



# Microeconomics in Context

THIRD  
EDITION

GOODWIN • HARRIS • NELSON • ROACH • TORRAS

**Complete Student Study Guide**

# Microeconomics In Context, 3e

## STUDENT STUDY GUIDE

by Brian Roach and Joshua Uchitelle-Pierce

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Comments and feedback are welcomed:

Global Development And Environment Institute  
Tufts University  
Medford, MA 02155  
<http://ase.tufts.edu/gdae>

E-mail: [gdae@tufts.edu](mailto:gdae@tufts.edu)

## Chapter 1

# ECONOMIC ACTIVITY IN CONTEXT

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

This chapter introduces you to the basic concepts that underlie the study of economics. The four essential economic activities are resource maintenance, the production of goods and services, the distribution of goods and services, and the consumption of goods and services. As you work through this book, you will learn in detail about how economists analyze each of these areas of activity.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Define the difference between normative and positive questions.
2. Differentiate between intermediate and final goals.
3. Discuss the relationship between economics and well being.
4. Define the four essential economic activities.
5. Illustrate tradeoffs using a production possibilities frontier.
6. Explain the concept of opportunity costs.
7. Summarize the differences between the three spheres of economic activity.
8. Understand what is meant by “economics in context.”

### Key Terms

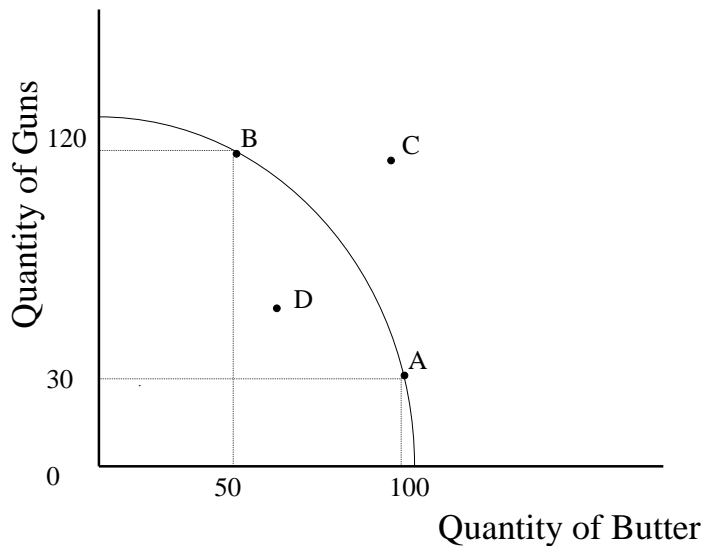
economics	well-being
positive questions	normative questions
intermediate goal	final goal
wealth	economic efficiency
economic actor (agent)	negative externalities
positive externalities	resource maintenance
production	distribution
exchange	transfer
consumption	scarcity
production possibilities frontier (PPF)	opportunity cost
technological progress	microeconomics
macroeconomics	model
circular flow diagram	factor markets
product markets	core sphere
business sphere	public purpose sphere

## Active Review Questions

Fill in the blank

1. You buy a new book. If you didn't buy the book, you would have purchased a pizza instead. Economists would call the pizza your \_\_\_\_\_ of buying the book instead.
2. A new factory begins discharging pollutants into a previously pristine river. Fish in the river begin to die, and people who make their living through fishing have trouble maintaining their catch. This factory is generating a \_\_\_\_\_.
3. Protecting wildlife in a national park is an example of the economic activity of \_\_\_\_\_.
4. Your grandmother sends you a check for \$100. This form of resource distribution is referred to as a \_\_\_\_\_.
5. A diagram that shows the tradeoffs between production of two goods is called a(n) \_\_\_\_\_.
6. A professional musician practices piano every afternoon. Her neighbor listens to the music and enjoys it. Through her activity, the musician is creating a(n) \_\_\_\_\_.

Questions 7 to 9 refer to the production possibilities frontier shown below.



*True or false*

7. In the graph shown above, at point B, society is producing the maximum possible amount of butter.
8. To move from point A to point B, society would have to cut down on its gun production and increase butter production.
9. Starting from point B, society would have to invest substantial resources to increase gun production.
10. Cooking a family dinner at home is an activity of the core sphere of economics.
11. Microeconomics is the study of national and international economic trends.
12. Watching a movie is an example of “consumption.”

*Short answer*

13. Name the four essential economic activities.  
\_\_\_\_\_  
\_\_\_\_\_
14. “Children should learn to clean up after themselves by the age of six.” Is this a positive or a normative statement? \_\_\_\_\_
15. “The business sphere contributed 59% of production in the US in 2000.” Is this a positive or a normative statement? \_\_\_\_\_
16. List the three basic economic questions.  
\_\_\_\_\_  
\_\_\_\_\_
17. What are the two main forms of economic distribution? What is the difference between them?  
\_\_\_\_\_  
\_\_\_\_\_
18. A family enjoys a three-week vacation. In order to afford this vacation, the family saved money over the course of a year. Was earning this money a final goal or an intermediate goal?  
\_\_\_\_\_  
\_\_\_\_\_

19. Technological innovations can vastly increase a society's productive capacity. How might a technological innovation affect a society's production possibilities frontier?

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20. What is the distinguishing characteristic of institutions in the public purpose sphere?

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### Self Test

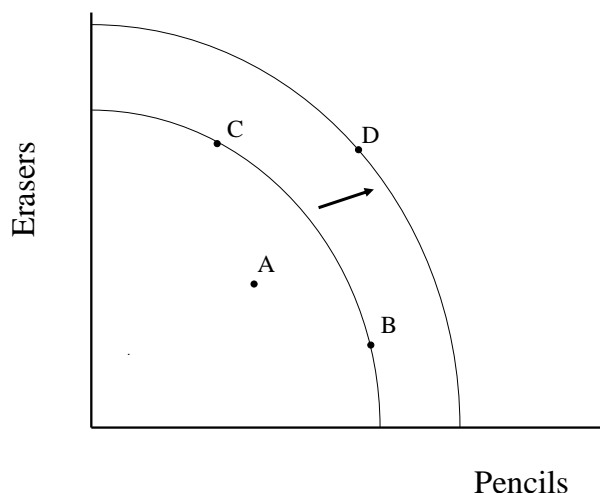
1. Which of the following best exemplifies an intermediate goal?
  - a. Spending a relaxing vacation with your family.
  - b. Spending a day at the art gallery.
  - c. Going fishing for fun.
  - d. Getting a summer job so you can afford a trip abroad.
  - e. Reading a novel.
  
2. Which of the following statements is positive (as opposed to normative)?
  - a. One should always be polite at the dinner table.
  - b. There are ten people in this class.
  - c. A young person's top priority should be job security.
  - d. The best professor is one who meets with students individually each week.
  - e. Resources should be distributed equally across society.
  
3. Which of the following is an example of a positive externality?
  - a. A musician performs in a concert. People pay to listen to the concert.
  - b. An architect designs a house for herself to live in. She enjoys spending time in the house.
  - c. A student volunteers in a shelter for the homeless.
  - d. A homeowner plants a tree for shade around her house. The tree also provides shade for her next-door neighbor.
  - e. A teacher drives his car to work and gets stuck in a traffic jam.

4. Which of the following is an example of a negative externality?
- a. A student receives a failing grade on a French exam.
  - b. Your roommate throws a loud party that keeps you awake all night.
  - c. You decide to take public transportation to work every day.
  - d. A group of farmers pool their resources to purchase seeds for next year.
  - e. You receive a letter saying your bank account is overdrawn.
5. Enjoying art at a museum is an example of ...
- a. Production
  - b. Consumption
  - c. Exchange
  - d. Transfer
  - e. Resource maintenance
6. Which of the following statements is *false*?
- a. Final goals could include fairness, freedom, or a sense of meaning in one's life.
  - b. You are offered a very interesting job, but you need a car to get there. Getting a car is an example of a final goal.
  - c. Resource maintenance refers to activities associated with tending to, preserving, or improving natural, social, and other resources.
  - d. Production is the conversion of resources into goods or services.
  - e. Distribution is the sharing of products and resources among people.
7. Which of the following is an example of the economic activity of resource maintenance?
- a. cooking dinner
  - b. operating a factory
  - c. providing worker education
  - d. drilling for oil
  - e. buying a bicycle
8. Which of the following factors could expand a society's production possibilities frontier?
- a. Increased butter production.
  - b. Shifting from one product to another.
  - c. Producing air pollution.
  - d. Depleting resources now instead of later.
  - e. Technological innovations.

9. Which of the following is an example of the economic activity of distribution?
- A baker makes 10 loaves of bread.
  - A plumber fixes a leak.
  - The legal speed limit is raised from 65 to 75 mph.
  - A couple enjoys a walk in the forest.
  - A retired worker receives Social Security benefits.
10. Which of the following is an example of the economic activity of consumption?
- A baker makes 10 loaves of bread.
  - A plumber fixes a leak.
  - The legal speed limit is raised from 65 to 75 mph.
  - A couple enjoys a walk in the forest.
  - A retired worker receives Social Security benefits.
11. What does the Production Possibilities Frontier represent?
- A catalog of all possible production options, represented as percentages.
  - The tradeoffs between production and consumption options.
  - The tradeoffs between possible production levels for two goods.
  - The amount that a society could produce if it devoted all its resources to producing one good.
  - The possible gains from international trade in two or more goods.

**Questions 12 and 13 refer to the following scenario.**

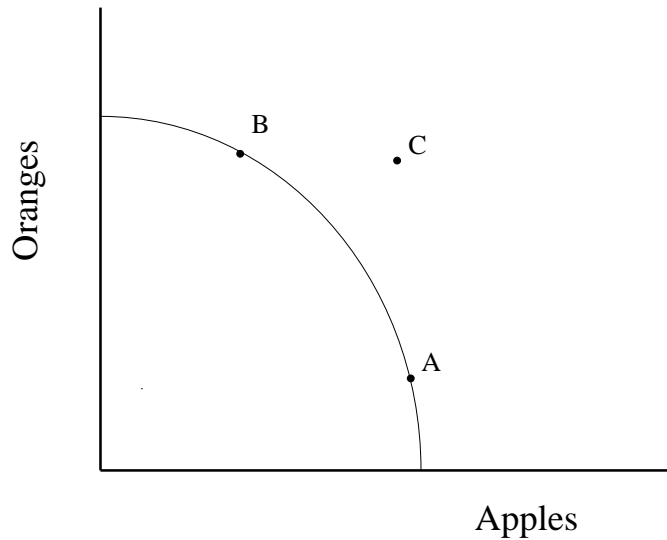
An economy produces two goods: pencils and erasers. The graph shown below depicts two possible production possibilities frontiers (PPFs) for this economy.





12. Which of the following events could cause the economy to move from point B to point D?
- a. Workers become less productive due to poor working conditions.
  - b. A hurricane destroys vital resources for pencil production.
  - c. A new machine is invented that makes it easier to produce both pencils and erasers.
  - d. All production costs rise proportionally.
  - e. The cost of eraser inputs goes up.
13. Which of the following statements is true?
- a. Moving from point C to point B requires shifting resources away from eraser production and into pencil production.
  - b. Point B represents a less efficient resource mix than point C.
  - c. Depletion of nonrenewable resources could lead the economy to shift from point C to point D.
  - d. Utility is maximized at point A.
  - e. At point A, society is producing all the pencils it can.
14. The nation of Anyplace produces two goods, chairs and tables. Anyplace can produce the chairs and tables using either sustainable methods or resource-depleting methods. If Anyplace chooses resource-depleting methods, which of the following statements is true?
- a. Eventually the PPF of Anyplace will shift outward (away from the origin).
  - b. Eventually the PPF of Anyplace will shift inward (toward the origin).
  - c. Eventually the PPF of Anyplace will pivot, causing a change in the slope of the curve.
  - d. Eventually Anyplace will have to choose between producing only chairs or producing only tables.
  - e. None of the above.

Question #15 refers to the graph shown below.



15. Which of the following statements is true?

- a. Point A is inefficient.
- b. Point B is inefficient.
- c. Point A is preferred to point B.
- d. Point B is preferred to point A.
- e. Point C cannot be attained with current technology.

16. Suppose there is a production possibilities frontier (PPF) for wine and cheese. Which of the following situations would shift the PPF inward (toward the origin)?

- a. A severe weather event that destroys much of the economy's productive capacity.
- b. Discovery of a new, cheaper source of milk for making cheese.
- c. Increased popularity of wine, as compared with cheese.
- d. A technological breakthrough.
- e. Improved education of the work force.

17. In general, as production of a good increases, the opportunity cost of production increases. How is this notion reflected in the graph of production possibilities frontier (PPF)?

- a. The PPF bows inwards (that is, looks like a slide or a valley)
- b. The PPF bows outwards (that is, looks like a hillside).
- c. The PPF shifts in response to technological change.
- d. The PPF shows production of one good at a time.
- e. The PPF becomes flatter as resource availability increases.

18. A city government maintains local roads. This is an example of ...
- a. a core sphere activity
  - b. a business sphere activity
  - c. a positive externality
  - d. a public purpose sphere activity
  - e. a negative externality
19. Which of the following is an example of a core sphere activity?
- a. James plays a game of catch with his nephew.
  - b. Martha works at a bank.
  - c. A nonprofit organization provides social services to low-income families.
  - d. A national government purchases weapons.
  - e. Both a and c are true.
20. The activities of a charitable institution would be characterized as part of
- a. The core sphere
  - b. The free rider sphere
  - c. The public purpose sphere
  - d. The business sphere
  - e. The informal sphere

## Answers to Active Review Questions

1. opportunity cost
2. negative externality
3. resource maintenance
4. transfer
5. production possibilities frontier
6. positive externality
7. False. Society could produce more butter by producing fewer guns.
8. False. To move from A to B, society would have to decrease butter production and increase gun production.
9. True. At point B, society is already employing many of its resources to produce guns. Increasing gun production further will present high opportunity costs.
10. True.
11. False. Microeconomics focuses on activities that take place within and among the major economic organizations of a society. Macroeconomics is the study of broader patterns in the national and international economy.
12. True. An experience can be “consumed” without using up material resources.
13. production, distribution, consumption, and resource maintenance
14. normative
15. positive
16. What should be produced and maintained? How? For whom?
17. Exchange and transfer. Exchange occurs when one actor provides a good or service, or money, in return for something else. Transfer is a one-way transaction, when one actor gives something to another.
18. intermediate
19. A technological innovation can expand the production possibilities frontier (move it “out,” away from the origin).
20. The distinguishing characteristic of institutions in the public purpose sphere is that they exist for a purpose related to the public good (e.g. national defense, poverty alleviation, healthcare, education, environmental protection, etc.).

## Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. d  | 11. c |
| 2. b  | 12. c |
| 3. d  | 13. a |
| 4. b  | 14. b |
| 5. b  | 15. e |
| 6. b  | 16. a |
| 7. c  | 17. b |
| 8. e  | 18. d |
| 9. e  | 19. a |
| 10. d | 20. c |

## Chapter 2

# MARKETS AND SOCIETY

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

This chapter points out that the economy may be understood as existing within “three spheres” of activity; not only businesses (estimated at 58% of the economy), but also the core sphere, comprising economic activity that occurs within households and communities (32%), as well as the public purpose sphere, of government and not-for-profit activity (10%). The chapter then discusses markets, first by defining markets in different ways and listing the institutional requirements for smoothly-functioning markets. Markets are further classified according to what is sold and how prices are determined. The chapter ends with a brief discussion of the advantages and disadvantages of markets, a topic that will be discussed frequently throughout the book.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Differentiate between the three spheres of economic activity.
2. Understand the three different meanings of “markets.”
3. Describe the institutional requirements for well-functioning markets.
4. Classify markets according to what is sold.
5. Classify markets according to how prices are determined.

### Key Terms

core sphere  
public good  
informal sphere  
market (second meaning)  
market (third meaning)  
private property  
implicit contract  
money  
wholesale markets  
resale market  
labor market  
underground market  
market value  
open auction  
sealed-bid auction  
bargaining

public purpose sphere  
business sphere  
market (first meaning)  
institutions  
laissez-faire economy  
explicit contract  
physical infrastructure  
retail markets  
intermediate goods market  
commodities market  
financial market  
posted prices  
auction market  
Dutch auction  
double auction

## Active Review Questions

### *Fill in the blank*

1. A local grocery store is an example of an organization that would be classified into the \_\_\_\_\_ sphere.
2. Something that is freely available to everyone, and whose use by one person does not diminish the ability of others to use it, is known as \_\_\_\_\_.
3. About 32% of economic activity in the United States is classified as occurring in the \_\_\_\_\_ sphere.
4. “The real estate market in Los Angeles” is an example of the definition of markets as \_\_\_\_\_.
5. Markets for raw materials such as agricultural products and minerals are known as \_\_\_\_\_.
6. Markets for goods and service purchased from businesses, generally in small quantities, are known as \_\_\_\_\_.
7. A market in which the initial price is set high, and then lowered until a buyer is willing to pay that price is known as \_\_\_\_\_.

### *True or false*

8. Economic activity in the core sphere tends to be rewarded with wages and salaries.
9. Religious organizations would be classified into the public purpose sphere.
10. A public good is one which is available at low cost to everyone, and whose use by one person does not affect its availability to others.
11. One of the advantages of economic activity in the business sphere is that it tends to encourage innovation.
12. About 10% of economic activity in the United States occurs in the public purpose sphere.
13. When we speak of a “laissez-faire economy” we are referring to a market as a social institution.
14. An implicit contract is an example of a social institution of trust.

15. Intermediate goods markets involve the sale of used products between households.
16. Markets with bargaining involve the interaction of a single buyer with a single seller.

*Short answer*

17. What is a public good?

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18. What are the three definitions of markets?

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19. What are the four institutional requirements for smoothly functioning markets?

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20. List five different markets classified according to what is sold.

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**Self Test**

1. What are the three spheres of economic activity?
  - a. The core, business, and government spheres
  - b. The monetary, core, and government spheres
  - c. The public, private, and social spheres
  - d. The core, business, and monetary spheres
  - e. The core, business, and public purpose spheres
2. What sphere of economic activity is comprised of households, families, and communities?
  - a. Public purpose sphere
  - b. Core sphere
  - c. Internal sphere
  - d. Dependency sphere
  - e. Institutional sphere

3. Which one of the following is an example of an organization in the public purpose sphere?
  - a. A family
  - b. A supermarket chain
  - c. A local grocery store
  - d. A state environmental protection agency
  - e. A child selling lemonade
  
4. Which one of the following is an example of a public good?
  - a. A clean house
  - b. A city park
  - c. A lawnmower shared by several neighbors
  - d. Cable television
  - e. A doctor's services
  
5. Which one of the following statements is false?
  - a. Public purpose sphere organizations tend to conduct economic activities at a larger scale than core sphere organizations.
  - b. Core sphere organizations can respond to needs as well as wants.
  - c. The primary place where good social relations are established is in the business sphere.
  - d. One critique of public purpose sphere organizations is that they can be inefficient.
  - e. Business sphere organizations may pursue motives other than making a profit.
  
6. About what percent of economic activity in the United States occurs in the core sphere?
  - a. 4%
  - b. 10%
  - c. 16%
  - d. 25%
  - e. 32%



7. About what percent of economic activity in the United States occurs in the business sphere?
- a. 10%
  - b. 20%
  - c. 32%
  - d. 58%
  - e. 73%
8. Which one of the following is an example of a market as a social institution?
- a. The stock market
  - b. A grocery store
  - c. A market-based capitalistic economy
  - d. A used car dealership
  - e. An on-line bookseller
9. Which one of the following is an example markets as an economic system?
- a. The stock market
  - b. A grocery store
  - c. A market-based capitalistic economy
  - d. A used car dealership
  - e. An on-line bookseller
10. Laws that define which goods can be owned are considered ...
- a. social institutions of trust.
  - b. individualist institutions of property and decision making.
  - c. infrastructure for the flow of information.
  - d. unnecessary for market functioning.
  - e. part of implicit contracts.
11. An implicit contract is an example of ...
- a. an individualist institution of property and decision making.
  - b. an economic activity in the core sphere.
  - c. a social institution of trust.
  - d. infrastructure for the flow of information.
  - e. a market as an economic system.

12. Which one of the following is not a requirement for something to be considered money?
- a. A durable store of value
  - b. A unit of account
  - c. Minimal handling costs
  - d. Backed by government-held assets
  - e. Acceptance as a medium of exchange
13. Markets for unfinished goods sold between businesses are referred to as ...
- a. intermediate goods markets.
  - b. commodity markets.
  - c. resale markets.
  - d. wholesale markets.
  - e. retail markets.
14. Markets for goods and services sold by businesses to consumers, generally in small quantities are referred to as ...
- a. intermediate goods markets.
  - b. commodity markets.
  - c. resale markets.
  - d. wholesale markets.
  - e. retail markets.
15. The prices of goods sold at a convenience store tend to be determined by ...
- a. bargaining.
  - b. posted prices.
  - c. open auctions.
  - d. closed auctions.
  - e. social institutions.
16. An auction in which the initial price is set high, and lowered until someone is willing to pay that price, is known as ...
- a. an open auction.
  - b. a Dutch auction.
  - c. a sealed-bid auction.
  - d. a closed auction.
  - e. a double auction.

17. An auction in which the initial price is set low, and bidders increase the bid until there is only one remaining buyer is known as ...
- a. an open auction.
  - b. a Dutch auction.
  - c. a sealed-bid auction.
  - d. a closed auction.
  - e. a double auction.
18. Bargaining involves the interactions of ...
- a. numerous buyers and sellers.
  - b. one buyer and one seller.
  - c. one seller and numerous buyers.
  - d. one buyer and numerous sellers.
  - e. buyers and sellers with equal market power.
19. Which one of the following is not a potential drawback of markets?
- a. A failure to account for environmental degradation.
  - b. A loss of certain community values.
  - c. The tendency to over-provide public goods.
  - d. An inability to correct for excessive market power.
  - e. A failure to address economic inequalities.
20. Which one of the following statements is false?
- a. Markets involve implicit and explicit contracts.
  - b. Markets require physical and communications infrastructure.
  - c. Markets provide feedback between buyers and sellers.
  - d. Markets encourage sellers to respond to buyer preferences.
  - e. Markets discourage economic actors from increasing efficiency.

## Answers to Active Review Questions

1. business
2. a public good
3. core
4. institutions that facilitate interactions among buyers and sellers
5. commodity markets
6. retail markets
7. A Dutch auction
8. False. Activities in the core sphere tend to be rewarded by the direct outcome of the activity, such as vegetables grown in a garden.
9. True
10. False. The statement is true except that public goods are freely available to everyone.
11. True
12. True
13. False. We are referring to a market as an economic system.
14. True
15. False. Intermediate goods markets involve the sale of unfinished products between businesses.
16. True
17. A public good is freely available to anyone and its use by one person does not diminish its ability to be used by others.
18. Markets as place to buy and sell, markets as social institutions, markets as economic systems.
19. Individualist institutions of property and decision making, social institutions of trust, infrastructure for the flow of goods and information, and money as a medium of exchange.
20. Retail markets, wholesale markets, intermediate goods markets, resale markets, commodities markets, labor market, financial markets, underground markets.

## Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. e  | 11. c |
| 2. b  | 12. d |
| 3. d  | 13. a |
| 4. b  | 14. e |
| 5. c  | 15. b |
| 6. e  | 16. b |
| 7. d  | 17. a |
| 8. a  | 18. b |
| 9. c  | 19. c |
| 10. b | 20. e |

## Chapter 3

# SUPPLY AND DEMAND

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

In this chapter, you'll find the basics of supply and demand analysis. As you work through this chapter, you will start learning how to manipulate supply and demand curves as a way to analyze the relationships among prices, volume of production, and other factors. You will learn about the various factors that can shift a supply or demand curve up or down, and the concepts of equilibrium and market adjustment.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Interpret supply and demand curves.
2. Understand the difference between a change in supply (demand) and a change in the quantity supplied (demanded).
3. List the non-price determinants of supply by businesses and demand by households.
4. Explain how price adjusts due to changes in supply and demand.
5. Understand topics of market analysis including scarcity, shortage, inadequacy, and equity.
6. Explain the difference between accuracy and precision.

### Key Term Review

demand  
market price  
positive (or direct) relationship  
market (or aggregate) supply  
supply curve  
ceteris paribus  
nonprice determinants of supply  
demand curve  
market (or aggregate) demand  
change in the quantity demanded  
nonprice determinants of demand  
complementary good  
shortage  
theory of market adjustment  
markup (or cost-plus) pricing  
social value

supply  
market quantity sold  
individual supply  
supply schedule  
change in quantity supplied  
change in supply  
demand schedule  
negative (or inverse) relationship  
individual demand  
change in demand  
substitute good  
surplus  
market equilibrium  
market disequilibrium  
market value  
inadequacy

precise

accurate

### Active Review

#### *Fill in the Blank*

1. A curve indicating the quantities that buyers are willing to purchase at various prices is known as a(n) \_\_\_\_\_ curve.
2. Mark would like to buy a new car for \$20,000. However, he doesn't have any savings and he doesn't qualify for a loan. Thus, his desire for a car does not translate into \_\_\_\_\_ demand.
3. Tabitha needs furniture for her room. She is deciding between a medium-sized couch and a large armchair. Either the couch or the armchair could fulfill her need for sitting space in the room. The couch and the armchair can be referred to as \_\_\_\_\_ goods.
4. When people eat french fries, they like to put ketchup on them. Due to an increase in the price of french fries, total sales of french fries decrease. At the same time, ketchup sales also decrease. This phenomenon can be explained by noting that french fries and ketchup are \_\_\_\_\_ goods.
5. Surplus and shortage are both instances of \_\_\_\_\_.
6. In general, in a basic model showing supply and demand, if the supply curve shifts to the right, equilibrium price will \_\_\_\_\_ and equilibrium quantity supplied will \_\_\_\_\_.

#### *True or False*

7. The price of limes could be a nonprice determinant of the supply of lemons.
8. The demand curve for a good shows the same information as the demand schedule.
9. Tastes and preferences act as nonprice determinants of demand.
10. In general, an increase in demand tends to increase equilibrium price and decrease equilibrium quantity.
11. If both supply and demand increase, the price of the good will also increase.
12. If demand increases and supply decreases, the price of the good will increase.
13. The more precise a model is, the more likely it is to be accurate.

*Short Answer*

14. There are ten restaurants in your town. On a given night, each restaurant has the ability to produce up to twenty full course dinners at a price of \$20 each. What is the total market supply of full course dinners tonight, at a price of \$20?

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15. Name six nonprice determinants of supply, for a producing business.

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16. Why do demand curves generally slope downward?

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17. Suggest a possible exception to the "law of demand," in which people buy less of a good as its price increases.

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18. Explain the difference between a *change in quantity demanded* and a *change in demand*.

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19. Describe a possible case in which adjustment to equilibrium may take many years, or not happen at all.

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20. A new movie is released after having been heavily promoted to teenagers. On the first night, the tickets sell out and there are still teenagers waiting outside theaters, desperate to see the movie and unable to get a ticket. Is this market in equilibrium? Explain.

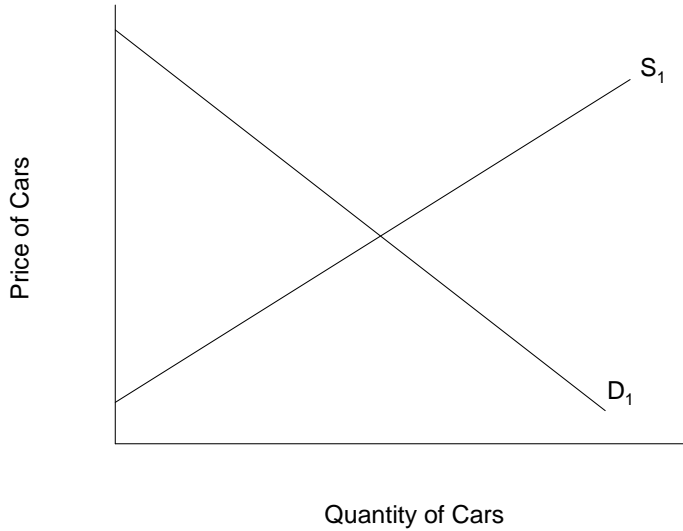
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**Problems**



1. For the following questions, refer to the graph shown above.
- a. Label the equilibrium point as  $E_1$ , the equilibrium quantity as  $Q_1$ , and the equilibrium price as  $P_1$ .
  - b. Show how the supply curve will change if car manufacturers achieve a technological breakthrough that allows them to produce cars more cheaply.
  - c. If the price stayed at  $P_1$ , would a surplus or a shortage result from the technological breakthrough described in part (b)? Answer in words, and show on the graph.  

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  - d. Assuming market forces work quickly, show the new equilibrium price to which the market will adjust. Label this point as  $E_2$ . Label the new equilibrium quantity as  $Q_2$ , and the new equilibrium price as  $P_2$ .
  - e. In words, summarize the information that you have shown in your adjustments to the graph in parts (a) through (d).  

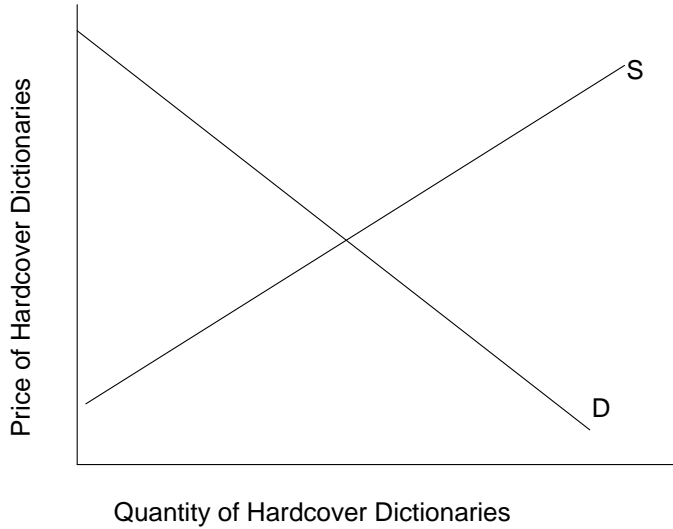
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2. The graph above shows supply and demand for hardcover English dictionaries. Suppose that a new dictionary resource is created on the Internet, decreasing people's interest in buying large dictionaries in book form. For the questions below, state the answer in words and, where relevant, diagram your answer.

- a. What happens to the demand curve for hardcover dictionaries, as a result of this Internet innovation? (Answer in words and diagram.)

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- b. What happens to the supply curve as a result of the Internet innovation? (Answer in words and diagram.)

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- c. What happens to the price of hardcover dictionaries as a result of the innovation? Show the new price level on the graph you drew for part (b).

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- d. Suggest one or more factors that could prevent this market from adjusting to equilibrium.

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3. Refer again to the graph above, showing the market for hardcover dictionaries. What are the two types of change in this market that would lead the equilibrium price to *rise*?

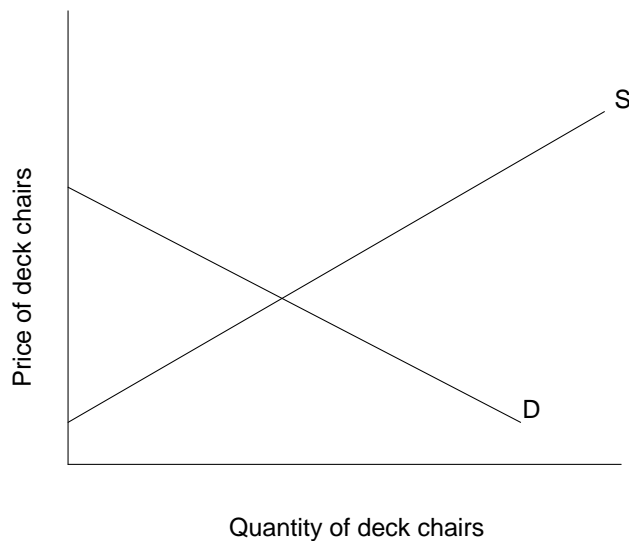
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4. In a popular new movie, a central character spends much of his time sitting on a white deck chair. Suddenly, white deck chairs come into fashion and everybody wants one. The graph below shows the market for deck chairs *before* the movie came out.



- On the diagram above, show what happens to the market for deck chairs as a result of the movie.
- Show the size of the shortage that exists in the short term, before the market adjusts to equilibrium.
- Label the new equilibrium point as  $E_2$ .

5. Using the same example of the market in white deck chairs, describe and, on separate graphs, show the changes in equilibrium price and quantity that would occur in response to the following events.

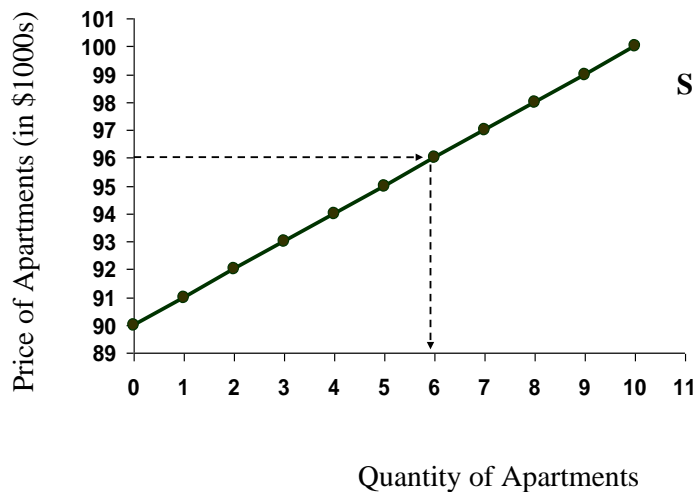
- A key input for making deck chairs becomes more expensive (*ceteris paribus*).
- In a highly publicized event, someone falls off a poorly constructed deck chair and sustains a serious head injury (*ceteris paribus*).

## Self Test

1. Suppose when the price of shirts increases from \$20 to \$25, the quantity supplied increases. This change is best described as ...
  - a. movement along a supply curve.
  - b. a change in supply.
  - c. movement along a demand curve.
  - d. a change in demand.
  - e. none of the above.
2. Which one of the following statements is false?
  - a. Demand curves tend to slope downward.
  - b. The relationship between price and quantity demanded is generally positive.
  - c. The relationship between price and quantity supplied is generally direct.
  - d. At equilibrium, the quantity demanded equals the quantity supplied.
  - e. A shortage occurs when the quantity demanded exceeds the quantity supplied.

### Questions 3 to 5 refer to the following graph:

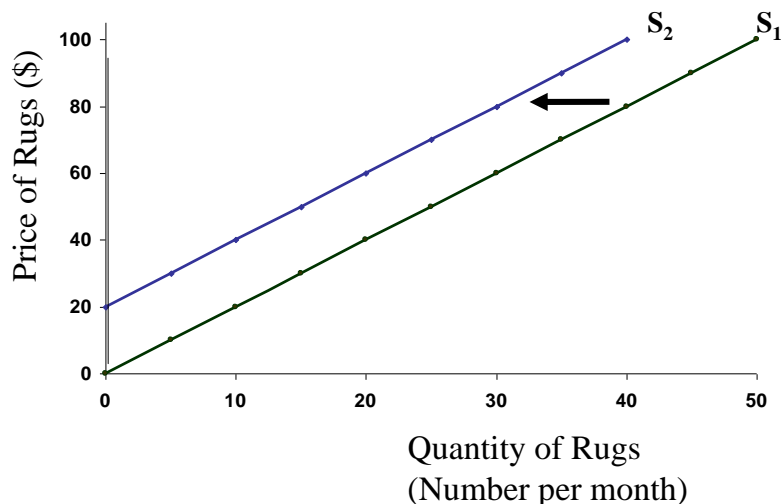
The Supply Curve for Apartments



3. Based on the figure above, how many apartment owners would be willing to sell their apartments for \$91,000?
  - a. None
  - b. One
  - c. Two
  - d. Six
  - e. Ten

4. In the graph above, up to ten apartments may be available for sale. Suppose that ten more apartment owners enter the market, for a total of twenty available apartments. These new entrants into the market would be willing to sell their apartments for any price above \$90,000. Which of the following statements accurately describes the resulting change in the supply curve?
  - a. The supply curve shifts upward.
  - b. The supply curve shifts to the right.
  - c. The supply curve shifts to the left.
  - d. The supply curve becomes longer.
  - e. The supply curve can no longer be represented by a straight line.
  
5. In the situation described in Question #4, how many apartment owners would be willing to sell their apartments for \$91,000?
  - a. None
  - b. One
  - c. Two
  - d. Ten
  - e. Eleven
  
6. Which of the following statements is true, regarding the supply of a particular good, and that good's own price?
  - a. A price increase shifts the supply curve to the right.
  - b. A price decrease shifts the supply curve to the right.
  - c. A price increase shifts the supply curve downward.
  - d. A price change alone does not shift the supply curve.
  - e. A price change is the only way to shift the supply curve.

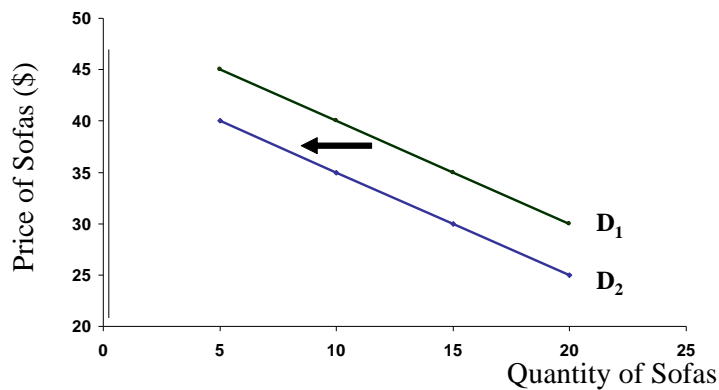
**Question #7 refers to the following graph.**



7. The graph shown above depicts two possible supply curves for production of handmade rugs.  $S_1$  is the initial supply curve, and  $S_2$  is the new supply curve after a change has occurred in the market. Which of the following events could have caused this shift?
- Several rug makers have left the market, making handmade rugs more scarce.
  - Several new rug makers have entered the market, making handmade rugs more plentiful.
  - The price of thread used in rugs has dropped, making it cheaper to produce rugs.
  - Rugs have come into fashion, so buyers want more of them.
  - Rugs have gone out of fashion, so buyers want fewer of them.
8. Which of the following is *not* an example of a “nonprice determinant of supply” of handmade rugs?
- Available technology for making rugs.
  - The price of looms for weaving rugs.
  - Number of rug producers.
  - Price of related goods and services.
  - Price of handmade rugs.
9. Which of the following is an example of movement *along* a supply curve?
- The quantity of apples offered for sale increases as the price of apples rises.
  - An apple orchard burns down in an accidental fire, decreasing the number of suppliers on the market.
  - Thanks to good weather conditions, apple growers enjoy a bumper crop this year.
  - The price of pears doubles, increasing demand for apples.
  - The price of fertilizer increases, making it more expensive to produce apples.
10. Which of the following statements is true?
- Markets respond to both effective and latent demand.
  - Markets respond to demand, even if that demand is not backed up by cash.
  - Markets respond only to wants or needs that are backed up by the ability to pay.
  - Demand curves represent "effective demand" only.
  - Both c and d are true.

11. Suppose the number of engineers graduating from college increases at the same time as the demand for engineers increases. Which one of the following is true?
- The number of engineers employed will increase, and engineer wages will increase.
  - The number of engineers employed will increase, and engineer wages will decrease.
  - The number of engineers employed will increase, but the effect on engineer wages is ambiguous.
  - Engineer wages will increase, but the effect of the number of engineers employed is ambiguous.
  - The effect on both engineer wages and the number of engineers employed is ambiguous.

**Question #12 refers to the following graph.**

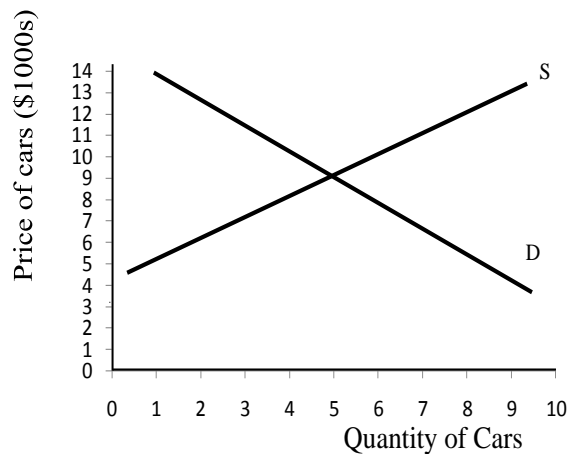


12. Assume that sofas and arm chairs are substitute goods. The graph shown above illustrates the demand curve for sofas. Which of the following events could have triggered the shift in demand from  $D_1$  to  $D_2$ , as shown above?

- The price of sofas increased.
- The price of armchairs increased.
- The price of labor for making sofas increased.
- The price of sofas decreased.
- The price of armchairs decreased.

13. A bike shop in a small town has received a shipment of 10 new bicycles. The shop offers the bikes for sale at a price of \$300 each. At this price, however, there are only two people in town who are willing to buy a bicycle. This situation can be described as
- disequilibrium
  - shortage
  - surplus
  - equilibrium
  - both a and c are correct

Questions 14 to 16 refer to the graph below.



14. When the price of cars is \$5000, which of the following terms is not an accurate description of the situation?
- Quantity demanded exceeds quantity supplied.
  - A shortage exists.
  - The market is in disequilibrium.
  - Fewer than five cars are available for sale.
  - The market is in equilibrium.
15. Beginning from the price of \$5000, which of the following events would be predicted by the theory of market adjustment?
- Some buyers who are willing to pay more will bid the price of cars up.
  - The market will remain in disequilibrium.
  - Prices will fall.
  - All buyers will remain in the market.
  - The supply and demand curves will shift to achieve equilibrium.

16. Now suppose that the local government invests in a new, very efficient fleet of buses. Now, it is easy and affordable to get from one place to another without having your own car. What change in the graph shown above is most likely to result from the new bus service?
- The supply curve shifts to the right.
  - The supply curve shifts to the left.
  - The demand curve shifts to the right.
  - The demand curve shifts to the left.
  - None of the above.
17. At the end of a hot day, ten people want to buy a glass of lemonade. However, the local lemonade stand only has five glasses of lemonade left. The lemonade stand operator sells the remaining five glasses to the five people who are willing and able to pay the most. This is an example of ...
- a surplus
  - rationing by price
  - disequilibrium
  - a shift in the demand curve
  - a lottery
18. Suppose there is a drought that reduces the harvest of corn. At the same time, the demand for corn increases due to expanded use of ethanol fuels. Which one of the following statements is true?
- The price of corn will increase, but the effect on the quantity of corn sold is ambiguous.
  - The price of corn will decrease, but the effect on the quantity of corn sold is ambiguous.
  - The quantity of corn sold will increase, but the effect on the price of corn is ambiguous.
  - The quantity of corn sold will decrease, but the effect on the price of corn is ambiguous.
  - The effect on both the quantity of corn sold and the price of corn is ambiguous.
19. Which one of the following would be most likely to increase (shift to the right) the demand curve for public transportation?
- Increasing the frequency of bus stops
  - Lower fares for bus tickets
  - Lower prices for airline tickets
  - Higher gasoline prices
  - Lower automobile prices



20. When the supply of a good increases, what happens to equilibrium price and quantity?
- They both increase
  - They both decrease
  - Price increases, quantity decreases
  - Price decreases, quantity increases
  - The effect is ambiguous

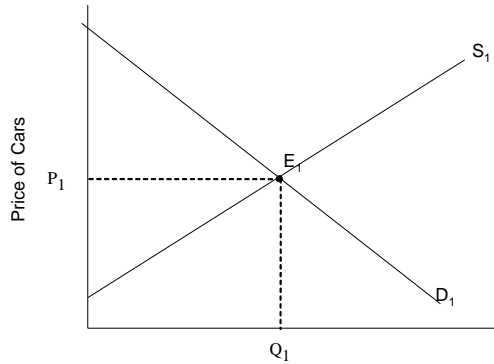
### Answers to Active Review Questions

- demand
- effective
- substitute
- complementary
- disequilibrium
- decrease, increase
- True. For example, if limes command a high price, lemon producers might switch to lime production, thus decreasing the total supply of lemons available.
- True.
- True.
- False. In general, an increase in demand tends to increase both equilibrium price and equilibrium quantity.
- False. The impact of these changes on equilibrium price is ambiguous.
- True.
- False. The more precise a model is, the less likely it is to be accurate.
- Market supply is 200.
- Available technology of production; resource prices; number of producers; producer expectations about future prices and technology; prices of related goods and services; physical supply of a natural resource.
- The demand curve slopes downward because in general, the higher the price of the good, the fewer people will want to buy it.
- Occasionally, people will want more of a good if it is sold as a "prestige" good at a high price. This phenomenon might sometimes be observed with specialty foods, clothes, or cars.
- "Change in quantity demanded" refers to movement *along* the demand curve. For example, if the price of apples rises, all other things being equal, people will buy fewer apples; thus, the quantity demanded will decrease. A "change in demand" refers to a situation in which the entire demand curve shifts. For example, if a large number of new people move into your neighborhood, there will be a larger pool of people interested in buying apples at the local grocery store.
- One example is the shortage of nursing staff in health care settings, a shortage that has existed for decades. You may come up with other real-life or hypothetical examples. For example, adjustment to equilibrium might take a long time in a

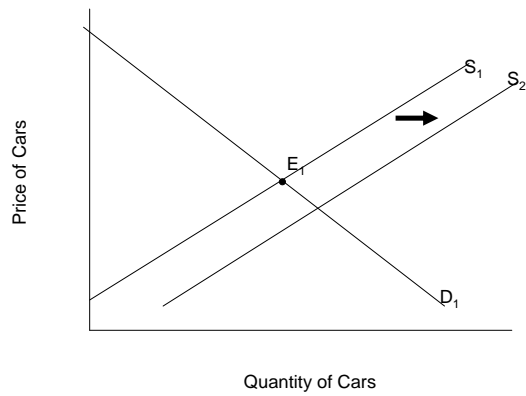
housing market; sellers might keep prices high for a period of time, hoping to find takers, even though few people are willing to purchase homes at those prices.  
 20. No, this market is not in equilibrium; there is a shortage of movie tickets.

**Answers to Problems**

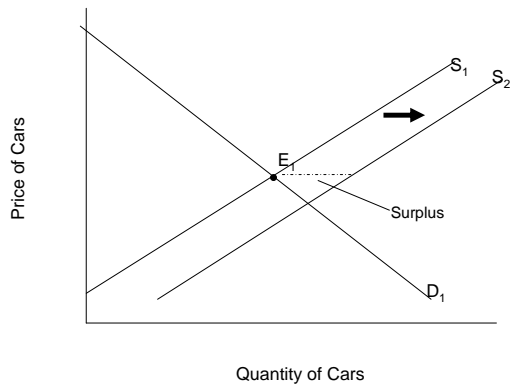
1. a.



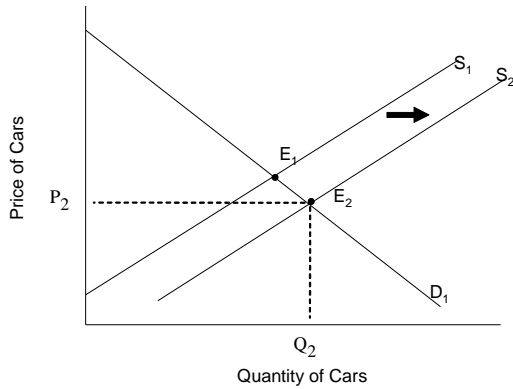
1. b.



1. c. The shift in the supply curve creates a temporary surplus.

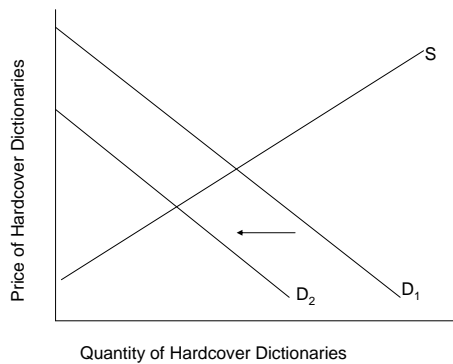


1. d.



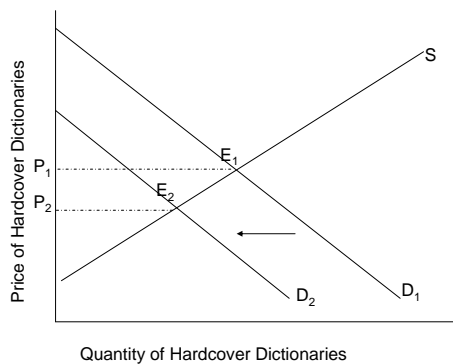
1. e. The supply curve has shifted to the right. The equilibrium price has fallen, and equilibrium quantity has risen.

2. a. The demand curve shifts to the left.



2. b. The supply curve does not shift.

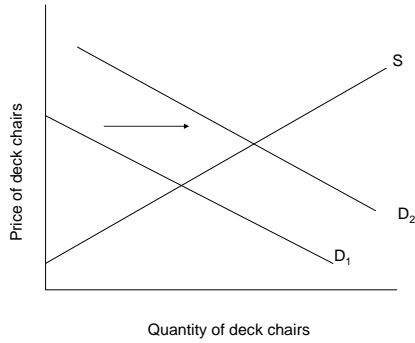
2. c. The price of hardcover dictionaries at the new equilibrium,  $E_2$ , is lower.



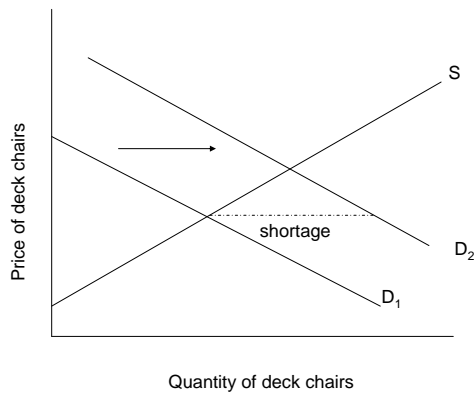
d. Many answers are possible here. For example, dictionary producers might continue charging high prices out of habit, failing to recognize – or not wanting to admit – that demand has changed significantly.

3. The equilibrium price could rise as a result of the supply curve shifting to the left (i.e. a decrease in supply), or as a result of the demand curve shifting to the right (i.e. an increase in demand).

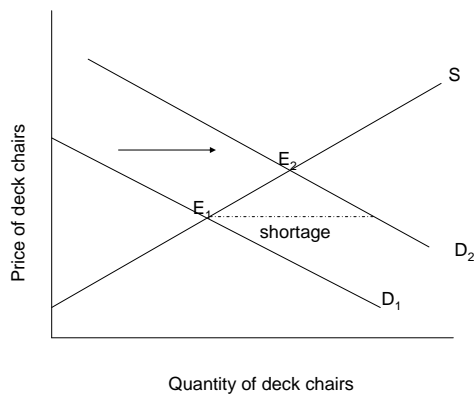
4. a.. The demand curve shifts to the right, as shown below.



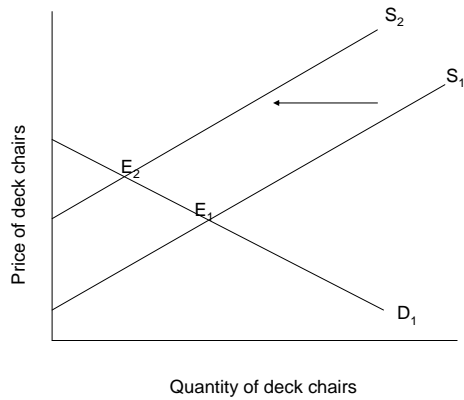
4. b.



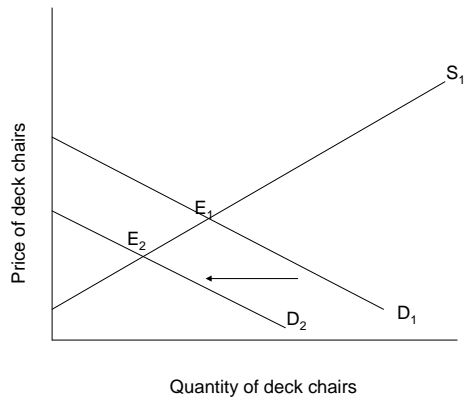
4. c.



5. a. The supply curve shifts to the left, leading to a higher equilibrium price and lower equilibrium quantity.



5. b. The demand curve shifts to the left, leading to a lower equilibrium price and lower equilibrium quantity.



### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. a  | 11. c |
| 2. b  | 12. e |
| 3. b  | 13. e |
| 4. b  | 14. e |
| 5. e  | 15. a |
| 6. d  | 16. d |
| 7. a  | 17. b |
| 8. e  | 18. a |
| 9. a  | 19. d |
| 10. e | 20. d |

## Chapter 4

# ELASTICITY

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

This chapter continues dealing with the demand and supply curves we learned about in Chapter 3. You will learn about the notion of *elasticity* of demand and supply, the way in which demand is affected by income, and how a price change has both income and substitution effects on the quantity demanded.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Define elasticity of demand and differentiate between elastic and inelastic demand.
2. Calculate the elasticity of demand.
3. Understand how to apply an elasticity of demand to a business seeking to maximize revenues as well as to a policy situation.
4. Define elasticity of supply and differentiate between elastic and inelastic supply.
5. Understand the income and substitution effects of a price change.
6. Discuss the differences between short-run and long-run elasticities.

### Key Terms

elasticity  
price-inelastic demand  
price-inelastic demand (technical definition)

perfectly inelastic demand  
unit-elastic demand  
income elasticity of demand  
inferior goods  
income effect of a price change  
long-run elasticity

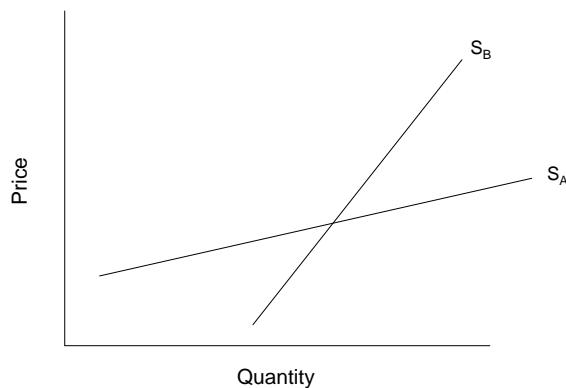
price elasticity of demand  
price-elastic demand  
price-elastic demand (technical definition)  
perfectly elastic demand  
price elasticity of supply  
normal goods  
substitution effect of a price change  
short-run elasticity

## Active Review Questions

*Fill in the blank*

1. When you drop by the only coffee shop in your neighborhood, you notice that the price of a cup of coffee has increased considerably since last week. You decide it's not a big deal, since coffee isn't a big part of your overall budget, and you buy a cup of coffee anyway. Most of the other coffee drinkers who frequent the coffee shop make a similar calculation. Thus, the demand for coffee in your neighborhood is relatively \_\_\_\_\_.
2. You sell muffins for one dollar each. If you raise your price by even one penny, you will lose all your customers. The demand curve for your muffins is thus \_\_\_\_\_.
3. The responsiveness of demand to income is known as the \_\_\_\_\_ of demand.
4. The income elasticity of demand is \_\_\_\_\_ for inferior goods and \_\_\_\_\_ for normal goods.
5. When demand is \_\_\_\_\_, revenue to the seller is unaffected by a price change.

**For Question #6, refer to the following graph:**



6. For a given price range, which of the supply curves in the graph shown above is characterized by a relatively greater elasticity of supply? \_\_\_\_\_
7. The elasticity of demand is calculated as the percent change in \_\_\_\_\_ divided by the percent change in \_\_\_\_\_.
8. When quantity demanded does not respond at all to price, demand is perfectly \_\_\_\_\_.

9. If the price elasticity of demand is greater than one, then demand is \_\_\_\_\_.
10. Suppose tangerines are an inferior good. This means that if your income decreases, you will buy (more/fewer) \_\_\_\_\_ tangerines.

*True or False*

11. Perfectly elastic demand refers to a situation in which any price change for the good in question, no matter how small, will produce an "infinite" change in quantity demanded.
12. When the seller increases the price charged for a good with an elastic demand, the seller's revenues will go up.
13. Elasticity is the same as the slope of the demand curve.
14. Income elasticity of demand is always expressed as a positive number (absolute value).
15. When the income elasticity of demand is positive but less than 1, demand is called "income elastic."
16. If a good is inferior and its price rises, the income effect will encourage greater expenditures, at the same time as the substitution effect pushes toward lower expenditures.

*Short Answer*

17. Name the three main reasons why demand for a good or service might be inelastic.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
18. You run the only lemonade stand in Central Park. If people don't buy lemonade from you, their only other option is to buy orange juice from a nearby vendor. One day, you decide to raise the price of your lemonade from \$1 per glass to \$1.25 per glass. As a result, half of your usual customers decide to get orange juice instead of lemonade that day. What does this experience tell you about the demand for lemonade in Central Park?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

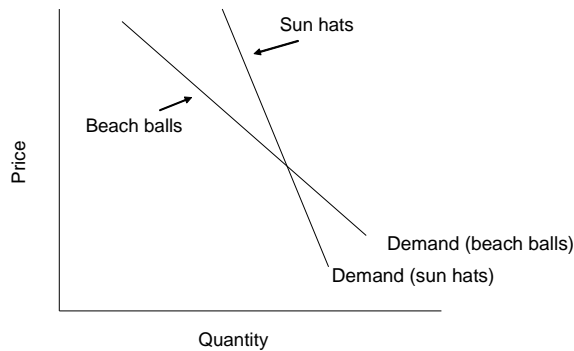


19. A 20% increase in the price of milk leads to a 10% reduction in the quantity of milk demand. What is the price elasticity of demand for milk?

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**For Question #20, refer to the graph below.**



20. The graph shown above illustrates the demand curves for two goods: Sun hats and beach balls. Which demand curve is relatively more elastic?

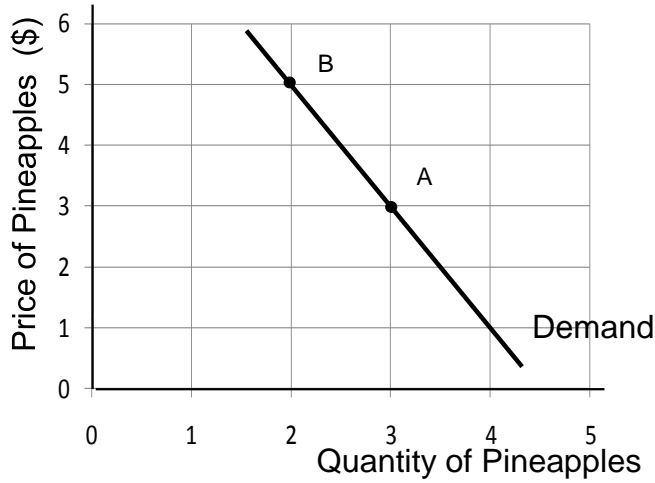
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### Problems

1. Draw a diagram of a perfectly inelastic demand curve. Suggest an example of a good for which demand might be perfectly elastic.
  
  
  
  
  
  
  
  
  
  
2. A limited number of Civil War uniforms have been preserved. No matter how much buyers are willing to pay for these uniforms as collectors items, there's no way to increase the quantity of uniforms in existence. Show the supply curve for authentic Civil War uniforms.

For Problems #3 and #4, refer to the following graph:



3. The graph above shows the demand curve for pineapples.

a. Calculate the amount of revenue the seller would receive if the price is set at \$3.

b. Calculate the amount of revenue the seller would receive if the price is set at \$5.

c. Reasoning from the results you just calculated, is the demand for bananas elastic or inelastic, in this range of prices? How do you know?

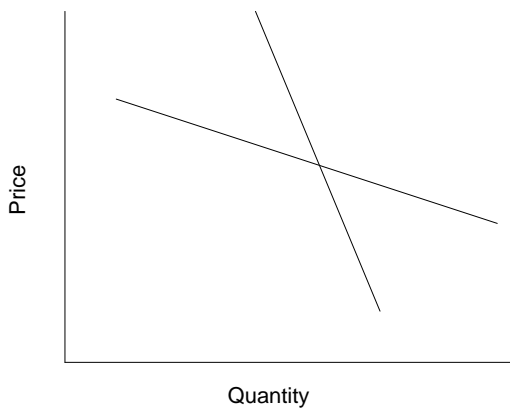
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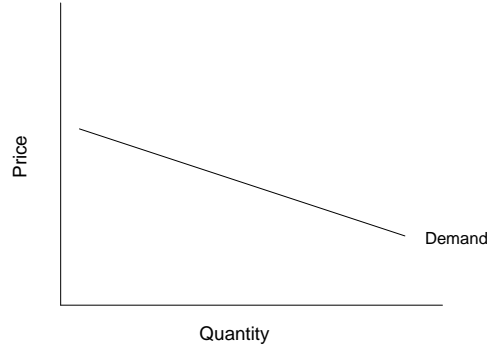
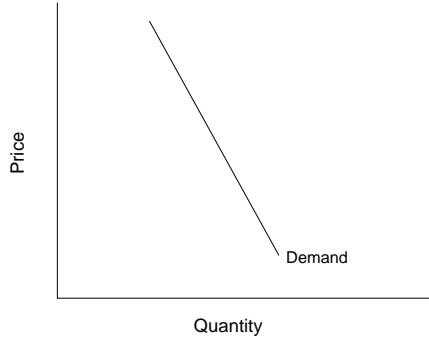
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4. Continuing with the above example of pineapples,
- Calculate the percent change in price that occurs in moving from point A (the “base” case) to point B, using the midpoint formula.
  - Calculate the percent change in quantity that occurs in moving from point A to point B, using the midpoint formula.
  - Calculate the price elasticity of demand for pineapples.
5. Suppose the demand for oranges is more price elastic in the demand for chocolate. On the graph below, indicate which line represents the demand for oranges, and which represents the demand for chocolate.



6. Which of the following demand curves is more elastic?

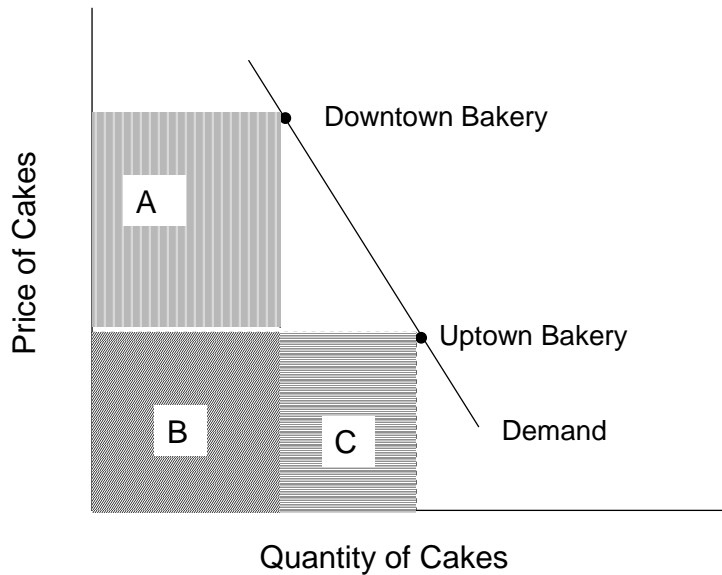


**Self Test**

1. The price of milk doubles, but the quantity demanded changes very little. Which of the following would *not* be a likely explanation for this phenomenon?

- a. There isn't a good substitute for milk.
- b. People feel they need milk, rather than just wanting it.
- c. Demand for milk is highly price elastic.
- d. Milk is not a very big part of most people's budget.
- e. All of the above are likely explanations for this phenomenon.

Questions 2 and 3 refer to the following scenario and graph. Bob's Bakery has two locations. The bakery decides to experiment with charging different prices at the two bakeries, to find out which price will bring in higher total revenues. The results of the experiment are shown in the graph below.



2. The revenue earned at Downtown Bakery is equal to
- area A
  - area B
  - area C
  - area A + B
  - area B + C
3. Area A is bigger than area C. This means that
- Demand for chocolate cake is highly price elastic.
  - Demand for chocolate cake is price inelastic.
  - The quantity demanded of chocolate cake exceeds the quantity supplied.
  - The quantity supplied of chocolate cake exceeds the quantity demanded.
  - None of the above.
4. Suppose a study finds that as people's incomes rise, they tend to buy fewer subway tokens because they are more likely to have a car. This would mean that subway tokens are
- normal goods
  - inferior goods
  - price elastic goods
  - price taker goods
  - supply elastic goods
5. The more money people make, the more pairs of shoes they buy. We can conclude that
- Shoes are a normal good.
  - Shoes are an inferior good.
  - Demand for shoes is highly price elastic.
  - Demand for shoes has an elasticity between 0 and 1.
  - All of the above.

Questions #6 and #7 refer to the following scenario: A 4% increase in the price of tomatoes leads to a 1% reduction in the quantity of tomatoes demanded.

6. The price elasticity of demand for tomatoes is:
- 0.5
  - 0.6
  - 0.25
  - 1.25
  - 4.0

7. Which of the following statements about the market in tomatoes is *false*?
- Demand for tomatoes is price inelastic.
  - A price increase will lead to a revenue increase.
  - Demand for tomatoes is unit elastic.
  - Price elasticity of demand equals percent change in quantity demanded, divided by percent change in price.
  - All of the above are true.
8. Which of the following statements is *true*?
- Elasticity is identical to the slope of the demand curve.
  - A single, straight-line demand curve can be elastic in one region and inelastic in another.
  - Perfectly inelastic demand can be represented by a horizontal line.
  - When demand is unit elastic, revenue is strongly affected by price changes.
  - You can always determine the relative elasticity of demand for two products by comparing the slope of their demand curves.
9. Suppose a 50% increase in the price of a drug results in no change in the quantity demanded. What is the price elasticity of the drug?
- 0
  - 0.05
  - 0.5
  - 1
  - Infinite
10. Suppose the price elasticity of demand for a good is 0.6. When the price of the good decreases by 10%, what would we expect to happen to the quantity demanded?
- It will increase by 60%
  - It will increase by 6%
  - It will increase by 0.6%
  - It will decrease by 0.6%
  - It will decrease by 6%
11. Which one of the following goods is most likely to have a perfectly elastic demand?
- cigarettes
  - shoes
  - rice, in a developing country
  - a particular brand of butter
  - airline travel

12. Which of the following income elasticities could correspond to a *normal good* that is *income inelastic*?
- 0.5
  - 1.5
  - 1.5
  - 2.0
  - 0.5
13. Every week you buy rice, wheat, and oatmeal. Suddenly the price of rice rises. You decide to cut down on your rice purchases and get more wheat and oatmeal instead. This is an illustration of ...
- an income effect
  - a substitution effect
  - a normal good effect
  - a Giffen good
  - a price inelastic good
14. A population subsists largely on potatoes, plus small amounts of dairy products and vegetables. The price of potatoes rises, driving many poor families deeper into poverty. As a result, these families are forced to eliminate dairy products and vegetables from their daily diet and start eating even more potatoes than they did before. In this example potatoes are ...
- normal goods
  - inferior goods
  - giffen goods
  - both a and c are correct.
  - both b and c are correct.
15. You get a notice in the middle of the semester stating that your monthly dorm fee is being doubled, effective immediately. You don't want to pay the higher fee, but it's not practical for you to move out of the dorm mid-semester. You decide to pay the extra charge now, and look for new housing option after exams are over. Which of the following statements best describes your situation?
- The dorm room is a Giffen good.
  - The dorm room is an inferior good.
  - Your short run demand for dorm housing is relatively inelastic.
  - Your long run demand for dorm housing is less elastic than your short run demand.
  - None of the above.

16. Which of the following goods is most likely to have high price elasticity of demand?
- a. A staple food.
  - b. A good that forms a very small part of a person's total budget.
  - c. A good for which there are many close substitutes.
  - d. A vital medicine.
  - e. None of the above.
17. Jake sells hot dogs at an outdoor stand. There are several other hot dog stands in the vicinity. There is a going price in the market for hot dogs. Which of the following statements is true about the demand for Jake's hot dogs?
- a. Demand for Jake's hot dogs is perfectly inelastic.
  - b. Demand for Jake's hot dogs is perfectly elastic.
  - c. Demand for Jake's hot dogs can be represented as a vertical line.
  - d. Demand for Jake's hot dogs can be represented as a downward sloping line.
  - e. None of the above.
18. Suppose that the price elasticity of supply for toothpaste is 0.2. If the price of toothpaste increases by 30%, what would we expect to happen to the quantity of toothpaste supplied?
- a. increase by 3%
  - b. decrease by 5%
  - c. increase by 60%
  - d. decrease by 15%
  - e. increase by 6%
19. Suppose a grocery store normally sells 100 cartons of milk per day and the price elasticity of demand for milk is 1.7. If the store lowers the price of milk by 10%, about how many cartons of milk will it then sell per week?
- a. 117
  - b. 83
  - c. 85
  - d. 100
  - e. 101.7
20. Which of the following is most likely to be an inferior good?
- a. eyeglasses
  - b. airplane tickets
  - c. caviar
  - d. opera tickets
  - e. discount bus tickets

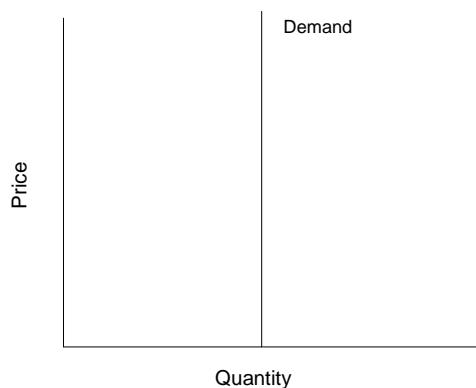


## Answers to Active Review Questions

1. price inelastic
2. perfectly price elastic
3. income elasticity
4. negative, positive
5. unit elastic
6.  $S_A$  (the flatter curve)
7. quantity demanded; price
8. inelastic
9. elastic
10. more
11. True.
12. False.
13. False.
14. False.
15. False.
16. True.
17. There are very few good, close substitutes for the good or service; it is a good or service that people feel they need, rather than just want; or the good or service is a very small part of a buyer's budget.
18. The demand for lemonade in Central Park is price elastic.
19. 0.5
20. The demand curve for beach balls is relatively more elastic.

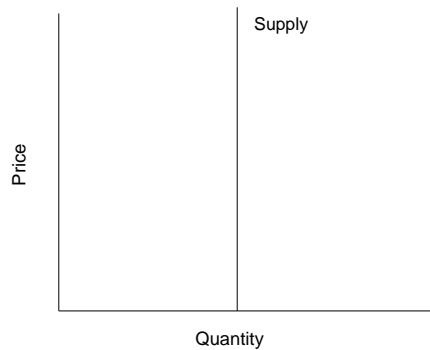
## Answers to Problems

1.



The textbook suggests the example of a medication that you must take every day in order to survive. Provided that you have the money to pay for it, your demand is likely to be perfectly inelastic over a range of prices, since skipping a pill would mean losing your life.

2.



3.

a. Revenue (at point A) = Price  $\times$  Quantity = \$3  $\times$  3 = \$9

b. Revenue (at point B) = \$5  $\times$  2 = \$10

c. In this case, an increase in price from \$3 to \$5 raises revenues from \$9 to \$10. When a price increase leads to higher revenues (that is, when revenues move in the same direction as the price), demand is **inelastic**.

4.

a. % change in price =  $[(5-3) / ((5+3)/2)] \times 100 = (2/4) \times 100 = + 50\%$

b. % change in quantity =  $[(2-3) / ((2+3)/2)] \times 100 = (1/2.5) \times 100 = - 40\%$

c. Price elasticity of demand =  $|\% \text{ change in quantity demanded} / \% \text{ change in price}|$   
 $= |-40\% / 50\%| = .8$

5. We cannot tell which demand curve is more elastic, because the scale is not shown. To compare the elasticities of the two curves based on their appearance, they would have to be on the same scale and passing through the same point.

## Answers to Self Test Questions

1. c
2. d
3. b
4. b
5. a
6. c
7. c
8. b
9. a
10. b
11. d
12. a
13. b
14. e
15. c
16. c
17. b
18. e
19. a
20. e

## Chapter 5

# WELFARE ANALYSIS

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

This chapter presents welfare analysis, including the topics of consumer and producer surplus. This chapter also includes a close examination of different ways of understanding efficiency. Consideration of what is efficient—and for whom—is followed by a first look at policy conclusions that have been drawn from this approach and at the requirements for “perfect markets” that underlie traditional welfare analysis.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Understand how economists define and quantify social welfare.
2. Define consumer surplus, and be able to understand it in relation to a demand curve.
3. Define producer surplus, and be able to understand it in relation to a supply curve.
4. Explain why a market at equilibrium maximizes the net social welfare to market participants.
5. Discuss why a price floor or a price ceiling creates a deadweight loss.
6. Discuss the policy implications of welfare analysis, including the basis for laissez-faire economics and the problem of market failure.

### Key Term Review

welfare economics  
third-party effects  
consumer surplus  
marginal benefit (for consumers)  
net benefits  
market consumer surplus  
marginal cost  
social efficiency (in welfare economics)  
deadweight loss  
laissez-faire

social welfare  
maximum willingness to pay (WTP)  
marginal change  
marginal benefits curve  
market (or aggregate) benefits  
producer surplus  
market producer surplus  
price ceiling  
price floor  
market failure

## Active Review Questions

*Fill in the blank*

1. The difference between a consumer's maximum willingness to pay for something and price is known as \_\_\_\_\_.
2. Another name for a demand curve is \_\_\_\_\_.
3. Producer surplus is essentially the same thing as \_\_\_\_\_.
4. The area above the supply curve but below price is known as \_\_\_\_\_.
5. An allocation of resources that maximizes the net benefits to society is known as \_\_\_\_\_.
6. A minimum price set above the market equilibrium price is known as \_\_\_\_\_.
7. A reduction in net benefits as a result of a market intervention is known as \_\_\_\_\_.
8. A minimum wage law is an example of \_\_\_\_\_.
9. The perspective that government regulation in markets should be kept to a minimum is known as \_\_\_\_\_.
10. Situations in which unregulated markets fail to maximize social welfare are known as \_\_\_\_\_.

*True or False*

11. Suppose Solange is willing to pay \$50 for a particular pair of shoes. The price of the shoes is \$30. She would obtain a consumer surplus of \$20 if she purchases the shoes.
12. Consumer surplus is the area above a demand curve but below price.
13. Another name for a demand curve is a marginal cost curve.
14. The producer surplus for a particular unit is equal to the vertical distance between price and the supply curve.
15. Social efficiency is an allocation of resources in which consumer and producer surplus are equal.

16. Under certain assumptions, the market equilibrium is socially efficient.
17. Rent control is an example of a price ceiling.
18. A deadweight loss results when resources are allocated in an unequal manner.
19. Laissez-faire economics means that resources should be allocated in an equal manner.
20. Market failure occurs when unregulated markets fail to maximize net social benefits.

*Short Answer*

21. What area in a market graph is equal to market consumer surplus?

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22. What is social efficiency?

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23. What is a deadweight loss?

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24. What is a price ceiling?

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**Problems**

1. In Figure 5.11 the price floor appears to increase producer surplus. Draw a graph illustrating a price floor that clearly decreases producer surplus. Be sure to indicate which areas represent producer surplus before and after the price floor.

2. Illustrate in a graph how a price ceiling creates a deadweight loss.

### Self Test

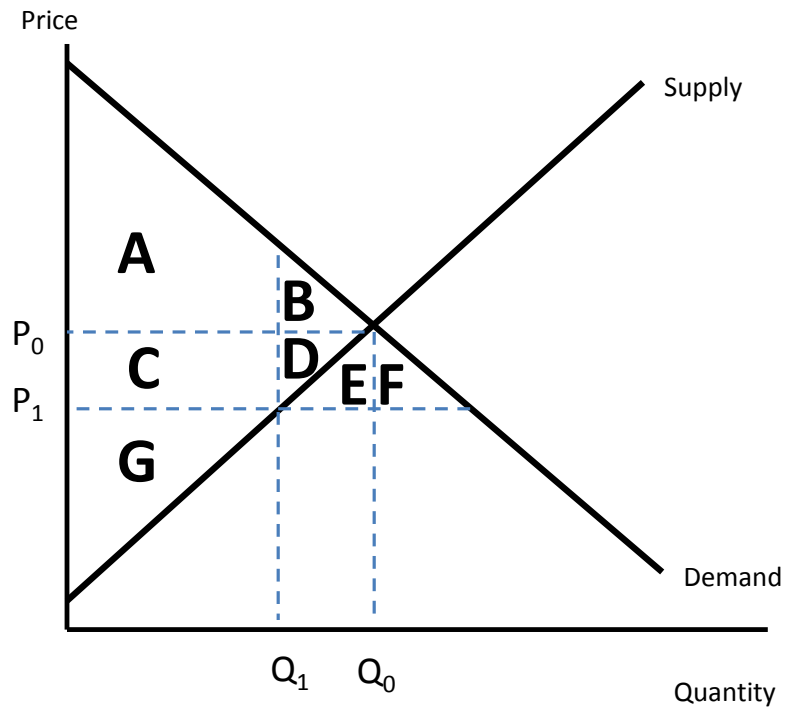
1. Social welfare is defined as ...
  - a. the aggregate well-being of society.
  - b. consumer surplus minus producer surplus.
  - c. producer surplus minus consumer surplus.
  - d. total net benefits.
  - e. total benefits minus deadweight loss.
2. The difference between maximum willingness to pay and price is known as ...
  - a. producer surplus.
  - b. total benefits.
  - c. consumer surplus.
  - d. deadweight loss.
  - e. market failure.
3. Consumer surplus for a particular unit sold is equal to ...
  - a. the vertical distance between price and the demand curve.
  - b. the vertical distance between the demand curve and the supply curve.
  - c. the vertical distance between price and the supply curve.
  - d. the vertical distance between the demand curve and the x-axis.
  - e. the vertical distance between the supply curve and the x-axis.

4. What is another name for a demand curve?
  - a. A marginal benefits curve
  - b. A total benefits curve
  - c. A marginal cost curve
  - d. An aggregate benefits curve
  - e. A total cost curve
  
5. Market producer surplus is equal to what area?
  - a. The area below the demand curve but above price
  - b. The area between the demand and supply curves
  - c. The area below the demand curve but above the x-axis
  - d. The area above the supply curve but below price
  - e. The area below the supply curve but above the x-axis
  
6. Market net benefits are equal to what area?
  - a. The area below the demand curve but above price
  - b. The area between the demand and supply curves
  - c. The area below the demand curve but above the x-axis
  - d. The area above the supply curve but below price
  - e. The area below the supply curve but above the x-axis
  
7. What is another name for profits?
  - a. Deadweight loss
  - b. Market failure
  - c. Consumer surplus
  - d. Producer surplus
  - e. Aggregate benefits
  
8. Social efficiency is defined as an allocation of resources that ...
  - a. maximizes consumer surplus.
  - b. maximizes producer surplus.
  - c. maximizes social well-being.
  - d. maximizes social welfare.
  - e. maximizes market failure.



9. A price ceiling is defined as ...
- a price set to maximize producer surplus.
  - a price set to maximize consumer surplus.
  - a regulation that specifies a maximum price.
  - a regulation that specifies a minimum price.
  - a regulation that sets the quantity sold.
10. A price floor will ...
- clearly increase both consumer and producer surplus.
  - clearly decrease both consumer and producer surplus.
  - clearly increase consumer surplus but have an ambiguous effect on producer surplus.
  - clearly decrease consumer surplus but have an ambiguous effect on producer surplus.
  - clearly increase producer surplus but have an ambiguous effect on consumer surplus.
11. Laissez-faire economics states that ...
- government regulation should be kept to a minimum.
  - government regulation should promote equity.
  - government regulation can eliminate market failure.
  - government regulation should be limited to taxation.
  - government regulation can maximize social welfare.
12. A deadweight loss is defined as ...
- a reduction in social welfare due to equity considerations.
  - a reduction in social well-being due to equity considerations.
  - a reduction in social welfare due to laissez-faire policies.
  - a reduction in social welfare due to market failure.
  - a reduction in social welfare due to market interventions.
13. The policy implication of market failure is that ...
- government intervention is not warranted.
  - government intervention should be undertaken to increase equity.
  - government intervention may be necessary to increase well-being.
  - government intervention is warranted only to protect property rights.
  - government intervention may be necessary to increase social welfare.

For Questions 14-17, refer to the graph below.



14. In the graph above, setting a maximum price of  $P_1$  is an example of ...
  - a. laissez-faire economics.
  - b. a price floor.
  - c. a price ceiling.
  - d. a market failure.
  - e. an inequitable policy.
  
15. In the graph above, if the maximum price is set at  $P_1$ , what area(s) represent consumer surplus after the implementation of this policy?
  - a. Area A
  - b. Areas A+B
  - c. Areas A+C
  - d. Areas A+B+C
  - e. Areas A+B+C+D

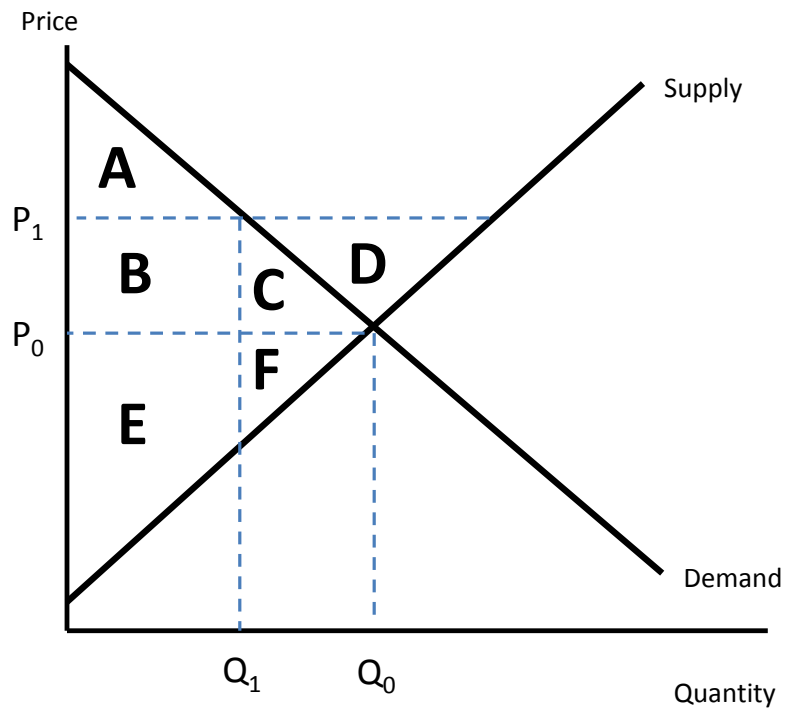
16. In the graph above, if the maximum price is set at  $P_1$ , what area(s) represent the deadweight loss as a result of this policy?

- a. Areas A+C+G
- b. Area B
- c. Areas E+F
- d. Areas C+D
- e. Areas B+D

17. In the graph above, if the maximum price is set at  $P_1$ , what area(s) represent the producer surplus after the implementation of this policy?

- a. Areas C+D+G
- b. Area G
- c. Areas G+D
- d. Area C
- e. Area D

**For Questions 18-20, refer to the graph below.**



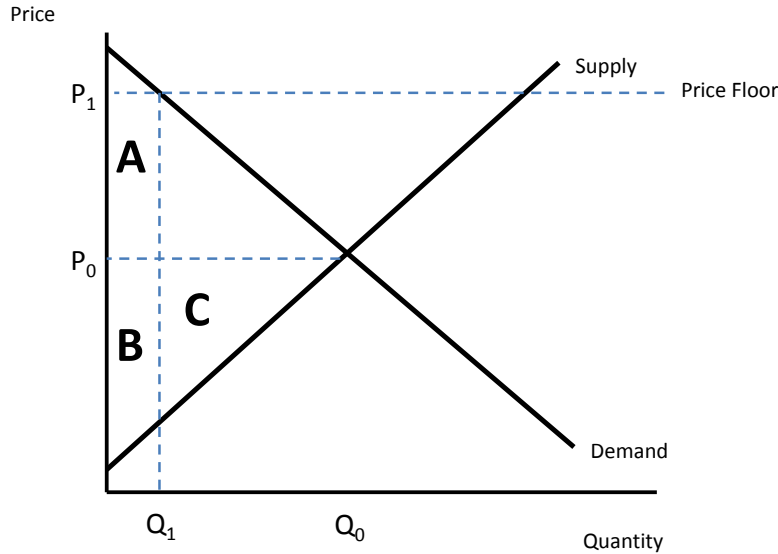
18. In the graph above, if the minimum price is set at  $P_1$ , what area(s) represent the producer surplus after the implementation of this policy?
- a. Areas B+C+E+F
  - b. Areas B+E
  - c. Areas E+F
  - d. Area E
  - e. Area B
19. In the graph above, if the minimum price is set at  $P_1$ , what will limit the quantity of the good that is sold?
- a. Demand
  - b. Supply
  - c. A government quota
  - d. Consumer surplus
  - e. Producer surplus
20. In the graph above, if the minimum price is set at  $P_1$ , what area(s) represent the consumer surplus after the implementation of this policy?
- a. Area A
  - b. Areas A+B
  - c. Areas A+C
  - d. Areas A+B+C
  - e. Area B

## Answers to Active Review Questions

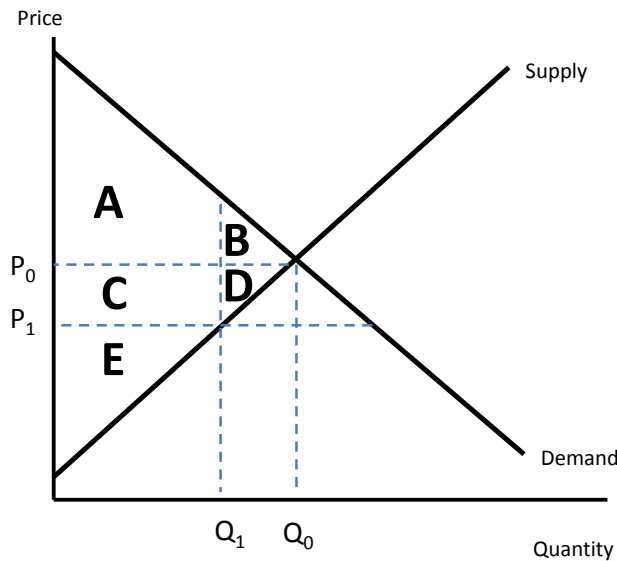
1. consumer surplus
2. a marginal benefits curve
3. profits
4. producer surplus
5. social efficiency
6. a price floor
7. a deadweight loss
8. a price floor
9. laissez-faire economics
10. market failure
11. True
12. False. Consumer surplus is the area below a demand curve but above price.
13. False. Another name for a demand curve is a marginal benefit curve.
14. True
15. False. Social efficiency is an allocation of resources that maximizes net benefits.
16. True
17. True
18. False. A deadweight loss is created when a market intervention reduces net benefits.
19. False. Laissez-faire economics means that government intervention in markets should be kept to a minimum.
20. True
21. The area above price but below the demand curve.
22. Social efficiency is the maximization of net social benefits.
23. A deadweight loss is a reduction in net social benefits as a result of a market intervention, such as a price floor or a price ceiling.
24. A price ceiling is a maximum price set below the market equilibrium.

**Answers to Problems**

1. If a price floor is set very high, it will clearly decrease producer surplus. This is illustrated in the graph. Before the price floor, producer surplus is areas (B+C). After the price floor, producer surplus is areas (A+B). Area A is clearly smaller than area C. Thus producer surplus has decreased.



2. The initial price in the graph below is  $P_0$ . Consumer surplus is areas (A+B). Producer surplus is areas (C+D+E). So total market benefits are (A+B+C+D+E). The price ceiling is set at  $P_1$ . Consumer surplus is now areas (A+C). Producer surplus is now area E. Total market benefits are now (A+C+E). Thus the reduction in social welfare is equal to areas (B+D), which is the deadweight loss.



## Answers to Self Test Questions

1. d
2. c
3. a
4. a
5. d
6. b
7. d
8. d
9. c
10. d
11. a
12. e
13. e
14. c
15. c
16. e
17. b
18. b
19. a
20. a

## Chapter 6

# INTERNATIONAL TRADE AND TRADE POLICY

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

This chapter presents different perspectives on the important subject of international trade. It begins by presenting the classical economic contributions to economic theory of Adam Smith and David Ricardo. It shows the reasoning behind why free markets promote specialization and, in turn, efficiency and comparative advantage. As will be shown, comparative advantage, is the logical argument behind why free trade is desirable—it is beneficial to both countries.

The chapter then discusses other important advantages of trade, but also equally important disadvantages. These illustrate that trade is a much more complex topic than may appear just from looking at the logic of the comparative advantage model. Next, the idea of protectionism—or restrictions on trade—is introduced, with examples such as tariffs and quotas. We look at some reasons why countries sometimes pursue protectionist policies, and also briefly discuss some of today’s trade institutions like the World Trade Organization, the European Union, and the North American Free Trade Agreement. Finally, the chapter discusses some political economy considerations that influence the “fairness” of free trade or protectionism.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Describe how specialization, productivity, and trade are related.
2. Discuss how trade can expand a society’s consumption opportunities.
3. Explain the law of comparative advantage.
4. List the advantages and disadvantages of free trade.
5. Understand how the job outlook can be related to free trade.
6. Describe the likely effects of protectionism.
7. Explain why countries sometimes follow protectionist policies.
8. Discuss how trade and protectionism relates to issues of fairness.

### Key Terms

free trade  
labor-intensive production  
factor-price equalization  
globalization  
tariffs  
trade-related subsidy  
administrative obstacles  
infant industry

comparative advantage (principle of)  
capital-intensive production  
race to the bottom  
protectionism  
trade quotas  
import substitution  
World Trade Organization (WTO)



## Active Review Questions

### *Fill in the Blank*

1. According to Adam Smith, free trade led to specialization, which in turn increased \_\_\_\_\_.
2. Comparative advantage refers to a country's ability to produce some good or service at a lower \_\_\_\_\_ than other countries.
3. A productive method that employs a high ratio of labor to capital is known as \_\_\_\_\_ production.
4. A race to the \_\_\_\_\_ refers to when countries compete with each other by providing low-cost business environment.
5. Tariffs and quotas are both examples of \_\_\_\_\_ policies.
6. A government policy undertaken to reduce reliance on inputs and encourage development of domestic industry can be referred to as an import \_\_\_\_\_ policy.
7. The principle of comparative advantage says that a producer should specialize in producing goods for which its opportunity costs are relatively \_\_\_\_\_.
8. The practice of selling products at prices below production costs is known as \_\_\_\_\_.

### *True/False*

9. Suppose Costa Rica and Panama both produce two goods: bananas and beans. According to the principle of comparative advantage, if Costa Rica produces both bananas and beans less efficiently than Panama, it should simply buy both goods from Panama.
10. The principle of comparative advantage applies only to decisions concerning international trade.
11. Increasing capital mobility decreases the likelihood of a "race to the bottom" in social, health, and environmental standards among countries.
12. Adam Smith is known for having promoted the principle of comparative advantage.
13. Specialization in production always increases the prosperity of a country.

14. Relying excessively on other countries for petroleum imports increases vulnerability to free trade.

15. Relying excessively on other countries for pistachio imports increases vulnerability to free trade.

16. Lock-in is one of the key strategies followed by countries to achieve prosperity.

17. The chief mandate of the World Trade Organization is to provide lending assistance and grants to countries with poor terms of trade.

*Short Answer*

18. Explain Adam Smith's reasoning for why free trade would lead to economic prosperity.

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19. List and describe at least three disadvantages of free trade.

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*Problem*

20. Suppose that by devoting all its resources to coffee production, Ethiopia can produce 6 tons of coffee, while if it devotes all its resources to peanut production, it can produce 2 tons of peanuts. Senegal can produce 2 tons of coffee if it devotes all its resources there, or 4 tons of peanuts if it grows only peanuts.

a. Draw the PPFs for Ethiopia and Senegal. (Put the quantity of coffee on the vertical axes.)

b. Which country is the more efficient producer of coffee? Explain how you got your answer.

c. Suppose that Ethiopia would like to consume 4 tons of coffee and 1 ton of peanuts, while Senegal would like to consume 2 tons of coffee and 3 tons of peanuts. Could either country consume their desired consumption bundle, without trade? Show on your graphs above.

- d. If the countries trade, could they each get their desired consumption bundle?  
If so, how?

### Self Test

1. Adam Smith referred to specialization in production as...
  - a. the division of labor.
  - b. laissez-faire.
  - c. sweat and toil.
  - d. the invisible hand.
  - e. the essence of comparative advantage.
  
2. According to Adam Smith, productivity gains could be brought about through...
  - a. factor-price equalization.
  - b. labor-intensive production.
  - c. diversification.
  - d. market expansion.
  - e. protectionism.
  
3. David Ricardo is most well-recognized for his...
  - a. advocacy of the GATT and the WTO.
  - b. theory of comparative advantage.
  - c. theory of absolute advantage.
  - d. development of capital-intensive modes of production.
  - e. Slavonic approaches to trade.

4. According to the principle of comparative advantage:
- Each country should specialize in the good it can produce most efficiently compared with its trading partner.
  - Buyers should compare goods before signing a contract.
  - Wealthier countries have significant advantages compared to poorer countries.
  - Each country should produce at least some quantity of every important consumer good.
  - Some countries should act strictly as consumers and not as producers.

Use the table below, showing the maximum quantities of two items that two countries could produce if they each specialized entirely in one good or the other, to answer Questions 5-8.

<u>Country</u>	<u>Industry</u>	
	Wheat	Copper
United States	5 bushels	7 tons
Zambia	1 bushel	2 tons

5. The opportunity cost of a bushel of wheat in the United States is...
- $7/5$  ton of copper.
  - 7 tons of copper.
  - 5.7 tons of copper.
  - $7/5$  bushels of wheat.
  - $5/7$  tons of copper.
6. The opportunity cost of a bushel of wheat in Zambia is...
- $1/2$  ton of copper.
  - $1/2$  ton of wheat.
  - 2 bushels of wheat.
  - 2 tons of copper.
  - None of the above.
7. Which country has the comparative advantage in producing copper?
- The United States
  - Zambia
  - both
  - neither
  - you can't tell from the information given

8. If it follows the principle of comparative advantage, which item should the United States specialize in producing?
- a) wheat
  - b) copper
  - c) both
  - d) neither
  - e) you can't tell from the information given
9. Which of the following is not cited as an advantage of specialization and exchange?
- a. incentives to be productive
  - b. gains from trade
  - c. non-coercion
  - d. power differentials
  - e. creation of common interests
10. According to the infant industry argument:
- a. Government should sometimes protect domestic firms from foreign competition until they can compete on their own.
  - b. Tariffs may be justified to protect an industry until it becomes more competitive.
  - c. Quotas are never justified in an international trade situation.
  - d. Both a and b
  - e. Both b and c
11. Which of the following is a disadvantage of import substitution policies?
- a. Decreased likelihood of lock-in
  - b. Loss of potential gains from trade in the short run
  - c. Loss of infant industry advantages
  - d. Loss of long run comparative advantage
  - e. Diversification of production
12. Which of the following is not a potential drawback to specialization and exchange in international markets?
- a. Creation of common interests.
  - b. Excessive dependence on another nation for crucial inputs.
  - c. Loss of domestic food security.
  - d. A "race to the bottom" in environmental standards.
  - e. Wars sparked by the need for products or raw materials provided by another country.

13. Which of the following is an example of a protectionist policy?
- a. Ensuring equal pay for men and women.
  - b. Social Security.
  - c. An excise tax on cigarette consumption.
  - d. A quota on imports of sugar.
  - e. None of the above.
14. In theory, free trade enables countries to...
- a. consume at points within their production possibilities frontiers.
  - b. consume at points on their production possibilities frontiers.
  - c. consume at points beyond their production possibilities frontiers.
  - d. shift their production possibilities frontiers outward.
  - e. Trade has nothing to do with production possibilities.
15. Which of the following is *not* among the listed advantages of free trade?
- a. Efficiency
  - b. Fairness
  - c. Incentive for hard work
  - d. Non-coerciveness
  - e. Promotes common interests
16. A tariff is...
- a. a tax paid by suppliers in the exporting country.
  - b. a subsidy paid to suppliers in the exporting country.
  - c. a subsidy paid to importers.
  - d. a tax paid by importers.
  - e. a tax paid by consumers from the exporting country.
17. The World Trade Organization...
- a. provides emergency assistance to countries in financial crisis.
  - b. issues project-specific loans to developing countries.
  - c. rules on trade disputes between countries.
  - d. (b) and (c)
  - e. None of the above are true.

18. Economists say that a process that is highly automated is...
- a. capital intensive.
  - b. labor intensive.
  - c. labor scarce.
  - d. capital abundant.
  - e. None of the above are true.
19. The theory of factor-price equalization states that...
- a. for both trading partners to benefit, factor prices should be equalized.
  - b. free trade tends to equalize returns on productive factors across countries.
  - c. returns on all of a country's productive factors should be the same in the long run.
  - d. specialization inhibits the equalization of factor price.
  - e. None of the above are true.
20. The issue of trade in genetically-modified organisms is fundamentally one about...
- a. efficiency.
  - b. global governance.
  - c. tariffs.
  - d. comparative advantage.
  - e. fairness.

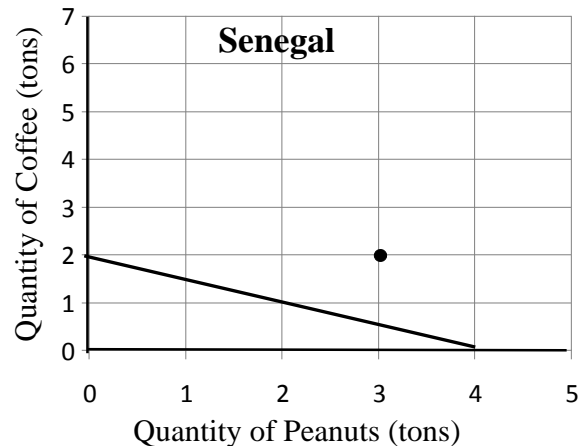
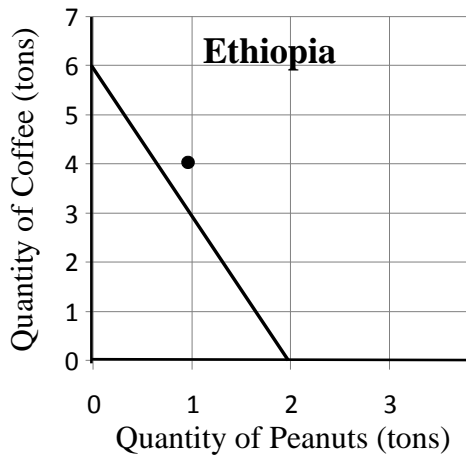


*Answers to Active Review Questions*

1. productivity or efficiency
2. opportunity cost
3. labor intensive
4. bottom
5. protectionist
6. substitution
7. low
8. dumping
9. False
10. False
11. False
12. False
13. False
14. True
15. False
16. False
17. False
18. Smith believed that free trade increased the extent of the market, which would increase gains to specialization, which would motivate a greater degree of specialization, leading to greater economic productivity and, in the long run, greater national prosperity.
19. Vulnerability, lock-in, coercion and power differentials, tension between government and corporate interests, race to the bottom, and commodification of fundamental social needs are among potential disadvantages of free trade.

20.

a.



b. Ethiopia is the more efficient producer of coffee. Ethiopia can produce 1 ton of coffee at an opportunity cost of only  $\frac{1}{3}$  ton of peanuts, while the opportunity cost of a ton of coffee in Senegal is 2 tons of peanuts.

c. No. (See the points marked on the graphs above—they are outside the PPFs.)

d. Yes. If Ethiopia produces 6 tons of coffee and sells 2 tons to Senegal in exchange for 1 ton of peanuts, while Senegal produces only peanuts (keeping 3 tons, and using the fourth to buy 2 tons of coffee from Ethiopia), both countries will get their desired consumption bundle.

*Answers to Self Test Questions*

1. a
2. d
3. b
4. a
5. a
6. d
7. b
8. a
9. d
10. d
11. b
12. a
13. d
14. c
15. b
16. d
17. c
18. a
19. b
20. e

## Chapter 7

# ECONOMIC BEHAVIOR AND RATIONALITY

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

This chapter focuses on what goes into the making of economic decisions. The first part discusses the classical view of human rationality, which goes back to Adam Smith, as well as the neoclassical model, which is based upon classical thinking. It also reviews the “rationality axiom” of neoclassical economics, which is related to the notion of self-interest and assumes the existence of perfect information.

The second section is about economic behavior. It discusses a few experimental cases, such as the availability heuristic, framing, and anchoring, examples of how humans often do not behave “rationally” as defined by the neoclassical model. The section also discusses the importance of both time and intuition in the making of economic decisions – factors not previously considered in neoclassical theory.

The final section discusses the roles of political and corporate influence on rational decision-making, as well as the role of human altruism. It also challenges the neoclassical assumption of perfect information, drawing on the work of Herbert Simon (winner of the Nobel Memorial Prize in economics, even though he was a psychologist and computer scientist, not an economist!) to show that in reality our “rationality” is “bounded” in most instances. The final part of this section explores what a more broad-based notion of rationality would require.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Explain the classical economic views of human nature.
2. Compare and contrast the classical view with the neoclassical model.
3. Describe in what key ways behavioral economic is a departure from neoclassical theory.
4. Explain the roles that time and emotions play in economic decisions.
5. Understand the basics of economic rationality, including how it is shaped by constraints, information, and influence.
6. Discuss economic behavior “in context”—that is, from a substantially more complex “real world” perspective.

## Key Terms

neoclassical model  
behavioral economics  
framing  
time discount rate  
satisfice  
path dependence  
altruistic behavior

rationality axiom  
availability heuristic  
anchoring effect  
optimizing behavior  
meliorating  
bounded rationality  
the common good

## Active Review

### *Fill in the Blank*

1. The theoretical approach that has come to dominate economics is known as the \_\_\_\_\_ model.
2. According to the rationality axiom, pursuit of anything *other than* \_\_\_\_\_ is considered irrational.
3. \_\_\_\_\_ economics is a subfield of microeconomics concerned with how economic decisions are made.
4. The deliberate changing of the presentation of choices in order to influence the final economic decision is known as \_\_\_\_\_.
5. We say that people with a low \_\_\_\_\_ place relatively high value on possible outcomes in the distant future.
6. People that \_\_\_\_\_ generally do so because they possess insufficient information with which to make optimal decisions.
7. We label \_\_\_\_\_ situations in which a choice depends on what has happened in the past.
8. The idea that people consider some, but not all, relevant information when making a decision is included in a broad concept of \_\_\_\_\_ rationality.
9. We are being \_\_\_\_\_ if our actions are focused on the well-being of others instead of our own well-being.

*True or false*

10. Economics is a “pure” science.
11. The neoclassical model of human behavior is consistent with the behavioral economics approach.
12. The deliberate change in the way in which available information is presented is known as the availability heuristic.
13. When we place less economic importance on the future than on the present, we are engaging in discounting.
14. It is possible to think about a choice among alternatives to an inefficiently excessive degree.
15. Satisficing is a better strategy than optimizing when the decision to be made is highly complex.
16. Meliorating refers to the act of engaging in bounded rationality.
17. “Rational economic man” combines self-interest with altruism in pursuit of his economic goals.

*Short answer*

18. In *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith expounds on the concept of the invisible hand. Did Smith believe that humans were characterized by blatant self-interest? Explain.

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19. Briefly explain how neoclassical and behavioral economics differ from each other.

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20. Discuss in what way rationality is related to self-interest. Are the two concepts synonymous?

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21. Give a few examples of how we sometimes behave in a seemingly irrational manner. Is such behavior uncommon? Discuss.

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22. Is our time discount rate typically the same for all types of choices or decisions? Should it be? Explain.

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23. Is it improper or “inefficient” for us to rely on our emotions for some economic decisions instead of our reasoning ability? Discuss.

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24. List a few examples of path dependence and explain how they fit the definition.

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25. Describe a more broad-based definition of rationality than the one provided by neoclassical theory.

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### Self Test

1. Which of the following statements about Adam Smith is false?

- a. Smith is the author of *The Theory of Moral Sentiments*.
- b. Smith is the author of *The Wealth of Nations*.
- c. Smith believed that there is no need for altruistic behavior.
- d. Smith's work has been used to justify views that are not necessarily supported by his writing.
- e. Smith wrote about both economic and ethical issues.

2. Some people have argued that if everyone simply follows his or her own self-interest, societal well-being will automatically result. This view overlooks ...

- a. the fact that people may not have all the information they need to make good decisions.
- b. the fact that people almost always work to advance the common good.
- c. the fact that people optimize.
- d. the fact that people have high discount rates.
- e. the role of markets.

3. Which of the following is *not* considered a hallmark of neoclassical economics?

- a. Rationality
- b. Utility maximizing households
- c. Availability heuristics
- d. Firms that maximize profit
- e. All of the above *are* hallmarks of neoclassical economics.

4. The author of *Economics: An Introductory Analysis*, the economics textbook that would become the best-selling textbook ever, was ...

- a. John Stuart Mill
- b. Adam Smith
- c. Milton Friedman
- d. Paul Samuelson
- e. Alan Greenspan

5. According to neoclassical economics, irrational behavior is ...

- a. not uncommon.
- b. that which is not consistent with self-interest.
- c. not necessary for information to be perfect.
- d. related to people's emotions.
- e. misunderstood.

6. The term "rational behavior" is used in neoclassical economic models to describe behavior that *best* moves a person toward his or her goals. This behavior is known as ...

- a. bounded rationality
- b. satisficing
- c. meliorating
- d. organizational savvy
- e. optimizing

7. The subfield of microeconomics that studies how economic decisions are made is known as ...

- a. situational economics
- b. meso-economics
- c. rationality economics
- d. altruistic economics
- e. behavioral economics

8. When people alter their choices based on how the relevant information is presented to them, this is an example of ...

- a. behavioral economics
- b. an availability heuristic
- c. framing
- d. anchoring
- e. optimizing

9. When people over-rely on information that may or may not be relevant to the decision at hand, it is called ...

- a. neoclassical economics
- b. satisficing
- c. framing
- d. anchoring
- e. optimizing

10. During her first year of college, Jean lived in a small dorm room with an annoying roommate. In her second year, she was happy because she got a room of her own, although it was still small. In her third year, she moved into a spacious apartment with a good friend. Jean's process of finding a better place to live each year could be described as ...

- a. discounting
- b. custom
- c. exchange
- d. meliorating
- e. production



11. The concept that describes the relative weighting of present versus future benefits and costs is known as the ...

- a. time value factor.
- b. time discount rate.
- c. analysis of variance.
- d. quotient of quotidian time.
- e. None of the above are correct.

12. Emotions ...

- a. have no relevance in economics.
- b. are always rational.
- c. are at the foundation of optimization behavior.
- d. sometimes provide wisdom in decision making.
- e. must be balanced with reasoning when conducting neoclassical analysis.

13. Which of the following do *not* play any role in decision-making?

- a. Time
- b. Money
- c. Media influence
- d. Advertising
- e. All of the above play a role.

14. The neoclassical economic model assumes perfect rationality and perfect information. Which of the following situations is most consistent with this model?

- a. You need to buy a pair of shoes. You find out what store sells the best shoes for the lowest prices, and you go shopping there.
- b. You need to buy a pair of shoes, so you buy them at the nearest store.
- c. You get drunk at a fraternity party because you want to impress your friends.
- d. You don't study the night before your economics exam because your roommate is sick and needs your help.
- e. You buy a used car without doing research beforehand, and end up paying more than the car is worth.

15. Which statement about the neoclassical economic model is false?

- a. It assumes the economy is composed entirely of households and firms.
- b. It treats households as organizations with potentially complex internal dynamics.
- c. It assumes that exchange is performed in markets.
- d. It assumes that all economic actors possess perfect information.
- e. It omits consideration of resource maintenance activities.

16. The experiment that asks participants to decide what share of a \$20 payout to give to a partner is known as the ...

- a. prisoner's dilemma game.
- b. chicken game.
- c. path dependence game.
- d. satisficing game.
- e. ultimatum game.

17. Which of the following statements is true?

- a. Anchoring can occur when we pay insufficient attention to information that could be vitally important.
- b. The notion of bounded rationality is central to the neoclassical model.
- c. Following intuition is often a good idea when economic decisions involve a high level of complexity.
- d. The neoclassical model relies heavily on the notion of melioration.
- e. A person who does not care much about the future is said to have a low time discount rate.

18. Bounded rationality ...

- a. is a euphemism for highly irrational behavior.
- b. is always path dependent.
- c. usually does not lead to the "optimal" choice.
- d. was discussed extensively in *The Theory of Moral Sentiments*.
- e. None of the above are true.

19. Which of the following exemplifies a high time discount rate?

- a. Making sure to save money for your child's college education, even though your child is still young.
- b. Deciding to take an expensive vacation now, even if it means not taking a vacation next year.
- c. Taking steps to avoid water pollution, because the pollution could decrease fish yields next year.
- d. Planting an acorn with the intention that your grandchildren will enjoy the full-grown oak tree.
- e. Putting money away for a rainy day.

20. Which of the following situations best illustrates the concept of satisficing?
- a. Claudillo looks for a job that will pay better than his last job.
  - b. Johanna researches every possible option before she chooses what model of car she will buy.
  - c. Albert eats a peanut butter sandwich for lunch every day because that's all he can afford.
  - d. Juan wants an affordable three-bedroom apartment. He rents the first one he finds.
  - e. Carla saves her money carefully so she can take a year off from work and write a novel.

### Answers to Active Review Questions

- 1. neoclassical
- 2. self-interest
- 3. behavioral
- 4. framing
- 5. time discount rate
- 6. satisfice
- 7. path dependent
- 8. bounded
- 9. altruistic
- 10. False. Economics is a “social” science. It is not a pure science since the economy is far more difficult to analyze using the traditional scientific method than controlled laboratory experiments.
- 11. False. These are very different; in fact, weaknesses in neoclassical economics with regard to how people make decisions are what have given rise to behavioral economics.
- 12. False. It is known as framing.
- 13. True.
- 14. True.
- 15. True.
- 16. False. Meliorating is continuously attempting to improve upon one’s situation.
- 17. False. Rational economic man only pursues self-interest, never altruism.
- 18. No, he did not. He believed that people often were motivated by self-respect, and having the respect of others.
- 19. Neoclassical economics narrowly holds that all economic decisions are dictated by rationality, which is the pursuit of self-interest. Behavioral economics offers a more nuanced approach to economic decision making, which maintains that rationality in a neoclassical sense is practically impossible (given existing real-world constraints) and that people are sometimes altruistic instead of self-interested.

20. Discuss in what way rationality is related to self-interest. Are the two concepts synonymous? According to the neoclassical model, the two are indistinguishable, since rationality is defined as the incessant pursuit of self-interest. The broader behavioral model, however, believes that rationality neither requires nor is required by self-interest. It allows for bounded rationality or satisficing (which it deems rational), as for altruistic behavior. Moreover, according to this model, self-interest can also be pursued irrationally.
21. One example is where we allow ourselves to be confused by the framing of a problem requiring a decision. “Lives saved” and “deaths averted” mean the same thing, but which is used often influences the choices people make. Another example is where we allow, say, one video transmission influence our thinking to a greater extent than a summary of many responses that contradicts the video. Such behavior is “irrational” according to the neoclassical model, but it is actually quite common and *not* irrational according to the behavioral model.
22. No, it generally is not, nor should it be. For example, we tend to value the future to a significant degree when it comes to our finances, meaning that many save a fair share of their income for future use. On the other hand, many of us tend to be more shortsighted when it comes to making decisions (often related to consumption of products, energy, or materials) that have an adverse impact on the natural environment. For a variety of reasons, we tend to prefer pushing these “costs” on to future generations.
23. It is not necessarily inefficient to rely on our emotions; in fact, the opposite might be the case. For especially complicated economic decisions, it is almost impossible to obtain enough information that could be relevant to our ultimate choice. So wasting too much time gathering enough information might end up being inefficient in such situations (hence irrational), and it often is more efficient to rely on our intuition or emotions by “satisficing.”
24. The QWERTY arrangement of keys on a keyboard is a classic example. It was initially developed in order to *slow down* professional secretaries, since their extreme typing speed with more efficient arrangements would invariably lead the typewriter keys to become tangled and stuck. Of course this has not mattered for at least a few decades, but the less efficient system stuck. Another example might be where a concentration of businesses in a particular geographical area might ultimately lead to disproportionate economic development, where buyers cluster around the initial sellers, attracting more businesses to the area, etc. It may not be the most efficient geographical distribution of businesses, but it follows logically from its starting point.
25. A more broad-based definition would involve goals that are well-being enhancing but also that pursuit of the goals themselves contributes to well-being. More important, naked self-interest is not required. Altruism might often also contribute to well-being by, for example, strengthening the local community. Finally, a more broad-based definition would presume – more realistically than the neoclassical model – that it is often not possible to be rational (even though people mostly *try* to act rationally) on account of lack of relevant information in making decisions.

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. d  | 11. b |
| 2. a  | 12. d |
| 3. c  | 13. e |
| 4. d  | 14. a |
| 5. b  | 15. b |
| 6. e  | 16. e |
| 7. e  | 17. c |
| 8. c  | 18. c |
| 9. d  | 19. b |
| 10. d | 20. d |

## Chapter 8

# CONSUMPTION AND THE CONSUMER SOCIETY

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

*This chapter presents the standard economic model of consumer behavior. We explain the notion of consumer sovereignty, show how to graph a budget line, and explain the rule for utility maximization derived from marginal thinking.*

*We set this standard material in context by then moving on to different perspectives on consumer behavior. First, we consider the historical context of consumer behavior. Then we consider the social and environmental contexts of modern consumer society. Finally, we explore the relationship between consumerism and well-being, and discuss options for public policy.*

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Draw a budget line and a utility function.
2. Discuss how marginal thinking can be used to maximize consumer utility.
3. Discuss the historical and international contexts of consumer society.
4. Explain the implications of the social context for consumer behavior.
5. Describe the link between consumption and the environment.
6. Evaluate the relationship between consumption and well-being.
7. Discuss policy options for influencing consumer behavior.

### Key Term Review

consumer sovereignty

budget line

utility function (total utility curve)

consumer society

absolute deprivation

reference group

ecological footprint

ecolabeling

voluntary simplicity

living standard (or lifestyle) goals

utility

diminishing marginal utility

consumerism

relative deprivation

aspirational group

green consumerism

subjective well-being (SWB)

## Active Review

### *Fill in the blank*

1. The idea of consumer sovereignty holds that \_\_\_\_\_ is the ultimate economic goal.
2. A group to which a consumer wishes he or she could belong to is a(n) \_\_\_\_\_ group.
3. A \_\_\_\_\_ line shows all the combinations of two goods that a consumer can purchase, given his or her monetary resources and the prices of the two goods.
4. The idea that a consumer's additional utility from successive units of a good tends to decrease is known as \_\_\_\_\_.
5. The feeling of lack that comes from comparing oneself with someone who has more is known as \_\_\_\_\_.
6. Annual advertising expenditures in the United States are equivalent to \$\_\_\_\_\_ per person.
7. The practice of reducing one's overall level of consumption in order to reduce their environmental impacts is referred to as \_\_\_\_\_.
8. A conscious decision to live with a limited or reduced level of consumption is known as \_\_\_\_\_.

### *True or False*

9. About one third of the world's population suffers from absolute deprivation.
10. Economic research has shown that one's income level has no effect on one's happiness.
11. Shallow green consumerism means a consumer will choose ecofriendly products, but not necessarily reduce his or her overall level of consumption.
12. Renee allocates her income between soup and nuts. If the price of soup increases while the price of nuts remains constant, Renee's budget line will shift inward to a new, parallel budget line.

13. John allocates his income between bows and arrows. Suppose that a graph of his budget line shows quantity of bows on the horizontal axis and quantity of arrows on the vertical axis. If the price of bows decreases, John's budget line pivots outward to a new line with a shallower slope.
14. According to the traditional model, consumers maximize utility by purchasing an equal amount of each good that provides utility.
15. Having aspirational groups tends to reduce people's level of consumerism.

*Short Answer*

16. Explain why a utility curve becomes flatter as consumption levels increase.

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17. What is the difference between absolute and relative deprivation?

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18. Summarize the evidence on whether money buys happiness.

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Questions #19 and #20 are based on material covered in the Appendix to Chapter 8.

19. Briefly define the concept of an "indifference curve," and illustrate it with an example.

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20. Explain why indifference curves are generally drawn as a curve that is bowed in toward the origin.

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**Problems**

1. Joel has \$10 to spend on some combination of roses and daisies. Roses cost \$1 each, and daisies cost \$2 each.

a. Draw Joel's budget line, putting daisies on the vertical axis.

b. If Joel buys four daisies, how many roses can he buy?

2. Continuing the example from above, now suppose that Joel's income increases from \$10 to \$12. Sketch the budget line from Problem #1 and then show the change to the new budget line.



4. Jenny divides her income between corn and beans. She has a total of \$100. Beans cost \$10 per sack, and corn costs \$20 per sack.
- a. Draw Jenny's budget line, with beans on the vertical axis.
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  - b. The price of both beans and corn decreases by 50%, to \$5 and \$10 respectively. Draw the change in Jenny's budget line on the graph in part (a).
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  - c. What other event could have produced the change you diagrammed in your answer to part b?

## Self Test

1. The other consumers whose consumption choices help you decide what to buy are
  - a. your reference group
  - b. your support group
  - c. your self-actualization group
  - d. your budget reference
  - e. your reference point

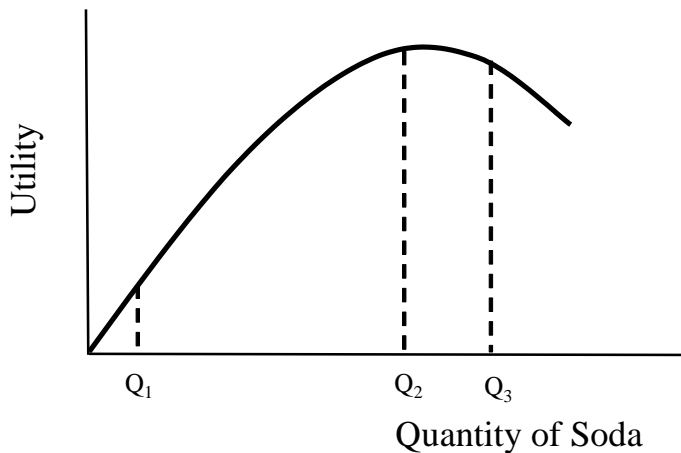
Questions # 2 and # 3 refer to the budget line graph below.



2. Dorothea has to allocate her budget between groceries and rent. Which of the following combinations can Dorothea afford?
  - a. 6 weeks of rent and 20 bags of groceries
  - b. 6 weeks of rent and 10 bags of groceries
  - c. 1 week of rent and 25 bags of groceries
  - d. 5 weeks of rent and 18 bags of groceries
  - e. 6 weeks of rent and no groceries
3. Dorothea has to pay for a trip to the emergency room when her niece has an asthma attack. Now she has less money for groceries and rent. What happens to her budget line?
  - a. The slope increases.
  - b. The slope decreases.
  - c. The budget line does not change.
  - d. The budget line shifts toward the origin while the slope does not change.
  - e. The budget line pivots to the right.

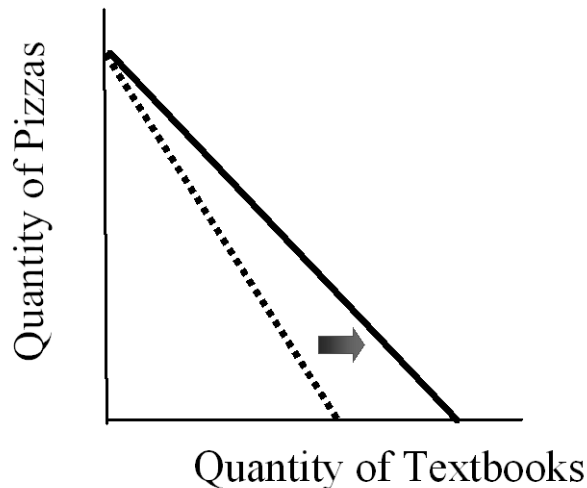
4. Which of the following is an example of relative deprivation?
- Three teenagers spend their allowances on new clothes.
  - Sam can't afford to get trendy clothes like his 9<sup>th</sup> grade classmates.
  - A child gets sick because he doesn't have enough to eat.
  - A wealthy donor withdraws support from the local school system.
  - A community cannot afford to obtain vaccines against yellow fever.
5. Jane allocates her income between candy and soda. Something happens that causes her budget line to shift toward the origin without a change in slope. What could have caused this change?
- Jane's income decreased.
  - The price of both candy and soda increased by the same percentage.
  - The price of candy increased.
  - Jane decided to buy more of both goods.
  - Both a and b are true.
6. Consumer sovereignty is the idea that
- Businesses should be consumer-oriented.
  - Consumers should be independent of the government.
  - Consumer satisfaction is the ultimate economic goal.
  - It's important to the economy for consumers to be employed independently.
  - Both a and c.

**Question #7 refers to the following graph.**



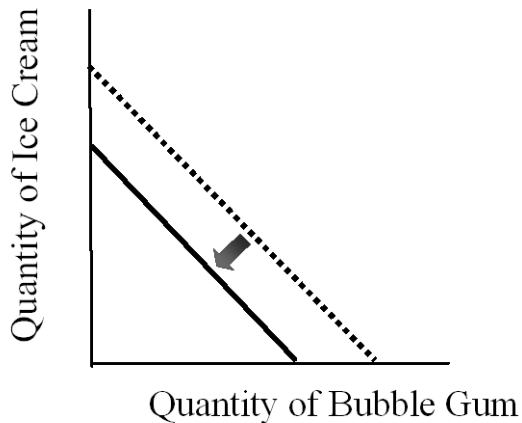
7. The graph above shows the utility function of a student consuming bottles of soda. Which of the following statements is *false*, based on the information in this graph?
- The marginal utility of an additional can of soda in the region from  $Q_1$  to  $Q_2$  is positive.
  - Diminishing marginal utility first occurs at  $Q_3$ .
  - Soda consumption is characterized by diminishing marginal utility.
  - Marginal utility is greater at  $Q_1$  than at  $Q_2$ .
  - At  $Q_3$ , an additional bottle of soda makes the student feel worse, not better.
8. About what proportion of the world's population experiences *absolute deprivation*?
- 1%
  - 5%
  - 10%
  - 20%
  - 33%

**Question #9 refers to the following graph.**



9. Marnie allocates her income between pizzas and textbooks. The graph above shows Marnie's budget line. Which of the following events could produce the shift from the dotted line to the solid line?
- A decrease in the price of textbooks
  - An increase in the price of textbooks
  - An increase in the price of pizzas
  - A decrease in the price of pizzas
  - Marnie signing up for a class that requires her to buy more textbooks

**Question #10 refers to the following graph.**



10. James allocates his income between bubble gum and ice cream. The graph above shows James' budget line. Which of the following events could cause James' budget line to shift inward, from the dotted line to the solid line?
- A decrease in James' income.
  - An increase in James' income.
  - An increase in the price of bubble gum relative to ice cream.
  - An increase in the price of one good and a decrease in the price of the other.
  - None of the above.
11. According to the textbook, which of the following changes has tended to accompany and facilitate increased consumption?
- Increase in consumer credit.
  - Decrease in advertising revenues.
  - Increase in labor union power.
  - Increase in political freedom.
  - Reduction in government spending.
12. A consumer society is best described as one in which ...
- people have enough money to buy consumer goods and services.
  - people form reference and aspirational groups.
  - people derive their sense of identity largely through consumer goods and services.
  - consumer institutions such as credit, advertising, and regulations are fully developed.
  - consumer impacts are environmentally unsustainable.

13. Suppose someone from a middle-class neighborhood feels poor driving through an upscale neighborhood. This is an example of ...
- shallow green consumerism
  - deep green consumerism
  - absolute deprivation
  - relative deprivation
  - subjective well-being
14. Which one of the following is not an institution that promotes greater levels of consumerism?
- Advertising
  - Department stores
  - Consumer credit
  - Higher incomes
  - Consumption taxation
15. The consensus is that the origins of the consumer society as a mass phenomenon can be identified as ...
- the United States in the 18<sup>th</sup> century
  - Western Europe in the 18<sup>th</sup> century
  - the United States in the early 20<sup>th</sup> century
  - Western Europe in the 16<sup>th</sup> century
  - Asia in the 19<sup>th</sup> century
16. Suppose a consumer decides not to purchase an automobile to reduce her environmental impacts. This is an example of ...
- shallow green consumerism
  - deep green consumerism
  - absolute deprivation
  - relative deprivation
  - subjective well-being
17. Which statement below best describes the relationship between money and happiness?
- Higher income is associated with lower levels of happiness, at an increasing rate
  - Higher income is associated with lower levels of happiness, at a decreasing rate
  - Higher income is associated with higher levels of happiness, at an increasing rate
  - Higher income is associated with higher levels of happiness, at a decreasing rate
  - Income is unrelated to levels of happiness



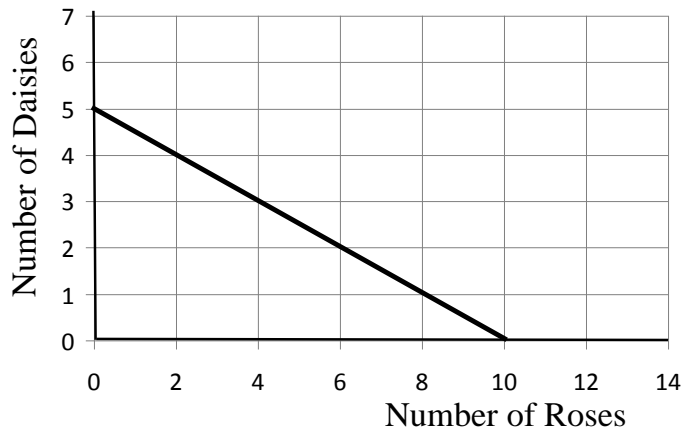
18. Reducing one's level of consumption in order to increase the quality of life is known as ...
- a. relative deprivation
  - b. absolute deprivation
  - c. emotional well-being
  - d. self-conceptualization
  - e. voluntary simplicity
19. (Appendix) What is the slope of an indifference curve?
- a.  $-P_x / P_y$
  - b.  $-\text{MU}_x / \text{MU}_y$
  - c.  $-\text{MU}_x / P_y$
  - d.  $-\text{MU}_y / P_x$
  - e.  $-P_y / P_x$
20. (Appendix) The rule for utility maximization states that consumers maximize their utility when ...
- a. The marginal utility spent on the last unit of each good is equal to price.
  - b. The marginal utility of all goods is equal.
  - c. The marginal utility on all goods is diminishing per dollar.
  - d. The marginal utility per dollar is equal across all goods.
  - e. The marginal utility per dollar is maximized across all goods.

## Answers to Active Review Questions

1. consumer satisfaction
2. aspirational
3. budget
4. diminishing marginal utility
5. relative deprivation
6. 800
7. deep green consumerism
8. voluntary simplicity
9. True
10. False
11. False
12. False. Her budget line will rotate, not shift.
13. True
14. False
15. False
16. A utility curve becomes flatter as consumption levels increase because of diminishing marginal utility. Each successive unit of consumption provides a smaller increase in utility. Thus the utility curve rises by a smaller amount with each additional unit of consumption.
17. Absolute deprivation is an inability to meet basic needs. One –third of humanity suffers from absolute deprivation, most of them in developing countries. Relative deprivation is a feeling of lack that comes from comparing oneself to others who have more, and can occur even among those with relatively high incomes.
18. Higher income levels tend to be associated with higher subjective well-being, but at a decreasing rate. This is consistent with the idea of diminishing marginal utility. Research indicates that “emotional well-being” – focusing on the positive and negative emotions people experience n a daily basis – also increases with income, at a decreasing rate, but only up to a point. At an income level of \$75,000, in the United States, further increases in income did not improve emotional well-being.
19. An indifference curve shows the combination of two goods with which a consumer would be equally satisfied. For example, a consumer might theoretically be equally satisfied with one ice cream cone and seven cookies, or with three cookies and two ice cream cones.
20. The shape of the indifference curve reflects the assumption that the consumer experiences diminishing marginal utility for both goods in question.

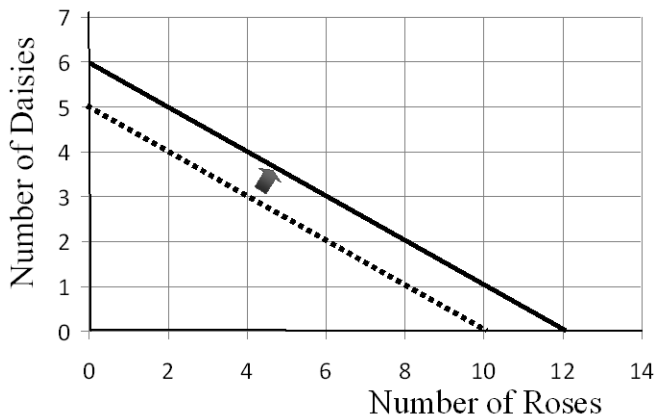
## Answers to Problems

1. a.

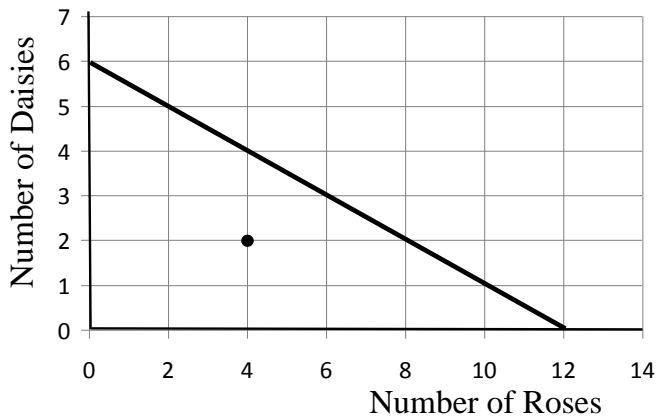


1. b. After spending \$8 ( $= 4 \times \$2$ ) on daisies, Joel has enough left to buy 2 roses.

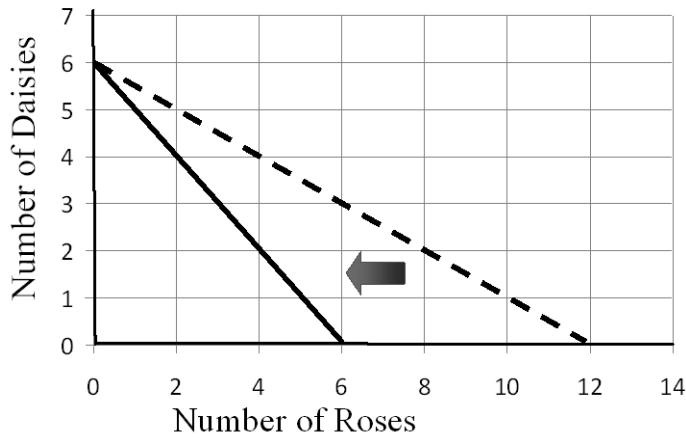
2.



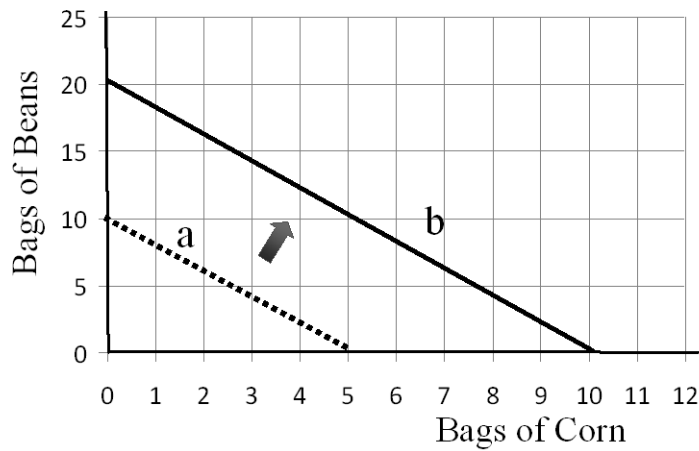
3. a. This consumption combination, shown as a point, falls well to the left of the budget line.



3. b.



4. a and b



4. c. An increase in Jenny's income from \$100 to \$200 would have produced the same change.

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. a  | 11. a |
| 2. e  | 12. c |
| 3. d  | 13. d |
| 4. b  | 14. e |
| 5. e  | 15. b |
| 6. c  | 16. b |
| 7. b  | 17. d |
| 8. e  | 18. e |
| 9. a  | 19. b |
| 10. a | 20. d |

## Chapter 9

# MARKETS FOR LABOR

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

This chapter deals with supply and demand for labor. You will learn about why the supply curve for paid labor is generally depicted as sloping upward, and why the labor supply curve for an individual worker may bend backward. Also included are topics such as market power in labor markets, the notion of compensating wage differentials, and labor market discrimination. Also highlighted are the ways in which historical and social factors can influence wage patterns over long periods of time.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Discuss how individuals make decisions about entering the market for paid labor.
2. Understand the concepts of labor demand and labor supply, including the ambiguity regarding the slope of the labor supply curve at the individual level.
3. Describe the interaction of supply and demand in the aggregate labor market.
4. Explain variations in wages among workers, as well as how these are determined in the market.
5. Discuss recent changes in jobs and the labor force, particularly the notion of employment “flexibility,” annual work hours, and the impact of immigration.
6. Understand other explanations for wage determination not explained by the neoclassical model, such as compensating wage differentials, bargaining and unions, efficiency wages, and dual markets.
7. Discuss wage discrimination based on race and gender.

### Key Terms

marginal revenue product of labor  
backward-bending individual paid  
general human capital  
screening methods  
labor force participation rate  
monopsony  
oligopsony  
efficiency wage theory  
dual labor markets  
occupational segregation

marginal factor cost of labor  
labor supply curve  
employer-specific human capital  
signaling theory  
compensating wage differentials  
bilateral monopoly  
labor unions  
employee morale  
labor market discrimination  
worker cooperatives

## Active Review

*Fill in the blank*

1. The upward-sloping supply curve for labor reflects the \_\_\_\_\_ effect of a change in the wage.
2. The higher wages are, the more leisure people may want to “buy”. This phenomenon can be described as the \_\_\_\_\_ effect of rising wages.
3. If a variation in wages produces little change in the quantity of labor supplied, we can say that the market labor supply is relatively \_\_\_\_\_.
4. The \_\_\_\_\_ theory of education suggests that the value of an advanced degree lies in the information it provides about how good a worker and learner the person holding the degree is likely to be.
5. A situation in which there is only one buyer for a good is known as \_\_\_\_\_.
6. A situation in which there is only one buyer and one seller is known as a \_\_\_\_\_ monopoly.
7. Suppose there are many talented musicians hoping to sell their music, and just a few record label buyers of musical works. This situation, in which there are just a few buyers, is known as \_\_\_\_\_.
8. A profit-maximizing firm will hire workers up to the point where the marginal revenue product of labor is equal to the \_\_\_\_\_.
9. If a firm brings labor in a perfectly competitive labor market, it will maximize profits at the point where \_\_\_\_\_ is equal to wage.
10. Paying workers a premium in order to induce harder work is covered by the theory of \_\_\_\_\_ wages.
11. The situation in which a segment of the labor market is specialized and earns high pay and benefits while another earns little and has slim chance of advancement is known as \_\_\_\_\_ markets.
12. Occupational \_\_\_\_\_ refers to the tendency of men and women to be employed in different occupations.

*True or False*

13. According to the theory of compensating wage differentials, non-unionized workers are more likely to take low-paying, unpleasant jobs.
14. In a dual labor market, each worker either holds two jobs or is qualified to hold two possible jobs.
15. Any given worker's wage can be taken as an accurate representation of that worker's contribution to wellbeing in the economy.
16. If a firm is a monopsonist in a labor market, it will pay wages above the marginal factor cost of labor.
17. Oligopsonistic employers will tend to hire fewer workers than firms operating in a perfectly competitive labor market.

*Short Answer*

18. If the wages of car mechanics rise, would you expect a movement along the supply curve for car mechanics, a shift in the supply curve for car mechanics, or both?

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19. Explain the concept of "efficiency wage".

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20. What conditions are necessary in order for the theory of compensating wage differentials to operate in reality?

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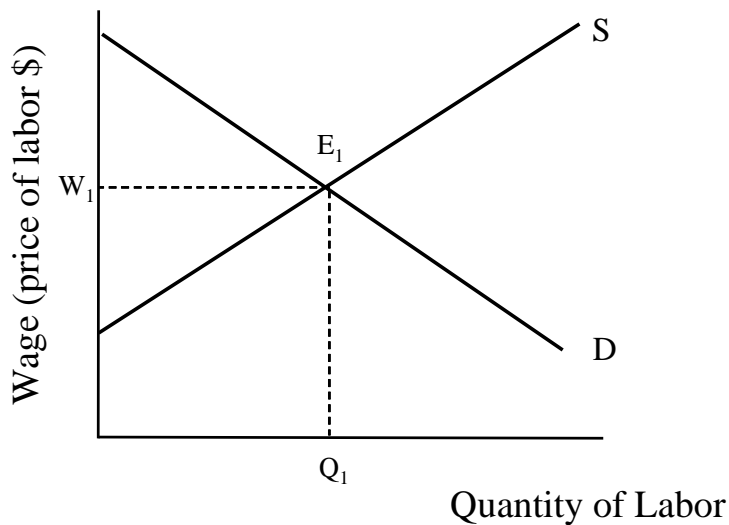
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*Problems*

1. Sketch a backward-bending individual labor supply curve, and indicate where on the curve the income effect is stronger than the substitution effect.

2. The following graph shows the labor market for pastry chefs.



Suppose a popular new diet book is published that says people should eat at least one fancy French pastry per day, for optimum health. Show the change that might result in the labor market for pastry chefs and indicate the new quantity of labor supplied and the new equilibrium wage.



3. Suppose Amy's Applesauce company produces jars of applesauce. The chart below shows the total number of applesauce jars produced for a given number of workers.

Number of Workers	Number of Jars	Marginal physical product of labor	Marginal revenue product of labor
1	30		
2	70		
3	120		
4	140		
5	150		

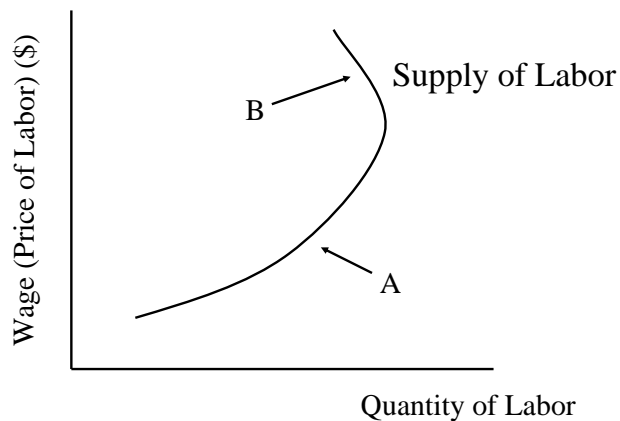
a) Fill in the marginal physical product of labor for each level of production.

b) Now suppose each jar of applesauce sells for \$5. Fill in the marginal revenue product of labor for each level of production.

### Self Test

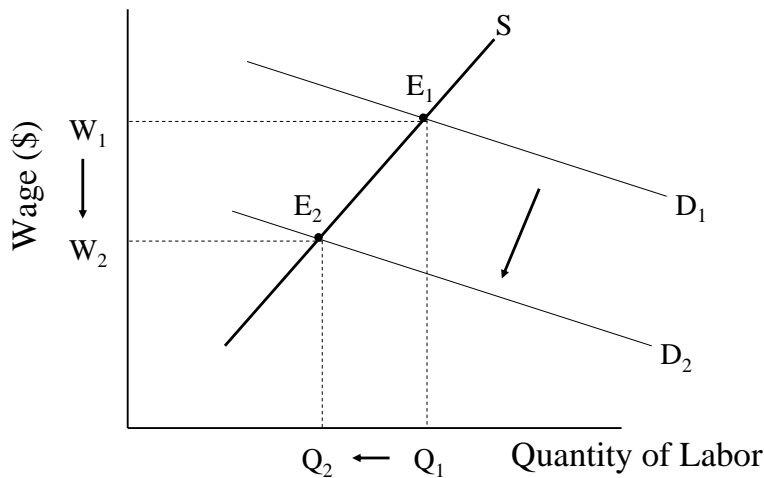
1. Which of the following would *not* be considered an opportunity cost of paid employment?
  - a. Caring for an elderly relative
  - b. Education
  - c. Self-employment
  - d. Leisure
  - e. Transportation costs of commuting to work

**Question #2 refers to the following graph.**



2. Which of the following statements is true?
- The income effect is stronger than the substitution effect at point A.
  - The income effect is stronger than the substitution effect at point B.
  - This graph represents the market supply of labor.
  - An individual labor supply curve like that shown in the graph above could not occur in the real world.
  - The shape of the curve is determined by the average cost of production.

**Question #3 refers to the graph shown below.**



3. Suppose that the graph shown above depicts a change in the labor market for graphic designers. Which of the following events could have produced the change we see in this graph?
- A new computer program allowed people to complete graphic designs automatically, without the aid of a trained designer.
  - Many new graphic designers graduated from a top training program.
  - The wage offered for specialized graphic design services rose.
  - The market for graphic designers expanded.
  - None of the above.
4. A situation in which there are many sellers of labor but only one employer (i.e. buyer of labor) can be referred to as
- Monopolistic labor
  - Monopoly
  - Monopsony
  - Competitive equilibrium
  - Labor equilibrium

5. Suppose there is only one company that hires skilled machinists, and all skilled machinists belong to one union. This situation, in which a single employer faces a single seller of labor, is known as
- Monopsony
  - Oligopsony
  - Oligopoly
  - Bilateral monopoly
  - Monopolistic competition
6. Factors that might make one job more appealing than another include
- working conditions
  - wages
  - amount of vacation offered
  - both a and c are true
  - a, b, and c are all true
7. The notion that, all else equal, workers will accept lower wages for jobs with better characteristics is known as the theory of
- social contribution
  - consumer sovereignty
  - market power
  - compensating wage differentials
  - employee morale
8. Efficiency wage theory holds that
- Workers will work harder when they know their current employer is paying them more than they could get elsewhere.
  - Workers work less when they know they are being overpaid.
  - Employee morale is not a factor influencing total productivity.
  - Raising wages is the best way to increase output per worker.
  - All of the above.
9. A situation in which some workers get high wages, job security, and other benefits while other workers, doing similar jobs, get low wages, no job security, and few other benefits, is known as
- An efficiency wage situation
  - A wage contour
  - A dual labor market
  - A price discriminating labor force
  - A high monitoring costs employment structure

10. The tendency of men and women to be employed in different occupations is referred to as
- a. occupational segregation.
  - b. gender inequality.
  - c. racial segregation.
  - d. contour segregation.
  - e. occupational dysphoria.
11. The neoclassical model of the labor market assumes that
- a. firms are relatively powerless.
  - b. workers are sometimes irrational.
  - c. the firm faces multiple equilibria.
  - d. workers maximize profits.
  - e. All of the above are true
12. When a firm hires an additional worker, all else being equal, which of the following statements is false?
- a. Costs rise by the amount of the additional wages paid.
  - b. Revenue increases.
  - c. Revenue only increases if the firm makes a positive profit.
  - d. Profits may or may not increase.
  - e. Output increases.
13. A profit-maximizing firm should keep hiring more labor until the point where the marginal revenue product of labor is equal to
- a. Marginal productivity of capital.
  - b. Factor cost of capital.
  - c. Monopolistic wage.
  - d. Marginal factor cost of labor.
  - e. Marginal factor cost of fixed assets.
14. If a firm can maximize profit simply by setting  $MRP_L = \text{wage}$ , then we know that the firm must be
- a. A monopolist.
  - b. A monopsonist.
  - c. An oligopolist.
  - d. A monopolistic producer.
  - e. Operating in a perfectly competitive labor market.

15. Which of the following statements is true regarding monopsonistic employers?
- a. They hire more workers than firms that operate in perfectly competitive markets.
  - b. They pay workers more than their marginal revenue product of labor.
  - c. They pay workers less than firms that compete in labor markets.
  - d. They reward workers better than oligopsonistic firms.
  - e. Both a and c are true.
16. According to US census data for the year 2013, the median wage for women of all races was \_\_\_\_\_ of that of men.
- a. 20%
  - b. 50%
  - c. 71%
  - d. 82%
  - e. 93%
17. Which of the following statements is true?
- a. From 1980 to 2006, average annual hours worked declined 18 percent in Germany.
  - b. From 1980 to 2006, average annual hours worked increased 11 percent in The United Kingdom.
  - c. Workers in the United States for the most part work fewer hours per year than workers in Europe.
  - d. From 1980 to 2006, average annual hours worked remained fairly steady in the United States at 1,800 hours.
  - e. Both a and d are true.
18. From the perspective of an individual, the upward-sloping labor supply curve reflects the \_\_\_\_\_ effect of changes in wages.
- a. income
  - b. substitution
  - c. downward
  - d. backward-bending
  - e. upward
19. Which of the following jobs is most likely to have a relatively inelastic labor supply curve?
- a. cashier
  - b. garbage collector
  - c. janitor
  - d. nuclear physicist
  - e. none of the above

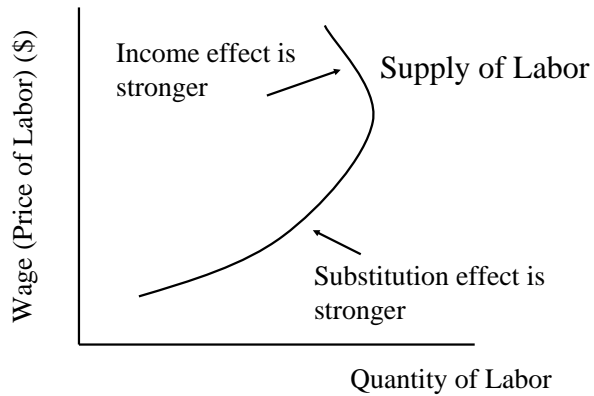
20. Suppose a firm manufactures bags of peanuts. A single worker can produce 20 bags of peanuts, but adding a second worker makes it possible to produce 45 bags of peanuts. The marginal physical product of the second worker is
- Equal to \$20.
  - Equal to \$25.
  - 20 bags of peanuts.
  - 25 bags of peanuts.
  - Measured in dollars but unknown from the information given in this problem.

### Answers to Active Review Questions

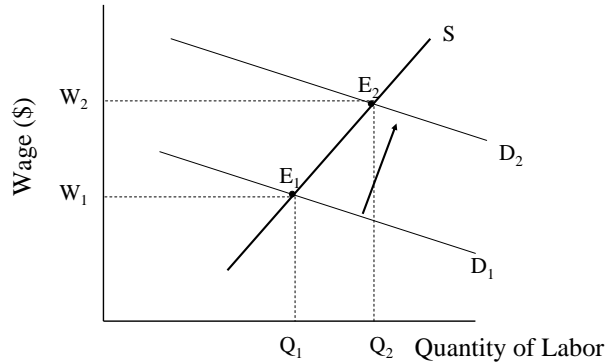
- substitution
- income
- wage inelastic
- signaling
- monopsony
- bilateral
- oligopsony
- Marginal factor cost of labor
- Marginal revenue product of labor
- efficiency
- dual
- segregation
- False. It is true that non-unionized workers are more likely to be found in low-paying, unpleasant jobs, but this is not the focus of the theory of compensating wage differentials. The theory of compensating wage differentials holds that workers will be willing to accept lower wages for jobs with better characteristics and will demand higher wages for jobs with unappealing characteristics, all else being equal.
- False.
- False.
- False.
- True.
- Rising wages for car mechanics will produce movement along the supply curve only.
- Efficiency wage theory suggests that workers perform better when they know their current employer is paying them more than they would receive elsewhere. Efficiency wages may be profit maximizing since the cost to the firm may be counterbalanced by superior work effort and loyalty on the part of the employees.
- Workers must have very good information about job conditions and risks, and must be able to move freely to alternative jobs.

## Answers to Problems

1.



2.



3.

Number of Workers	Number of Jars	Marginal physical product of labor	Marginal revenue product of labor
1	30	30	\$150
2	70	40	\$200
3	120	50	\$250
4	140	20	\$100
5	150	10	\$50

## Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. e  | 11. a |
| 2. b  | 12. c |
| 3. a  | 13. d |
| 4. c  | 14. e |
| 5. d  | 15. c |
| 6. e  | 16. d |
| 7. d  | 17. e |
| 8. a  | 18. b |
| 9. c  | 19. d |
| 10. a | 20. d |

## Chapter 10

# ECONOMIC AND SOCIAL INEQUALITY

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Summary

This chapter starts by defining economic inequality, deriving a Lorenz curve and then using it to calculate a Gini coefficient. It then presents data on income and wealth inequality in the United States, along with international comparisons. The third section considers the causes and consequences of inequality. The final section presents various philosophical perspectives in inequality and potential policies to address inequality.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Interpret a Lorenz curve, and construct one based on income distribution data.
2. Explain how a Gini coefficient is derived.
3. Comment on inequality trends in the United States.
4. State how the United States compares to other countries in terms of economic inequality.
5. Discuss the causes and consequences of rising inequality.
6. Describe five philosophical perspectives on inequality.
7. Discuss different policy proposals to address inequality.

### Key Terms

Lorenz curve

Gini ratio (or Gini coefficient)

capital gains

economic mobility

labor income

capital income

rent



## Active Review Questions

### *Fill in the Blank*

1. The graph that is used to depict income inequality, showing the percent of households along one axis and the percent of income along the other, is known as the \_\_\_\_\_ curve.
2. If income were perfectly equally distributed within a country, the value of the Gini ratio for that country would be \_\_\_\_\_.
3. The distribution of wealth tends to be \_\_\_\_\_ (more/less) unequal than the distribution of income.
4. Economists refer to payments for the direct or indirect use of any capital asset as \_\_\_\_\_.
5. The philosophical perspective on inequality that focuses attention on the least fortunate is known as the \_\_\_\_\_ approach.

### *True/False*

6. The richest fifth of American households receive more than half of all income.
7. The closer a Lorenz curve is to a 45-degree straight line, the more unequal the distribution of income.
8. A Gini coefficient of 0.80 would be considered a highly unequal distribution of income.
9. The income Gini coefficient for the United States is currently around 0.80.
10. A capital gain is the income from renting out personal property.
11. The highest Gini coefficient in United States history occurred in 1968.
12. The top 1% of American households own more than one-third of all wealth.
13. Median household income in the United States is about \$51,000.
14. The median assets of white households in the United States are more than ten times higher than the median assets of black and Hispanic households.
15. Most economists view technological change as a factor which decreases levels of economic inequality.

16. The “equality of outcomes” perspective on inequality is rarely adopted by policymakers.
17. The “equal rewards for equal contributions” perspective on inequality is based on the traditional economic logic of market exchange.
18. The “Buffet Rule” is a policy proposal intended to reduce levels of economic inequality in the United States.

*Short Answer*

19. Briefly described the trends in income inequality in the United States over the last 100 years.

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20. List five possible standards of equity on fairness.

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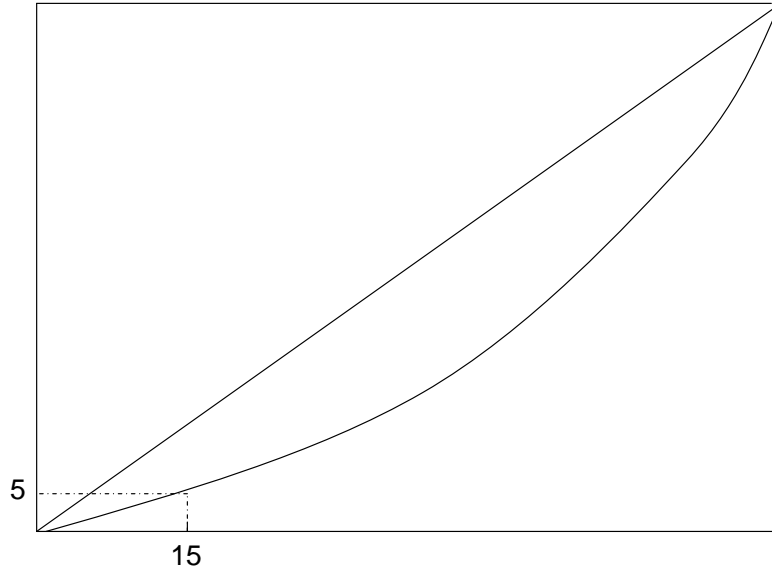
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## Problems



1. The graph above shows a Lorenz curve for income distribution in the country of Utopia.

a. Label the horizontal and vertical axes on this graph.

b. In words, explain what information is communicated by the numbers shown on this graph.

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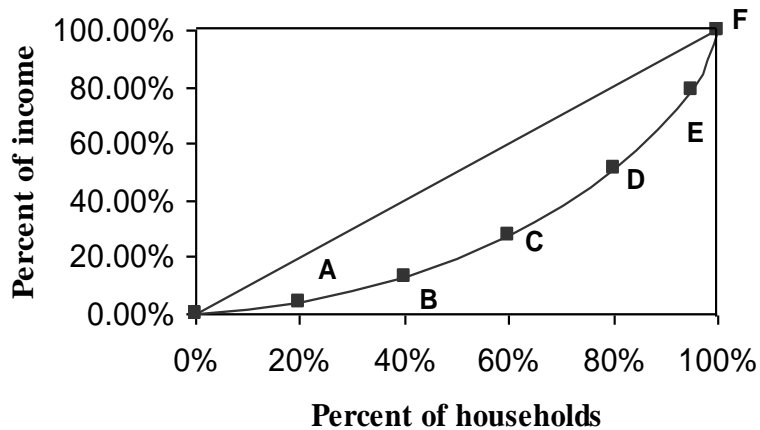
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c. Suppose that the government of Utopia introduces a new tax on the richest 10% of society, and uses the proceeds to supplement the income of the poorest members of society. On the graph, show the direction in which the Lorenz curve will change as a result of the new policy.

## Self Test

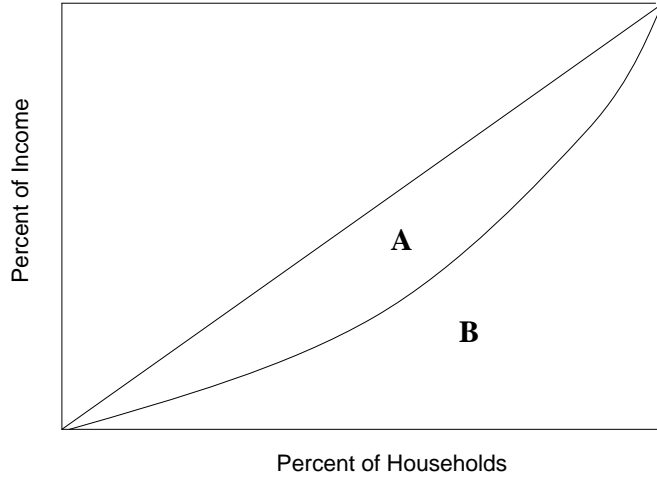
1. The graph used to describe inequality in a country is called ...
  - a. a Kuznets curve
  - b. a Gini curve
  - c. a Lorenz curve
  - d. a production possibilities frontier
  - e. a comparative advantage function
2. The richest fifth of Americans receive about what percent of all income?
  - a. 35%
  - b. 43%
  - c. 51%
  - d. 63%
  - e. 75%

Question #3 refers to the graph below.



3. According to the Lorenz curve above, which of the following statements is true?
  - a. The bottom 40% of households earn less than 20% of all income
  - b. The bottom 20% of households earn 20% of all income
  - c. The society shown here has complete income equality
  - d. The more the curve sags downward, the greater income equality
  - e. Both a and d are true

Question #4 refers to the graph below.



4. Referring to the graph shown above, the Gini ratio is equal to ...
- $A/(A+B)$
  - $(A+B)/A$
  - $B/(A+B)$
  - $A/B$
  - $B/A$
5. In the year 2010, suppose the Gini ratio for Canada was 0.30 and the Gini ratio for the US was 0.50. In the year 2015, suppose the Gini ratio for Canada rises to 0.35. Which of the following statements is true?
- Canada has greater inequality than the US.
  - Canada has greater inequality in 2015 than it did in 2010.
  - The US has greater equality than Canada.
  - Between 2010 and 2015, Canada's Lorenz curve has become straighter (closer to the diagonal).
  - All of the above are false.
6. Which one of the following Lorenz curves represents a country with perfect equality?
- A horizontal line
  - A vertical line
  - An L-shaped curve
  - A 45-degree line sloping downward
  - A 45-degree line sloping upward

7. About what is current income Gini coefficient in the United States?
- a. 0.25
  - b. 0.36
  - c. 0.48
  - d. 0.62
  - e. 0.80
8. In what year did the income Gini coefficient in the United States reach its historic low?
- a. 1929
  - b. 1947
  - c. 1955
  - d. 1968
  - e. 1979
9. The top 1% of households in the United States own about what percent of all wealth?
- a. 26%
  - b. 36%
  - c. 47%
  - d. 55%
  - e. 63%
10. Which one of the following statements is false?
- a. Median household income in the United States is about \$51,000.
  - b. The median income of married couples is higher than the median income of single-adult households.
  - c. Median household assets tend to increase with higher levels of education.
  - d. Median household assets are nearly twice as high for white households as compared to black and Hispanic households.
  - e. Median household assets tend to increase as the age of the householder increases.
11. Which of the following statements is true?
- a. The U.S. has the lowest Gini ratio of all major industrialized countries.
  - b. The U.S. has the highest Gini ratio of all major industrialized countries.
  - c. The U.K. has a higher Gini ratio than the U.S.
  - d. Countries with high levels of equality have high Gini ratios.
  - e. The U.S. has a straighter Lorenz curve (closer to the diagonal) than any other major industrialized country.

12. Which of the following statements about income inequality in the U.S. is true?
- a. Income distribution was most equal in 1968.
  - b. Income distribution was most equal in 1947.
  - c. Income inequality has declined steadily from 1947 to the present.
  - d. Income inequality has risen steadily from 1947 to the present.
  - e. The U.S. has greater income equality than most industrialized countries.
13. The term economists use for payments for the use of any capital asset is ...
- a. rent.
  - b. capital gains.
  - c. Lorenz payments.
  - d. economic mobility.
  - e. factor equalization.
14. Which one of the following impacts is most accepted by economists to be a consequence of increasing inequality?
- a. Greater economic growth
  - b. Lower economic growth
  - c. Higher homicide rates
  - d. Greater social cohesion
  - e. Greater public investment
15. Which perspective on inequality is most based upon the exchange principle of economic markets?
- a. Equality of outcomes
  - b. Equality of opportunities
  - c. Equal rewards for equal contributions
  - d. Equal rights
  - e. The basic needs approach
16. Which perspective on inequality states that everyone should have the same level of well-being?
- a. Equality of outcomes
  - b. Equality of opportunities
  - c. Equal rewards for equal contributions
  - d. Equal rights
  - e. The basic needs approach

17. Which perspective on inequality focuses attention on the least fortunate members of society?
- a. Equality of outcomes
  - b. Equality of opportunities
  - c. Equal rewards for equal contributions
  - d. Equal rights
  - e. The basic needs approach
18. Which one of the following policy proposals would not be expected to reduce inequality?
- a. The “Buffet Rule”
  - b. A higher minimum wage
  - c. An increase in debt financing
  - d. An increase in public education spending
  - e. An increase in the tax rates on high-income households
19. Which one of the following factors has not contributed to increasing inequality in the United States?
- a. The declining power of labor unions
  - b. An increase in labor income
  - c. Rapid technological change
  - d. Globalization
  - e. An increase in single-parent households
20. Which of the following countries has the lowest Gini coefficient?
- a. The United States
  - b. South Africa
  - c. The United Kingdom
  - d. Sweden
  - e. Brazil

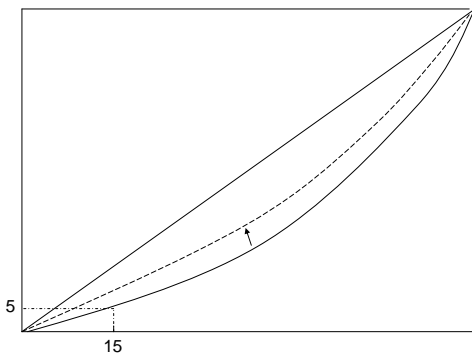


*Answers to Active Review Questions*

1. Lorenz
2. zero
3. more
4. rent
5. basic needs
6. True
7. False
8. True
9. False
10. False
11. False
12. True
13. True
14. True
15. False
16. True
17. True
18. True
19. Income inequality was relatively high leading up to the Great Depression. Then inequality decreased for several decades, until the late 1960s. Since then, inequality has generally increased. Current levels of inequality are similar to, or greater than, the levels observed in the early 20<sup>th</sup> century.
20. Equality of outcomes; equality of opportunity; equal rewards for equal contributions; equal rights; the basic needs approach

*Answer to Problems*

1. a. The horizontal axis should be labeled as “Percent of Households,” and the vertical axis should be labeled as “Cumulative Percent of Income.”
1. b. Based on this graph, we can see that the poorest 15% of households in Utopia receive 5% of total household income.
1. c. The curve will shift upward, toward the diagonal:



*Answers to Self Test Questions*

1. c
2. c
3. a
4. a
5. b
6. e
7. c
8. d
9. b
10. d
11. b
12. a
13. a
14. b
15. c
16. a
17. e
18. c
19. b
20. d

## Chapter 11

# TAXES AND TAX POLICY

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Summary

This chapter starts out with a theory of taxes using the supply-and-demand model. Referring back to the chapter on welfare analysis (Chapter 5), it shows how economists may easily deduce the inefficiency of most taxes, based solely on economic efficiency. Moving then to discuss taxation specifically in the United States, data are presented on the structure of various federal taxes, and their impacts. International tax data are then presented to provide context to the U.S. data. The chapter concludes with a discussion of current tax policy issues.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Illustrate the impacts of an excise tax on a supply-and-demand graph.
2. Illustrate the welfare impacts of an excise tax, also on a supply-and-demand graph.
3. Explain what is meant by tax progressivity.
4. Discuss the structure of the federal income tax in the United States.
5. Discuss the structure of social insurance taxes in the United States.
6. Briefly discuss the structure of other U.S. taxes (e.g., corporate taxes, state and local taxes).
7. Define recent trends in U.S. tax data.
8. Compare tax data from the United States to data from other countries.
9. Discuss the relationship between taxes and economic growth.
10. Define tax incidence analysis.
11. Discuss the distribution of the U.S. tax burden.

### Key Term Review

excise tax  
regressive tax  
marginal propensity to consume  
taxable income  
effective tax rate  
estate taxes  
supply-side economics

progressive tax  
proportional tax  
total income  
marginal tax rate  
social insurance taxes  
gift taxes  
tax incidence analysis

## Active Review Questions

### *Fill in the Blank*

1. If a tax is placed on a good with an inelastic demand, the tax revenues will be relatively \_\_\_\_\_ (large or small) and the change in the quantity sold will be relatively \_\_\_\_\_ (large or small).
2. A tax in which the proportion of income paid in taxes tends to rise as one's income increases is known as a \_\_\_\_\_ tax.
3. Total taxes paid divided by income is known as one's \_\_\_\_\_.
4. The macroeconomic theory that low marginal tax rates lead to higher rates of economic growth is known as \_\_\_\_\_.
5. In the United States, the top 1% paid about \_\_\_\_\_ percent of their total income in taxes in 2013.

### *True/False*

6. An excise tax can be represented on a supply-and-demand graph as an upward shift in the supply curve.
7. A government looking to generate a significant amount of tax revenue should tax goods and services with elastic demand curves.
8. An excise tax will result in a deadweight loss only if the good being taxed has a perfectly inelastic demand curve.
9. Instituting an excise tax on a product will result in a reduction of producer surplus.
10. Suppose Josh has an income of \$50,000 and pays \$10,000 in total taxes. Corrine has an income of \$30,000 and pays \$6,000 in taxes. This is an example of a progressive tax system.
11. For the U.S. federal income tax, one's effective tax rate is generally higher than their marginal tax rate.
12. The U.S. federal estate and gift taxes are considered to be complementary taxes.
13. The main reason overall taxes in the United States, as a percentage of GDP, have increased in recent decades is that federal tax rates have increased.

14. The primary reason that total tax receipts in the United States have fluctuated in recent decades is macroeconomic factors.
15. Overall tax receipts in the United States, as a percentage of GDP, are average when compared to other OECD countries.
16. Supply-side economics argues that having a lower overall tax rate than other countries is the key to economic growth.
17. The top marginal tax rate in the United States has generally declined over the last several decades.
18. In 2012, households in the bottom quintile in the United States paid an average of about 19% of their total income in taxes.

*Short Answer*

19. Explain the difference between a marginal tax rate and an effective tax rate.

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20. Briefly discuss the empirical findings regarding the current progressivity of the overall U.S. tax system.

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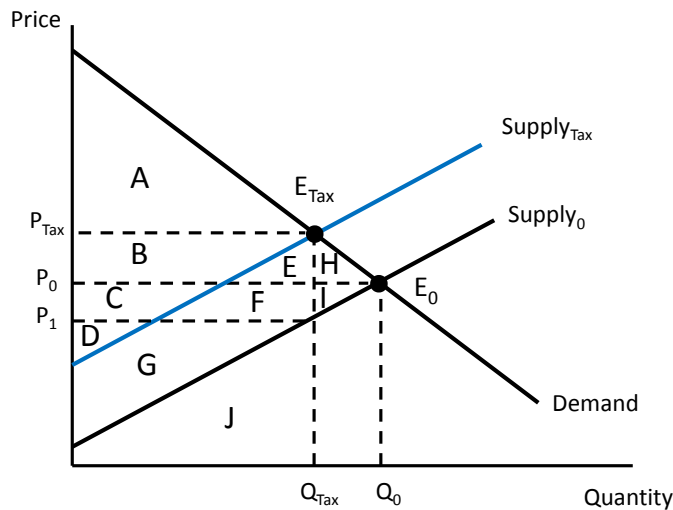
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**Self Test**

1. How will an excise tax imposed on a good impact the market equilibrium?
  - a. Price will rise, and quantity will fall
  - b. Price and quantity will both rise
  - c. Price will fall, and quantity will rise
  - d. Price and quantity will both fall
  - e. It cannot be determined without information about elasticities

2. Suppose an excise tax of \$0.30 per gallon is placed on gasoline. The price of gasoline will increase by \$0.30 only if ...
  - a. the supply curve is perfectly inelastic.
  - b. the demand curve is perfectly elastic.
  - c. the demand curve is perfectly inelastic.
  - d. both the supply and demand curves are perfectly elastic.
  - e. the market is in a situation of shortage.

For Questions 3 – 6, refer to the graph below.



3. In the graph above, which area(s) represent the consumer surplus in the market before any excise taxes are imposed on the good?
  - a. Area A
  - b. Areas A + B
  - c. Areas B + E + H
  - d. Areas A + B + E + H
  - e. Areas A + B + C + D
  
4. In the graph above, which area(s) represent the loss in consumer surplus as a result of imposing an excise tax on the good?
  - a. Area A
  - b. Areas A + B
  - c. Areas B + E + H
  - d. Areas A + B + E + H
  - e. Areas A + B + C + D

5. In the graph above, which areas represent the tax revenue once an excise tax is imposed on the good?
- a. Areas B + E + H
  - b. Areas C + F + I
  - c. Areas H + I
  - d. Areas B + E + C + F
  - e. Areas A + B + E + H
  - f. Areas B + E + H + C + F + I
6. In the graph above, which areas represent the deadweight loss as a result of imposing an excise tax on the good?
- a. Areas B + E + H
  - b. Areas C + F + I
  - c. Areas H + I
  - d. Areas B + E + C + F
  - e. Areas A + B + E + H
  - f. Areas B + E + H + C + F + I
7. A tax which impacts high-income taxpayers more than low-income taxpayers, expressed as a percentage of their income, is known as what kind of tax?
- a. A flat tax
  - b. A regressive tax
  - c. A wealth tax
  - d. A proportional tax
  - e. A progressive tax
8. A tax which impacts all taxpayers equally regardless of income, is known as what kind of tax?
- a. A social insurance tax
  - b. A regressive tax
  - c. A wealth tax
  - d. A proportional tax
  - e. A progressive tax

**For Questions 9 and 10, consider the following marginal tax table:**

Taxable Income Range	Marginal Tax Rate
\$0 - \$10,000	10%
\$10,001 - \$30,000	15%
Above \$30,000	25%

9. Suppose Tahira has an income of \$16,000. She is able to deduct \$5,000 of her income as non-taxable. How much would she owe in taxes based on the table above?
- a. \$0
  - b. \$1,100
  - c. \$1,150
  - d. \$1,500
  - e. \$1,650
10. Suppose Michal has an income of \$50,000. She has is able to deduct \$10,000 of her income as non-taxable, and she also contributes \$2,000 to a non-taxable IRA. How much would she owe in taxes based on the table above?
- a. \$4,200
  - b. \$6,000
  - c. \$8,500
  - d. \$12,500
  - e. \$14,000
11. How would we expect one's effective tax rate to compare with their top marginal tax rate for the U.S. federal income tax?
- a. As long as one pays federal income taxes, their top marginal tax rate should always be higher.
  - b. One's top marginal tax rate should be higher, but only if the taxpayer has income above the bottom marginal rate.
  - c. One's top marginal tax rate should be higher, but only if one can claim extra tax deductions.
  - d. One's top marginal tax rate should be higher, but only if they are taxed at more than one marginal rate.
  - e. One's top marginal tax rate should be higher, but only if one's taxable income is higher than their total income.



12. Federal social insurance taxes in the United States are best described as ...
- a. A progressive tax at lower income levels, and then a proportional tax at higher income levels.
  - b. A proportional tax at lower income levels, and then a regressive tax at higher income levels.
  - c. A proportional tax at lower income levels, and then a progressive tax at higher income levels.
  - d. A regressive tax at lower income levels, and then a proportional tax at higher income levels.
  - e. A progressive tax at lower income levels, and then a regressive tax at higher income levels.
13. Which one of the following statements is false?
- a. Federal tax receipts in the United States, expressed as a percentage of GDP, reached a historical high in 2010.
  - b. U.S. federal tax receipts tend to fluctuate more over time than do state and local tax receipts.
  - c. The overall tax rate in the U.S., expressed as a percentage of GDP, is lower than in most other OECD countries.
  - d. The majority of U.S. states levy a state income tax.
  - e. The majority of U.S. states levy a state sales tax.
14. What is the primary reason overall U.S. tax receipts vary over time?
- a. Changes in federal tax laws
  - b. Changes in state tax laws
  - c. Changes in local tax laws
  - d. Macroeconomic fluctuations
  - e. Changes in consumer preferences
15. Which of the following countries has the lowest overall tax rate, expressed as a percentage of GDP?
- a. Japan
  - b. United States
  - c. Canada
  - d. United Kingdom
  - e. Germany

16. What is the main principle of supply-side economics?
- a. That the majority of economic benefits will accrue to lower-income households
  - b. That low top marginal tax rates will spur economic growth
  - c. That government subsidies should be targeted at high-growth industries
  - d. That a flat tax will produce the highest economic growth rates
  - e. That reduction of regulations on raw material extraction will spur economic growth
17. About what was the top marginal federal income tax rate in 2013 in the United States?
- a. 50%
  - b. 40%
  - c. 34%
  - d. 28%
  - e. 19%
18. Which one of the following is not a generally-accepted conclusion from tax incidence analysis?
- a. Property taxes on landlords are generally passed on to renters.
  - b. Social insurance taxes are borne almost entirely by workers.
  - c. Excise taxes are mostly paid by consumers.
  - d. Sales taxes are split about equally between consumers and producers.
  - e. The burden of corporate taxes falls primarily on the owners of capital investments.
19. About what percentage of total income do U.S. households in the bottom quintile pay in taxes?
- a. 3%
  - b. 10%
  - c. 19%
  - d. 27%
  - e. 33%
20. About what percentage of total income do U.S. households in the top 1% pay in taxes?
- a. 3%
  - b. 10%
  - c. 19%
  - d. 27%
  - e. 33%

*Answers to Active Review Questions*

1. large, small
2. regressive
3. effective tax rate
4. supply-side economics
5. 33
6. true
7. false
8. false
9. true
10. false
11. false
12. true
13. false
14. true
15. false
16. false
17. false
18. true
19. A marginal tax rate only applies on one's additional income above a certain amount. An effective tax rate is obtained by dividing one's total taxes paid by total income, expressed as a percentage. One's effective tax rate tends to be much less than one's top marginal tax rate.
20. The overall U.S. tax system is progressive, but rather modestly. For example, households in the bottom income quintile paid an average of 19% of their total income in taxes in 2012. Households in the middle income quintile paid 27% of their income in taxes. Households in the top 1% paid an average of 33% of their income in taxes.

*Answers to Self Test Questions*

- |       |       |
|-------|-------|
| 1. a  | 11. a |
| 2. c  | 12. b |
| 3. d  | 13. a |
| 4. c  | 14. d |
| 5. e  | 15. b |
| 6. c  | 16. b |
| 7. e  | 17. b |
| 8. d  | 18. d |
| 9. c  | 19. c |
| 10. b | 20. e |

## Chapter 12

# THE ECONOMICS OF THE ENVIRONMENT

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Summary

*This chapter has three sections. The first section presents the standard economic theory of externalities, demonstrating the need for a tax (in the case of a negative externality) or a subsidy (in the case of a positive externality) to correct the market failure. The second section discusses economists' methods to value environmental services and natural capital, as well as cost-benefit analysis. The final section summarizes environmental policies in theory and practice.*

After reading and reviewing this chapter, you should be able to:

1. Use a supply-and-demand graph to illustrate why the unregulated market equilibrium is inefficient in the presence of externalities.
2. Discuss how a negative externality can be internalized with a Pigovian tax.
3. Define what is meant by total economic value.
4. List and define the four nonmarket valuation methodologies.
5. Describe how a cost-benefit analysis is conducted, including discounting and valuing human lives.
6. List and define the four main types of environmental policies.
7. Briefly describe a few major environmental laws, and the relationship between environmental protection and the economy.

### Key Term Review

Pigovian tax	internalizing negative externalities
subsidy	upstream taxes
revenue-neutral (taxes)	willingness-to-pay (WTP) principle
intrinsic value	ecosystem services
nonuse benefits	total economic value
nonmarket valuation techniques	cost of illness method
lower-bound estimate	replacement cost methods
revealed preference methods	travel cost models
defensive expenditures approach	stated preference methods
contingent valuation	contingent ranking
cost-benefit analysis	discounting
present value	discount rate
value of a statistical life (VSL)	precautionary principle
pollution standards	market-based approaches (to pollution
tradable pollution permits	regulation)

## Active Review Questions

### *Fill in the Blank*

1. A negative externality can be incorporated into a supply-and-demand graph as a \_\_\_\_\_ (upward / downward) shift of the \_\_\_\_\_ (supply / demand) curve.
2. The common policy recommendation in a market with a positive externality is to implement a \_\_\_\_\_.
3. The \_\_\_\_\_ states that something has economic value only according to the maximum amount people are willing to pay for it.
4. Nonmarket valuation techniques that base estimates on the cost of substitutes for ecosystem services are known as \_\_\_\_\_.
5. Using surveys to elicit respondents' willingness to pay for hypothetical scenarios is known as \_\_\_\_\_.
6. A discount rate is used in cost-benefit analysis to convert a future cost or benefit into its equivalent \_\_\_\_\_.
7. The main advantage of \_\_\_\_\_, compared to other environmental policy options, is that enforcement and monitoring costs are relatively low.
8. The first attempt to use tradable pollution permits in the United States was implemented to reduce emissions of \_\_\_\_\_.

### *True/False*

9. A Pigovian tax is shown in the supply-and-demand model as an upward shift of the demand curve.
10. Instituting a Pigovian tax will increase the equilibrium price and decrease the equilibrium quantity.
11. A tax on coal extracted from a coal mine is an example of an upstream tax.
12. An example of a nonuse benefit would be the welfare gain a person gets who visits a lake but doesn't go swimming or boating.
13. The cost-of-illness method provides an upper-bound estimate to the true willingness to pay to avoid diseases.

14. Economists generally prefer revealed preference methods over other approaches to nonmarket valuation.
15. Contingent valuation has been criticized for producing willingness to pay estimates that tend to be exaggerated.
16. The higher the discount rate, the lower the present value of a future cost or benefit.
17. The main advantage of pollution standards is that they are cost effective.
18. When faced with a pollution tax, a firm will reduce its pollution as long as the marginal cost of pollution reduction is lower than the tax.

Short Answer

19. Explain in your own words why the unregulated market outcome in a market with a negative externality is economically inefficient.

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20. What are the four main environmental policy options? List one advantage and one disadvantage of each.

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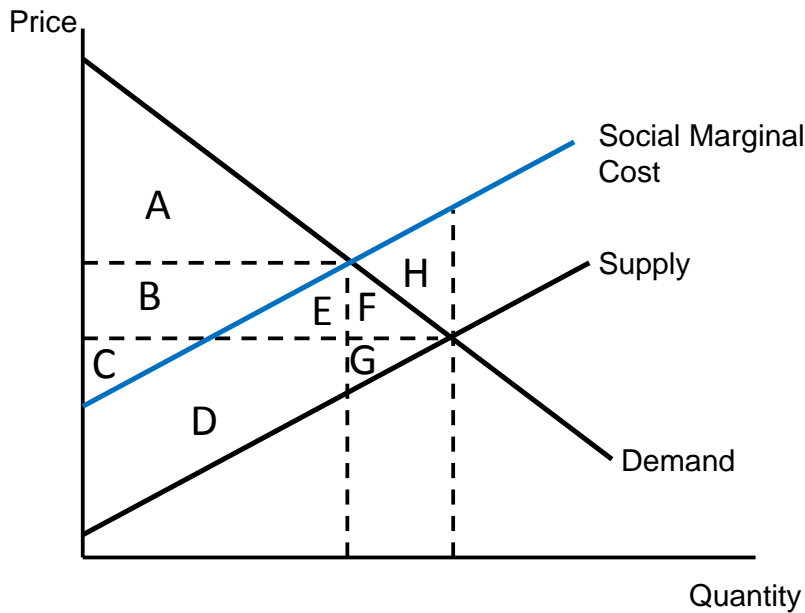
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**Self Test**

1. How will imposing a Pigovian tax normally affect a market that produces a negative externality?
  - a) Price and quantity will both increase
  - b) Price will increase and quantity will decrease
  - c) Price and quantity will both decrease
  - d) Price will decrease and quantity will increase
  - e) We can't determine the impacts in advance

2. Which one of the following statements is false?
- A Pigovian tax will reduce the negative externality damage in a market.
  - The equilibrium outcome in an unregulated market with a negative externality will not be economically efficient.
  - The damage from a negative externality can be incorporated into a supply-and-demand graph as an upward shift of the supply curve.
  - Setting a Pigovian tax at the “correct” level reduces the negative externality damage in a market to zero.
  - A Pigovian tax does not ensure that those suffering the negative externality damage are directly compensated.

For Questions 3-4 refer to the following graph.



3. In the graph above, what area(s) represent the negative externality damage in an unregulated market (i.e., with no Pigovian taxes)?
- D+E
  - D+E+F+G
  - H
  - F+G+H
  - D+E+F+G+H

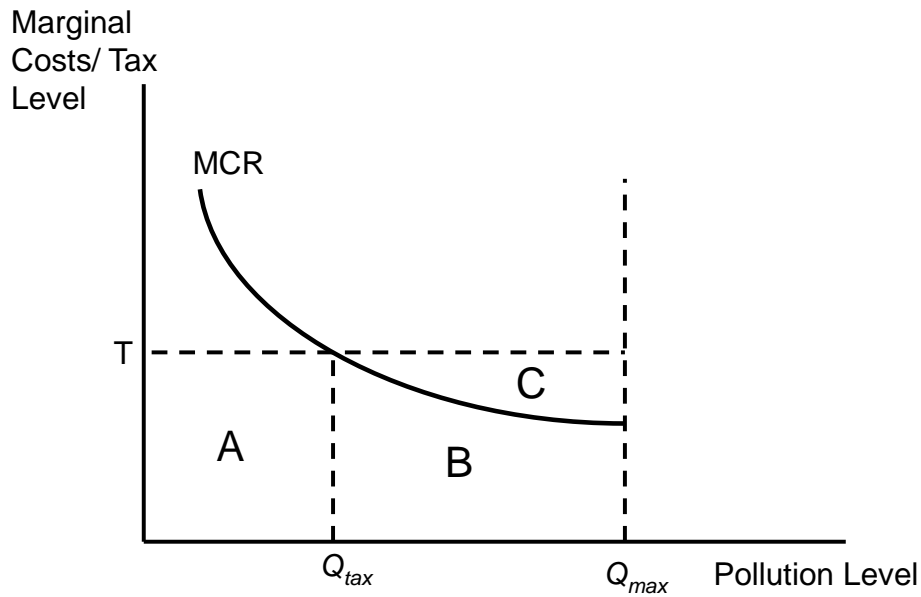
4. In the graph above, what area(s) represent the tax revenue if a Pigovian tax is implemented which fully internalizes a negative externality?
- a) B+E+F
  - b) C+D+G
  - c) C+D
  - d) D+E
  - e) B+E+F+H
5. How can the social benefits from a positive externality be represented in a supply-and-demand graph?
- a) As an upward shift of the supply curve
  - b) As an upward shift of the demand curve
  - c) As a downward shift of the supply curve
  - d) As a downward shift of the demand curve
  - e) None of the above
6. What is an upstream tax?
- a) A tax placed on consumer goods
  - b) A tax on pollution dumped into rivers
  - c) A tax placed on raw materials
  - d) A tax placed primarily on high income households
  - e) A tax placed primarily on low income households
7. About how much are environmental taxes in the United States, expressed as a percentage of total tax revenue?
- a) 3%
  - b) 7%
  - c) 12%
  - d) 18%
  - e) 25%
8. Total economic value excludes which one of the following components?
- a) Profits
  - b) Nonuse benefits
  - c) Ecosystem services
  - d) Recreation benefits
  - e) Intrinsic value



9. Which one of the following is not a nonmarket valuation technique?
- a) Revenue-neutral methods
  - b) The cost of illness method
  - c) Replacement cost methods
  - d) Revealed preference methods
  - e) Stated preference methods
10. Suppose a household purchases a water purification system to avoid exposure to contaminated drinking water. Estimating the value of safe drinking water by measuring the cost of the purification system is an example of what valuation method?
- a) The replacement cost method
  - b) The travel cost method
  - c) Contingent valuation
  - d) The defensive expenditures approach
  - e) Contingent ranking
11. Using a survey to elicit people's willingness to pay for a hypothetical scenario is known as ...
- a) contingent ranking.
  - b) contingent valuation.
  - c) replacement cost methods.
  - d) revealed preference methods.
  - e) the defensive expenditures approach.
12. Which of the following methods would be most likely to produce an accurate estimate of the recreation benefits of a National Park?
- a) Replacement cost methods
  - b) Defensive expenditures approach
  - c) Travel cost models
  - d) Contingent valuation
  - e) Cost of illness method
13. What is considered to be the main advantage of contingent valuation?
- a) Responses can be validated by comparison to market behavior
  - b) Results are unbiased
  - c) Surveys can be done at low cost
  - d) Values can be obtained for any type of benefit
  - e) Results are easily replicated

14. The present value of a benefit of \$50 that occurs 10 years from now, at a discount rate of 3%, is obtained by which of the following formulas?
- a)  $\$50 * (1.03)^{10}$
  - b)  $\$50 / (0.97)^{10}$
  - c)  $\$50 / (1.03)^{10}$
  - d)  $\$50 - (0.97)^{10}$
  - e)  $\$50 - (1.03)^{10}$
15. Which one of the following statements is false?
- a) The higher the discount rate, the lower the present value of a future benefit.
  - b) The further a benefit occurs in the future, the lower the present value.
  - c) The precautionary principle states that policies should err on the side of caution when there is a risk of a catastrophic outcome.
  - d) The value of a statistical life can be used in cost-benefit analysis to determine the benefits of policies that reduce environmentally-related deaths.
  - e) The accepted approach among economists for choosing a discount rate is to set it equal to the rate of return on U.S. corporate stocks.
16. What is the main advantage of a pollution standard?
- a) It can specify a definite result.
  - b) It is a cost-effective policy.
  - c) It encourages innovation.
  - d) The cost is known in advance.
  - e) Monitoring costs are minimized.
17. What is considered to be the main advantage of a technology-based regulation?
- a) It is a market-based approach to regulation.
  - b) It encourages innovation.
  - c) It is a cost-effective policy.
  - d) Technology is always improving.
  - e) Monitoring costs are minimized.
18. Which one of the following statements is false?
- a) The economic benefits of environmental laws in the U.S. are unknown because no federal regulations must be analyzed using cost-benefit analysis.
  - b) The benefits of the U.S. Clean Air Act significantly exceed the costs.
  - c) The European Union has implemented a tradable permit system for carbon emissions.
  - d) The United States has implemented a tradable permit system for sulfur dioxide emissions.
  - e) Environmental protection can be compatible with economic growth.

For Questions 19 and 20, refer to the following graph.



19. In the graph above showing the marginal cost of pollution reduction for a firm, what area(s) represent the tax revenue the firm pays if a tax is set at T?

- a) A
- b) B
- c) C
- d) A+B
- e) B+C

20. In the graph above, showing the marginal cost of pollution reduction for a firm, what area(s) represent the expenditures the firm makes to reduce its pollution level if a tax is set at T?

- a) A
- b) B
- c) C
- d) A+B
- e) B+C

*Answers to Active Review Questions*

1. upward; supply
2. subsidy
3. willingness-to-pay principle
4. replacement cost methods
5. contingent valuation
6. present value
7. technology-based regulations
8. sulfur dioxide
9. False
10. True
11. True
12. False
13. False
14. True
15. True
16. True
17. False
18. True
19. At the unregulated market equilibrium, the social marginal cost (including the externality) exceeds the marginal benefits (the demand curve). Thus the market equilibrium results in over-production of the good or service causing the externality. The efficient level of production occurs where the social marginal costs just equal the marginal benefits.
20. See the table below:

<b>Policy Option</b>	<b>Advantages</b>	<b>Disadvantages</b>
Pollution standards	Can specify a definite result	Not cost-effective; little incentive for further reduction
Technology-based regulation	Relatively low enforcement and monitoring costs; cost savings due to standardization	Not cost-effective; little incentive for further reduction
Pigovian (or pollution) taxes	Cost effective; incentive for further reduction; price of pollution is known	Resulting pollution levels difficult to predict
Tradable pollution permits	Cost effective; incentive for further reduction; resulting pollution level specified in advance	Price of permits difficult to predict

*Answers to Self Test Questions*

- |       |       |
|-------|-------|
| 1. b  | 11. b |
| 2. d  | 12. c |
| 3. e  | 13. d |
| 4. d  | 14. c |
| 5. b  | 15. e |
| 6. c  | 16. a |
| 7. a  | 17. e |
| 8. e  | 18. a |
| 9. a  | 19. a |
| 10. d | 20. b |

## Chapter 13

# COMMON PROPERTY RESOURCES AND PUBLIC GOODS

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Overview and Objectives

*This chapter provides a classification of different types of goods based on the properties of rivalness and excludability. Non-private goods include artificially scarce goods, common property resources, and public goods. For each of these types of goods, government interventions may be warranted for reasons of efficiency and fairness. The chapter concludes with a discussion of global climate change, which incorporates many of the issues raised in Chapter 12 and earlier in this chapter.*

After reading and reviewing this chapter, you should be able to:

1. Classify goods into four categories based on the properties of rivalness and excludability.
2. Indicate why markets for artificially scarce goods are economically inefficient.
3. Describe why an unregulated outcome for a common property resource will be inefficient, and how policies can be used produce a more efficient outcome.
4. Discuss why private markets don't exist for public goods, and how a government can determine the efficient provision level for a public good.
5. Describe the causes and consequences of global climate change.
6. Summarize the results of economic analyses of global climate change.
7. Summarize some of the policy responses to global climate change.

### Key Term Review

private good

rival good

nonexcludable good

common property resource

congestion

individual transferable quota (ITQ)

free riders

greenhouse gases

excludable good

public good

nonrival good

artificially scarce good

price discrimination

tragedy of the commons

climate change

global public good

## Active Review Questions

### *Fill in the Blank*

1. A public good is defined as one that is \_\_\_\_\_ and \_\_\_\_\_.
2. An artificially scarce good is defined as one that is \_\_\_\_\_ and \_\_\_\_\_.
3. The supply curve in the case of an artificially scarce good is \_\_\_\_\_.
4. Those who benefit from a public good without paying for it are known as \_\_\_\_\_.
5. Most of the growth in future global carbon dioxide emissions will come from \_\_\_\_\_ (developed/developing) countries.
6. The \_\_\_\_\_ was drafted in 1997 as an international treaty to reduce greenhouse gas emissions by developed countries.

### *True/False*

7. A common property resource is nonexcludable and nonrival.
8. An ocean fishery is an example of a public good.
9. An uncrowded health club is an example of a private good.
10. Market failure tends to occur in the market for artificially scarce goods.
11. The marginal cost of supply for an artificially scarce good is infinite.
12. Price discrimination can potentially increase social welfare in the case of an artificially scarce good.
13. For a common property resource, inefficiency occurs because each user of the resource fails to account for the impact of his or her actions on other resource users.
14. Individual transferable quotas for common property resources would work in theory, but have never been used in actual national policies.
15. The social marginal benefits of a public good can be obtained by the horizontal addition of individual demand curves.

16. Projections indicate that per capita carbon dioxide emissions will be the same in developed and developing countries by 2035.
17. The Stern Review's main conclusion was that the benefits of strong action on climate change far outweigh the costs of not acting.
18. The only country that signed but never ratified the Kyoto Protocol was the United States.

*Short Answer*

19. Explain in your own words why markets for artificially scarce goods tend to be inefficient.

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20. Explain in your own words why the marginal benefits of a public good differ from the willingness to pay for it.

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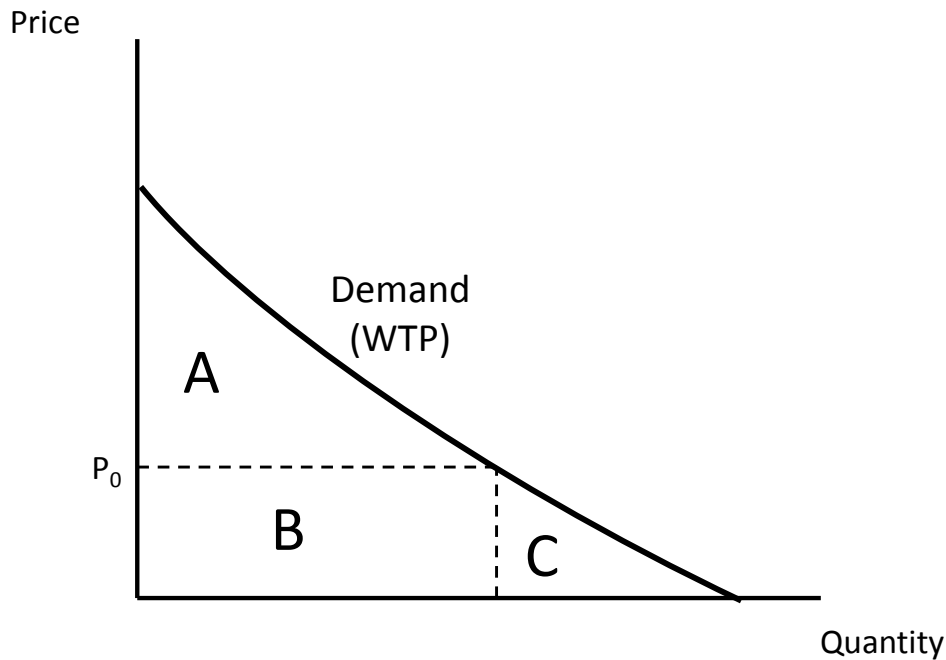
**Self Test**

1. What does it mean to say that a good is "nonrival"?
  - a) It doesn't face any competition
  - b) It has a non-zero price
  - c) Owners can exclude others from consuming it or enjoying its benefits
  - d) It can be consumed by more than one person at a time
  - e) It suffers from congestion
2. Which one of the following is the best example of a common property resource?
  - a) Free radio
  - b) A dentist's office
  - c) Satellite radio
  - d) A community swimming pool
  - e) National defense



3. Which one of the following is the best example of a private good?
  - a) Free radio
  - b) A dentist's office
  - c) Satellite radio
  - d) A community swimming pool
  - e) National defense
  
4. Which one of the following is the best example of an artificially scarce good?
  - a) Free radio
  - b) A dentist's office
  - c) Satellite radio
  - d) A community swimming pool
  - e) National defense
  
5. If a public good suffers from congestion, then it would be re-classified as what type of good?
  - a) A common property resource
  - b) A private good
  - c) A nonrival good
  - d) A nonexcludable good
  - e) An artificially scarce good
  
6. The supply curve for an artificially scarce good is ...
  - a) A vertical line at a price of zero
  - b) A vertical line at the market price
  - c) A horizontal line at a price of zero
  - d) A horizontal line at a price of infinity
  - e) A horizontal line at the market price
  
7. Social benefits for an artificially scarce good are maximized at what price?
  - a) A price equal to average cost
  - b) It will depend on the particular market
  - c) A price of zero
  - d) A price of infinity
  - e) A price somewhere between zero and infinity

For Questions 8 and 9 refer to the following graph.



8. In the graph above showing the market for an artificially scarce good, what area(s) represent the revenue obtained by the firm supplying the good?
- a) A
  - b) B
  - c) C
  - d) A+B
  - e) B+C
9. In the graph above showing the market for an artificially scarce good, what area(s) represent the potential welfare gain if the good were sold at a price of zero instead of a price of  $P_0$ ?
- a) A
  - b) B
  - c) C
  - d) A+B
  - e) B+C

10. At the unregulated outcome for a common property resource, which statement best describes the profits at this point?
- a) Profits for each firm equal the difference between their revenues and social costs
  - b) The unregulated outcome maximizes total profits in the industry
  - c) Social costs are equal to total industry profits
  - d) Profits are sufficient to attract additional firms into the industry
  - e) Industry profits are equal to zero
11. Which one of the following statements is false?
- a) The tragedy of the commons is a likely outcome when a common property resource is unregulated.
  - b) The unregulated outcome with a common property resource is inefficient.
  - c) Each user of a common property resource creates a positive externality for other resource users.
  - d) Private markets are not suited for the allocation of public goods.
  - e) Individual transferable quotas can increase social welfare in the allocation of a common property resource.
12. The social marginal benefits of a public good are obtain by ...
- a) vertical addition of individual marginal benefit curves.
  - b) horizontal addition of individual marginal benefit curves.
  - c) vertical addition of individual willingness to pay curves.
  - d) horizontal addition of individual willingness to pay curves.
  - e) None of the above
13. What is generally considered the most appropriate method for funding the provision of a public good?
- a) Provide a subsidy to firms
  - b) Implement a system of individual transferable quotas
  - c) Allow price discrimination
  - d) Taxation
  - e) Voluntary donations
14. A free rider is defined as someone who ...
- a) accesses a common property resource without paying for it.
  - b) accesses an artificially scarce good without paying for it.
  - c) obtains a private good without paying for it.
  - d) avoids paying taxes that used to provide public goods.
  - e) receives the benefits of a public good without paying for them.

15. Which one of the following is not considered to be one of the likely effects of global climate change?
- a) Warmer average temperatures in most, but perhaps not all, regions
  - b) Increased economic output
  - c) On average, more frequent precipitation
  - d) Rising sea levels
  - e) An increase in species extinction
16. Which one of the following statements is false?
- a) Climate change will increase economic activity, primarily because it will increase agricultural production.
  - b) Burning fossil fuels generates emissions of carbon dioxide.
  - c) Greenhouse gases can remain in the atmosphere for decades, or even longer.
  - d) Global average temperatures have already increased by about one degree Celsius.
  - e) Climate change can be considered to be the result of a market failure.
17. Which one of the following statements is true?
- a) Emissions of carbon dioxide per capita will be about equal in developing and developed countries within 30 years.
  - b) Most of the growth in global carbon dioxide emissions in the next few decades will be from the United States.
  - c) At the 2009 meeting on climate change in Copenhagen, over 130 countries agreed in principle to limit warming to no more than 5 degrees Celsius.
  - d) Five degrees Celsius represents the approximate global temperature difference between now and the last ice age.
  - e) There is considerable disagreement among climate scientists about whether humans are impacting the global climate.
18. What is the primary difference between economic analysis of climate change that recommend significant policy action, and those that recommend only a modest policy response?
- a) Whether the impacts in developing countries are calculated as a percent of total income or in absolute dollars
  - b) The assumption about the extent of melting in Greenland and Antarctica
  - c) The choice of the discount rate
  - d) The choice of the price elasticity of demand for fossil fuels
  - e) The assumption about the adoption of renewable energy

19. What was the only country to sign, but never ratify, the Kyoto Protocol?

- a) Australia
- b) China
- c) India
- d) Russia
- e) United States

20. Which one of the following statement is false?

- a) An advantage of a carbon tax over a cap-and-trade policy is that the tax provides certainty about the price of emissions.
- b) The European Union has implemented a tradable permit system for carbon emissions.
- c) Developing countries such as China and India were not bound to carbon emission reductions under the Kyoto Protocol.
- d) The Kyoto Protocol never entered into force because the United States withdrew from the treaty.
- e) The atmosphere can be considered a global public good.

*Answers to Active Review Questions*

1. nonexcludable; nonrival
2. excludable; nonrival
3. a horizontal line at a price of zero (or essentially nonexistent)
4. free riders
5. developing
6. Kyoto Protocol
7. False
8. False
9. False
10. True
11. False
12. True
13. True
14. False
15. False
16. False
17. True
18. True
19. In an efficient market, equilibrium occurs where the marginal benefits are just equal to the marginal costs. In a market for an artificially scarce good, the marginal cost of providing it is zero. But a private company can't sell its products for a price of zero. So the market price will be above marginal cost and equilibrium will be determined by the intersection of price with the demand curve (marginal benefits). But there are still consumers willing to pay a positive price for the good, but not the market price. The company could increase its profits and additional consumers could obtain a consumer surplus if these additional consumers were able to purchase the good at a lower-than-market price. In other words, if the price discrimination were possible, overall social welfare could be increased.
20. For a typical good, one's marginal benefits are equal to his or her willingness to pay for it. But with a public good, one can receive the benefits of it without paying. In other words, one can be a free rider. So one's willingness to pay for the public good may be considerably less than his or her willingness to pay, and may even be zero.

*Answers to Self Test*

- |       |       |
|-------|-------|
| 1. d  | 11. c |
| 2. d  | 12. a |
| 3. b  | 13. d |
| 4. c  | 14. e |
| 5. a  | 15. b |
| 6. c  | 16. a |
| 7. c  | 17. d |
| 8. b  | 18. c |
| 9. c  | 19. e |
| 10. e | 20. d |

## Chapter 14

# CAPITAL STOCKS AND RESOURCE MAINTENANCE

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

This chapter deals with the concepts associated with resource maintenance and capital stocks. The text examines the five types of capital that underlie economic activity: natural, human, social, manufactured, and financial capital. This chapter focuses primarily on definitions and concepts, rather than on graphic or numerical problems.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Define the difference between stocks and flows.
2. Define the five types of capital.
3. Discuss the limitations of substitutability with respect to natural capital.
4. Describe why social capital is important for economic activities.
5. Distinguish between the two types of financial capital.
6. Understand the importance of sustaining capital stocks.

### Key Term Review

capital	stock
investment	flow
stock-flow diagram	natural capital
manufactured (or produced) capital	human capital
social capital	financial capital
physical capital	intangible capital
renewable resource	nonrenewable resource
substitutability	sustainable socioeconomic system
fixed manufactured capital	depreciation
inventories	social organization
equity finance	debt finance
loan	principal
interest	

## Active Review

### *Fill in the Blank*

1. Assets that are tangible are known as \_\_\_\_\_ capital.
2. Manufactured goods that yield a flow of productive services over an extended period of time are known as \_\_\_\_\_ manufactured capital.
3. Gary's Gasoline Station is for sale. Gary hopes to get a good price for the station in part because he has built up a good reputation with customers. The good will of Gary's customers is a form of \_\_\_\_\_ capital.
4. Financial capital exists in two forms: \_\_\_\_\_ finance and \_\_\_\_\_ finance.
5. A system that maintains its resources such that at least the same level of well-being can be maintained over time is known as a \_\_\_\_\_.
6. Stocks of materials or goods that are not currently being used or sold but are expected to be used or sold in the foreseeable future are known as \_\_\_\_\_.

### *True or False*

7. A stock-flow diagram shows how flows change over time.
8. The stock of relationships that facilitate economic transactions is known as human capital.
9. A fishery is an example of a renewable natural resource.
10. An obsolete computer is an example of depreciation.
11. Eating nutritious food can be considered an investment in human capital.
12. Buying furniture using cash is an example of equity finance.
13. Social capital can only increase over time.
14. The number of fish sold per day at Big City Fish Shop is an example of a stock.
15. The principal is the original amount of a loan plus interest.
16. Planting trees can be considered investment.
17. The number of students enrolled in your economics class is an example of a stock.



*Short Answer*

18. Name the five forms of capital.

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19. Alice is good at learning foreign languages, and has already studied Latin and Greek. She decides to sign up for an intensive summer course in intermediate German. Describe the scenario using the terms " human capital stock" and "investment."

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20. Describe the difference between equity and debt finance.

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**Self Test**

1. Which of the following is an example of a stock?

- a. The number of haircuts you got last year
- b. The amount of water that passes over a waterfall per second
- c. The number of screwdrivers sold by a hardware store each week
- d. The number of fish produced at a hatchery each day
- e. The number of goldfish in the pet store's aquarium

2. Which of the following is an example of investment?

- a. A business sponsors an educational program for its employees.
- b. A farmer sets aside seeds to plant next year.
- c. A group of neighbors construct a new day care facility.
- d. A worker puts half her paycheck into a savings account.
- e. All of the above.

3. Which of the following statements is *false*?
- A nonrenewable resource is a stock that diminishes as it is used over time.
  - Renewable resources can be eliminated through over-use.
  - Financial capital refers to purchasing power, or money.
  - Natural capital refers to both renewable and nonrenewable resources.
  - Human capital refers to buildings, machines, and inventories of produced goods.
4. Which of the following would be referred to as social capital?
- money in the bank
  - heavy machinery
  - one person's training in engineering
  - a forest
  - trust and mutual understanding
5. Which of the following activities would be described as a resource maintenance effort?
- Limiting use of fossil fuels in an effort to limit global warming
  - Harvesting fish at a high rate
  - Extracting oil from known oil reserves
  - Using a well-designed machine to process leather for shoes
  - Selling seeds on the international market
6. Which of the following is *not* an example of manufactured capital?
- roads
  - computers
  - a plow
  - a primitive digging stick
  - a fresh-water spring
7. A city government builds a new road. After five years the road develops some potholes, making it less useful. This decline in the value of the road over time is an example of
- fixed inventory
  - flows of capital services
  - depreciation
  - substitutability
  - a renewable resource

8. Hal's Hardware has a backup supply of 100 cans of paint thinner in its warehouse. The cans of paint thinner, which Hal's Hardware is holding until they can be used, are
- an inventory
  - a flow
  - fixed manufactured capital
  - renewable resources
  - financial capital
9. Which of the following is an example of fixed manufactured capital?
- A delivery truck.
  - Oil reserves.
  - A chemical compound that will be incorporated into a product.
  - Nails that will be used to build a playground.
  - Both a and d are correct.
10. Which of the following would be considered a type of social capital?
- technology
  - good nutrition
  - roads
  - factories
  - financial assets
11. Which of the following statements is *false*?
- Crude oil stocks are natural capital.
  - Mutual understanding is a type of social capital.
  - Knowledge about how to operate a machine is intangible capital.
  - Physical capital is synonymous with natural capital.
  - Education is an investment in human capital.
12. A farmer takes a course to learn about crop rotation methods. In taking this course, she is investing in
- substitutable capital
  - human capital
  - natural capital
  - nonrenewable resources
  - fixed manufactured capital

13. Which of the following is an example of a stock of natural capital?
- The number of trucks owned by a company.
  - The new growth in a forest over a year.
  - The knowledge you have gained from your past education.
  - The amount of oil in an underground reserve.
  - Efforts to remove the effects of pollution from a river.
14. A diagram that shows how flows change the level of a stock over time is known as a(n)
- flow chart
  - flow diagram
  - stock-flow diagram
  - input-output model
  - capital stock diagram
15. Which of the following forms of capital would be likely to increase if there is an influx of new funding for literacy training?
- human capital
  - social capital
  - stock capital
  - financial capital
  - physical capital
16. Which of the following activities is an example of maintaining a capital stock?
- Replenishing soil quality through crop rotation.
  - Harvesting a crop of corn.
  - Withdrawing money from a checking account.
  - Paying a phone bill.
  - None of the above.
17. Which of the following is an example of an inventory?
- A freezer full of ice cream to be served at a party next week.
  - Taking out a loan from a bank.
  - A shopping cart.
  - A house that is for sale by the owner.
  - Both a and b are true.

18. The possibility of using one resource instead of another is known as
- the precautionary principle
  - substitutability
  - sustainability
  - manufacturing advantage
  - comparative advantage
19. Manufactured goods that yield a flow of productive services over an extended period of time are referred to as
- capital services
  - capital flows
  - fixed manufactured capital
  - manufactured flows
  - inventories
20. Suppose you buy a new printer for your business using money you've earned as profits. What is this an example of?
- inventory finance
  - fixed finance
  - debt finance
  - flow finance
  - equity finance

## Answers to Active Review Questions

1. physical
2. fixed
3. social
4. equity; debt
5. sustainable socioeconomic system
6. inventories
7. False
8. False
9. True
10. True
11. True
12. True
13. False
14. False
15. False
16. True
17. True
18. Natural, manufactured, human, social, financial.
19. Alice's innate abilities and prior training, which contribute to her ability to learn a new language, are part of her *human capital stock*. Taking the German course is an *investment* that will increase her stock of knowledge.
20. Equity finance is using one's own funds to make productive investments. Debt finance is taking out a loan (i.e., temporarily borrowing another's funds, on the condition that it be paid back with interest) to make investments.

## Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. e  | 11. d |
| 2. e  | 12. b |
| 3. e  | 13. d |
| 4. e  | 14. c |
| 5. a  | 15. a |
| 6. e  | 16. a |
| 7. c  | 17. a |
| 8. a  | 18. b |
| 9. a  | 19. c |
| 10. a | 20. e |

## Chapter 15

# PRODUCTION COSTS

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Overview

Chapter 15 begins by exploring the nature of different kinds of production costs. A numerical and graphical example is presented concerning how production levels, and production costs, change as the use of a variable input is increased. You will learn about total product curves, total cost curves, marginal cost curves, and the long-run average cost curve.

After reading and reviewing this chapter, you should be able to:

1. Understand the economist's notion of production.
2. Define the difference between economic and accounting costs.
3. Distinguish between private and external costs.
4. Understand an economic production function.
5. Describe the relationship between patterns of returns and patterns of (total and marginal) production costs.
6. Discuss economies of scale

### Key Term Review

triple bottom line

outputs

variable costs

accounting costs

production function

variable input

limiting factor

total product curve

diminishing marginal returns

increasing marginal returns

constant marginal costs

average cost (average total cost)

economies of scale

diseconomies of scale

maximum efficient scale

inputs

marginal analysis

fixed costs (sunk costs)

economic costs

fixed input

short run

long run

marginal product

constant marginal returns

increasing marginal costs

decreasing marginal costs

long-run average cost

constant returns to scale

minimum efficient scale

input substitution

## Active Review

### *Fill in the Blank*

1. Costs of production that are not borne by persons or entities directly involved in the production are known as \_\_\_\_\_ costs.
2. Annika opens a riding stable. She factors in the cost of buying horses, buying riding tackle, and renting space. However, she does not consider the opportunity cost of her time. Annika is considering only the \_\_\_\_\_ costs of her project.
3. A cost that can be easily adjusted is known as a(n) \_\_\_\_\_ cost.
4. An equation or graph that shows the relationship between types or quantities of inputs and quantity of the output is known as a(n) \_\_\_\_\_.
5. In the short run, a factor that creates a constraint to increasing production is known as a(n) \_\_\_\_\_ factor.
6. When we consider a time scale long enough to allow fixed inputs to become variable, it becomes relevant to consider the long run \_\_\_\_\_ cost of production.
7. Applying fertilizer to a crop of beans is associated with diminishing marginal returns. From this fact, we can deduce that applying fertilizer to beans has \_\_\_\_\_ marginal costs.
8. When a company's long-run average cost increases with increasing output, that company is experiencing \_\_\_\_\_ of scale.
9. A lawn service decides to get rid of its leaf blowing machines and increase its number of workers, who will gather and move leaves using regular, nonautomated rakes. This decision is an example of input \_\_\_\_\_.

### *True or False*

10. The harmful effects of the pesticide DDT on human health can be considered an external cost.
11. The costs of fixed inputs can only be adjusted in the long run.
12. The social costs of production include opportunity costs, accounting costs, and external costs.



13. A process exhibits economies of scale when long-run average cost increases with increasing output capacity.
14. A paper mill pollutes a local river by discharging waste containing chlorine and other toxic chemicals. The cost of treating diseases that result from this pollution would be considered an accounting cost of production.
15. A company signs a contract for five years, under which it will pay the same amount every month for property insurance. This cost, which is independent of the level of production in any given month, is referred to as a variable cost.
16. In the long run, all inputs are variable.

*Short Answer*

17. Suggest a situation in which the economic costs of a project would be lower than the accounting costs.

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18. Which is a better guide in making decisions about what projects to undertake: accounting cost or economic cost?

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19. The relationship between hours spent studying (input) and knowledge of economics (output) is positive. However, once you have done 20 hours of studying, an additional hour does not add as much to your knowledge as the first hour did. When you graph the relationship between studying and knowledge, is the resulting line straight or curved? Why?

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20. Explain the difference between fixed and variable costs.

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## Problems

1. As Augusta's Hair Salon increases its staff from 1 to 15 hairdressers, it experiences increasing marginal returns, because the hairdressers work faster and better when they are in a larger group. Illustrate this situation on a total product curve graph.

2. A shoe factory has 500 employees and produces a thousand pairs of shoes per hour.

a. What is the shoe factory's productivity per worker per hour? \_\_\_\_\_

b. The factory hires one new worker. Now, the factory produces 1,002 shoes per hour. Then the factory hires one more worker. Production rises to 1,004 per hour. Does the factory have diminishing, constant, or increasing marginal returns at this level of production?

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c. Graph the production function (total product curve) of the shoe factory at these levels of production, carefully labeling all lines and points.

3. Production at Julia's call center shows the following relationship between the number of workers and the number of phone calls handled (per day).

Quantity of Variable Input: Labor	Quantity of Output: Calls	Marginal Return to Additional Labor	Fixed Cost (\$)	Variable Cost (\$)	Total Cost (\$)
0	0	--			
1	100				
2	180				
3	240				

a. Calculate the marginal return gained from the addition of each worker, filling in the column in the table.

b. Suppose Julie has entered a long term lease for an office space and telephones, and this is her only fixed cost. The lease costs her \$50 (per day). Fill in the Fixed Cost column in the table.

c. Julia pays each worker she hires \$80 per day, and this is her only variable cost. Fill in the Variable Cost column in the table.

d. Fill in the column for the Total Cost corresponding to each level of production.

4. Producing umbrellas requires inputs of fabric, metal, and labor. Umbra's Umbrella Factory experiences increasing returns to inputs of labor up to a certain point, and constant returns for all levels of production thereafter. There is no range of diminishing returns at Umbra's Umbrella Factory.

a. What is the shape of the production function for Umbra's Umbrella Factory? Sketch (and fully label) it below.

b. Sketch the total cost curve for Umbra's Umbrella Factory.

c. Sketch the marginal cost curve for Umbra's Umbrella Factory.

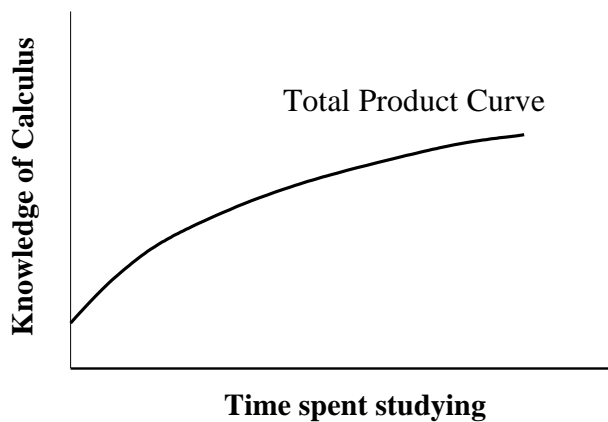
5. Coretta can build three chairs in her first week of work. In the second week, she starts to get tired and has to take time out to clean the workshop, so she can only make two additional chairs. In the third week, she settles into a pattern of one additional chair per week, which she can maintain for a fourth, fifth, and sixth week. In the seventh week, she's exhausted and can only finish half an additional chair.

a. Make a table showing the number of weeks worked and the marginal and total number of chairs produced.

- b. Sketch Coretta's total product curve for chairs, where the variable input is the time she spends, and the output is the total number of chairs produced.

### Self Test

For Question # 1, refer to the graph shown below.

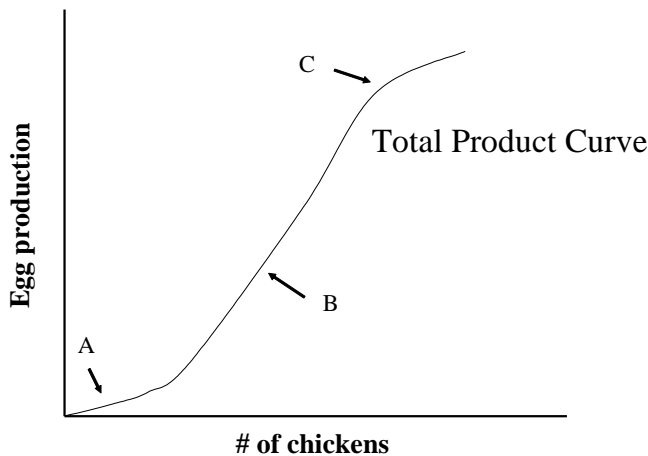


1. You are taking a calculus course. The graph above shows the relationship between the time spent studying calculus (input) and knowledge of calculus (output). Based on the graph, you can see that ...
- studying calculus is characterized by increasing marginal returns.
  - studying calculus is characterized by diminishing marginal returns.
  - studying calculus is characterized by constant marginal returns.
  - studying calculus has a synergistic effect on calculus knowledge.
  - the slope of the studying production curve is constant.

2. A hat maker pays \$500 per month in rent for his production facility. This cost is best described as ...

- a. an opportunity cost.
- b. an external cost.
- c. a variable cost.
- d. a fixed cost.
- e. a marginal cost.

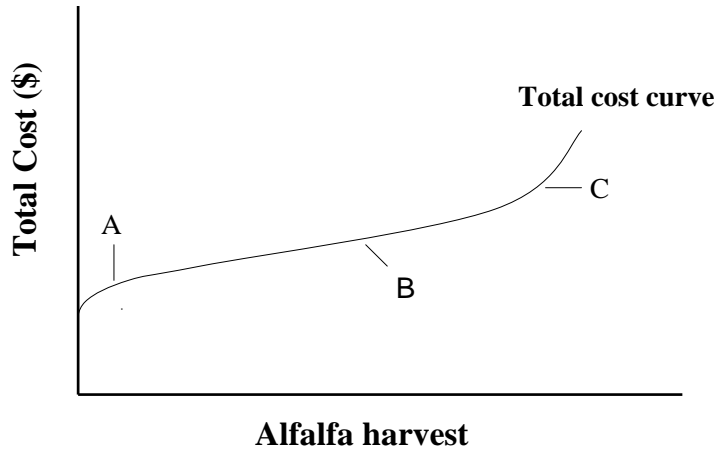
**For Question #3, refer to the graph shown below.**



3. Babette's Barn produces eggs. The production function for Babette's Barn is shown above. Based on the graph (not on your knowledge of chicken biology), which of the following statements is likely to be false?

- a. In region A, there's lots of space in the barn and the chickens are lonely. In this region, adding one additional chicken makes all the chickens happier and more likely to lay eggs.
- b. In region B, the barn is overcrowded and each additional chicken increases stress, decreasing the number of eggs laid per chicken.
- c. In region C, the barn is overcrowded and each additional chicken increases stress, decreasing the number of eggs laid per chicken.
- d. Throughout the range of production shown here, the number of chickens has a positive relationship to egg production.
- e. Throughout the range of production shown here, the number of chickens has a direct relationship to egg production.

For Question # 4, refer to the graph shown below.



4. The graph above shows the total cost curve for the alfalfa harvest on Alf's Alfalfa Farm. Based on this graph, which of the following statements about Alf's Alfalfa Farm must be false?
- In region A, marginal costs are increasing.
  - In region B, marginal costs are constant.
  - Total costs increase as production rises.
  - The marginal cost curve is flat in region B.
  - In region A, the production function is characterized by increasing marginal returns.
5. Jim decides to start a business manufacturing toothpaste. Which of the following would be included in the *accounting* costs of the undertaking?
- \$100,000 of Jim's own money that he invests to start up the business.
  - Interest Jim could have made if he put the \$100,000 into a savings account instead.
  - Money Jim could make if he got a job at a local shampoo factory instead.
  - Costs of toothpaste ingredients Jim needs to purchase each week.
  - Both a and d are true.
6. Albert is interested in opening a bicycle repair shop, but to do so will require getting information about other bike shops in the city, getting a permit to open a new business, and interviewing applicants for the positions of shop manager and accounts manager. All of these factors, which will slow down the process considerably, are
- extra costs
  - external costs
  - equity costs
  - accounting costs
  - transaction costs

7. Which of the following is an example of external costs?
- Mark purchases 10 books and pays 10% tax on the entire purchase.
  - Aurelio sells an acre of land but has to pay to have the land surveyed before the sale is completed.
  - Marty opens a chocolate factory and offers free samples to neighborhood children every Friday.
  - Gustave buys a new piece of equipment for his factory.
  - Georgette operates a noisy machine every morning, and scares away the birds from the local wildlife refuge.
8. Suppose in the short run a factory cannot increase its production output without adding more workers. What term would best describe the workers in this example?
- A fixed input
  - An external cost
  - A limiting factor
  - An opportunity cost
  - A marginal product
9. You have signed a two-year lease on a building in which you are planning to open a day care center. You have no choice about how much money you spend on rent for the next two years, because you are already committed to this agreement. This is an example of ...
- a variable input
  - a short run input
  - a long run input
  - a fixed input
  - a marginal input
10. Suppose that adding fertilizer always increases corn growth. The relationship between fertilizer application and corn growth would be
- positive
  - direct
  - fixed
  - efficient
  - both a and b are true.



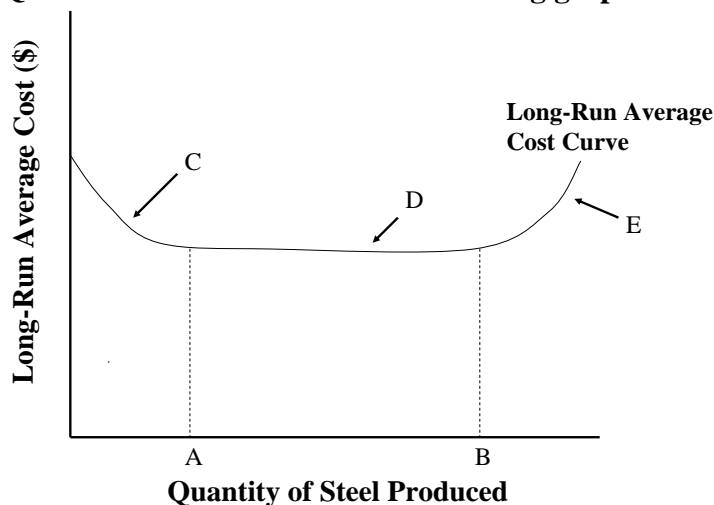
11. Charlie initially leased a one-room space and started a small day care center with only 4 children and one staff member. But he found that the costs per child were very high. When he leased a larger space, and expanded the center to have more children and staff, the cost per child fell. Which of the following factors came into play when Charlie expanded the center?

- a. economies of scale
- b. diseconomies of scale
- c. increasing returns to the labor inputs
- d. decreasing returns to the labor inputs
- e. input substitution

12. Which of the following statements is true?

- a. Long-run average cost is calculated by multiplying marginal cost by the unit of time in question.
- b. In computing marginal cost, we can ignore fixed costs.
- c. Constant returns to scale result from increasing marginal returns to production.
- d. Diseconomies of scale occur when long-run average cost declines with rising output.
- e. Increasing factory size always leads to decreasing marginal costs.

Questions 13 to 16 refer to the following graph.



13. The graph above shows the long-run average cost curve for a steel foundry. On this graph, point A is ...

- a. the minimum efficient scale.
- b. the maximum efficient scale.
- c. the point where economies of scale begin.
- d. the point where diseconomies of scale begin.
- e. the optimal level of output.

14. The region marked D is characterized by ...
- economies of scale.
  - increasing returns to scale.
  - constant returns to scale.
  - diseconomies of scale.
  - maximum average long-run cost.
15. Which of the following statements is true regarding the graph?
- Returns to scale are constant throughout.
  - As production increases, the the amount used of all inputs--including the quantity of labor and the size of the factory--increases.
  - In region E, there isn't enough space for all the workers required to produce at this level and they are getting in one another's way.
  - The minimum efficient scale is at a production level of zero.
  - The maximum efficient scale is marked by point A.
16. Which of the points or regions on this graph is associated with diseconomies of scale?
- A
  - B
  - C
  - D
  - E
17. A self-employed accountant spends a lot of money identifying clients and advertising her services. These activities are an example of ...
- external costs
  - transaction costs
  - fixed inputs
  - marginal returns
  - opportunity costs
18. In economics, the "long run" is a time period in which ...
- all inputs are variable.
  - all inputs are paid for.
  - all outputs are determined.
  - all loans are repaid.
  - all interest is paid.

19. In the case of constant marginal costs, the total cost curve will be ...

- a. a flat line
- b. a straight line sloping upward
- c. a straight line sloping downward
- d. a curved line sloping upward
- e. a curved line sloping downward

20. A production function with diminishing marginal returns ...

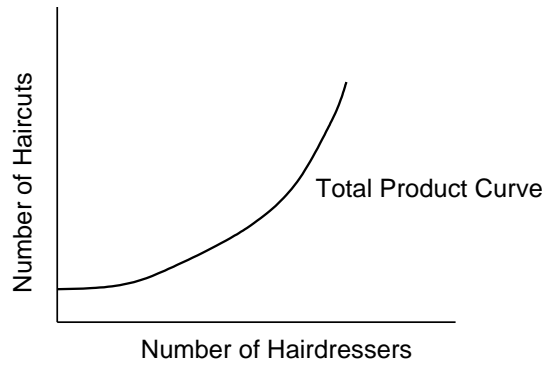
- a. can continue to slope upward indefinitely.
- b. is very unlikely in the real world.
- c. is quite common in the real world.
- d. must eventually display increasing marginal returns.
- e. Both B and D

## Answers to Active Review Questions

1. external
2. accounting
3. variable
4. production function or total product curve
5. limiting
6. average
7. increasing
8. diseconomies
9. substitution
10. True.
11. True.
12. True.
13. False. Economies of scale are present when long-run average cost *declines* with increasing output capacity.
14. False.
15. False. This is a fixed cost.
16. True.
17. A project that hires people who would otherwise be unemployed, and pays them the legal minimum wage or union negotiated wage, has economic costs below the accounting costs because it is bringing otherwise unused resources into valuable activity.
18. Economic cost is a better guide, because it takes into account the real value of whatever is given up in order to undertake the project.
19. The resulting line is curved, because marginal returns diminish with increasing time spent studying.
20. Fixed cost is the cost associated with using fixed inputs, which is the same no matter what quantity of output is produced. For example, if you have signed a lease on a factory building, you have to pay the same amount each month regardless of what you produce. A variable cost is the cost of using variable inputs (e.g. raw materials, energy, labor), which rise with quantity of output.

## Answers to Problems

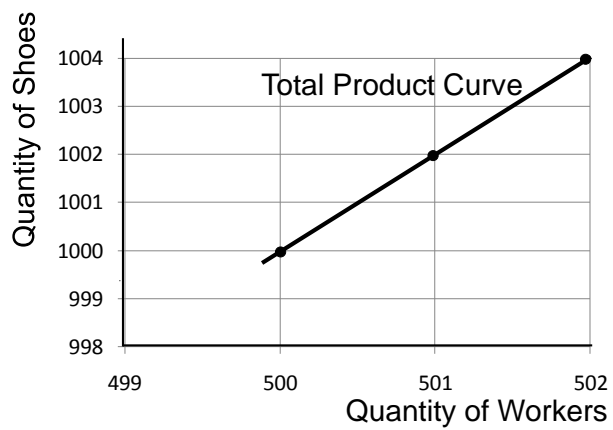
1.



2. a. 2

2. b. constant

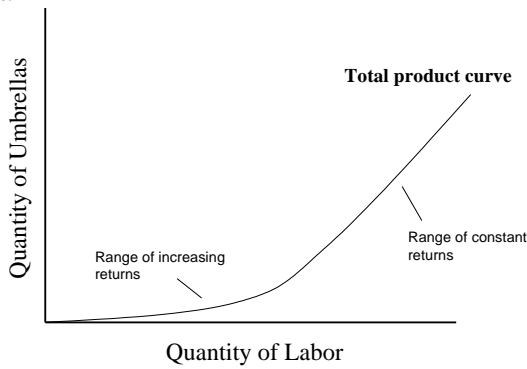
2. c.



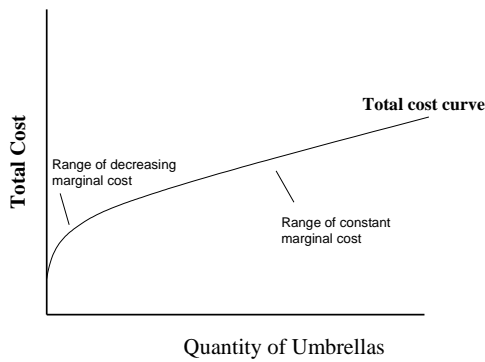
3. The completed table is:

Quantity of Variable Input: Labor	Quantity of Output: Calls	a. Marginal Return to Additional Labor	b. Fixed Cost (\$)	c. Variable Cost (\$)	d. Total Cost (\$)
0	0	--	\$50	0	\$50
1	100	100	\$50	\$80	\$130
2	180	80	\$50	\$160	\$210
3	240	60	\$50	\$240	\$290

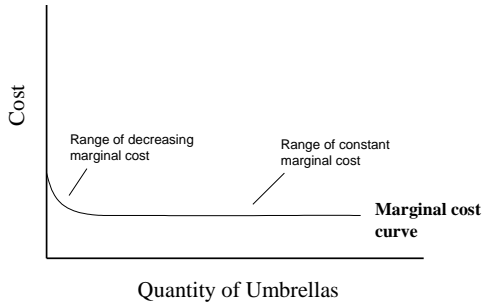
4. a.



4. b.



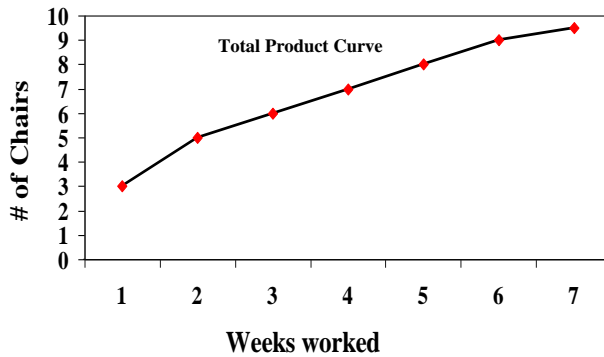
4. c.



5. a.

Number of Weeks worked	Marginal return to additional week of work (number of chairs)	Total Quantity of Chairs Produced
1	3	3
2	2	5
3	1	6
4	1	7
5	1	8
6	1	9
7	1/2	9 1/2

5.b.



### Answers to Self Test Questions

1. b
2. d
3. b
4. a
5. e
6. e
7. e
8. c
9. d
10. e
11. a
12. b
13. a
14. c
15. b
16. e
17. b
18. a
19. b
20. c

## Chapter 16

# MARKETS WITHOUT POWER

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Summary

This chapter presents the traditional, idealized model of perfect competition. In it, you will learn how perfectly competitive firms theoretically make production decisions to maximize their profits. Perhaps the most surprising concept in the chapter is the idea that perfectly competitive firms make zero *economic* profit. The chapter will end with some real-world considerations that indicate even perfectly competitive markets may not always produce economically efficient outcomes.

After reading and reviewing this chapter, you should be able to:

1. Describe the four different views of market power.
2. List the assumptions behind the traditional model of perfectly competitive markets.
3. Describe how a perfectly competitive firm maximizes its profits, based on analysis of total revenue and total cost curves.
4. Describe how a perfectly competitive firm maximizes its profits, based on marginal analysis.
5. Describe how the situation facing the individual firm relates to the overall market situation, in perfect competition.
6. Describe why economic profits are driven to zero under perfect competition.
7. Discuss why inefficiencies may persist in markets, even under conditions approaching perfect competition.

### Key Term Review

market power

price taker

accounting profits

marginal revenue

perfectly competitive market equilibrium

path dependence

perfect competition

total revenues

economic profits

profit maximization (under perfect competition)

sunk cost

network externality (in production)



## Active Review Questions

### *Fill in the Blank*

1. The ability to affect the terms and conditions of the exchanges in which you participate is referred to as \_\_\_\_\_.
2. In the perfect competition model, buyers and sellers have \_\_\_\_\_ information.
3. The demand curve facing a perfectly competitive firm is \_\_\_\_\_.
4. The difference between total revenues and accounting costs is known as \_\_\_\_\_.
5. Under conditions of perfect competition, a profit-maximizing firm will choose a level of production such that marginal cost is equal to \_\_\_\_\_.
6. At competitive equilibrium, all firms make (positive/zero/negative) \_\_\_\_\_ economic profit.
7. In a perfectly competitive market, the entrance of new firms into the market will drive prices (up, down) \_\_\_\_\_.
8. There are (many/few) \_\_\_\_\_ real world examples of perfectly competitive markets.
9. The economists view generally considers market power to be (good/bad) \_\_\_\_\_ and competition to be (good/bad) \_\_\_\_\_.
10. The term implying that “history matters” is known as \_\_\_\_\_.

### *True or False*

11. Under conditions of perfect competition, all firms make positive economic profits.
12. Under perfect competition, individual economic actors have no market power.
13. If a perfectly competitive firm wants to sell a larger quantity of goods, it must lower its selling price.
14. A perfectly competitive firm maximizes its profits at the point where its total cost curve intersects its total revenue curve.
15. Economic profit is equal to the difference between total revenues and economic costs.

16. The “citizen perspective” is that market power and competition can both be undesirable.

17. An example of a network externality is when the widespread adoption of a particular technology results in environmental damages.

18. A perfectly competitive firm should shut down in the short run whenever it is unable to recover its fixed costs.

*Short Answer*

19. What are the four key assumptions of the traditional model of perfect competition?

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20. Describe an example of a network externality. (The textbook describes several examples; try to think of a different one from those presented in the book.)

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**Problems**

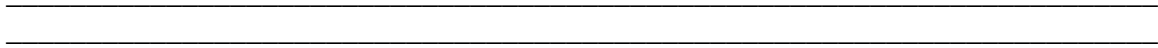
1. Suppose that manufacturers of laptop computers are price takers operating in a perfectly competitive market. Each laptop can be sold for \$2,000.

- a. Sketch the total revenue curve for laptop computers, and explain why it looks the way it does.

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- b. Sketch the marginal revenue curve for laptop computers, and explain why it looks the way it does.



2. Suppose that the cost of production of laptop computers shows initially a brief span of decreasing marginal costs, followed by increasing marginal costs.

- a. On the same graph as the total revenue curve you drew for Problem #1a, draw a possible total cost curve for laptop computer production. For a given quantity  $Q_1$  (placed at any location you choose on the horizontal axis), show the corresponding profit.
- b. On the same graph as the marginal revenue curve you drew for Problem #1b, draw a possible marginal cost curve for laptop computer production. Indicate the profit maximizing output level.

3. A flashlight manufacturing company has the following cost structure (some columns are intentionally left blank):

Quantity	Marginal Cost (\$)			
0				
1	12			
2	8			
3	10			
4	13			
5	17			

- a. Supposing that the firm is a price taker and can sell each flashlight it makes for \$13, graph the Marginal Cost and Marginal Revenue curves for this flashlight manufacturer.
- b. If you apply marginal analysis, what does the figure you drew in part (a) imply is the profit-maximizing output level for the firm?
- c. Assume that the firm has fixed costs of \$10. Calculate Total Cost, Total Revenue and Total Profit for the firm at the various production levels, using the blank columns in the table above.
- d. With flashlights selling for \$13, what is maximum profit the firm can make? What should it do? Explain.

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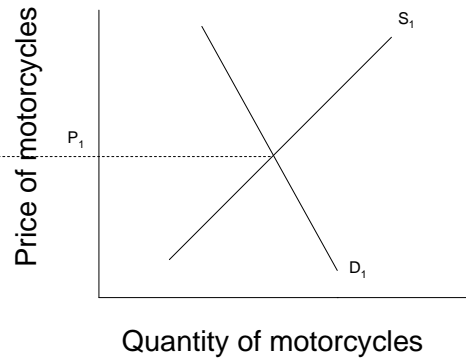
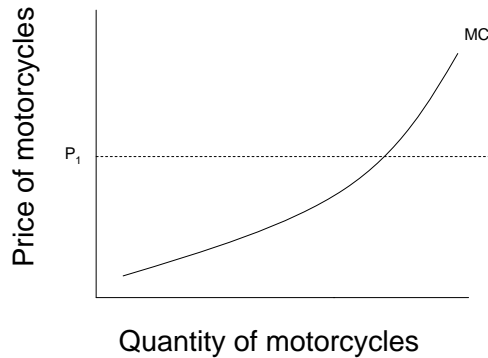
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## Self Test

1. In the market structure known as perfect competition, which of the following statements is assumed to be true all the time?
  - a. All economic actors have market power.
  - b. Big business has significant influence on public policy.
  - c. Competition is considered a harmful force.
  - d. Economic actors are concerned citizens.
  - e. Individual economic actors have no market power.
  
2. Which of the following is *not* a condition of the model of perfect competition?
  - a. Each individual buyer can affect the market price.
  - b. Within a given market, only one kind of good or service is traded.
  - c. Producers can freely enter the industry.
  - d. Producers can freely exit the industry.
  - e. Sellers all have perfect information.
  
3. The individual price-taking firm faces ...
  - a. A perfectly inelastic demand curve.
  - b. A horizontal demand curve.
  - c. A perfectly elastic demand curve.
  - d. A vertical demand curve.
  - e. Both b and c are true.
  
4. Over the long run, which of the following statements is true about profit-maximizing firms in a perfectly competitive market?
  - a. Economic profits are zero.
  - b. Economic profits are negative.
  - c. Economic profits are positive.
  - d. Accounting profits are zero.
  - e. Both c and d are true.

Questions #5 to #7 refer to the following graphs:



5. Suppose that at price  $P_1$ , motorcycle manufacturers are making positive economic profits. Assuming the market in motorcycles is perfectly competitive, which of the following will occur in the long run?
  - a. The supply curve will shift to the right.
  - b. The demand curve will shift to the right.
  - c. Price will rise.
  - d. Price will remain constant.
  - e. Marginal costs will increase.
  
6. Suppose now that motorcycle producers are making economic losses. Which of the following will happen in the long run?
  - a. Competitive pressures will drive economic profits toward zero.
  - b. Some firms will exit the market.
  - c. The supply curve will shift to the right.
  - d. Both a and b are true.
  - e. Both b and c are true.
  
7. Suppose that competitive pressures drive the price of motorcycles downward. Which of the following statements is an accurate description of the situation that results?
  - a. Revenues and profits are reduced.
  - b. Revenues fall, while profits remain constant.
  - c. The supply curve shifts to the left.
  - d. Marginal cost rises.
  - e. The demand curve shifts to the right.

**Questions 8 – 10 refer to the following scenario.**

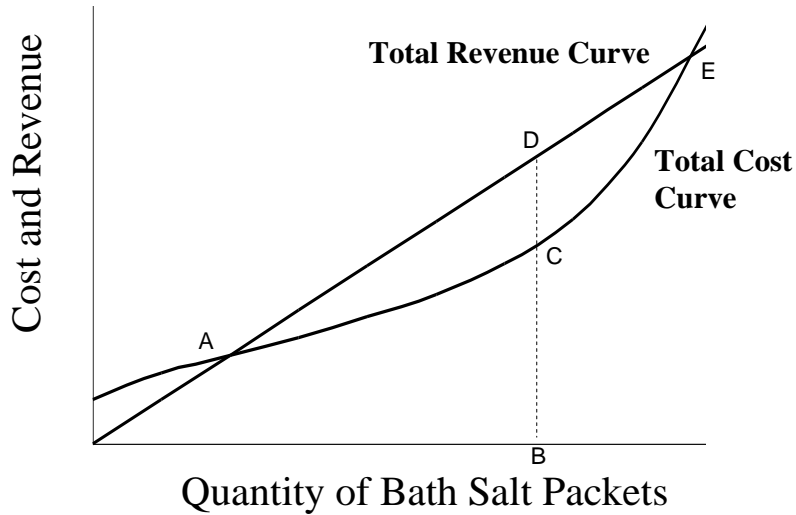
Handy Hardware Factory produces desk lamps, according to the following cost structure. They are a price taker, and can sell any number of lamps for \$8 each.

Quantity of Lamps	Marginal Cost (\$)	Total Cost (\$)	Marginal Revenue (= Price) (\$)	Total Revenue (\$)	Total Profit (\$)
0	--	50	--		
1	15		8		
2	5		8		
3	6		8		
4	8		8		
5	12		8		

8. What is the total cost of producing 3 lamps?
- a. \$ 6
  - b. \$ 8
  - c. \$ 50
  - d. \$ 76
  - e. None of the above.
9. What level of total profit will Handy Hardware make, if it produces 3 lamps?
- a. less than \$ 0 (that is, a loss)
  - b. between \$ 0 and \$20
  - c. between \$20 and \$50
  - d. more than \$50
  - e. Cannot be determined from the information given.
10. What is the profit-maximizing level of output for Handy Hardware?
- a. 0 lamps
  - b. 1 lamp
  - c. 3 lamps
  - d. 4 lamps
  - e. None of the above.

**Questions 11 – 12 refer to the following scenario.**

Bertha's Bath Supplies produces packets of bath salts, which are sold for \$5 each. Bertha's Bath Supplies is a price-taking firm. Total revenue and total cost curves for the firm are shown in the graph below.

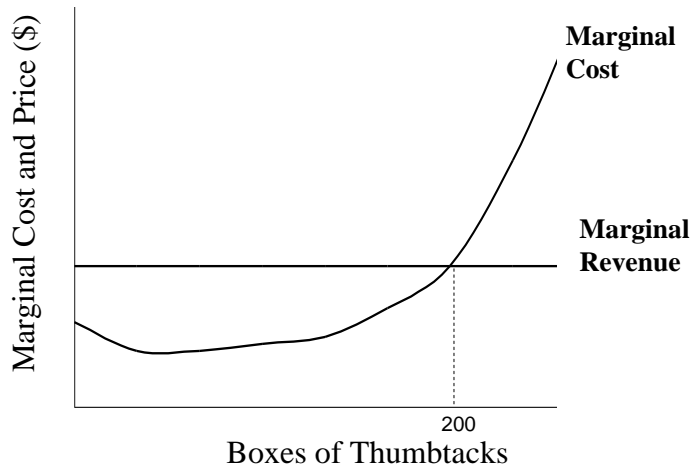


11. Which of the following statements is true regarding the graph shown above?
- Profits are maximized at point E.
  - The distance from B to C represents profit earned.
  - The distance from B to D represents profit earned.
  - The distance from C to D represents profit earned.
  - At point B, marginal revenue is designated by point D.
12. Which of the following statements about Bertha's Bath Supplies do you know to be true, based on the information provided above?
- Profits are maximized when production reaches 100 packets.
  - Profits are maximized at point E.
  - Profits are maximized when marginal costs equal \$5 per packet.
  - Point B represents a production level yielding zero accounting profit.
  - Point E represents a production level yielding positive economic profit.
13. Another name for marginal revenue is ...
- externalities.
  - price.
  - economic profits.
  - accounting profits.
  - sunk cost.



**Questions 14 and 15 refer to the scenario below.**

Tillie's Tack Place manufactures thumb tacks and sells them for \$2.00 per box of tacks. The graph below shows marginal cost and marginal revenue for Tillie's Tack Place.



14. When Tillie's Tack Place is producing 200 boxes of thumbtacks, which of the following statements must be true?
- a. Tillie's Tack Place is not yet making a profit.
  - b. Producing more tacks would reduce total profits.
  - c. Producing more tacks would increase total profits.
  - d. Total costs exceed total revenues at this point.
  - e. Producing one more box of tacks would mean that total accounting costs would exceed total revenues.
15. When Tillie's Tack Place is producing 200 boxes of thumbtacks, the marginal cost per box is equal to ...
- a. \$50
  - b. \$25
  - c. \$5
  - d. \$2
  - e. The marginal cost cannot be determined from the information given here.
16. What type of cost should not affect the short-run production decisions of a perfectly competitive firm?
- a. Variable costs
  - b. Sunk costs
  - c. Fixed costs
  - d. Both a and b
  - e. Both b and c

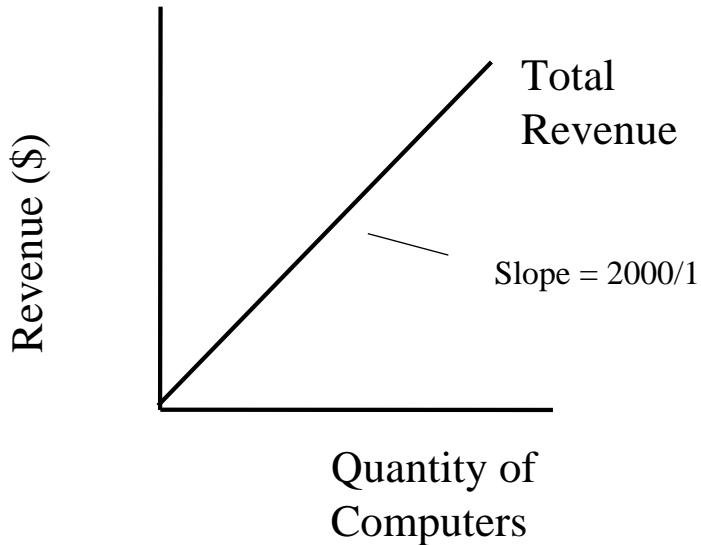
17. In the short run, a perfectly competitive firm should keep producing as long as ...
- it is making an economic profit.
  - it is making an accounting profit.
  - its total revenues are greater than its fixed costs.
  - its total revenues are greater than its variable costs.
  - its marginal revenues are positive.
18. If positive economic profits are being made in a perfectly competitive market, what two changes are likely to occur?
- The market supply curve will shift to the left and each firms' production quantity will fall.
  - The market supply curve will shift to the right and each firms' production quantity will rise.
  - The market supply curve will shift to the left and each firms' production quantity will rise.
  - The market supply curve will shift to the right and each firms' production quantity will fall.
  - None of the above
19. If negative economic profits are being made in a perfectly competitive market, what two changes are likely to occur?
- The market supply curve will shift to the left and each firms' production quantity will fall.
  - The market supply curve will shift to the right and each firms' production quantity will rise.
  - The market supply curve will shift to the left and each firms' production quantity will rise.
  - The market supply curve will shift to the right and each firms' production quantity will fall.
  - None of the above
20. Suppose that businesses tend to locate in areas that already have a high concentration of businesses. This is an example of ...
- path dependence.
  - sunk costs.
  - market equity.
  - marginal analysis.
  - perfect competition.

## Answers to Active Review Questions

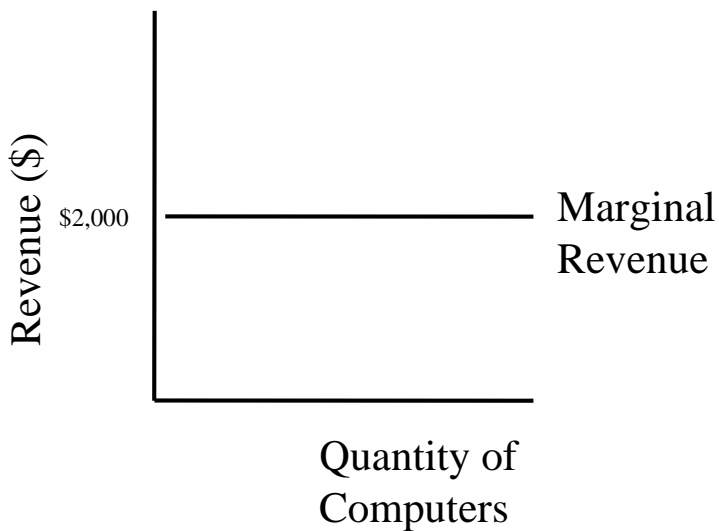
1. market power
2. perfect
3. perfectly elastic (or horizontal)
4. accounting profits
5. price (or marginal revenues)
6. zero
7. down
8. few
9. bad; good
10. path dependence
11. False
12. True
13. False
14. False
15. True
16. True
17. False
18. False
19. 1. There are numerous small sellers and buyers, so small that no individual seller or buyer can affect the market price. 2. Within any particular market, only one kind of good or service is traded, and all units are identical. 3. Producers can freely enter or exit the industry. 4. Buyers and sellers all have perfect information.
20. One example could be the difficulties you might face if you tried to maintain an old model of car that few other people were using. Over time, you would probably find it difficult to get the parts you needed, or even to find a mechanic who understood how to maintain this kind of car. Another example would be trying to get around with a horse and buggy. You would probably find that because cities are set up for traveling by cars and other automated forms of transport, you would have trouble navigating modern city streets with your horse and buggy.

### Answers to Problems

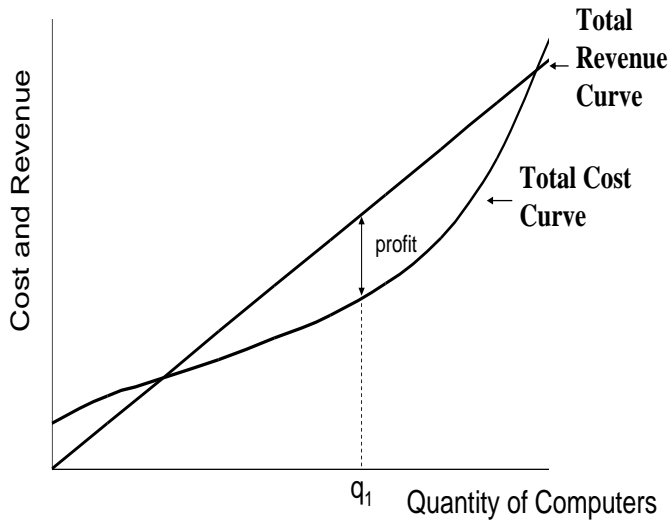
1.a. The total revenue curve for laptop computers is a straight upward-sloping line because in a perfectly competitive market, every laptop will sell for the same price. The slope of the line is +2000.



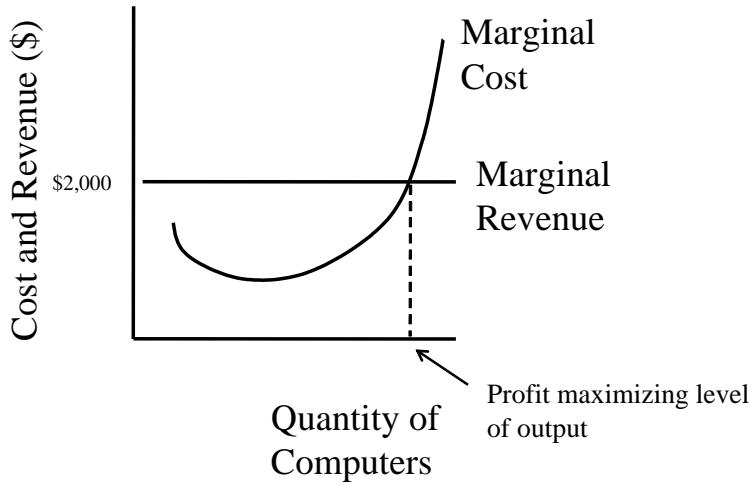
1.b. The marginal revenue curve is a straight line, horizontal at the market price (\$2,000). Each additional laptop sold brings in the same amount.



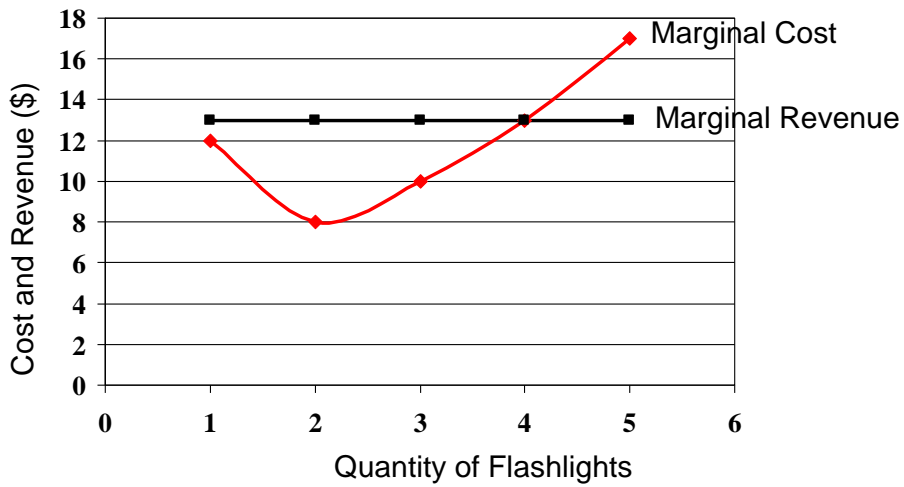
2. a.



2.b.



3. a.



3. b. 4 flashlights (where marginal cost = marginal revenue)

3. c.

Quantity	Marginal Cost (\$)	Total Cost (\$)	Total Revenue (Price = \$13)	Total Profit
0		10	0	-10
1	12	22	13	-9
2	8	30	26	-4
3	10	40	39	-1
4	13	53	52	-1
5	17	70	65	-5

3. d. At a price of flashlights of \$13, the firm's maximum profit is a *loss* of \$1 (achievable at a production level of 3 or 4 lamps). The firm should continue to produce (in the short run), since losing \$1 is better than losing \$10, which is what it would lose if it shuts down.

### Answers to Self Test Questions

1. e
2. a
3. e
4. a
5. a
6. d
7. a
8. d
9. a
10. a
11. d
12. c
13. b
14. b
15. d
16. e
17. d
18. d
19. c
20. a

## Chapter 17

# MARKETS WITH MARKET POWER

*Microeconomics in Context* (Goodwin, et al.), 3<sup>rd</sup> Edition

### Chapter Summary

Now that you understand the model of a perfectly competitive market, this chapter complicates the picture by adding the element of market power. You will be introduced to the traditional models of monopoly, monopolistic competition, and oligopoly. You will learn about how firms maximize profits in these more complicated theoretical situations, and also about some of the ways in which firms may negotiate with one another—either explicitly or implicitly—to attain their preferred outcomes. At the end of the chapter we will discuss two industries—agricultural products and health care—that, for different reasons, are characterized by highly imperfect competition.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Define a monopoly and describe how a monopolist maximizes profits.
2. Understand why a monopoly may or may not be efficient.
3. Define monopolistic competition and describe how profits are maximized in these markets.
4. Define oligopoly and discuss firm behavior under conditions of oligopoly.
5. Understand the effect of government farm policy on food markets.
6. Explain the reasons why the health care industry is limited in its degree of competitiveness and understand both the pros and cons.

### Key Terms

pure monopoly

oligopoly

natural monopoly

predatory pricing

local monopoly

price maker

nonprice competition

duopoly

price war

tacit collusion

price leadership

monopolistic competition

barriers to entry

exclusionary practices

dumping

regulated monopoly

price discrimination

industrial concentration ratio

payoff matrix

collusion

price fixing

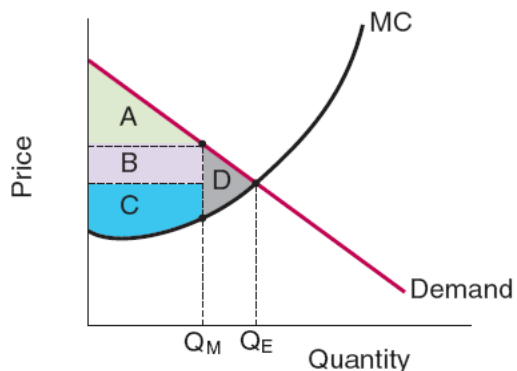
adverse selection

## Active Review Questions

### Fill in the Blank

1. A monopoly that emerges because of economies of scale is called a \_\_\_\_\_ monopoly.
2. Joe's Superstore prevents competitors from entering the market by temporarily pricing its goods below cost, thus driving new entrants out of business. This practice is known as \_\_\_\_\_ pricing.
3. Selling goods to another country at a price below the cost of production is known as \_\_\_\_\_.
4. The marginal revenue curve for a monopolist is (flat/downward-sloping/upward-sloping) \_\_\_\_\_.
5. Market power in the form of a monopoly creates benefits for the (buyer/seller) \_\_\_\_\_ at the expense of the (buyer/seller) \_\_\_\_\_.
6. When the government pays a subsidy to the farmer, it results in a(n) \_\_\_\_\_ of food.

**Questions #7, #8, and #9 refer to the graph below.** In this graph,  $Q_E$  refers to the quantity of a good that would be provided under conditions of perfect competition, and  $Q_M$  refers to the quantity of the same good that is provided under conditions of monopoly.



7. Area A shows the magnitude of \_\_\_\_\_.
8. Area D shows the magnitude of \_\_\_\_\_.
9. Area B represents a transfer from \_\_\_\_\_ to \_\_\_\_\_.
10. A firm that charges different prices to different buyers depending on their ability and willingness to pay is referred to as a \_\_\_\_\_ seller.



*True/False*

11. In a hypothetical case of perfect price discrimination, producer surplus is completely eliminated.
12. In a hypothetical case of perfect price discrimination, deadweight loss is completely eliminated.
13. “Monopolistic competition” includes some characteristics of perfect competition and some characteristics of monopoly.
14. In a situation of monopolistic competition, no close substitutes are available.
15. Monopolistically competitive firms have higher unit costs than would occur in a perfectly competitive market.
16. The health care industry is, for the most part, characterized by competitive markets.

*Short Answer*

17. Describe one way in which monopolistically competitive firms work to protect their “miniature monopoly”.

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18. List three conditions of the idealized market structure of monopoly.

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19. Explain how network externalities can lead to monopolization.

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20. Briefly describe the pros and cons of allowing drug companies to enjoy substantial market power (through, e.g., the use of patents).

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21. Briefly explain how monopolistic competition differs from perfect competition.

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22. Describe the main characteristics of oligopoly.

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23. Explain in what ways markets for food are not as competitive as they could be.

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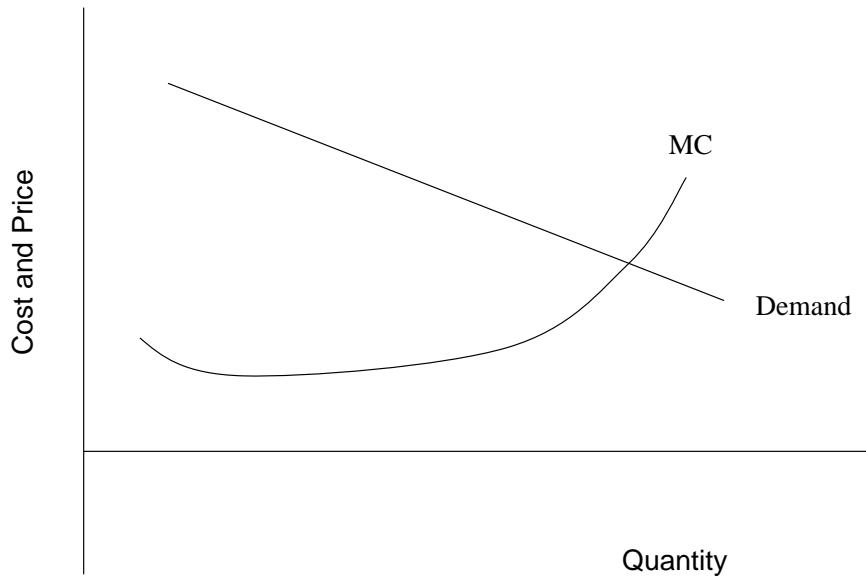
**Problems**

1. Suppose that a monopolistic firm produces hair dryers. The chart below shows the quantities of hair dryers that can be sold at various prices.

<b>Quantity of Hairdryers</b>	<b>Price of Hairdryers</b>	<b>Total Revenue</b>	<b>Marginal Revenue</b>
1	\$100		
2	\$90		
3	\$80		
4	\$70		
5	\$60		
6	\$50		

- a. Fill in the total and marginal revenue columns in the chart shown above.
- b. If marginal cost is equal to marginal revenue at  $MC=MR=\$20$ , what is the profit maximizing level of production (assuming that the firm should produce at all)?

2. The following graph shows the demand curve and the marginal cost curve for a monopolistic firm producing electric cars.



- Sketch a possible marginal revenue curve for this firm.
- On the horizontal axis, label the profit-maximizing level of production as  $Q_1$ . On the vertical axis, label the price  $P_1$  that the firm will charge at the profit maximizing level of production.
- Label the area of deadweight loss in the graph you draw for part (b).
- How do the monopolistic price and quantity compare to those of competitive market equilibrium?

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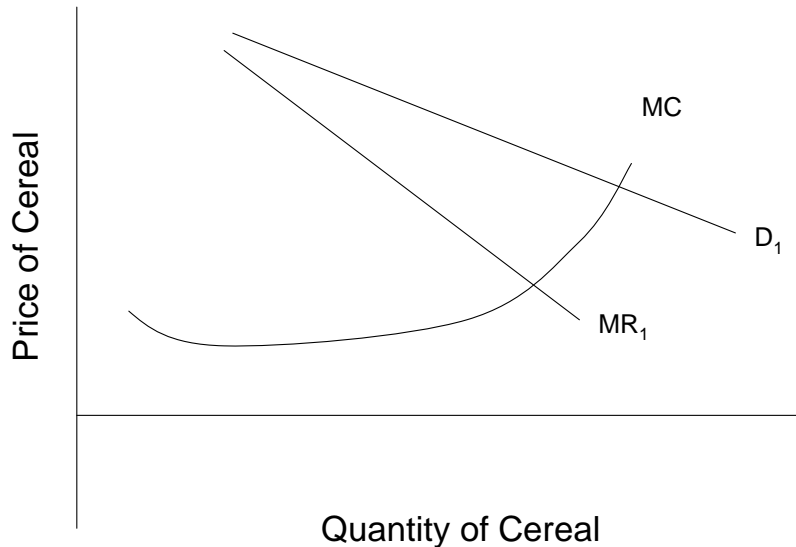
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- Harry's Auto Shop is a perfectly price discriminating seller. Harry has an uncanny ability to assess how much people are willing to pay for a car, and he sets prices accordingly.
  - Sketch the demand curve and the marginal cost curve for Harry's Auto Shop.
  - Show the area that represents consumer surplus on the graph you drew for part (a).
  - Show the area of the producer surplus on the same graph.

4. Ten breakfast cereal producers operate in a market characterized by monopolistic competition. The demand, marginal revenue, and marginal cost curves faced by an individual breakfast cereal producer are shown below.



Suppose that five new breakfast cereal producers enter the market. Show the new demand curve and the new marginal revenue curve that result on the graph above.

5. Suppose the market for cookbooks is a duopoly. The chart below shows a payoff matrix for the two cookbook producers.

		Producer 2's options	
		Low Price	High Price
Producer 1's options	Low Price	\$20 / \$20	\$80 / \$1
	High Price	\$1 / \$80	\$100 / \$100

- Based on the information shown in the payoff matrix above, how much profit would each firm make if the firms were non-cooperative?
- If producer 2 charged a high price and producer 1 charges a low price, how much profit would producer 1 make?

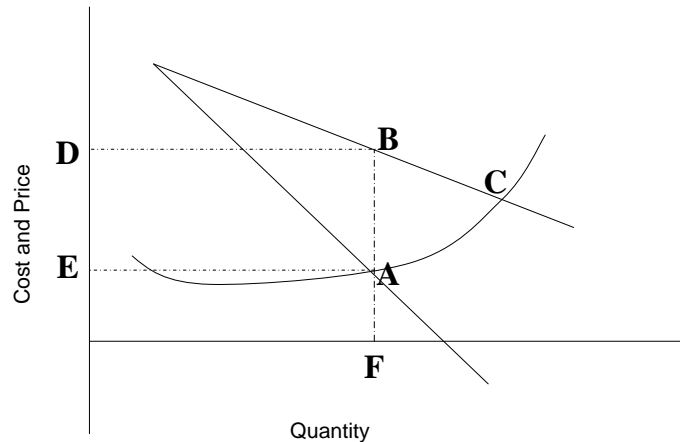
- c. If the firms colluded and set prices together, how much profit would each producer make?

### Self Test

1. Which of the following is a condition of monopoly?
  - a. Two or more sellers.
  - b. Only one buyer.
  - c. A good with several close substitutes.
  - d. Barriers to entry.
  - e. None of the above.
2. A “natural monopoly” is
  - a. An oligopoly.
  - b. A monopoly characterized by diseconomies of scale.
  - c. A monopoly that emerges because of economies of scale.
  - d. A monopoly on a scarce natural resource.
  - e. A monopoly that solves the problem of diseconomies of scale.
3. In international trade, “dumping” refers to
  - a. Exclusionary practices.
  - b. Charging unfairly high prices.
  - c. Providing unwanted goods free of charge.
  - d. Selling goods at a price below the cost of production.
  - e. Selling goods above market price.
4. Which of the following statements is *false*?
  - a. Monopolistic firms maximize profits at the point where  $MC=MR$ .
  - b. Monopolistic firms are price takers.
  - c. Monopolistic firms face a downward sloping demand curve.
  - d. Monopolistic firms face a downward sloping marginal revenue curve.
  - e. All of the above are true.
5. The demand curve for the output of a monopolistic firm is equal to
  - a. The marginal revenue for the product in question.
  - b. The market supply curve for the product in question.
  - c. The market demand curve for the product in question.
  - d. The demand curve for a firm in a perfectly competitive market.

- e. The concentration ratio of the firm.
6. A monopolistic firm can sell more by
- a. Advertising its product successfully.
  - b. Competing effectively with other firms.
  - c. Lowering the price of its product.
  - d. Both a and c are true.
  - e. Options a, b, and c are all true.
7. Suppose a firm can sell five units of output at a price of \$10 each. To sell six units of output, the firm must lower its price to \$9 per unit. To sell seven units, the firm must lower its price to \$8 per unit. Which of the following statements is *true*?
- a. The firm can maximize profits at all of the production levels listed above.
  - b. The firm faces an upward sloping demand curve.
  - c. Based on the information given above, we can conclude that seven units is the profit maximizing level of production.
  - d. Based on the information given above, we can conclude that this firm faces net losses at the levels of production considered here.
  - e. The firm can be described as a “price maker”.
8. Suppose a firm can sell one unit of product for \$50, two units for \$45 each, three units for \$40 each, or four units for \$35 each. When the firm sells four units, marginal revenues is equal to
- a. \$5.
  - b. \$20.
  - c. \$25.
  - d. \$30.
  - e. \$35.
9. Which of the following statements is *true*?
- a. Monopolistic firms face zero profits in the long run.
  - b. Monopolistic situations do not involve any inefficiencies.
  - c. The monopolistic firm always faces a downward sloping marginal cost curve.
  - d. The perfectly competitive firm faces a horizontal marginal revenue curve.
  - e. The monopolistic firm faces a horizontal marginal revenue curve.

Questions #10 and #11 refer to the graph below.



The graph shown above depicts the demand, marginal revenue, and marginal cost curves faced by a monopolistic firm.

10. Point A indicates

- Total cost.
- The point where  $MR=MC$ .
- The price buyers are willing to pay at equilibrium.
- The point where  $MC=P$ .
- Total revenue.

11. Which of the following statements is *false*?

- When the firm chooses a level of production F, buyers will pay a price E.
- Point A is on the marginal cost curve.
- Point B shows the level of demand that corresponds to the profit maximizing level of production.
- Point C indicates the price and quantity of production that would exist in a competitive equilibrium.
- Because the firm described by this graph is a monopoly, production is lower and price is higher than they would be at competitive equilibrium.

12. Rent-seeking behavior is

- An effort to find affordable housing.
- An effort to get transfers or favors.
- A behavior of all monopolists.
- A behavior of governments only.
- A behavior that facilitates creation of a perfectly competitive market.

13. Which of the following statements is *false*?
- a. In some cases, monopoly can be a preferable option for society as a whole compared with a situation of perfect competition.
  - b. For some services, such as passenger rail transportation, government subsidies to a monopolist may produce the most socially beneficial outcome.
  - c. Government regulation of an industry characterized by natural monopoly can help to reduce the inefficiencies associated with market power.
  - d. Optimally efficient pricing always leads to self-sustaining revenues.
  - e. All of the above are true.
14. Which of the following is an example of a price discriminating seller?
- a. Frank sells condominiums only to buyers of a certain ethnic background.
  - b. Ellen charges different prices to different buyers, depending on their ethnic or religious background.
  - c. Amelia charges different prices to different buyers depending on their ability or willingness to pay.
  - d. An airline charges the same price to all travelers.
  - e. Both a and b are correct.
15. When you go shopping you discover that you can choose among twenty different brands of breakfast cereal, all with about the same nutritional content. The proliferation of cereal options is an example of
- a. product differentiation
  - b. oligopoly
  - c. perfect competition
  - d. a price war
  - e. monopoly
16. Which of the following statements is *true* of a monopolistically competitive firm?
- a. It faces a downward sloping demand curve.
  - b. It earns positive economic profits in the long run.
  - c. It produces more than a perfectly competitive firm.
  - d. It charges lower prices than a perfectly competitive firm.
  - e. Its profits are protected by significant barriers to entry.



17. Under conditions of oligopoly, firms may collude in order to
- Avoid the outcome associated with the prisoner's dilemma.
  - Increase competition.
  - Solve the concentration ratio problem.
  - Create a prisoner's dilemma for buyers.
  - Initiate a price war with one another.
18. Which of the following is a form of implicit collusion?
- Duopoly
  - Price wars
  - Non-price competition
  - Prisoner's dilemma
  - Price leadership
19. Which of the following statements about oligopoly is *false*?
- Under conditions of oligopoly, entry into the market is difficult.
  - The amount of long-run economic profit made by oligopolistic firms is variable.
  - Each firm in an oligopoly makes decisions without regard for the actions of other firms.
  - Game theory is used to analyze the behavior of firms in an oligopoly.
  - Firms in an oligopolistic market often have an incentive to collude.
20. One type of market distortion employed by the U.S. government in the markets for agricultural produce is
- a price ceiling.
  - a price floor.
  - a deadweight loss.
  - price fixing.
  - price discrimination.
21. Which of the following is *false* about U.S. farm policy?
- It causes land to be degraded more rapidly than otherwise.
  - It intensifies inequality by providing disproportionate subsidies to large landholders.
  - It sometimes helps relieve famines in other countries, at least in the short term.
  - It often distorts international food markets.
  - All of the above are true.

22. Which of the following has the United States *not* done with its food surpluses in the past?
- Sell it to the Soviet Union.
  - Give it to poor countries to help with famine relief.
  - Confiscate it and make it available at regional food banks at a low price.
  - Destroy it.
  - The United States has, at one time or another, done *all* of the above.
23. Among reasons for why markets in the health care industry are not highly competitive are
- the complete absence of deadweight losses.
  - heterogeneous products.
  - barriers to entry.
  - information asymmetry.
  - price ambiguity.
24. The health insurance and pharmaceutical industries are best described as
- monopolies.
  - monopolistic competitors.
  - oligopolies.
  - perfectly competitive markets.
  - quasi-governments.
25. A phenomenon that favors the weaker members of a given population to the detriment of the system as a whole is known as
- suboptimal rationality.
  - counterproductive targeting.
  - rent seeking.
  - adverse selection.
  - inefficient but fair.

## Answers to Active Review Questions

1. natural
2. predatory
3. dumping
4. downward-sloping
5. seller; buyer
6. overproduction (or surplus)
7. consumer surplus
8. deadweight loss
9. consumer; producer
10. price discriminating
11. False. In a hypothetical case of perfect price discrimination, *consumer* surplus is completely eliminated.
12. True.
13. True.
14. False.
15. True.
16. False.
17. Monopolistically competitive firms often engage in non-price competition (e.g. advertising, using attractive packaging, etc.).
18. (a) There is only one seller. (b) The good being sold has no close substitutes. (c) Barriers to entry prevent other firms from starting to produce the good in question.
19. Network externalities can “lock in” one technology, product, or system, making it hard for other options to gain a foothold in the market. The textbook discusses the example of computer operating systems: once a large number of people have adopted one operating system, the firm producing that system has a significant advantage over new entrants that might attempt to compete.
20. Offering patents can create an incentive to develop new drugs. On the other hand, the high prices of patented drugs can mean that life-saving drugs are denied to thousands or even millions of people who need them. (It is worth noting that other options are available to motivate research and development in pharmaceuticals.)
21. In monopolistic competition, products are differentiated instead of identical. Also, more important, while there is only one seller for monopoly, there are generally many in a monopolistically competitive market structure. We can say that each has a “mini-monopoly” for its own niche (i.e., differentiated) product.
22. Oligopoly is a structure where a few sellers dominate the market, and at least some control enough of the market to be able to influence price; and entry by competitors is very difficult.
23. Markets for food are not especially competitive, given that farmers have for decades enjoyed government subsidies. The markets have grown increasingly distorted over time, as relatively few farms have grown immense in size, resulting in disproportionate subsidies accruing to them (the payments are often in relation

to farm size). Many argue that such a generous policy does nothing to promote efficiency in food production—quite the contrary!

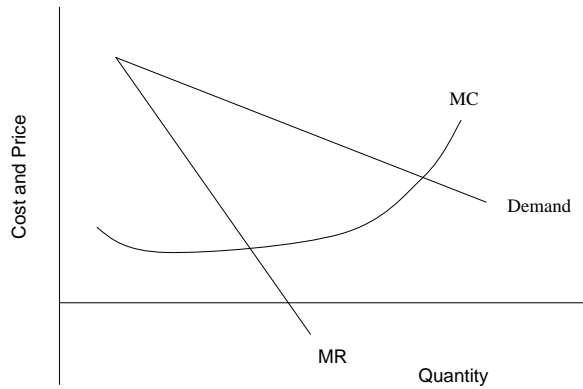
**Answers to Problems**

1. a.

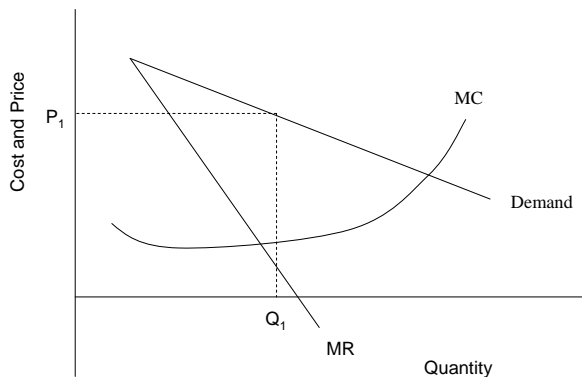
Quantity of Hairdryers	Price of hairdryers	Total Revenue	Marginal Revenue
1	\$100	\$100	\$100
2	\$90	\$180	\$80
3	\$80	\$240	\$60
4	\$70	\$280	\$40
5	\$60	\$300	\$20
6	\$50	\$300	\$0

b. 5 hairdryers

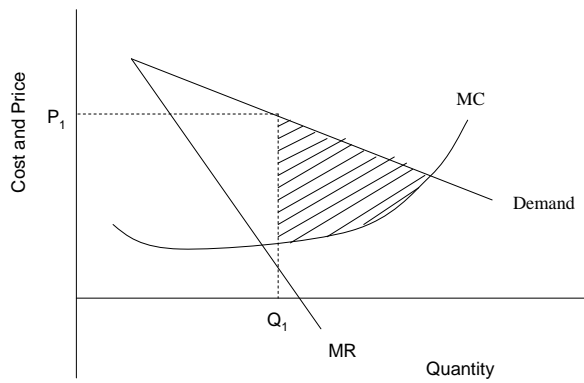
2. a.



2.b.

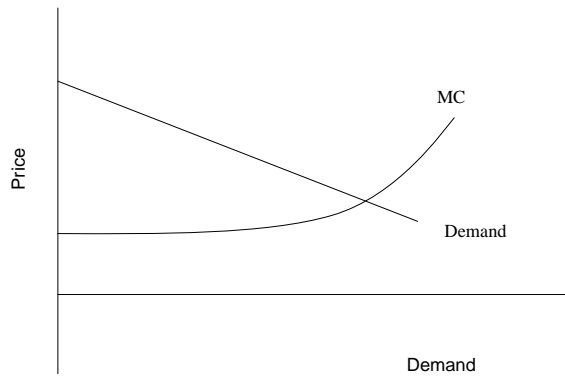


2. c.



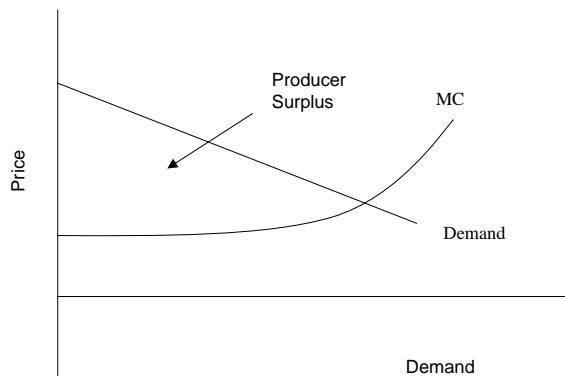
2. d. The quantity sold by the monopolist is lower, and the price charged is higher, than in perfect competition.

3. a.

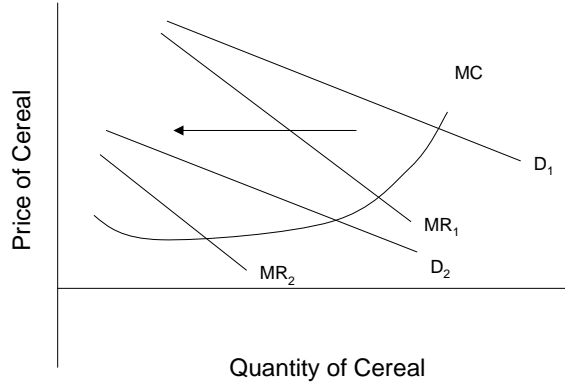


3.b. There is no area of consumer surplus on this graph.

3. c.



4.



- 5. a. They will each make \$20.
- 5. b. Producer 1 will make \$80.
- 5. c. Both firms will make \$100.

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. d  | 13. d |
| 2. c  | 14. c |
| 3. d  | 15. a |
| 4. b  | 16. a |
| 5. c  | 17. a |
| 6. d  | 18. e |
| 7. e  | 19. c |
| 8. b  | 20. b |
| 9. d  | 21. e |
| 10. b | 22. c |
| 11. a | 23. a |
| 12. b | 24. c |
|       | 25. d |