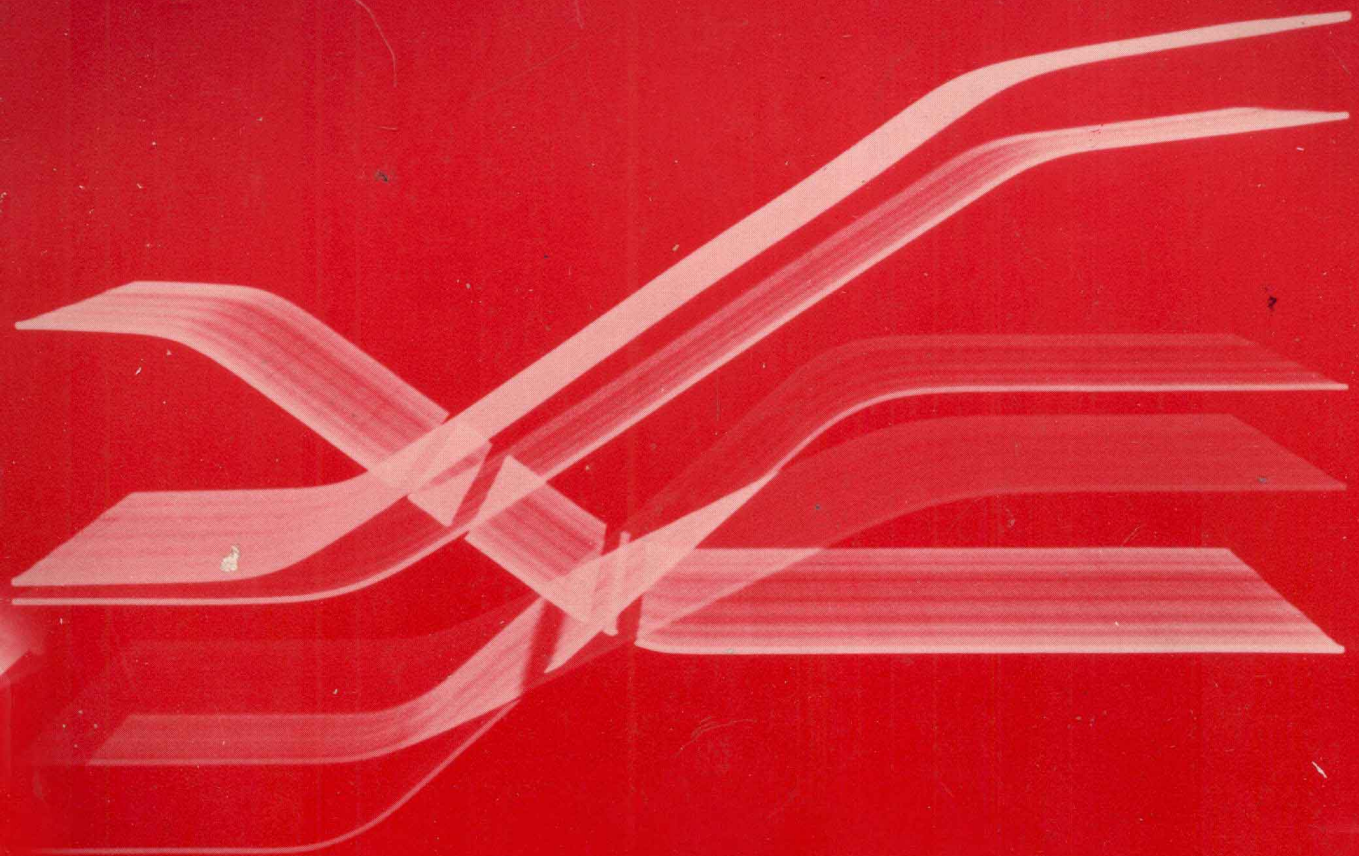


**Study Guide**

# **Principles of Macroeconomics**

**John Vahaly, Jr.**

**Prepared to accompany the text by Roy J. Ruffin and Paul R. Gregory**



Study Guide

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## To the Student

This Study Guide has been designed to help you understand and apply the economic principles presented in your text, *Principles of Macroeconomics*, by Ruffin and Gregory. I recommend that you adopt the following approach to the course material to maximize your study time:

1. You should begin, of course, by carefully reading the assigned chapter in the text, giving special attention to key concepts and terms. The Learning Objectives listed at the start of each corresponding Study Guide chapter underline the important topics and issues in the text chapter.
2. Next, read the Chapter Outline in the Study Guide for each text chapter. This outline organizes and summarizes the text material, offering you a quick review of the important points.
3. When you feel familiar with the information presented in the text, check your understanding and retention by answering the true-false, multiple-choice, and application questions in the Study Guide chapter. Answers to these questions, as well as additional explanation and clarification to show you *why* the answer is correct in each case, are provided at the end of the Study Guide chapter.
4. Just before exam time, take the Review Quizzes that appear at the back of the Study Guide for the chapters on which you will be tested (if you have not already answered these multiple-choice questions as class assignments). The answers to these questions are available from your instructor.

Remember that the Study Guide's purpose is to help you grasp the text material. It is not intended to replace the text. If you follow my advice and team the Study Guide *with* the text, you will have a much better understanding of the material, and you will be able to face the world on exam day with confidence.

J.V.

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# The Nature of Economics

## (Appendix: Reading Graphs)

### LEARNING OBJECTIVES

After reading the text chapter, “The Nature of Economics,” and the Appendix, “Reading Graphs,” you should be able to do each of the following:

1. Define *economics* and explain the basic themes that underlie it.
2. Explain how marginal analysis is used to make economic decisions.
3. Define *microeconomics* and *macroeconomics*, indicating the types of problems with which each is concerned.
4. Explain how economics uses the scientific method to develop theories and hypotheses about economic activity.
5. Identify and explain common logical fallacies that can occur in economics.
6. Define *positive* and *normative economics* and explain why economists differ on economic issues.
7. Explain positive or direct relationships and negative or inverse relationships.
8. Explain the relationship between dependent and independent variables.
9. Define and show how to calculate the slope of a straight line and a curvilinear graph.
10. Explain the pitfalls encountered in the use of graphs.

### CHAPTER OUTLINE

#### I. WHAT IS ECONOMICS: BASIC THEMES

- A. Economics is the study of how people choose to use limited resources to produce, exchange, and consume goods and services.
- B. There are four basic themes:
  1. *Scarcity*: people’s wants exceed the ability of the economy to meet those wants.
  2. *Choice*: because of scarcity, people must always choose between alternatives.
  3. *Specialization*: economic participants specialize where they do relatively best.
  4. *Exchange*: voluntary trade occurs between individuals with different specializations.

#### II. UNDERSTANDING ECONOMICS: MARGINAL ANALYSIS

*Marginal analysis* suggests that we make economic decisions by evaluating the extra or marginal costs and benefits of relatively small changes. If marginal benefits exceed marginal costs, we undertake extra activity.

#### III. MICROECONOMICS AND MACROECONOMICS

- A. *Microeconomics* primarily uses marginal analysis to study the price and output decision making of firms and individuals in a market setting.
- B. *Macroeconomics* studies the economy as a whole, including inflation, unemployment, and the GNP.

#### IV. METHODOLOGY IN ECONOMICS

- A. Economics uses testable *theories* or *hypotheses* to simplify and explain economic phenomena (the *scientific method*).
- B. Economic theories help people to understand complex economic relationships and make predictions about economic events and variables.

#### V. COMMON FALLACIES IN ECONOMICS: SOME WARNINGS

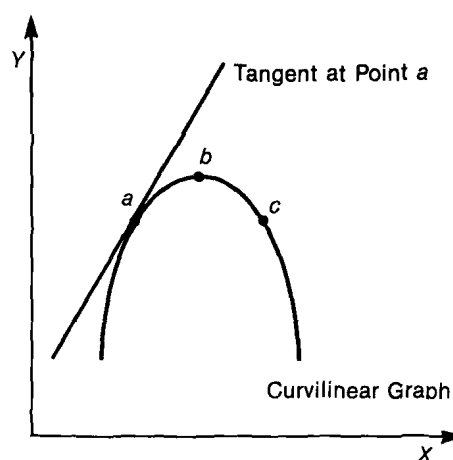
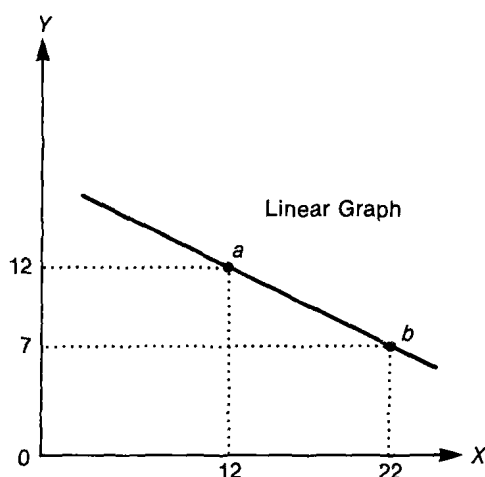
- A. The *false-cause fallacy* can arise if one event is assumed to cause another just because the events occur together.
- B. The *fallacy of composition* can occur if what is true for a part is assumed to be also true for the whole, and vice versa.
- C. The *ceteris paribus* fallacy can arise if the effects of changes in one set of variables are incorrectly attributed to another set of variables.

#### VI. WHY ECONOMISTS DISAGREE

*Positive economics* is the study of *what is*, whereas *normative economics* is the study of *what ought to be*. There are disputes about both among economists.

#### VII. APPENDIX: READING GRAPHS

- A. A *positive* or *direct* relationship exists between two variables if increases in one are associated with increases in the other, and vice versa. A *negative* or *inverse* relationship exists if increases in one variable are associated with decreases in the other, and vice versa.
- B. A change in the value of an *independent variable* will cause a change in the value of the *dependent variable*.
- C. Graphs summarize and simplify relationships between variables.
  - 1. Graphs may shift if an important factor changes.
  - 2. The *slope* of a straight line is—Slope = rise in  $Y$ /run in  $X = \Delta Y/\Delta X$  ( $Y$  measured vertically,  $X$  horizontally). Measuring from  $a$  to  $b$  in the first figure, slope =  $-5/10 = -0.5$ .



- 3. The slope at a point on a curvilinear graph is given by the slope of the *tangent* at that point. (The slope at  $a$  in the second figure is positive; the slope at  $c$  is negative.)
- 4. A point on a curvilinear graph has zero slope at either a low (minimum) or high (maximum) point. (The slope at  $b$  is zero.)
- D. As with any statistics, caution must be employed in the use of graphs to avoid the ambiguity of slope, improper measurement, and unrepresentative data.

## TRUE-FALSE QUESTIONS

- |     |  |     |  |  |
|-----|--|-----|--|--|
| T F | 1. Scarcity arises because it is human nature to want more than we have.   |     |  | coherent explanation of how a particular set of facts are related. |
| T F | 2. Because of scarcity, people are poor by definition.   | T F | 10. A key element in applying the scientific method to economics is testing the accuracy of theoretical predictions.                               |  |
| T F | 3. The reason specialization is undertaken is that people are willing to give up wealth in order to learn how to do something really well. | T F | 11. Higher take-home pay is always an indication of higher standard of living for U.S. workers.  |  |
| T F | 4. If the marginal cost of an activity exceeds its marginal benefit, that activity should not be undertaken.                               | T F | 12. A statistical correlation between two variables proves the two variables have either a direct or inverse relationship to each other.           |  |
| T F | 5. Marginal analysis is based upon the view that economic decisions are made by looking at unimportant or marginal costs and benefits.     | T F | 13. The areas of disagreement in positive economics tend to be concentrated on the microeconomic effects of price controls, such as rent ceilings. |  |
| T F | 6. Marginal analysis is the principal tool of analysis in microeconomics.  | T F | 14. The slope of a straight line is constant.  |  |
| T F | 7. In modern economics, microeconomics and macroeconomics are completely separate fields of study.   | T F | 15. The slope at a point on a curvilinear graph is given by the slope of a straight line tangent to the graph at that point.                       |  |
| T F | 8. In economics, we just let the facts speak for themselves.   |     |  |  |
| T F | 9. An economic hypothesis is a   |     |  |  |

## MULTIPLE-CHOICE QUESTIONS

- |  |  |
|--|--|
| 1. Because limited resources have alternative uses,  | c. to help lower the size and power of the government.                             |
| a. government must plan which sectors of the economy will get resources.   | d. and what ought to be done.  |
| b. there is no scarcity once resources have been allocated.  |  |
| c. the economic system must have a means of allocating resources.  | 3. When you say, "See you tomorrow," to someone, this statement                    |
| d. consumers never know what they want to purchase.  | a. is an example of the fallacy of composition.                                    |
|  | b. demonstrates a false cause.   |
| 2. Data gathered by J. R. Kearl and others suggest that there is considerable agreement among economists about what can be done— | c. assumes <i>ceteris paribus</i> .  |
| a. but less agreement about what ought to be done.   | d. can be made by individuals but not by groups.                                   |
| b. in macroeconomics but not in microeconomics.  |  |
|  | 4. U.S. automobile makers will keep producing cars as long as                      |
|  | a. the extra gains from sales exceed the extra costs of producing additional cars. |



- b. foreign imports do not capture half the U.S. auto market.
  - c. cars can be sold no matter how big a rebate is offered.
  - d. the model year lasts irrespective of sales or inventories.
5. Which of the following is a positive economic statement?
  - a. The government should raise the minimum wage in order to help low-income workers.
  - b. The oil giants should be broken into smaller companies.
  - c. The government should not have deregulated interstate trucking.
  - d. If other relevant factors do not change, consumers buy less of a product whose price increases.
6. According to the text, a student considering an extra two hours of study will
  - a. always study the extra time in order to learn more.
  - b. never study the extra two hours.
  - c. evaluate the extra costs associated with the extra study as well.
  - d. put too much emphasis on earning higher grades.
7. If a car depreciates \$5 per day whether it is used or not, parking costs \$1 at a downtown store, and gasoline and other operating costs are also \$1 for a downtown shopping trip and return, the extra or marginal transportation costs for an additional shopping trip are
  - a. \$0.
  - b. \$1.
  - c. \$2.
  - d. \$7.
8. A positive or direct relationship between two variables is described by all of the following *except*
  - a. an increase in one is associated with an increase in the other.
  - b. the graph of the relationship is an upward-sloping curve.
  - c. a decrease in one is associated with a decrease in the other.
  - d. the graph of the relationship is a downward-sloping curve.
9. The slope of the line between points *a* and *b* is
 

Point	X	Y
<i>a</i>	10	5
<i>b</i>	20	10

  - a. 0.5.
  - b. 1.0.
  - c. 1.5.
  - d. 2.0.
10. When a curvilinear relationship has a zero slope,
  - a. the graph must be at a low or minimum point.
  - b. the graph must be at a high or maximum point.
  - c. the graph has reached the origin.
  - d. the graph has reached either a high or low point.

## APPLICATION PROBLEMS

1. Identify and define the four basic themes of economics.
2. There are many stories about disagreements among economists, including President Truman's request for a "one-handed" economist who would not analyze all problems by concluding, "On the one hand . . . but on the other hand . . ." What basic themes of economics make such humor inevitable?
3. Listed below are the extra benefits, valued in dollars, associated with drinking coffee on a typical Monday morning for persons A and B. According to the data, the first cup is worth \$2.00 to A, the second \$1.20, and so on. If coffee costs \$.40/cup, how many cups of coffee will each person drink in this experiment? Explain why.

	Person A	Person B
1st cup	\$2.00	\$1.00
2nd cup	1.20	.50
3rd cup	.75	.20
4th cup	.25	.01

- Economic analysis is made more difficult by possible logical errors. State the three types of logical errors most commonly made in economics and give examples of each.
- Construct a diagram showing linear relationships between both the following relationships.

Dependent Variable	Independent Variable
a. automobile mileage	automobile weight
b. consumer spending	consumer income

- Identify and explain three problems encountered when using graphs to study economic problems.

## ANSWERS

### True-False

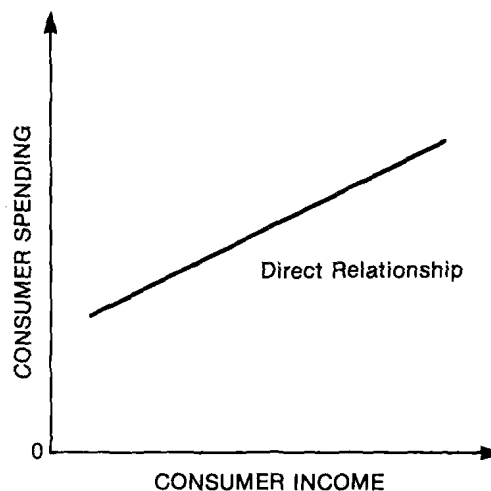
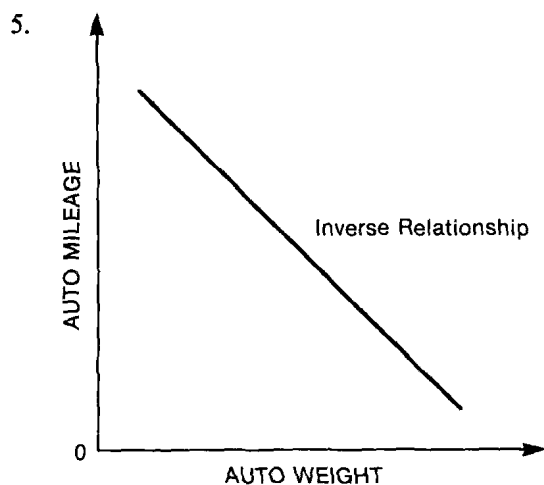
- True.* Scarcity exists because there are insufficient resources to produce everything consumers would desire.
- False.* Scarcity would still exist even if everyone were relatively affluent.
- False.* Specialization creates wealth, which is the principle incentive to pursue the division of labor.
- True.* Marginal analysis relies upon marginal costs and benefits to help guide decision making.
- False.* *Marginal* is used to mean extra or incremental costs and benefits that are used to guide decision making.
- True.* Microeconomics uses marginal analysis to study individual decision making.
- False.* They are becoming more closely related, as indicated by the use of microeconomic analysis to help understand inflation.
- False.* Since the world is too complex to simply collect and look at facts, logical theories are used to understand how the economy works.
- True.* An economic theory has the same function and is composed of one or more such hypotheses.
- True.* Positive economics is composed of different testable theories and hypotheses.
- False.* If inflation increases faster than wages, their standard of living decreases.
- False.* Statistical correlations do not prove relationships between variables.
- False.* Areas of disagreement in positive economics tend to be concentrated in macroeconomics.
- True.* For a linear relationship, the ratio of  $\Delta Y$  to  $\Delta X$  is a constant.
- True.* The slope at any point can be found in this manner.

## Multiple-Choice

1. (c) Some mechanism must exist for deciding how resources will be used.
2. (a) Since disputes among economists are in the public eye, there is a public perception of wide disagreement among economists.
3. (c) *Ceteris paribus* is a Latin term for "other things being equal."
4. (a) An activity is worth pursuing as long as the extra benefits are greater than the extra costs.
5. (d) This is a positive economic statement of what is.
6. (c) Students must give up two hours of work, sleep, dates, television, or whatever would be done in the absence of more study.
7. (c) The extra costs paid to go shopping are for parking and operating expenses.
8. (d) A downward sloping curve describes a negative or inverse relationship.
9. (a)  $\Delta Y/\Delta X = 5/10 = 0.5$ .
10. (d) Either a maximum or minimum point has been reached.

## Application Problems

1. The four themes are scarcity, choice, specialization, and exchange. Because resources are scarce relative to human wants and desires, choices have to be made about resource allocation alternatives. Individuals specialize and exchange to promote the greatest possible efficiency.
2. Since economics studies choice in a world of scarcity, there will inevitably be disagreement about selection of alternatives when choices are made.
3. Persons A and B will continue to drink coffee as long as the extra benefit exceeds the extra cost. A will drink three cups since for the fourth cup, the extra benefit is only \$.25. B will drink two cups since for the third cup, the extra benefit is only \$.20.
4.
  - a. The false cause fallacy—increasing whiskey consumption and public school employment does not prove the increase in teachers caused the increase in whiskey consumption.
  - b. The fallacy of composition—if all spectators at a ball game stand up to get a better view, no one may get one.
  - c. The *ceteris paribus* fallacy—rising incomes between 1970 and 1974 permitted U.S. consumers to purchase more oil even though its price increased.



6.
  - a. Slope can be an ambiguous guide to the strength of the relationship between two variables.
  - b. Using one variable to improperly measure another.
  - c. Data can be incomplete or unrepresentative of the variables being studied.

# The Economic Problem

## LEARNING OBJECTIVES

After reading the text chapter, “The Economic Problem,” you should be able to do each of the following:

1. Explain the four key concepts of economics: scarcity, resources, allocation, and competing ends.
2. State the economic problem and explain the three basic questions of What, How, and For Whom that arise from this problem.
3. Define the concept of *opportunity cost*.
4. Explain the concepts of *scarce* and *free goods* in terms of opportunity costs.
5. Explain how the production possibility frontier is used to illustrate the basic economic problem.
6. Define the *law of increasing cost* and the *law of diminishing returns* and explain how they are related to the shape of the production possibility frontier.
7. Explain how the choice between present and future consumption is related to economic growth.
8. Explain how market economies solve the basic economic problem.

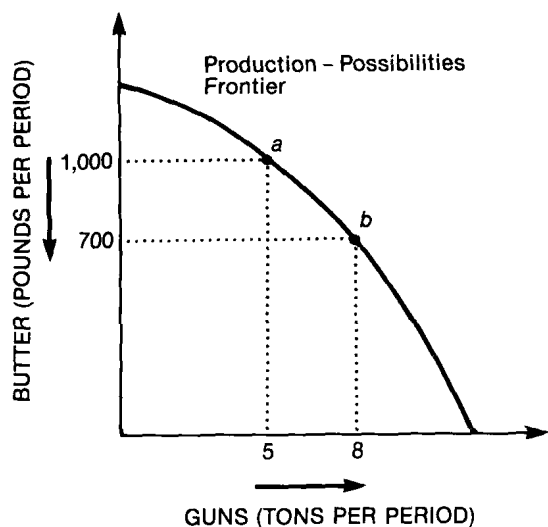
## CHAPTER OUTLINE

### I. THE DEFINITION OF ECONOMICS

- A. Economics is the study of how *scarce resources* are *allocated* among *competing ends*.
  1. A good or service is *scarce* if the amount available is less than people would desire if the item were free. It is a *free good* if the amount available is greater than people desire at a zero price.
  2. *Resources* include *land*, physical *capital* goods (*investment* refers to additions to the capital stock), and *labor* (including *entrepreneurship*).
  3. Scarce resources must be *allocated* by the *market*, *government*, or some combination of both.
  4. *Competing ends* describes the competition for resources that goes on at all levels of the economy.
- B. The *economic problem* of allocating scarce resources among competing ends implies that any *economic system* must devise a means to decide (1) *What* goods and services should be produced; (2) *How* they will be produced; and (3) *For Whom* they will be produced.

### II. ECONOMIC CONCEPTS AND TOOLS

- A. The *opportunity cost* of a particular action is the loss of the next best alternative. Only scarce goods have a positive opportunity cost.
- B. The *production-possibilities frontier (PPF)* illustrates the maximum production possibilities available to society given its resources and technology. In the figure on the next page, the opportunity cost of 3 additional tons of guns is 300 pounds of butter.



1. The *PPF* is drawn bowed out from the origin to reflect the *law of increasing cost* (as production of one commodity is uniformly increased, increasingly greater amounts of other commodities must be sacrificed).
2. The *law of diminishing returns* states that the extra output resulting from equal increases in one input, holding all other inputs constant, eventually must decrease.
3. Points *on* the *PPF* represent *efficient* resource use; points *inside* are *inefficient*.
4. Societies that choose to devote a relatively large share of resources to capital formation at the expense of current consumption experience higher rates of *economic growth* shown by outward shifts of the *PPF*.
5. If resources or technological skills increase, the *PPF* will shift outward.
6. Solving the economic problem with the *PPF*:

Problem	<i>PPF</i> Concept	Market Solution
What?	Choice of location on <i>PPF</i>	Consumer choice
How?	Utilization of factors of production on or inside the <i>PPF</i>	Competition
For Whom?	Distribution of production	Ownership and market returns of resources

## TRUE-FALSE QUESTIONS

- |     |   |     |  |
|-----|---|-----|--|
| T F | 1. For a commodity to be scarce, it must have an explicit price.                                      | T F | 5. Investing in human capital refers to the construction and operation of industrial robots.   |
| T F | 2. Landing slots at airports are like highway road space, a free good to users.                       | T F | 6. In an economic system that relies primarily upon market allocation, the problem of scarcity is addressed by governmental agencies, officials, and administrative authorities. |
| T F | 3. A good can be scarce even if it is given away free.  |     |  |
| T F | 4. When Air Florida gave airplane seats away for free, they created what economists call a free good. |     |  |

- |   |  |
|---|--|
| <p>T F 7. In the U.S., resource allocation is handled by a combination of market and government allocation.</p> <p>T F 8. In a market economy, the only purpose of higher prices for commodities is to encourage production.</p> <p>T F 9. If you received two free tickets to attend the NCAA championship basketball final game, the tickets would be considered by economists to be a free good.</p> <p>T F 10. Free goods have no opportunity cost.</p> | <p>T F 11. On a production possibility frontier, cost is measured in terms of opportunity cost.</p> <p>T F 12. The law of increasing cost implies that the opportunity cost per unit is constant for increasing production of a commodity.</p> <p>T F 13. Points inside the <i>PPF</i> are efficient.</p> <p>T F 14. It is possible to devote too many resources to capital accumulation.</p> <p>T F 15. Economic growth can be fostered if some people in society are willing to forgo present consumption.</p> |
|---|--|

## MULTIPLE-CHOICE QUESTIONS

- |  |  |
|--|--|
| <p>1. Which of the following does not describe the entrepreneur?</p> <p>a. Organizes the factors of production to produce output.</p> <p>b. Introduces new technologies and business opportunities.</p> <p>c. Takes risks.</p> <p>d. Is an extension of the capital input.</p> <p>2. In economics, investment</p> <p>a. happens whenever savers put more money in their bank.</p> <p>b. means buying stocks and bonds.</p> <p>c. occurs when there are additions to the capital stock.</p> <p>d. does not require either labor or land.</p> <p>3. Which of the following is not part of the basic economic definition of capital?</p> <p>a. Dollar reserves of businesses.</p> <p>b. Equipment.</p> <p>c. Buildings.</p> <p>d. Inventories.</p> <p>4. The fundamental source of scarcity is</p> <p>a. overpopulation of developed countries.</p> <p>b. that consumer incomes are too high.</p> <p>c. the limitation of resources.</p> <p>d. excessive government size.</p> <p>5. Compared to societies with little or no capital formation, a society that devotes a</p> | <p>substantial share of its resources to capital accumulation</p> <p>a. will find its <i>PPF</i> shifting relatively farther to the right.</p> <p>b. will be richer immediately.</p> <p>c. can dispense with the labor input and let machines do all the work.</p> <p>d. will eliminate scarcity.</p> <p>6. Capital accumulation is associated with all the following <i>except</i></p> <p>a. source of economic growth.</p> <p>b. <i>PPF</i> shifting outward.</p> <p>c. selecting capital goods rather than consumer goods.</p> <p>d. putting off future in favor of present consumption.</p> <p>7. According to the law of diminishing returns, as one input is continuously added to a set of fixed inputs,</p> <p>a. output will fall.</p> <p>b. increases in output will decrease.</p> <p>c. output will increase at a constant rate.</p> <p>d. inputs will be completely used up.</p> <p>8. The explanation of the law of diminishing returns is that the variable input eventually</p> <p>a. gets tired.</p> <p>b. declines in quality.</p> <p>c. overloads the fixed input.</p> <p>d. runs out.</p> |
|--|--|

9. In a market economy, the For Whom question is answered by
  - a. government income redistribution programs.
  - b. ownership of productive resources.
  - c. competition between business firms.
  - d. the consumption desires of families and individuals.
10. The economic problem emphasizes choice between competing ends, implying that some alternatives must be sacrificed. The opportunity cost of an action is
  - a. the sum of the value of all forgone alternatives.
  - b. the next best alternative that must be sacrificed.
  - c. the value of the action taken less the value of the next best alternative.
  - d. what you do today plus what you do tomorrow.

## APPLICATION PROBLEMS

1. The economic problem consists of allocating scarce resources among competing ends. What three questions must be answered in dealing with the economic problem, and how does a market allocation system answer them?
2. The basic economic problem of scarcity is due to the limited resources available to society. Identify and define the basic resource categories economists use.
3. Residents of cities like Los Angeles are not explicitly charged for clean air, which has been made a scarce good by air pollution. How do residents of these communities pay for polluted air?
4. "These gasoline lines are frustrating and unnecessary. The only way to eliminate them is have government take over energy production and supply. Then all our problems would be solved." What is the market allocation alternative to this view?
5. College catalogs typically estimate the costs of attending college full-time as including room and board, books, tuition and fees, and all other expenses including entertainment, travel, and the like. What cost is not included that is relevant for many full-time students?
6. Production possibility frontiers are generally drawn bowed out from the origin. Explain why they have this shape using the wheat and tank example.
7. Two points, *a* and *b*, lie along society's production-possibilities frontier. How do you decide which allocation of resources represented by *a* and *b* is better?
8. Explain how market economies deal with scarcity.

## ANSWERS

### True-False

1. *False.* Clean air in many cities has become a scarce good, yet no one is explicitly charged for clean (or cleaner) air.
2. *False.* During congested periods, landing slots are a scarce good.
3. *True.* Typically, scarce goods do have a price, but the definition of scarcity only requires that wants exceed the quantity of the good available at a zero price.
4. *False.* Since people wanted more free seats than the airline provided at zero price, the free seats were a scarce good.
5. *False.* Investment in human capital refers to investing in the training and education of people.



6. *False.* Resources are allocated through private markets guided by the price system.
7. *True.* Private markets and governmental rules and decisions determine U.S. resource allocation decisions.
8. *False.* Higher prices for products, *ceteris paribus*, also reduce consumption.
9. *False.* Attending requires your sacrifice of time spent at the game.
10. *True.* Since more are available at a zero price than are desired, nothing is sacrificed in taking one.
11. *True.* The cost of more wheat is fewer tanks.
12. *False.* As the output of a commodity is continuously expanded, increasing amounts of other commodities must be sacrificed.
13. *False.* Points inside the *PPF* must be inefficient in the sense that society could have more of one good without less of the other by moving toward the *PPF*.
14. *True.* Since capital accumulation reduces current consumption, excessive capital formation may reduce efficiency and even impoverish workers.
15. *True.* If the reduction in current consumption is associated with capital accumulation, economic growth can be increased.

### Multiple-Choice

1. (d) Entrepreneurship cannot be performed by land or capital.
2. (c) *Investment* refers to additions to the stock of capital.
3. (a) In economics, *capital* refers to physical capital goods: buildings, equipment, and inventories.
4. (c) If resources were unlimited, scarcity would not exist.
5. (a) Capital accumulation promotes economic growth that is associated with the *PPF* shifting outward.
6. (d) Putting resources into capital accumulation for future production means fewer resources are available for present consumption.
7. (b) The extra output due to additions of the variable input will eventually diminish.
8. (c) The decreases in extra output result from extra variable input overloading the stock of fixed inputs.
9. (b) Income is earned by selling land, labor, or capital to business firms needing these resources.
10. (b) *Opportunity cost* is the next best alternative that must be sacrificed.

### Application Problems

1. What commodities should be produced is answered by consumer preferences. How commodities should be produced is answered by market organization and competition. For Whom commodities are produced is answered by input ownership by families and individuals.
2. The labor input refers to the physical and mental abilities people contribute to the production process. Entrepreneurship is the human ability to organize the factors of production to produce an output. Capital is the equipment, buildings, and inventories available to society. Land refers to the natural resources available.
3. Community residents pay for air pollution when they are forced to escape heavy downtown pollution

by living in suburban communities, therefore making commuting trips long; when they must install home air-filtration systems to improve the quality of the air; and the like.

4. If the market allocates gasoline, higher prices are supposed to encourage sellers to increase production while giving buyers incentive to reduce consumption.
5. The next best alternative to attending college is usually a job. Students forgo income from employment to pay tuition and fees, buy books, and incur other expenses peculiar to attending college.
6. The *PPF* is drawn bowed out from the origin to reflect the law of increasing cost. As the output of wheat is continually expanded, increasingly greater resources must be taken away from tank production as resources less and less suitable for wheat production are transferred. It becomes increasingly difficult to expand wheat production, thus requiring greater sacrifices of tanks.
7. Points *a* and *b* represent two different answers to the What question and are possible allocations as determined by the private market, the government, or some combination of the two. If society relies upon the market to allocate resources, the point on the *PPF* that is better will be the one closer to consumer wants and preferences.
8. Commodities are scarce if the number desired at a zero price exceeds the number offered. Consequently prices are charged for such goods and services that have the simultaneous effect of encouraging production and discouraging consumption of such commodities.

## Chapter

# 3

# The Price System

## LEARNING OBJECTIVES

After reading the text chapter, “The Price System,” you should be able to do each of the following:

1. Define and distinguish between *money* and *relative prices*.
2. Explain how consumers respond to changes in the relative price of goods and services and the roles that substitution and property rights play in this process.
3. Describe how Adam Smith’s invisible hand works through the price system to guide resource allocation in a market or capitalist economy.
4. Draw and describe the circular flow model and explain how it illustrates the workings of a capitalist economy, mentioning omitted factors.
5. Explain how specialization that increases productivity is promoted by the price system.
6. Describe the law of comparative advantage and relate the law to the concept of opportunity cost.
7. Explain how the price system uses the interest rate to balance present and future consumption.