together the three factors of production (land, labor, and capital) is called **entrepreneurship**. The person who organizes a business is an entrepreneur, and he or she takes on risks and sometimes reaps rewards. If you start a delivery business, develop an app and offer it for sale on the Internet, or make crafts, then you are an entrepreneur.

Entrepreneurs develop new products, figure out more efficient means of production, and pioneer new ways of running the business. By putting in time, money, and effort in a business, the entrepreneur hopes to receive a profit. Entrepreneurship is risky. According to the Small Business Administration, 30 percent of U.S. businesses fail within the first two years of operation, and 50 percent fail within the first five years. However, many entrepreneurs relish hard work and risks. They often agree with the author and business leader John A. Shedd (1850–1926), who noted, “A ship in harbor is safe, but that is not what ships are built for.”

Rival and Non-Rival Factors of Production

Scarcity, constraints, and trade-offs apply to products that are in limited supply. Most products have a **rival nature**, only one person can consume them at a time. Even if you and your friends share a plate of nachos, only one of you can consume a single bite of a nacho at a time. Even if you and other family members share a car, only one of you at a time can drive it. Nachos, cars, and most other goods and services have a rival nature because one person’s consumption affects the consumption of others.

Non-Rival Factors of Production In 2017, *The Economist* magazine declared that the most valuable resource in the world was no longer oil—it was data. Companies including Facebook, Apple, Microsoft, and Google’s parent company Alphabet grew into enormous companies by harvesting user data and selling it to others.

As increasing amounts of established knowledge become freely available, people and organizations are able to use it to make medical breakthroughs, develop new inventions, and figure out new ways to provide goods and services more efficiently. However, even when established knowledge makes scarcity less of a problem, humans’ time, effort, and attention are limited resources and may get used up.

The Big Questions of Economics

The study of economics comes down to this: in most places and most cases, there is not enough of everything to go around. As a consumer, you think about what resources are available to you and plan carefully to spend them wisely. Families, communities, and societies do this too. Society allocates, or distributes, more resources to people or things that it values more highly than others. Every economic system must answer some basic economic questions:

- What goods and services will be produced?
- How will those goods and services be produced?
- Who will consume the goods and services?

ANSWER THE TOPIC ESSENTIAL QUESTION

1. In one paragraph, explain how individuals and economies confront the problem of scarce resources.

Key Terms

trade-off	consumption
economics	economic resources
scarcity	factors of production
constraint	land
opportunity cost	labor
microeconomics	capital
macroeconomics	human capital
goods	entrepreneurship
services	rival nature
consumer	non-rival nature

Data has a **non-rival nature** because more than one person or business at a time can use such information without depleting the supply for others. For example, unless you opt out of location tracking on your phone, your service provider sells information about your location to third parties. These third parties then send you advertisements based in part on your location. Many companies can use the same data about your location at the same time without using it up.

Your browsing history and your medical history are two other examples of non-rival data. Companies can use and reuse this data. This situation has caused concern among many people and some governments about individuals’ privacy rights.

Non-Rival Does Not Mean Freely Available Just because data is non-rival doesn’t mean pieces of such information are free and available to all. Companies spend huge sums on consumer data, so they don’t want to share them with the public in general or rivals in particular. Some companies hoard nearly all the customer data they collect, even if universities, hospitals, or government agencies might benefit from using them. The resource isn’t scarce, but its owners treat it as if it were. Data hoarding can also lead to disorganized storage and weak security measures—which means that hackers might steal credit card numbers, medical data, or other personal information.



Seats in a stadium to watch a soccer match are a rival good, but watching on television is a non-rival good.

Established Knowledge Data that companies gather aren’t always the same thing as established knowledge. Established knowledge is publicly available, has been evaluated and verified by a knowledgeable person or group, and is generally accepted as true. Following are some sources of established knowledge:

- Governments publish medical, scientific, and census data.
- The United Nations provides data about population, health, and trade.
- Some nonprofits share their research results freely with the public.
- Software developers share code snippets for others to use and modify.

MULTIPLE-CHOICE QUESTIONS

1. People and groups allocate the factors of production because
 - (A) land, labor, and capital are evenly divided among the members of a society in most economies today
 - (B) some goods and services are of a rival nature, even though most modern goods and services are non-rival
 - (C) regardless of technology, there are never enough resources to satisfy humans’ almost unlimited desires
 - (D) capital eventually becomes exhausted and must be replenished, even though land and labor are unlimited resources
 - (E) societies depend on entrepreneurship to combine the three factors of production as efficiently as possible
2. Which of these issues would a microeconomist most likely study?
 - (A) Whether the federal government is managing national parks wisely
 - (B) What impact the opening of two new factories has had on a city
 - (C) How a country can increase its productivity through technology
 - (D) What impact entrepreneurs have on natural resources globally
 - (E) The impact of federal subsidies on international trade agreements
3. Which of these is an example of capital as economists define it?
 - (A) A consumer
 - (B) The oil beneath publicly owned land
 - (C) A forest of pine trees
 - (D) Money used to buy a movie ticket
 - (E) A factory

FREE-RESPONSE QUESTION

1. Third Coast Lumber (TCL) has purchased 100 acres of forestland and intends to harvest the trees for lumber. The company has purchased equipment to log the trees and transport them. It has hired a manager to supervise the project and ten loggers to operate the equipment.
 - (a) Identify the land resource used by Third Coast Lumber.
 - (b) Identify the capital used by TCL.
 - (c) Identify the labor used by TCL.
 - (d) Identify the entrepreneur, and explain his or her role.
 - (e) Is the resulting lumber of a rival or non-rival nature? Why?



THINK AS AN ECONOMIST: DESCRIBE ECONOMIC CONCEPTS

Like other social sciences, the field of economics has a unique set of concepts that provides the foundation for its theories. Being able to accurately describe the key concepts is an essential part of understanding these theories. To describe a concept, answer these questions about it:

- What is the definition?
- How does it relate to other concepts?
- What are examples of the concept?
- Why is it important in the field of economics?

For example, consider the concept of scarcity. As you read in this topic, scarcity is defined as the gap between resources, which are limited, and wants or desires, which are practically unlimited. Scarcity is such a fundamental concept that it relates to almost all other economic concepts. In fact, scarcity is the fundamental driver of economic decision-making. A consumer, for example, has a limited budget. Because of that limited budget, she has to make decisions, such as whether to have a mechanic fix the problems in her car or to buy a new car.

Apply the Skill

Practice describing economic concepts by answering the following questions about the concept of economic resources.

1. What is the definition of economic resources?
2. How do resources relate to the concept of scarcity?
3. What are three examples of economic resources?
4. Why is the concept of economic resources important in the field of economics?

Topic 1.2

Resource Allocation and Economic Systems

"Choosing where to live, what to do, even which clothes to put on in the morning is tough enough for those of us accustomed to making choices; it can be utterly paralyzing for people who've had decisions made for them by the state their entire lives."

—Barbara Demick, *Nothing to Envy: Ordinary Lives in North Korea* (2009)

Essential Question: How do different economic systems allocate resources?

How would you run the economy of your household, your community, or your country if you could? Would you divide up all resources equally, so everyone gets the same? Maybe you would give more resources to people who needed more, people who worked harder, or people who did something to please you.

An **economic system** is defined by the way a society answers three questions:

- What goods and services will be produced?
- How will those goods and services be produced?
- Who will consume the goods and services?

The economic system where you live helps to shape your entire life. In one type of system, you might know from an early age that you would do the same type of work your parents and grandparents had done. In another type of system, the government might assign you a career based on how well you did in school or what economic planners thought the economy needed to prosper. In still another, you might be able to choose your own career—if others valued your goods or services enough to pay you a wage that you found acceptable.

In each system, someone or something different also controls the **means of production**. This term refers to everything used to supply goods and services, such as farmland, copper mines, factories, office buildings, robots, and supercomputers. The owners of the means of production control much of a society's economy.



ECONOMICS PERSPECTIVES: HOW MUCH CHOICE DO CONSUMERS WANT?

Consumers want choices. Further, when asked, they usually say they want more, rather than fewer, versions of an item to select from. But can the number of choices be too many?

The Traditional View The traditional view of choice says that consumers weigh the costs and benefits to make the best choices for themselves. They base their decisions on their personal preferences and long-term goals. This model assumes people are rational, have perfect self-control, and never waver between two opposing wishes. It ignores that habit, emotion, or some other factor can overrule reason.

Behavioral Models In reality, human beings often act unpredictably. For example, they often do not have all the information they need to make rational decisions. They sometimes lack self-control. And they may make decisions based on immediate gratification without taking into account the long-term effects.

Rather than taking a "one size fits all" approach to choice, behavioral economists look at the way the human brain actually works. Choices are the result of many different mental processes, including perception, thinking (which includes reasoning and imagination), memory, and emotion. People may make irrational choices because anxiety produced by stress suppresses those parts of the brain that aid in rational decision making.

The Paradox of Choice According to psychologist Barry Schwartz, people want choices, but not too many of them. Choice overload occurs when consumers are confronted with too many choices. This may be the result of several factors, including the sheer number of options (such as style and color), time constraints, or consumers' preferences. The result of choice overload can lead to unhappiness, stress, just going with the easiest option, or not buying a product.

Consumers can counter choice overload in several ways. They can simply limit the number of available options. They might decide to buy breakfast cereal made by only one company. They can use social networks to "follow the crowd." Rather than collect and evaluate information themselves, they can ask for advice from a friend or a consumer-oriented publication.

Support for Making Positive Decisions Economist Richard H. Thaler and legal scholar Cass R. Sunstein argue that the way government and businesses structure people's available choices makes some choices more likely than others. Hence, people can be "nudged" into making choices that are in their best long-run interest. For example, displaying healthy foods at eye level in a grocery store or at the beginning of the line in a cafeteria can lead more people to eat food that is good for them.

Types of Economic Systems

To economists, another question that helps define the different types of economic systems is: *Who or what answers the three questions?* There are a few different types of economic systems, and in each, someone or something different answers this question and the three questions above.

Traditional Economy In a **traditional economy**, what has happened in the past answers the three questions. Traditional economies are almost exclusively tied to communities of subsistence farmers and herders. Cultural traditions linked to family and/or tribal units determine what crops are grown or what animals are raised, what farming or herding methods are employed, and how the resources produced are utilized and shared. In this type of economy, the means of production are controlled by the community. Traditional economies are increasingly rare in the modern world.

Command Economy In a **command economy**, a central authority answers the questions. Command economies, also known as planned economies, are often an outgrowth of a socialist or communist government. In these systems, the central government devises and implements a plan for what goods and services will be produced, how they will be produced, and who will consume the goods and services. In a command economy, the means of production are controlled by the state rather than individuals or private companies. As a result, entrepreneurship is rare. Advocates for command economies argue that they can provide more equitable distribution of goods and services and greater efficiency in using resources. As with traditional economies, pure command economies have become increasingly rare.

Market Economy In a **market economy** (also called a capitalist economy), neither tradition nor the state control most economic decisions. Individuals and firms answer the three questions. Far from being discouraged or rare, private property and entrepreneurship are the backbone of a market economy. Individuals and firms have great freedom to produce whatever they like and in whatever manner they see fit. Consumers are free to purchase a wide range of goods and services they want and are able to. Producers try to maximize their profit, and consumers try to acquire the things they want at the best possible price. The market system is broadly considered to be the most efficient economic system.

Mixed Economy Today, every country in the world engages in what is known as a **mixed economy**. Most countries are mainly capitalist, allowing individuals and businesses to act in their own interests, for the most part. However, state involvement also plays a key role through actions such as safety regulations, minimum wage mandates, environmental laws, business development incentives, and many others.

The following chart sums up some of the differences between the various economic systems.

TYPES OF ECONOMIC SYSTEMS				
Key Questions	Traditional Economy	Command Economy	Market Economy (Capitalism)	Mixed Economy
What is it?	A system in which long-standing cultural customs and societal structures determine the economy	A system in which government planners decide what will be produced and who will receive it	A system in which buyers and sellers decide what a society's economic priorities will be	A system with features of both a market economy and a command economy
Who owns the means of production?	The community	The government	Businesses and individuals	Mostly businesses and individuals, but with differing levels of government regulation
What are some examples as of 2020?	The reindeer-herding Sami people of Scandinavia engage in a traditional economy. But no countries have an exclusively traditional economy.	North Korea, Cuba, and Belarus were mostly command economies.	The United States, the United Kingdom, Singapore, and Botswana were mostly market economies.	All countries are mixed economies, but each has its own mixture, where different systems are represented to a greater or lesser degree.

Resource Allocation in Different Economic Systems

A society's economic system strongly influences resource allocation. Every society that has ever existed has had scarce resources, and decisions about who controls the resources and how people use them are usually controversial. What follows is a more in-depth look at the functioning of command, market, and mixed economic systems at work in the modern world.

Resource Allocation in Command Economies For much of the 20th century, large-scale command economies existed in the former Soviet Union, China, and elsewhere. During World War II, the United States became more of a command economy as the government regulated economic activity in order to support the military. Since the late 20th century, many economies have become more market-oriented. Market economies and command economies were once considered to be opposites, but today most command economies include some degree of market-based planning. This planning involves several basic questions:

Resource Allocation in Mixed Economies All economies are mixed economies. In other words, no society is driven 100 percent by traditions, markets, or the government. However, mixed economies tend to favor either a command or a market economic system, and the way they answer the *what*, *how*, and *who* questions depends on the dominant system:

- **What goods and services do people produce?** In a mixed market economy, in addition to individual producers, the central, state, or local governments may provide services that are otherwise not available. In the United States during the 1960s, for example, railroad companies struggled to make a profit by providing passenger service, and several companies went bankrupt. To fill the resulting gap, the federal government in 1971 created Amtrak to provide railroad service between cities. Amtrak receives federal and state subsidies, or public funds, to support its operations.

In a mixed command economy, the government may permit entrepreneurs to create their own businesses on a limited basis as a way to increase worker motivation or help the economy grow.

- **How do people produce those goods and services?** In a mixed market economy, individuals and businesses have wide latitude on deciding how to provide the goods and services they create. But if the government concludes that production harms the public, it might step in with regulations. For example, the U.S. Congress regulates how food is processed so that it is safe to consume, drugs so that they are safe to consume, emissions from factories and cars to keep the air clean, and employment of children to prevent exploitation of children.

In a mixed command economy, some businesses can make production decisions based on market forces. However, the government may restrict the use of resources if a business seems to be drawing too many resources away from other endeavors.

- **Who consumes those goods and services?** In a mixed market economy, most decisions about consumption are based on the wealth of a consumer. For example, in 2018, the wealthiest fifth of American households spent \$13,348 on food. The poorest fifth spent \$4,109.

However, most wealthy countries provide a social safety net—a set of programs to support the most vulnerable members of society to obtain food, shelter, and usually health care. For example, throughout much of U.S. history, many older Americans lived with or near their children, and many people died within a few years of retiring. However, as people lived longer, families grew smaller, and young people moved to cities in search of jobs, more and more elderly lived in poverty after they retired. In response, the U.S. government created the Social Security system in 1935 to provide retired people with some income. Social Security operates as a required insurance program for which employers and employees provide the funds. As people have lived longer, Social Security has grown into the largest social safety net program in the United States.

- **What goods and services do people produce?** People produce the goods and services that the government believes are necessary to produce. They do so not to make a profit, but to best serve the country's needs as articulated by the government and its leaders. The government often tightly regulates who can start a business.

- **How do people produce those goods and services?** Central planners who work for the government set economic goals for the country as a whole. They decide where factories and other workplaces will be located, who will do what work, and how much people will be paid.

- **Who consumes those goods and services?** The government decides how much people will earn and what material goods they will be able to buy. Governments might claim to treat all citizens equally. However, in large-scale command economies such as the old Soviet Union, a small group of government leaders, scientists, and top athletes received better housing and far more luxuries than the average person had access to.

Resource Allocation in Market Economies Market economies have existed since the 1600s, as the feudal system (in which most people worked for a local lord or other large landowner) began declining. Today most people live in market economies, but all have some degree of government regulation:

- **What goods and services do people produce?** Market economies provide a vast and sometimes bewildering array of goods and services. Individuals and businesses develop, test, and produce what they believe consumers will demand—whether that is a self-driving car or a phone app that lets the user pretend to pop bubble wrap. If the market rejects a good or service, then its creator loses money.

How much people and organizations charge for goods and services depends on their competitors—others who sell identical or similar products. If you are an entrepreneur who produces a desired good or service and you have no competitors, then you can charge a high price. However, if you make high profits, other businesses or individuals will enter the market and put downward pressure on the prices you charge.

- **How do people produce those goods and services?** If you live in a market economy, innovation and technology are likely to be all around you. The career that you succeed in may not have existed in your parents' time. In fact, it may not even have been invented yet. Market economies are much larger than traditional economies, and their large populations of consumers often generate huge amounts of trash and pollution. Balancing environmental needs with consumers' desire for innovation is one of the challenges of a market economy, as individuals, businesses, and governments consider constraints and trade-offs.

- **Who consumes those goods and services?** What people consume reflects what they can afford to purchase. Individuals with more resources can consume more, while individuals with fewer resources consume less.



Source: DuKai/Getty Images

China was overwhelmingly a command economy in the 1950s through the 1980s. In the 1990s, China began adding free-market elements to its economy, following the advice of its leader Deng Xiaoping to "let some people get rich first." As a result, cities such as Shanghai (shown above) quickly became very wealthy, while rural areas were slower to escape poverty.

Control of Scarce Resources in Economic Systems

Every economic system involves constraints and trade-offs as people and institutions struggle for control of resources. Furthermore, each system makes decisions about the allocation of scarce resources through key institutions, or well-established organizations. Key institutions in a market economy are private businesses, including both large corporations and small enterprises run by individuals or families. In addition, local, state, and national governments are important in organizing and regulating the activities of private businesses.

Each system has coordinating mechanisms, or organizations and technologies through which natural resources reach companies and goods and services reach customers. For example, suppose you are a manager of a company that manufactures bicycles. Think of all the pieces and parts that go into making bikes: pedals, tires, gears, handlebars, and so forth. Your company could make each part, but you are likely to be more efficient if you buy pieces from various specialized manufacturers. Your company coordinates the process of getting all the parts together, assembling the bicycles, and shipping them to stores. All these activities are known as coordinating mechanisms. Resources are treated differently under different economic systems.

Human Resources People who create goods and services (also called human resources or labor) receive different treatment depending on the economic system they are in:

- Traditional economies value workers who can carry on the skills and crafts of their ancestors. Family and community are the key institutions.
- Command economies might support research and innovation sponsored by the government, but they often criticize individual entrepreneurs for being more focused on making money for themselves than on serving the public.

- Market economies value entrepreneurship—being able to combine human resources, natural resources, and capital resources in a way that succeeds in the marketplace.

Natural Resources Materials that the planet provides and that humans use (also called land) are essential to every economic system. In every system, individuals and companies must employ coordinating mechanisms to gather natural resources and supply them to the people who use them to create products:

- Traditional economies use individuals and communities to gain access to natural resources. They place the least burden on natural resources because these societies are small and do not innovate as often as other economies do.
- Many command economies, such as China's, are also industrialized. But in a command economy, government is the controlling institution, making decisions about the kinds of products and services that the country will produce.
- Many market economies are highly industrialized. That is, they use technological processes to turn raw materials into finished products. Market economies use natural resources heavily as producers and consumers continually seek lower-cost, newer, and more desirable products.

Sometimes poor use of natural resources causes the same problems in market economies and command economies. For instance, ill-advised farming methods caused massive dust storms in the United States in the 1930s and in China in the 2010s.

Capital Resources Tools and machines are part of every economic system, and factories and offices are part of most economic systems. Again here, in different systems these resources are treated differently:

- People in traditional economies value the tools and machines their ancestors used, such as fishing nets and sleds.
- In command economies, the government owns capital resources.
- In market economies, individuals and private groups own most capital resources.

ANSWER THE TOPIC ESSENTIAL QUESTION

1. In one to three paragraphs, explain the three main economic systems and how they allocate resources.

FREE-RESPONSE QUESTIONS

1. An economist studies two countries to determine how efficiently each uses its resources. The economist gathers this data on the two countries.

Country	Percentage of Factories Owned by the Government	Goods and Services Produced Annually	Estimated Number of New Products and Services Introduced Annually	Estimated Failure Rate of New Businesses
Country J	95 percent	\$2.0 billion	380	Not applicable
Country L	13 percent	\$3.1 billion	4,200	88 percent

- (a) Based on the data in this table, is Country J a traditional economy, a market economy, or a command economy? Explain.
- (b) Based on the data in this table, is Country L a traditional economy, a market economy, or a command economy? Explain.
- (c) Based on what you have read in this topic, why do you think the residents of Country J have access to fewer new products and services each year?
- (d) Based on what you have read in this topic, why do you think Country L's estimated failure rate of new businesses is so high?
- (e) Based on what you have read in this topic, why is the estimated failure rate of new businesses in Country J listed as "not applicable"?

Key Terms

economic system	command economy
means of production	market economy (capitalist economy)
traditional economy	mixed economy

MULTIPLE-CHOICE QUESTIONS

1. People in traditional economies, market economies, and command economies allocate resources differently because
 - (A) traditional and demand economies value entrepreneurship more highly than market economies
 - (B) traditional and command economies do not face the problem of scarcity while market economies do face scarcity
 - (C) command economies are smaller than traditional or market economies and therefore have fewer options
 - (D) market economies are smaller than traditional or demand economies and therefore have fewer options
 - (E) they have different opinions about what is most important, necessary, and worthwhile in a society
2. Which of these are you most likely to find in a command economy?
 - (A) A conference on entrepreneurship and starting new businesses
 - (B) A multiyear centralized economic plan that lists production quotas
 - (C) Baskets woven in the same way they were 300 years ago
 - (D) Minimal government policies regulating economic activity
 - (E) A wide and varied selection of newly developed consumer goods
3. Which type of economic system would the United States be considered as knowing that government creates regulations, price control mechanisms, and helps to allocate resources while businesses and entrepreneurs still have a chance to be vital decision makers in the productive economy?
 - (A) Pure traditional economy
 - (B) Mixed traditional economy
 - (C) Pure command economy
 - (D) Pure market economy
 - (E) Mixed market economy

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THINK AS AN ECONOMIST: DESCRIBE LIMITATIONS OF ECONOMIC MODELS

The traditional, market, command, and mixed systems are economic models, constructs of how the world works rather than examples of actual economies. Because of its structure and mode of operation, each economic system puts certain constraints on its economic actors. Those constraints impose limitations on economic performance.

To describe the limitations of an economic system, focus on the three basic economic questions:

- What are the limitations on what is produced?
- What are the limitations on how goods and services are produced?
- What are the limitations on who consumes those goods and services?

Consider traditional economies. Because they rely on traditional production methods, these economies have little variety in goods and services being produced. Traditional economies are low on innovation, which hampers variety in two ways. Lack of innovation dampens the inventiveness that leads members of the society to imagine both new goods and services and new methods of production. Traditional economies tend to rely on readily available natural resources and to be low in capital. The resulting limited technology restricts the quantity of goods produced and further constrains variety in goods and services. Finally, traditional societies tend to favor those with the most resources. This can result in some unequal allocation of productive output.

Apply the Skill

Using your knowledge of your own life experiences and the information in this topic, analyze the mixed market economic system of the United States. Write a paragraph that identifies the limitations on what is produced, how it is produced, and who has access to production.

Topic 1.3

Production Possibilities Curve

"I was missing out on a lot of things that my friends were doing, but in another way, they were missing things I was doing. It was kind of a trade-off I had to make."

—Professional tennis player Victoria Azarenka, 2012

Essential Question: How does the production possibilities curve illustrate constraints and trade-offs?

Which is more important: spending time with friends or training to become a winning athlete? Of course, different people will answer that question in different ways. People make these kinds of decisions every day, because a person's time is a scarce resource. Families, communities, and companies make these decisions as well, not just about scarce time, but also about other scarce resources.

Each of these choices involves a **trade-off**, a sacrifice of one desired thing in exchange for something more highly desired. In other words, to gain something such as athletic training, people must trade off something else for it, such as relaxed time with friends. The "price" that is paid for a trade-off such as this is called an **opportunity cost**.

Economists can use tables and graphs to show trade-offs associated with allocating scarce resources. An economic model called the production possibilities curve uses graphs to demonstrate various production decisions. This model shows how different choices in *what* to produce and *how many* to produce will affect one another.

The Production Possibilities Curve

A basic economic model that illustrates scarcity and opportunity costs is the **production possibilities curve (PPC)**. Like other models, the PPC is theoretical and based on simplified factors. (See Topic 1.2.) It explains the production possibilities of an enterprise that makes only two different goods when there are limited supplies of a resource that both goods need in order to be produced. No enterprise or economy is that simple, but the simplicity and limitations of the model help make the concepts clear.

To see how the production possibilities curve illustrates scarcity and trade-offs, consider the example of a family-owned business called Poweshiek Forest Furniture, which has six employees. This company produces only two products: tables and chairs, both made of hardwood from the walnut tree. The owners of

example, if they want to make 45 tables, they would have enough resources left to make 10 chairs. (See point A on the Production Possibilities Curve graph.) If they want to make 25 tables, they would have enough resources left to make 35 chairs. (See point B.)

Feasibility and Efficiency

The points on the PPC show what the feasibility, or possibility, is of producing certain amounts of two products. That is, Poweshiek Forest Furniture has enough wood and enough workers to make any combination of tables and chairs along the PPC. Those points also show the **efficiency** of those combinations. Production is efficient if it uses all available resources with no missed opportunities.

Points inside the PPC are also feasible, but they are not efficient. If Poweshiek Forest Furniture can make 25 tables and 35 chairs (a point on the PPC), it could also make 10 tables and 35 chairs (point C), but it would be inefficient to do so because it would not be using all its possible resources. In other words, its resources would be **underutilized**. A situation like this represents a **contraction**, a decline in output, which could have many causes. Maybe orders for new tables dropped and the company cut back on hours for workers, or maybe some of Poweshiek Forest's employees took vacation time. Any factor that would put Poweshiek Forest in the position of not being able to use all its resources would create inefficiency.

Now suppose Poweshiek Forest received a big order for 60 chairs and 30 tables (point D) on the graph. Would they have the resources to fulfill that order in a month? No. Anything that lies outside the PPC is not possible to produce with the given resources.

Opportunity Costs

Poweshiek Forest, like any other business, individual, family, or community, faces problems of scarcity and has to make choices. If it decides to make 25 tables in order to make 35 chairs as well (point B), the company has lost the opportunity to use its resources to make another 25 tables, though it has gained 35 chairs in the trade-off. That lost opportunity is called an **opportunity cost**—the loss of a benefit you would have gained (25 more tables) because you chose an alternative (35 chairs).

Calculating Opportunity Costs To calculate opportunity costs using data in a table, compare the numbers in the same row in each column. For example, look back at Poweshiek Forest's Production Trade-Offs above. The second row shows that to produce 10 chairs, Poweshiek Forest can produce only 45 tables. Opportunity costs are calculated based on what is sacrificed in the first column. So the opportunity cost for producing the first 10 chairs is 5 tables.

Calculating opportunity costs from a graph follows the same basic principle, but the graph allows you to see a large range of points at which different combinations are possible. To calculate the same situation as above—the opportunity cost of making 10 chairs—you find the point where 10 chairs (y-axis) intersects with tables (x-axis) on the PPC. That is point A on graph. If

Poweshiek Forest Furniture wonder how many tables and how many chairs they can make in a month with the resources they have.

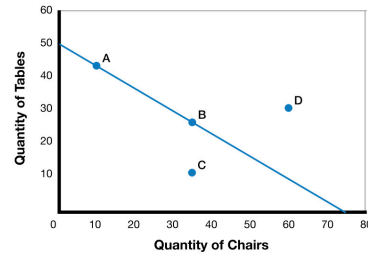
The production possibilities can be represented in a table.

POWESHIEK FOREST'S PRODUCTION TRADE-OFFS	
Production of Tables	Production of Chairs
50	0
45	10
25	35
10	60
0	75

Poweshiek Forest Furniture can look at this table and see that if they make 25 tables, they have enough resources left to make 35 chairs; if they make only 10 tables, they would have the resources to make 60 chairs.

The production possibilities curve (sometimes referred to as the *production possibilities frontier*, or *PPF*, because in some instances, the "curve" appearing in a graph may actually be a straight line) provides a way to visualize the economic relationships in their output.

PRODUCTION POSSIBILITIES CURVE



According to the PPC, if Poweshiek Forest uses all its wood and all of its workers' time to produce only tables (50 on the y-axis), it would have none left for chairs (0 on the x-axis). If it used all its wood and all of its workers' time to produce only chairs (75 on the x-axis), it would have none left for tables (0 on the y-axis).

Points anywhere on the production possibilities curve or *inside* it, however, would show the company how much of each product it could make if the decision-makers want to allocate scarce resources so they can make both. For

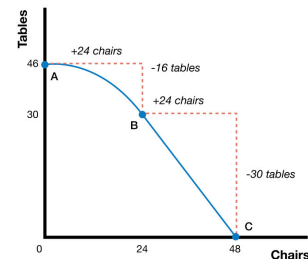
you look to the y-axis where the quantity of tables is represented, you can see that point A represents 5 tables lost, so that is the opportunity cost. Opportunity costs are calculated based on changes on the y-axis.

Constant Opportunity Costs In the production possibilities curve in the graph, every chair is worth $\frac{2}{3}$ of a table ($\frac{50 \text{ tables}}{75 \text{ chairs}} = 0.66$ or $\frac{2}{3}$). For every chair Poweshiek Forest makes, it "pays" an opportunity cost of $\frac{2}{3}$ of a table. If it makes three chairs, it gives up the chance to make two tables. If it makes 12 chairs, the opportunity cost is eight tables. The opportunity cost of a chair is always $\frac{2}{3}$ of a table. In this scenario, the opportunity cost does not change no matter what combination of chairs and tables Poweshiek Forest makes. This constant cost of 0.66 of a table for each chair made results in a production possibilities curve that is a straight line, since the change in the y-axis is always in the same relationship to the change in the x-axis.

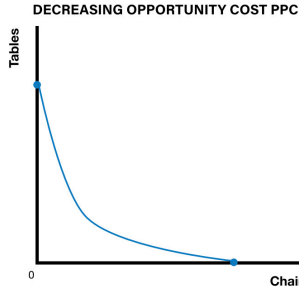
Increasing Opportunity Costs Suppose, though, that the opportunity cost for each additional chair increases. The first 24 chairs Poweshiek Forest makes have an opportunity cost of 16 tables (point B), but the next 24 chairs require giving up 30 tables (point C) because the chairs take more of the workers' time, which was used more efficiently to make tables. A PPC showing increasing opportunity costs is a curved line bowed outward instead of a straight line.

The increasing opportunity costs reflect the reality that most resources are not as efficiently used for one task as for another. Consider the skills of a lawyer. A firm could ask lawyers who specialize in criminal defense to help out the tax law department. So, instead of working rapidly in a field they are experts in, they would work more slowly in a new field they were gaining experience in.

INCREASING OPPORTUNITY COST PPC



Decreasing Opportunity Costs Up until now, all six workers made both tables and chairs. Suppose, however, the owner trained three of the workers to make only chairs. They took a course in woodworking that increased their skill and speed at making chairs. Before their training, for every 12 chairs Poweshiek Forest produced, they sacrificed 8 tables. After the training in making chairs, though, Poweshiek Forest could make 30 chairs and sacrifice only 6 tables. They kept improving their skills and could soon make 40 chairs for 4 tables. The PPC for a situation in which opportunity costs decrease is a curved line bowed inward instead of a straight line.



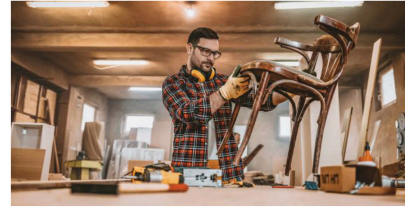
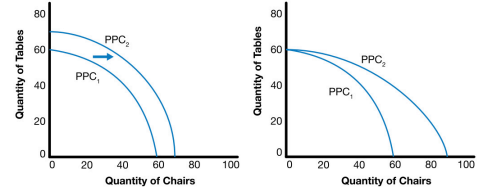
The Production Possibilities Curve and Growth

Most people, businesses, and societies are interested in **growth**, or increasing production. The production possibilities curve can represent growth resulting from possible additional resources, such as hiring more workers, using better management techniques, or improving technology. Any or all of these resources could potentially allow goods to be produced more efficiently. In other words, economic growth occurs through an increase in the quantity or quality of resources. In these cases, the resulting differences can be represented graphically.

The pair of graphs on the following page shows two types of shifts that occur when economic growth occurs. In each graph, the original PPC is labeled *PPC₁* and the PPC that results from the shift is labeled *PPC₂*. In the first graph, increases in production of both tables and chairs are equal, indicating that additional resources are available, and that they are being shared equally by both products. The figure illustrates economic growth—an increase in the output of tables and chairs. (If the direction of the arrow were reversed and the labels were switched, the figure would illustrate economic contraction—a decline in output.)

The second graph illustrates a shift that might be attributed to changes in the factors of production for just one good, just chairs, for example. Some of these changes might be access to additional hardwood, more workers, or the adoption of new technology in the production of chairs.

THE EFFECTS OF ECONOMIC GROWTH ON THE PPC



More workers in the shop might translate to the kind of shift seen in the right-hand graph.

ANSWER THE TOPIC ESSENTIAL QUESTION

- In one paragraph, explain what a production possibilities curve is and how it can be used to show trade-offs.

Key Terms

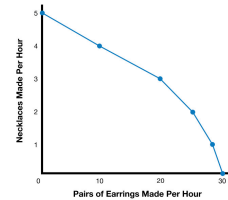
trade-off	underutilized
opportunity cost	contraction
production possibilities curve (PPC)	growth
efficiency	

MULTIPLE-CHOICE QUESTIONS

- The best definition of a PPC is that it is a model
 - of whether a company's business is likely to decrease
 - of how much competition exists in a market
 - that helps economists determine the one combination of production outputs that will use resources most efficiently
 - that shows the maximum amounts of products that can be produced given current levels of resources and technology
 - that demonstrates how businesses can avoid making trade-offs
- Which factor would move a company's production possibilities curve to the right?
 - The company's oil suppliers are charging more for oil.
 - The personal computer becomes widely used.
 - The number of engineers on its staff declines.
 - The union has negotiated a wage increase for workers.
 - The country increased taxes on products being imported.
- Bryana's Tree Corp has a constant opportunity cost production possibility curve in the production of lumber and furniture. If the company was efficiently producing 10 units of lumber and 5 units of furniture and wanted to produce more of both goods, what would be necessary to produce more of both goods?
 - Increasing wages for workers
 - Decreasing wages for workers
 - Increasing the prices for both lumber and furniture
 - Building a new factory
 - Producing goods more efficiently

FREE-RESPONSE QUESTIONS

- Jaylan's Jewelry makes both necklaces and earrings at three factories around the country. Jaylan's Jewelry's production possibilities can be found in the diagram below. Use the information from the production possibilities curve and your knowledge of economics to answer the questions that follow.



- Based on the data in this PPC, identify the production level of 2 necklaces and 20 pairs of earrings as efficient, inefficient, or unattainable. Explain.
- Based on the data in this PPC, identify the production level of 4 necklaces and 20 pairs of earrings as efficient, inefficient, or unattainable. Explain.
- Based on the data in this PPC, identify the production level of 4 necklaces and 10 pairs of earrings as efficient, inefficient, or unattainable. Explain.
- Assume that the company decides to demolish two factories leaving just one factory open. Explain what the change would be to the production possibilities curve.
- Assume instead that Jaylan's Jewelry wanted to increase production possibilities to produce 5 necklaces and 25 pairs of earrings. Identify one change that could attain this level of production.

THINK AS AN ECONOMIST: DRAW AN ACCURATELY LABELED GRAPH

A production possibilities curve plots the output of any two goods or services by a producer. Producers use it to study and identify opportunity costs inherent in the production process. The curve helps them decide how best to use their resource inputs of land, labor, and capital.

Apply the Skill

Practice creating and accurately labeling graphs by completing the following task using the scenario of Acme Enterprises.

The management team of Acme Enterprises faces a decision. Production for the summer selling season must begin soon. They have to choose how best to use their factories, workers, and budget for materials.

Use the data in the table to create a production possibilities curve the management team can use. Label the graph accurately by including descriptions of the x-axis and y-axis. Give the graph a title as well.

Output of Beach Umbrellas	Output of Beach Chairs
350,000	0
340,000	5,000
310,000	12,000
280,000	19,000
180,000	27,000
110,000	33,000
0	39,000