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Introduction:
What Is Economics?

Chapter Summary

Economics is about making choices when options are limited. Options in an economy are limited because the factors of production are limited. We can use economic analysis to understand the consequences of our choices as individuals, organizations, and society as a whole. Here are the main points of the chapter:

• Most of modern economics is based on positive analysis, which answers the question “What is?” or “What will be?” Economists contribute to policy debates by conducting positive analyses about the consequences of alternative actions.

• Normative analysis answers the question “What ought to be?”

• The choices made by individuals, firms, and governments answer three questions: What products do we produce? How do we produce the products? Who consumes the products?

• To think like economists, we (a) use assumptions to simplify, (b) use the notion of ceteris paribus to focus on the relationship between two variables, (c) think in marginal terms, and (d) assume that rational people respond to incentives.

• We use macroeconomics to understand why economies grow, to understand economic fluctuations, and to make informed business decisions.

• We use microeconomics to understand how markets work, to make personal and managerial decisions, and to evaluate the merits of public policies.

Learning Objectives

1. List the three key economic questions.
2. Discuss the insights from economics for a real-world problem such as congestion.
3. List the four elements of the economic way of thinking.
4. List three ways to use macroeconomics.
5. List three ways to use microeconomics.

1.1 What Is Economics?

Economics is the study of how people, businesses, governments, and other organizations make choices when there is scarcity. Scarcity means that the resources we use to produce goods and services are limited. Human wants, however, are unlimited. For instance, you may earn enough money each month to make a lease payment on a Lexus, but if you do that you won’t have money to pay for rent and buy food. Because your resources are limited, you have to choose between a nice car, and food and a place to sleep.
We call the resources used to produce goods and services **factors of production** and typically think of five types of factors:

- **Natural resources**, which are provided by nature and include land, mineral deposits, oil and gas deposits, and water.
- **Labor**, human effort, including both physical and mental effort, used to produce goods and services.
- **Physical capital**, the stock of equipment, machines, structures, and infrastructure that is used to produce goods and services.
- **Human capital**, the knowledge and skills acquired by a worker through education and experience and used to produce goods and services.
- **Entrepreneurship**, the effort to co-ordinate the factors of production to produce and sell products.

Think about the factors of production needed to open a coffee shop near your campus. You would need some physical capital, such as a building, an espresso machine, tables, and chairs. You would need labor, workers who would make the coffee drinks and who, hopefully, could suggest and help develop new recipes as they learn what your customers like. You would provide the entrepreneurial ability as you find a location and make decisions on the best way to use the resources at your disposal.

Economic analysis takes on two primary forms: **positive analysis**, which answers the question “What is?” or “What will be?” and **normative analysis**, which answers the question “What ought to be?”

An example of a positive question is “Why do athletes make more money than schoolteachers?” A related normative question would ask “Should athletes make more money than schoolteachers?” Another positive question is “How does a monopoly affect market outcomes?” A related normative question is “Should society regulate monopolies?”

**Remember**

Most of what is covered in this book will take the form of positive analysis, trying to understand the world the way it is, not the way we might like it to be.

Economics seeks to answer three primary questions:

- **What products do we produce?** Should a coffee shop sell breakfast food and lunch food along with coffee?
- **How do we produce the products?** Should the coffee shop hire bakers to make breakfast pastries or should they buy pastries from someone else?
- **Who consumes the products?** Should prices determine who buys coffee or should the coffee shop use some other mechanism?

Most of the time markets will provide the answers to these three questions. There are times when legal or regulatory restrictions are imposed on the market. We will explore how those impact economic outcomes. We will also see that there are times when legal or regulatory action improves market outcomes.

To simplify analysis, we use **economic models**. A model is a simplified representation of an economic environment. At this level, our models will often employ a graph. A model focuses on the main issues in
an economic situation. Most of our models ignore certain aspects of real markets, but the models do contain the essential features that let us understand how markets work. For example, we might assume in a model that firms sell identical goods. In most cases, we know that the goods offered by different companies are not technically identical. However, if most consumers don’t care what color facial tissues they buy, we can simplify analysis by assuming that all facial tissues are the same. By making this assumption, we remove a factor that would add a great deal of complexity to the analysis but little understanding.

1.2 Economic Analysis and Modern Problems

Policymakers, economists, company executives, and you can use the tools of economic analysis to understand and solve a variety of problems in the world. For instance, we might ask “What is the best way to reduce pollution?” and even “What is the right amount of pollution?” Economic analysis is often used to provide answers to these questions.

We can also use the tools of economics to measure the level of economic activity and to examine how changes in policy or education affect the level of economic activity and the amount of economic growth in a country.

Your book provides three examples of real-world problems that can be addressed by economics:

- Traffic congestion: How do you help people realize the true cost of driving on a road, and will this reduce congestion?
- Poverty in Africa: As economies grow, the poorest households share in the prosperity. A key source of economic growth missing from this is a well-functioning legal and regulatory system.
- The current world recession: How can we learn from history and implement policies to manage the economy effectively?

These will be used as examples in more detail in later sections of the book.

1.3 The Economic Way of Thinking

In many cases multiple things are happening at once. Most economic analysis attempts to understand how changing one variable, a measure of something that can take on different values, changes the economic outcome. To do this we often assume that all other variables are held constant in the analysis. Ceteris paribus is the Latin expression that means “to hold other variables fixed.”

Perhaps the most important thing to remember about the economic way of thinking is that economics focuses on the marginal change, that is, a small, one-unit change. Even though we may not consciously make decisions in this manner, it provides a very nice framework to understand decision making. Decisions made by individuals and institutions are usually very close to the decisions predicted by marginal analysis.

As an example of a marginal change, suppose that a store is selling sweaters for $40 each, two for $70, and three for $85. To find the marginal cost, the additional cost we must pay, of each sweater, we ask, “How much more do we have to spend to buy an additional sweater?” For the first sweater, we must spend $40. The marginal cost of the second sweater is only $30. Why? We have already spent $40 to purchase one sweater. Since we can buy two sweaters for $70, we need to spend only an additional $30 to acquire the second sweater. The third sweater will only cost us only $15 because we have paid $70 for two sweaters, and to purchase the third we must increase our payments to $85.
Study Tip
Throughout your study of economics, you will use the concept of a marginal change. Be sure that you understand that a marginal change considers how a small change in economic activity affects some other economic variable. For instance, marginal cost tells us how the production of one more unit of output changes our total costs. The marginal benefit of a slice of pizza is the change in satisfaction that comes from eating one more slice of pizza.

Here are the four main elements to the economic way of thinking:

1. **Use assumptions to simplify:** In any problem there are certain key elements we need to understand along with other elements that don’t affect the current decision. We use assumptions to eliminate the other elements, so we can focus on the key elements for the decision.

   For example, when you decide which road to take to travel from Seattle to San Francisco, you don’t take into account the curvature of the earth or all the smaller side roads along the path. You examine a flat highway map that shows only main roads. You have assumed away factors that don’t affect the decision at hand.

2. **Isolate variables:** Examine how a change in one factor (say, the price of apples) affects another (say, the quantity of apples a person purchases) while assuming all other factors (such as income) remain unchanged. We can then ask how a change in income affects the quantity of apples purchased, assuming the price of apples remains constant.

3. **Think at the margin:** Analyze a problem by asking, “What happens if we make a small change from our current point?”

   For instance, a firm might ask, “If we hire one more worker, how will our output change, holding everything else constant?” Or consider that no one tries to decide whether they should drop out of high school or become a doctor, in part because those aren’t the two options available. A marginal decision would be “do I drop out of high school or do I graduate?” The next decision would be “do I go to college or not?” Only after you graduate from college can you decide to go to medical school to be a doctor.

4. **Rational people respond to incentives:** People will change their behavior as the benefits and costs of their actions change.

   Imagine how your behavior would change if police could confiscate your car if they catch you speeding. Because the price of speeding would increase, you would be more careful to drive the speed limit. Some states will confiscate your car if you are caught driving under the influence.

Your book uses traffic congestion in London as an example. To solve the problem of traffic congestion, we first assume that all drivers and all cars have the same effect on congestion. This is an important simplifying assumption. We then examine how a government policy of charging a toll to drive on the road will affect the number of cars, holding constant things such as income and the price of gasoline. This assumption lets us focus on just the policy variable. To determine how well the toll works, we examine the effects of adding only one more car to the highway, that is, we think at the margin. In the book example, an additional car added two seconds to the travel time for each of the 900 other cars on the road. This amounted to 30 minutes of additional travel time. London decided to charge a tax of £8 per day to
drive in the city between 7 A.M. and 6:30 P.M. This higher price led some people to avoid driving in the
city during the day, thus easing congestion.

Let’s review two Applications that answer key questions:

1. How do people respond to incentives?

APPLICATION 1: INCENTIVES TO BUY HYBRID VEHICLES
This Application explains the incentives that helped the number of hybrid cars increase from
less than 10,000 cars in 2000 to more than 340,000 in 2007. Both rising gas prices and a
federal subsidy encouraged people to buy hybrids by reducing the cost of driving and
reducing the cost of the hybrid car. It is estimated that the subsidy was responsible for
roughly one fifth of the sales in 2007.

2. What is the role of prices in allocating resources?

APPLICATION 2: THE ECONOMIC SOLUTION TO SPAM
In this Application we examine the problem of spam, unwanted e-mail and text messages. The
application suggests that increasing the price of sending spam e-mail will get firms sending spam
e-mail to allocate promotional resources to other activities.

1.4 Preview of Coming Attractions: Macroeconomics

Macroeconomics is the study of the nation’s economy as a whole. Macroeconomists study questions of
inflation, unemployment, and economic growth. These are the economic issues you frequently hear about
on the news or read about in the paper and on the Web. Macroeconomics answers questions such as
“What makes economies grow?” “How can we smooth out business cycles?” “How does the Federal
Reserve affect economic performance?”

Three important reasons for studying macroeconomics are:
• To understand why economies grow.
• To understand economic fluctuations.
• To make informed business decisions.

1.5 Preview of Coming Attractions: Microeconomics

Microeconomics studies the choices of individual economic agents such as households, firms, and
governments. Microeconomics also studies how the choices made by these agents affect the market for
goods and services. Questions of output and pricing would be microeconomic questions. Some questions
addressed by microeconomics might be “How will a hurricane in Florida affect the price of citrus fruits?”
“Who pays when a tax is imposed in a market?” “When will a new business enter a market?” “Why does
the price of bottled water rise after a hurricane?”

Three important reasons for studying microeconomics are:
• To understand markets and predict changes.
• To make personal and managerial decisions.
• To evaluate public policies.
Study Tip

Economics is a way of looking at the world and understanding how the world works. To be successful in this class you must become comfortable thinking like an economist. While this may seem difficult at first, as with many things, practice will help this become second nature. That is one of the reasons it is important to work a lot of problems as you try to learn economics. Working the problems helps you to begin to see the world as an economist.

Activity

An important concept introduced in this chapter is that people respond to incentives. You can see this around you every day. As an example, think about all of the lectures and other campus events students attend because they are given extra credit. The incentive (extra credit) has changed their behavior. How incentives affect behavior is an important part of understanding economic decisions.

List a few ways that you and your fellow students respond to incentives. A good place to start is to ask yourself if you have ever attended a campus function that you normally wouldn’t attend to earn extra credit points. If you have, you have changed your behavior in response to the incentives offered.

Key Terms

*Ceteris paribus*: The Latin expression meaning other variables are held fixed.

*Economics*: The study of choices when there is scarcity.

*Economic model*: A simplified representation of an economic environment, often employing a graph.

*Entrepreneurship*: The effort used to coordinate the factors of production—natural resources, labor, physical capital, and human capital—to produce and sell products.

*Factors of production*: The resources used to produce goods and services; also known as production inputs or resources.

*Human capital*: The knowledge and skills acquired by a worker through education and experience and used to produce goods and services.

*Labor*: Human effort, including both physical and mental effort, used to produce goods and services.

*Macroeconomics*: The study of the nation’s economy as a whole; focuses on the issues of inflation, unemployment, and economic growth.

*Marginal change*: A small, one-unit change in value.

*Microeconomics*: The study of the choices made by households, firms, and government and how these choices affect the markets for goods and services.

*Natural resources*: Resources provided by nature and used to produce goods and services.
**Normative analysis:** Answers the question “What ought to be?”

**Physical capital:** The stock of equipment, machines, structures, and infrastructure that is used to produce goods and services.

**Positive analysis:** Answers the question “What is?” or “What will be?”

**Scarcity:** The resources we use to produce goods and services are limited.

**Variable:** A measure of something that can take on different values.

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**Appendix: Using Graphs and Percentages**

Graphs are a visual way of representing a relationship between variables. The relationship is usually either a **positive relationship**, meaning that the two variables move in the same direction, or a **negative relationship**, meaning that the two variables move in opposite directions. Figure 1A.4 shows a graph of a positive relationship. Figure 1A.6 shows a graph of a negative relationship. Graphs, particularly graphs of two variables, are used extensively in economics and a good understanding of the material in the appendix is needed for success.

🔗 **Study Tip**

We will use graphs throughout the text. Now is the time to make sure you understand how to understand information presented in a graph. In particular, understand the difference between those factors that cause us to move between two points on a fixed curve and those factors that cause the position of the curve to shift. Being able to work with graphs will be particularly important in Chapter 3 when you study supply and demand.

The **slope of a curve** tells us by how much a change in one variable affects the value of another variable. You can find the slope by dividing the vertical difference between two points (the rise) by the horizontal difference between the two points (the run). A graph of two variables with a positive relationship will have a positive slope. A graph of two variables with a negative relationship will have a negative slope. The slope answers questions in economics such as, “By how much does quantity demanded fall when the price of a good increases by $1?”

We move along a curve when we move from one point on a graph to another point on the same graph. This would be a movement from point f to point g in Figure 1A.5. You can see that both hours and income have changed along the line representing income with a $90 allowance. We shift the curve when one of the variables changes while the other variable stays the same. This would be a shift from point f to point b. Our income per week now takes on a different value at the same number of hours worked per week.
Key Equations: Finding the slope of a line

\[
slope = \frac{\text{vertical distance between two points}}{\text{horizontal distance between two points}}
\]

\[
slope = \frac{\text{rise}}{\text{run}}
\]

\[
slope = \frac{\Delta y}{\Delta x}
\]

The equations above all represent the same concept.

Key Equations: Calculating percentage changes

Percentage change = \( \frac{(\text{new value} - \text{initial value})}{\text{initial value}} \times 100 \)

In some cases, we will use the midpoint formula:

Percentage change = \( \frac{(\text{new value} - \text{initial value})}{\text{average value}} \times 100 \)

where the average value is:

\[
\frac{(\text{new value} + \text{initial value})}{2}
\]

Key Terms for Appendix

**Negative relationship:** A relationship in which two variables move in opposite directions.

**Positive relationship:** A relationship in which two variables move in the same direction.

**Slope of a curve:** The vertical difference between two points (the rise) divided by the horizontal difference (the run).
Practice Quiz

(Answers are provided at the end of the Practice Quiz.)

1. Economics is the study of choice under conditions of
   a. supply.
   b. scarcity.
   c. opportunity.
   d. abundance of resources.

2. Which of the following terms would best describe the consequence of scarcity?
   a. limited resources
   b. trade-offs
   c. unlimited wants
   d. poverty and possibly starvation

3. The resources provided by nature and used to produce goods and services are also known as
   a. factors of production.
   b. natural resources.
   c. physical capital.
   d. productive inputs.

4. Select the best answer. Which questions usually lie at the heart of policy debates?
   a. positive questions
   b. normative questions
   c. all economic questions, both positive and normative
   d. questions about the choices made by individuals

5. If the president of Colombia commented that “we should do something to reduce inflation in
   Colombia,” this would be an example of
   a. a normative statement.
   b. a positive statement.
   c. a statement that has both positive and normative components.
   d. neither positive analysis nor normative analysis.

6. Economic decisions are made at every level in society. When we try to decide which production
   method to use among several alternatives, which of the key economic questions are we trying to
   answer?
   a. What products do we produce?
   b. How do we produce the products?
   c. Who consumes the products?
   d. Which government agency should supervise the production of goods?

7. Economic models are
   a. precise representations of reality that include as many details as possible in order to accurately
      predict behavior.
   b. simplifications of reality that focus only on key relationships and ignore less relevant details.
   c. presentations of all the possible outcomes under all real world circumstances.
   d. analytical interpretations of economic behavior involving a good deal of the surrounding social
      and political structure of society.
8. Economists develop analytical tools to deal with specific problems. Which of the problems below is an economist prepared to discuss?
   a. the economic view of Japan’s economic problems
   b. the economic view of poverty in Africa
   c. the economic view of traffic congestion
   d. all of the above

9. A roadmap is a good example of which of the four elements of economic thinking?
   a. using assumptions to simplify
   b. isolating variables—ceteris paribus
   c. thinking at the margin
   d. acting rationally and responding to incentives

10. Macroeconomics can be used to understand all EXCEPT which of the topics below?
    a. how the national economy works
    b. how consumers decide which car to buy based on their preferences versus prices
    c. what causes economic booms and downturns
    d. how to make informed business decisions

11. In which of the following situations can we use economic analysis?
    a. to determine how well the government performs its roles in the market economy and to examine the trade-offs associated with various public policies
    b. to answer many practical questions about markets and how they operate
    c. to explain why some resources increase over time and how an increase in resources translates into a higher standard of living
    d. all of the above

12. If \( Y = 800 - 4X \), what is the slope of this line?
    a. \(-1/4\)
    b. \(1/4\)
    c. \(4\)
    d. \(-4\)
    e. \(800\)
13. Refer to the graph below. The solid line can be expressed algebraically as $Y = a + bX$. What causes the line to shift from the solid line to the dashed line?

![Graph showing a solid line and a dashed line with arrows indicating a shift.](image)

a. a change in the value of $a$

b. a change in the value of $b$

c. a change in the value of $X$

d. a change in the value of $bX$

14. Refer to the graph below. Which move describes the impact of an increase income on consumption?

![Graph showing consumption and income with multiple lines and arrows indicating different moves.](image)

a. the move from $b$ to $c$

b. the move from $c$ to $d$

c. the move from $d$ to $c$

d. a simultaneous move from $b$ to $c$ and from $c$ to $d
15. Refer to the graph below. The relationship between output produced and cost of production can be described as follows:

![Graph showing cost of production vs output produced]

a. The cost of production decreases up until point \( a \), then it increases.
b. The cost of production increases rapidly up until point \( a \), then it increases slowly.
c. The cost of production increases at a decreasing rate up until point \( a \), then it increases at an increasing rate.
d. The cost of production equals zero if there is no output produced.

16. Refer to the graph below. Which of the following statements is true about the value of the slope of this line?

![Graph showing downloaded songs vs CDs]

a. The value of the slope is greater between points \( a \) and \( b \) than between points \( c \) and \( d \).
b. The value of the slope is smaller between points \( a \) and \( b \) than between points \( c \) and \( d \).
c. The value of the slope is the same between points \( a \) and \( b \) and points \( c \) and \( d \).
d. The value of the slope increases as the value of the variable along the horizontal axis increases.
17. Refer to the graphs below. Which graph shows a negative and increasing relationship between $X$ and $Y$?

![Graphs A, B, C, D]

a. A  
b. B  
c. C  
d. D

18. Refer to the figure below. Which of the following is the correct expression for the slope of this line between points $a$ and $b$.

![Slope diagram]

a. $\frac{Y_2 - Y_1}{X_2 - X_1}$  
b. $\frac{Y_2 - X_2}{Y_1 - X_1}$  
c. $\frac{X_2 - X_1}{Y_2 - Y_1}$  
d. $\frac{X_2 - Y_1}{Y_2 - X_1}$
19. The sale price of a shirt is $8. There is a sign on the clothing rack that states “price marked is 20% off original price.” What was the original price of the shirt?
   a. $49.60
   b. $50
   c. $65
   d. $60

20. Define “economics” and explain the most fundamental economic problem.
Answers to the Practice Quiz

1. b. Scarcity is a situation in which resources are limited in quantity and can be used in different ways. Economics is the study of choice under conditions of scarcity.

2. b. Economists are always reminding us that there is scarcity—that there are trade-offs in everything we do.

3. b. Natural resources are provided by nature. Some examples are fertile land, mineral deposits, oil and gas deposits, and water. Some economists refer to all types of natural resources as land. Factors of production refers to all of the resources, not only natural resources but also labor, physical capital, human capital, and entrepreneurship, used to produce goods and services; they are also known as production inputs. Physical capital is the stock of equipment, machines, structures, and infrastructure that is used to produce goods and services. Some examples are forklifts, lathes, computers, factories, airports, roads, and fiber-optic cables. Productive inputs are all of the resources, not only natural resources but also labor, physical capital, human capital, and entrepreneurship, used to produce goods and services; they are also known as factors of production.

4. b. Correct. Normative economics answers the question: What ought to be? Normative questions lie at the heart of policy debates. Positive economics only lays out the possibilities and their likely consequences; it does not suggest decisions among these alternatives that are based on values and priorities. Policies often do influence how individuals make choices, but policy debates are centered around the choices made by policymakers based on their judgments on which policy will be best for society.

5. a. The word “should” implies a value judgment. Only normative statements involve value judgments.

6. b. When we try to decide which production method to use among several alternatives, we ask questions such as: Should power companies use coal, natural gas, or wind power to produce electricity? Should professors teach in large lecture halls or small classrooms?

7. b. Abstraction and simplification, as opposed to concrete and complex information, are the preferred characteristics of economic models. Models ignore all nonessential elements of real world complexity. They also ignore a good deal of the social and political reality in order to study the underlying economic concepts.

8. d. Economic analysis provides important insights into real-world problems. Economists attempt to diagnose and provide solutions to problems such as traffic congestion, pollution, taxation, or the problems of an entire economy.

9. a. Economists use assumptions to make things simpler and focus attention on what really matters. If you use a road map to plan a car trip from Seattle to San Francisco, you make two unrealistic assumptions to simplify your planning: The earth is flat: The flat road map doesn’t show the curvature of the earth. The roads are flat: The standard road map doesn’t show hills and valleys. Instead of a map, you could use a globe that shows all the topographical features between Seattle and San Francisco, but you don’t need those details to plan your trip. A map, with its unrealistic assumptions, will suffice because the curvature of the earth and the topography of the highways are irrelevant to your trip.

10. b. The decision between two types of cars is an individual choice. This is a topic of microeconomics.
11. d. Economic analysis includes all of the above.

12. d. The slope of this line is –4. You can calculate this by finding any two points on the line and remembering that the slope is the change in $Y$ divided by the change in $X$. Alternatively, for any linear function of the form $Y = a + bX$, $b$ is the slope.

13. a. The value of $a$ represents the $Y$-intercept. An increase in the value of the intercept causes the upward, parallel shift of the line. The value of $b$ represents the value of the slope of the line. A change in the value of the slope makes the solid line steeper or flatter, but it does not shift the line. A change in the value of $X$ causes a move along the solid line, not a shift to the dashed line. Only a change in $a$ would result in a parallel shift of the line.

14. a. As income increases, we move to the right along a fixed income/consumption line.

15. c. The relationship is first positive and decreasing, then positive and increasing.

16. c. The value of the slope is the same between any two points along a line.

17. c. As the value of $X$ increases, the value of $Y$ decreases at an increasing rate.

18. a. The difference between $Y_2$ and $Y_1$ is the vertical distance, or the change in $Y$. The difference between $X_2$ and $X_1$ is the horizontal distance, or the change in $X$. The ratio of the changes is commonly called “rise over run.”

19. d. A reduction of 20 percent means that the new price is 80 percent of the old price. If $40 equals 80 percent, then how many dollars are equivalent to 100 percent? The answer is $(48 \times 100)/80 = 60$.

20. Economics studies the choices that can be made when there is scarcity. Scarcity is a situation in which resources are limited in quantity and can be used in different ways. Because our resources are limited, we must sacrifice one thing for another. Economists are always reminding us that there is scarcity—that there are trade-offs in everything we do.