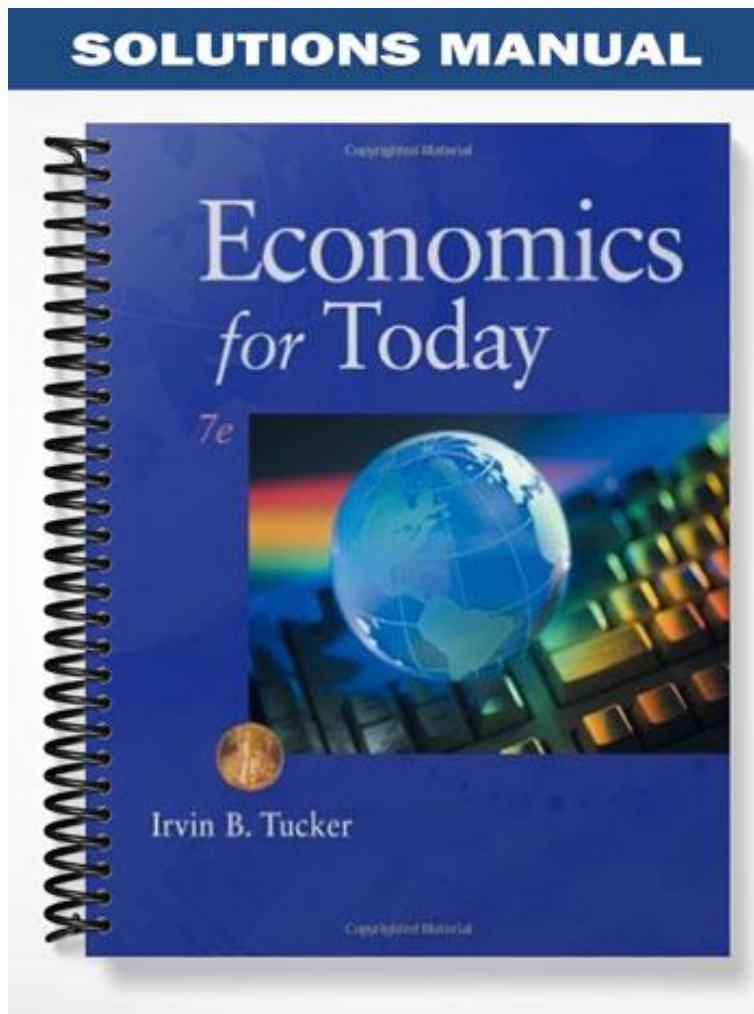


**SOLUTIONS MANUAL**



7e

Irvin B. Tucker

# Chapter 1

## Introducing the Economic Way of Thinking

### CHAPTER SUMMARY

Scarcity permeates the entire human experience. Scarcity means we are unable to have as much as we would like to have. Our wants are unlimited. But, our production capabilities are limited by our factors of production, which include land, labor (the entrepreneur is a special type of labor) and capital (plant and equipment). Because we are faced with scarcity we must make choices. Choices are made at the "macro" and "micro" level. Macroeconomics is concerned with the entire economic system, whereas microeconomics is concerned with some particular segment of the economy.

Economics can be further subdivided into positive ("what is") and normative ("what ought to be") economic analysis. We would all be well advised to first have a firm grasp of "what is" before we argue "what ought to be." This takes us to a look at how economists derive positive economic theories---a look at the methodology of economics. That methodology is the same scientific methodology used in all sciences---it is the process of induction and deduction. Theories can be expressed: 1) verbally, or in written form, 2) as a numerical table, 3) graphically, or 4) mathematically. Theories are helpful to understanding the relationship between economic variables but should be used with caution. Two common pitfalls to clear thinking are the failure to understand the *ceteris paribus* assumption and confusing *association* and *causation*. This chapter concludes with a review of careers in economics.

The appendix to this chapter focuses on how theories can be expressed graphically. Graphs are visual aids that help us see the *direct* or *inverse* relationship between two or more sets of data or variables.

### NEW CONCEPTS INTRODUCED

scarcity	labor	economics	entrepreneurship	ceteris paribus
resources	capital	macroeconomics	normative economics	
land	model	microeconomics	positive economics	

### INSTRUCTIONAL OBJECTIVES

*After completing this chapter, students should be able to:*

1. Understand that if there was no scarcity there would be no such thing as economics. Economics is the study of scarcity and how we deal with it.
2. Understand that scarcity exists because we are unable to produce as much as we would like (our wants are unlimited while our means of production are limited).
3. Understand that we try to do the best we can with what we have---to maximize our production with our limited resources (factors of production).
4. List the factors of production: land, labor, and capital.
5. Distinguish between "macro" and "micro."
6. Distinguish between "positive" and "normative" economic analysis.
7. Explain why economists are interested in relationships between economic variables.
8. Explain why theories enable us to discern relationships between economic variables.
9. Know how theories can be expressed.
10. Explain the limitations to the use of theories.

### CHAPTER OUTLINE

*Introducing the Economic Way of Thinking*

- I. Preview
- II. The Problem of Scarcity
- III. Scarce Resources and Production
  - a. Land
  - b. Labor
  - c. Capital

**Exhibit 1 "Three Categories of Resources"**

- IV. Economics: The Study of Scarcity and Choice
  - a. Macroeconomics
  - b. Microeconomics
- V. The Methodology of Economics
  - a. Problem Identification
  - b. Model Development
  - c. Testing a Theory

**Exhibit 2 "The Steps in the Model-Building Process"**

Checkpoint: *"Can You Prove There Is No Trillion-Dollar Person?"*

- VI. Hazards of the Economic Way of Thinking
  - a. The Ceteris Paribus Assumption
  - b. Association versus Causation

Checkpoint: *"Should Nebraska State Join a Big-Time Athletic Conference?"*

You're The Economist: Analyze the Issue

*"Mops and Brooms, the Boston Snow Index, the Super Bowl, and Other Economic Indicators"*  
*Applicable Concept: association versus causation.*

- VII. Why do Economists Disagree?
  - a. Positive Economics
  - b. Normative Economics

You're The Economist: Analyze the Issue

*"Does Raising The Minimum Wage Help The Working Poor?"* *Applicable Concept: positive and normative analysis.*

- VII. Careers in Economics

**Exhibit 3 "Average Yearly Salary Offers for Selected Majors"**

- VIII. List of Key Concepts
- IX. Summary
- X. Summary of Conclusion Statements
  - a. Financial capital by itself is not productive; instead, it is only a paper claim on economic capital.
  - b. A theory cannot be tested legitimately unless its ceteris paribus assumption is satisfied.

*Introducing the Economic Way of Thinking*

- c. The fact that one event follows another does not necessarily mean that the first event caused the second event.
- d. Forecasts of economists can differ because, using the same methodology, economists can agree that event A causes event B, but disagree over the assumption that event A will occur.
- e. When opinions or points of view are not based on facts, they are scientifically untestable.

## XI. Study Questions and Problems

## XII. Checkpoint Answers

## XIII. Practice Quiz

**HINTS FOR EFFECTIVE TEACHING**

1. Try to use this chapter for generating as much interest in economics as possible. Don't feel too pressed for time. Treat this chapter thoroughly---especially, "theories." It will be time well spent. (Some additional comments with respect to theories are found below.)  
You may want to start the class by asking students what they want to get out of the class---what they always wanted to know and were afraid to ask. Let them know that there is no such thing as a "silly" question. (Establishing a rapport with your students at the first opportunity will pay off!) Although you may field some questions which are best treated in some detail later, go ahead and survey the issues at hand and indicate that they will be treated in more detail later when it is more logical to do so---but for now ask them to note that these issues stem from the fact that we are faced with scarcity. Moreover, you will probably be given the opportunity to stress the difference between "positive" and "normative" economic analysis---the difference between "fact" and "opinion." For the "You're the Economist" on the minimum wage, be sure to note that you will return to this issue in Chapter 4 as an application of supply and demand analysis. Finally, take the opportunity to show by your actions that you will be keeping the course as application-oriented, or "user-friendly" as possible.
2. Indicate that in economics, *capital* is not money! It is defined as "plant and equipment." Students often get "capital" and "money" confused.
3. Point out that scarcity is not a synonym for poverty. Even "rich" nations like the United States (and rich people) are faced with scarcity because they are unable to have as much as they would like to have.
4. Give some examples of economic investigations and ask students to distinguish between whether they are of concern to "macro" or "micro."
5. Indicate that *theories are realistic* because they are based on facts. *Theories are practical* because they avoid unnecessary detail and enhance our understanding of relationships among economic variables. *Theories* (general statements about the causal relationship between variables based on facts) *are extremely useful in developing workable policies* to address a real-world problem. In sum, stress that economists derive economic theories because they are useful in the development of economic policies designed to solve real-world economic problems.
6. Indicate that there are really three forces at play in the real world in which we all live: economic, social and political. These three forces are often in conflict. Sound or rational economic reasoning doesn't always prevail---especially when it comes to developing "economic" policy in a political environment.

**CRITICAL THINKING /GROUP DISCUSSION QUESTIONS**

1. Why isn't money a resource  
*It isn't used in the production process; it merely facilitates trade.*

*Introducing the Economic Way of Thinking*

2. Respond to the following statement: "Theories are of no use to me because they are not very practical. All I need are the facts because they speak for themselves."  
*Facts don't speak for themselves. Facts are meaningless unless there is a theory to tie them together.*
3. Does economics help to teach us how to approach problems, or does it provide us with a set of answers to problems?  
*It teaches us "how to think." It doesn't provide us with answers.*
4. To what extent do you think normative economic analysis, as opposed to positive economic analysis determines our nation's public policy decisions made by government? Why? Is that "good" or "bad"? Why?  
*This is debatable.*
5. What are our nation's major macroeconomic goals? Are they in conflict with each other?  
*Full employment, low inflation, and high rates of economic growth are our nation's major macro goals. Also note that they are often in conflict with each other. For example, full employment and more rapid growth create higher rates of inflation.*

**CLASSROOM GAMES**

Approximately 170 non-computerized economic games (experiments) for use in the classroom are available for free at <http://www.marietta.edu/~delemeeg/games/>. The following games are recommended to help teach some of the concepts in this chapter:

*There are no recommended games for this chapter.*

**ANSWERS TO: "You're the Economist: Analyze the Issue"****MOPS AND BROOMS, THE BOSTON SNOW INDEX, THE SUPER BOWL, AND OTHER ECONOMIC INDICATORS**

Do you believe any of the above indicators are examples of causation? Explain.

*Each example involves association and not causation.*

**DOES RAISING THE MINIMUM WAGE HELP THE WORKING POOR?**

1. Identify two positive and two normative statements given concerning raising the minimum wage. List other minimum wage arguments not discussed in the Economics in Practice, and classify them as either positive or normative economics.
  - "In 1938 Congress enacted. . ." (positive economics)*
  - "Today a minimum wage worker. . . deplorable annual increase." (normative economics)*
  - "Only a small percentage. . . are full-time workers below the poverty line." (positive economics)*
  - "They say it is outrageous that a worker can work full-time and. . ." (normative economics)*
2. Give a positive and a normative argument why a business leader would oppose raising the minimum wage. Give a positive and a normative argument why a labor leader would favor raising the minimum wage.

*A business leader might argue that a higher minimum wage raises labor costs and cuts profits (positive economics). The business leader might also argue that a higher minimum wage is unfair to businesses because the business should be able to set wages without government intervention*

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*(normative economics). A labor leader could state that there is no relationship between higher minimum wage rates and unemployment (positive economics). The labor leader may also argue that the government must insure that workers earn a decent living (normative economics).*

3. Explain your position on this issue. Identify positive and normative reasons for your decision. Are there alternative ways to aid the working poor?

*Students should give thoughtful answers. One alternative to aid the working poor is simply to mail them a check.*

**ANSWERS TO EVEN-NUMBERED "Study Questions and Problems"**

2. *Money itself cannot physically be used to produce anything. Money is only a means to purchase resources, such as labor or capital that can actually produce goods and services.*
4. *Macroeconomics applies an overview perspective to an economy by examining economy-wide variables such as inflation, unemployment, and growth of the economy. Microeconomics examines individual economic units such as the market for corn, gasoline, or ostrich eggs.*
6. *(c) simplified description of reality used to understand the way variables are related.*
8. *People are complicated, and their economic choices are usually influenced by many variables. In order to focus only on the most important variables that influence choices, the ceteris paribus assumption rules out changes in certain variables that might affect the model.*
10. *(b) The average rate of inflation was higher during George W. Bush's presidency than during Bill Clinton's presidency.*
12. *The positive argument is that airbags are worth an additional cost of about \$600 because of the reduction in the number and severity of injuries to and deaths of motorists. This argument can be tested by data collected from drivers using airbags versus drivers using only seat belts. The normative argument is whether the government should make airbags mandatory or allow the decision to be voluntary. This policy question involves people's opinions on the appropriate role of government in the automobile market. Students can research the Internet and share their findings with the class.*

**CHAPTER 1 SUMMARY QUIZ**

1. Scarcity:
- exists because resources are unlimited while human wants are limited.
  - means we are unable to have as much as we would like to have.
  - will likely be eliminated as technology continues to expand.
  - is not an issue addressed in economics.

2. Which of the following is *not* a resource?
  - a. land
  - b. labor
  - c. money
  - d. capital
  
3. Microeconomics is concerned with:
  - a. some specific segment of the economic system.
  - b. the entire economic system.
  - c. reducing national unemployment and inflation rates.
  - d. what causes changes in the overall level of economic activity.
  
4. Which of the following is a *normative* economic statement?
  - a. The unemployment rate for the United States is currently 5.4%.
  - b. The inflation rate in the United States is too high.
  - c. An increase in the price of a good will reduce the amount purchased.
  - d. Higher profits in an industry will attract more entrepreneurs into the industry.
  
5. A model (or theory):
  - a. is a general statement about the causal relationship between variables based on facts.
  - b. helps explain and predict the relationship between variables.
  - c. when expressed as a downward (negatively) sloping graph implies an inverse relationship between the variables.
  - d. all of the above.

### **ANSWERS TO CHAPTER 1 SUMMARY QUIZ**

1. b
2. c
3. a
4. b
5. d

# *Appendix to Chapter 1*

## Applying Graphs to Economics

### APPENDIX SUMMARY

In economics, graphs are used as visual aids to illustrate relationships between economic variables. If a relationship exists between two variables, then the relationship is either direct (also known as a positive relationship) or inverse (also known as a negative relationship).

A direct relationship between two variables means that as one variable increases (the independent variable) this causes the other variable (the dependent variable) to also increase in value; and vice versa. A direct relationship is illustrated graphically as an upward sloping, or positively sloped line or curve.

An inverse relationship between two variables means that as one variable increases (the independent variable) this causes the other variable (the dependent variable) to decrease in value; and vice versa. An inverse relationship is illustrated graphically as a downward sloping, or negatively sloped line or curve.

An independent relationship means there is no relationship between two variables. This is expressed graphically as a horizontal line.

A shift in a curve (or line) occurs when the ceteris paribus assumption is relaxed and a third variable not on either axis of the graph is allowed to change.

### NEW CONCEPTS INTRODUCED

direct relationship  
inverse relationship

slope  
independent relationship

### INSTRUCTIONAL OBJECTIVES

*After completing this appendix, students should be able to:*

1. Know what a direct relationship is and how it is reflected graphically.
2. Know what an inverse relationship is and how it is reflected graphically.

### APPENDIX TO CHAPTER 1 OUTLINE

I. A Direct Relationship

**Exhibit A-1 "A Direct Relationship Between Variables"**

II. An Inverse Relationship

**Exhibit A-2 "An Inverse Relationship Between Variables"**

III. The Slope of a Straight Line

IV. The Slope of a Curve



*Applying Graphs to Economics***Exhibit A-3 "An Independent Relationship Between Variables"****Exhibit A-4 "The Slope of an Upward-Sloping Curve"****Exhibit A-5 "The Slope of a Downward-Sloping Curve"**

## V. A Three-Variable Relationship in One Graph

**Exhibit A-6 "Changes in Price, Quantity, and Income in Two Dimensions"**

## VI. A Helpful Study Hint Using Graphs

## VII. List of Key Concepts

## VIII. Summary

## IX. Summary of Conclusion Statements

- a. A shift in a curve occurs only when the ceteris paribus assumption is relaxed and a third variable not on either axis of the graph is allowed to change.

## X. Study Questions and Problems

## XI. Practice Quiz

**HINTS FOR EFFECTIVE TEACHING**

1. Stress the limitations of theory---especially association versus causation. Just because two things happen to occur together doesn't mean one necessarily causes the other. For example, the rooster may think his crowing is causing the sun to rise but we know better.
2. Providing a solid understanding of graphs will avoid many problems later. Point out that the dependent variable goes on the "Y" or vertical axis. The independent variable goes on the "X" or horizontal axis. A direct (also known as a positive) relationship is always expressed as a positively sloped line or curve. An inverse (negative) relationship always has a negative slope. Take several examples from outside the world of economics and ask students how they would be graphed (see "Critical Thinking/Group Discussion Question" # 6 below).

**CRITICAL THINKING /GROUP DISCUSSION QUESTIONS**

1. What is the relationship between the annual sale of umbrellas and the annual amount of rainfall received in inches. How would this relationship be graphed?  
*Direct relationship. The line or curve slopes upward (positive slope). The variable "annual sale of umbrellas" would be placed on the vertical axis (or "Y" axis) because it is the dependent variable while the variable "annual amount of rainfall received in inches" would be placed on the horizontal (or "X" axis) because it is the independent variable.*
2. What is the relationship between a student's grade point average and the number of hours spent studying per week. How would this relationship be graphed?  
*Direct relationship. The line or curve slopes upward (positive slope). The variable "grade point average" would be placed on the vertical axis (or "Y" axis) because it is the dependent variable while the variable "hours spent studying per week" would be placed on the horizontal (or "X" axis) because it is the independent variable.*
3. What is the relationship between tuition and student enrollment at a university. How would this relationship be graphed?

*Applying Graphs to Economics*

*Inverse relationship. The line or curve slopes downward (negative slope). The variable "student enrollment" would be placed on the vertical axis (or "Y" axis) because it is the dependent variable while the variable "tuition" would be placed on the horizontal (or "X" axis) because it is the independent variable.*

**CLASSROOM GAMES**

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*There are no recommended games for the appendix to this chapter.*

**ANSWERS TO EVEN-NUMBERED "Study Questions and Problems"**

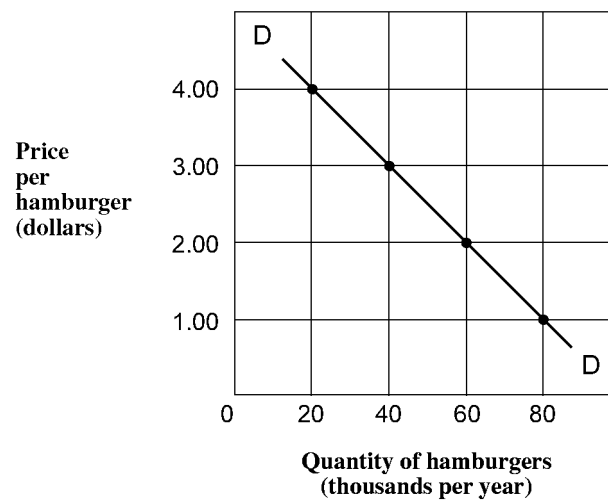
2. (a) *The relevant relationship is that there is an inverse relationship between the price per hamburger and the quantity consumers will purchase at each alternative price.*

(b) *The numerical table is:*

<i>Price per hamburger</i>	<i>Quantity of hamburgers demanded per year</i>
\$4.00	20,000
3.00	40,000
2.00	60,000
1.00	80,000

- (c) *Most students will prefer the graphical model because of its clarity. See Figure A-1 below.*

Figure A-1



**APPENDIX TO CHAPTER 1 SUMMARY QUIZ**

1. A direct relationship exists when:
  - a. there is no association between two variables.
  - b. one variable increases and there is no change in the other variable.
  - c. one variable increases and the other variable increases.
  - d. one variable increases and the other variable decreases.
  
2. An inverse relationship exists when:
  - a. there is no association between two variables.
  - b. one variable increases and there is no change in the other variable.
  - c. one variable increases and the other variable increases.
  - d. one variable increases and the other variable decreases.
  
3. A direct relationship is expressed graphically as a:
  - a. positively sloped line or curve.
  - b. negatively sloped line or curve.
  - c. horizontal line.
  - d. vertical line
  
4. Which of the following statements is correct?
  - a. Slope is the ratio of the vertical change (the rise or fall) to the horizontal change (the run).
  - b. A direct relationship is one in which two variables change in the same direction.
  - c. An inverse relationship is one in which two variables change in opposite directions.
  - d. An independent relationship is one in which two variables are unrelated.
  - e. All of the above.

**ANSWERS TO APPENDIX TO CHAPTER 1 SUMMARY QUIZ**

1. c
2. d
3. a
4. e

# Chapter 2

## Production Possibilities, Opportunity Cost, and Economic Growth

### CHAPTER SUMMARY

The *What, How* and *For Whom* questions are introduced as the fundamental economic questions that must be addressed by all societies. But, because any nation's resources are scarce and its wants are unlimited then all nations are faced with scarcity. Therefore, we must all try to do the best with what we have---to maximize production given limited resources. This is shown in terms of the production possibilities model. There are only two general types of products which can be produced. These are consumer and capital products. Consumer products satisfy our wants directly and in the present. Capital products satisfy our wants indirectly and in the future. If we are efficient with our use of resources then we are producing a combination of consumer and capital products shown by a point on the production possibilities curve. Inefficiency is shown by a point inside the curve. A point outside is a combination of output which is currently unobtainable. However, the greater the investment in capital production, then the greater the rate of economic growth and therefore the larger the rightward shifts of the production possibilities curve and the sooner the nation will be able to produce any point which is currently outside its curve. But, the opportunity cost of greater rates of economic growth over time is foregone consumer goods production today, and therefore current satisfaction.

Indeed, there is an increasing opportunity cost associated with producing ever larger quantities of any one good. Marginal analysis enables us to make more rational decisions by concentrating on the marginal, or extra, benefits and costs associated with a decision to see if that activity or good "is worth it."

### NEW CONCEPTS INTRODUCED

*What, How* and *For Whom* Questions  
increasing opportunity cost  
investment

marginal analysis

law of

economic growth

production possibilities curve

technology

opportunity cost

### INSTRUCTIONAL OBJECTIVES

*After completing this chapter, students should be able to:*

1. Explain how capitalism answers the *What, How*, and *For Whom* fundamental economic questions.
2. Understand what is meant by an opportunity cost and give some examples.
3. Explain why an opportunity cost is an implicit cost incurred in making all decisions.
4. Explain why marginal analysis can give rise to more rational decisions.
5. Graphically express a production possibilities model.

6. Understand that the production possibilities model illustrates the problem of scarcity, therefore choices have to be made, and when choices are made that an opportunity cost is incurred.
7. Illustrate production efficiency and inefficiency in the context of the production possibilities graph.
8. Describe what is meant by the law of increasing opportunity cost and why it exists.
9. Explain what is meant by investment.
10. Explain why a nation's decision to invest and produce more capital goods now will increase the nation's rate of economic growth over time.
11. Illustrate and explain economic growth in the context of a production possibilities model.

## **CHAPTER OUTLINE**

### I. Preview

### II. The Three Fundamental Economic Questions

- a. What To Produce?
- b. How To Produce?
- c. For Whom To Produce?

### III. Opportunity Cost

#### **Exhibit 1 "The Links between Scarcity, Choice, and Opportunity Cost"**

### IV. Marginal Analysis

### V. The Production Possibilities Curve

#### **Exhibit 2 "The Production Possibilities Curve for Military Goods and Consumer Goods"**

### VI. The Law of Increasing Opportunity Costs

#### **Exhibit 3 "The Law of Increasing Opportunity Costs"**

### VII. Sources of Economic Growth

- a. Changes in Resources
- b. Technological Change

#### **Exhibit 4 "An Outward Shift of the Production Possibilities Curve for Computers and Pizzas"**

*Checkpoint: "What Does a War of Terrorism Really Mean?"*

*You're The Economist: Analyze the Issue*

*"FedEx Wasn't an Overnight Success" Applicable Concept: entrepreneurship.*

### VIII. Present Investment and Future Production Possibilities Curve

#### **Exhibit 5 "Alpha's and Beta's Present and Future Production Possibilities Curves"**

*Global Economics: Analyze the Issue*

*"How Does Public Capital Affect a Nation's Curve?" Applicable Concept: economic growth.*

### IX. List of Key Concepts

- X. Summary
- XI. Summary of Conclusion Statements
  - a. Scarcity limits an economy to points on or below its production possibilities curve.
  - b. The production possibilities curve consists of all efficient output combinations where an economy can produce more of one good only by producing less of the other good.
  - c. A nation can accelerate economic growth by increasing its production of capital goods in excess of the capital being worn out in the production process.
- XII. Study Questions and Problems
- XIV. Checkpoint Answer
- XV. Practice Quiz

### **HINTS FOR EFFECTIVE TEACHING**

1. Some instructors prefer to teach comparative advantage with the concepts in this chapter. These instructors should assign the first few pages of Chapter 28 which covers this topic.
2. You may want to elaborate on the three fundamental economic questions ("How", "What" and "For Whom") which any society must address. You may want to ask students what they think the answers are. In the process point out that in a capitalist system consumer demand (sovereignty) predominately determines what gets produced. The "How" question is predominately answered by businesses when they determine the resource mix used in the production process subject to their desire to limit their costs and to maximize their profits. For whom goods and services are produced is largely determined by the distribution of income. If you have more money you get more goods and services. Moreover, you may want to reiterate that social and political forces, in addition to economic forces also help to determine the answers to the fundamental economic questions.
3. Because opportunity cost is such a fundamental economic concept you should make sure that students understand what it is through the use of several examples. Ask them what their opportunity cost is for being in class today.
4. Point out that opportunity costs are associated with *every* decision. Sometimes they are not so obvious--they are often implicit costs.
5. Point out that *all* costs are opportunity costs. *Note that opportunity costs cannot always be measured in dollars and cents.*
6. You may wish to elaborate on marginal analysis, which is at the heart of *rational* decision making. Note that if the marginal benefits exceed the marginal costs of a decision, then it is rational to do more of that activity because "its worth it"---you are adding more in benefits than in costs; and vice versa. Point out, however, that benefits and costs of a decision are not always clear. You don't always know what they are going to be. Moreover, they may not be easily measured or quantified. Instead, they often must be subjectively estimated. Therefore, what may appear as rational to one person may not appear as rational to someone else because of the different subjective estimates of benefits and costs.
 

After discussing a consumption decision, you may want to drive the point home by pointing out that reasonable people can disagree over whether government involvement in a particular situation is "worth it" or not, because of their differing subjective measures of the benefits and costs associated with that government involvement.
7. Stress that all nations attempt to produce on their production possibilities curves---to maximize production given their limited resources. To do so will require employing all their resources. This is why *full employment is a universal national economic (macroeconomic) goal*. Because full employment *is illustrated as a point on the curve*, then all nations attempt to be on their production

possibilities curves. If some unemployment and/or underemployment is experienced, then it is illustrated as a combination of output shown by a point inside the curve.

A point outside the curve is *currently* unattainable. However, with enough economic growth that combination of consumer and capital products may be feasible.

8. In terms of the production possibilities model, stress that there are only two general types of products which can be produced---consumer and capital products. Consumer products satisfy our wants directly and in the present. Capital products satisfy our wants indirectly and in the future. It may appear tempting to produce a lot of consumer products now because this will satisfy us more now. However, the opportunity cost is fewer capital goods production which is necessary for future growth. (Explain that investment in capital goods will increase future production possibilities because workers are more productive the more plant and equipment they have to work with. Emphasize that greater growth is illustrated as a rightward shift of the production possibilities curve.) Therefore, if we choose a lot of consumer goods production now it will be at the expense of not so much later on. In short, *our present location on the production possibilities curve will determine the future location of the curve.*

Moreover, emphasize that *economic growth is another one of the three major macroeconomic goals.* It is a major macroeconomic goal because it increases the size of the "economic pie." Assuming no change in the distribution of income, growth ensures that everyone gets "a bigger piece of the pie." Otherwise stated, *economic growth is desired because it increases the nation's average absolute standard of living.* But, higher standards of living require the sacrifice of current consumption in order to free up resources to be devoted to the production of capital products. *We need less consumption and more investment for greater growth and higher standards of living.*

### **CRITICAL THINKING/GROUP DISCUSSION QUESTIONS**

1. How does government affect the answer to the "What" fundamental economic question?  
*Whenever it taxes or spends money, or when it bans the production of some products...*
2. How does government affect the answer to the "How" fundamental economic question?  
*By setting government standards and regulatory guidelines...*
3. How does government affect the answer to the "For Whom" fundamental economic question?  
*By redistributing income via the personal income tax system...*
4. What is the opportunity cost of attending college?  
*The foregone income which could have been earned working full time.*
5. What is the cost of a new car?  
*The amount of other goods and services which could have been purchased but now must be given up.*
6. What is the profit-maximizing quantity of output for a firm to produce?  
*That output in which the marginal benefits from production no longer exceed the marginal cost (where  $MR = MC$ ).*
7. Under what conditions would a nation be able to *currently* produce more of both consumer and capital products?  
*If production is currently occurring at a point inside its production possibilities curve---if there is currently some unemployment and/or underemployment.*
8. What are the necessary ingredients for a nation to experience greater rates of economic growth, higher average standards of living, and a greater ability to compete in the global economy? That is, what could the U.S. do to achieve all this?  
*Need: 1) investment in private capital; 2) investment in public capital (infrastructure); 3) investment in human capital---people (e.g. education); 4) growth in technology; 5) entrepreneurship; 6) stable political environment.*
9. What are some problems associated with economic growth?  
*Environmental problems...Note, one needs to weigh the benefits against the costs to determine whether more growth is worth it.*

### CLASSROOM GAMES

Approximately 170 non-computerized economic games (experiments) for use in the classroom are available for free at <http://www.marietta.edu/~delemeeg/games/>. The following games are recommended to help teach some of the concepts in this chapter:

*Game #107*—Objective: To illustrate a production process subject to diminishing returns and illustrate the construction of a production possibilities frontier.

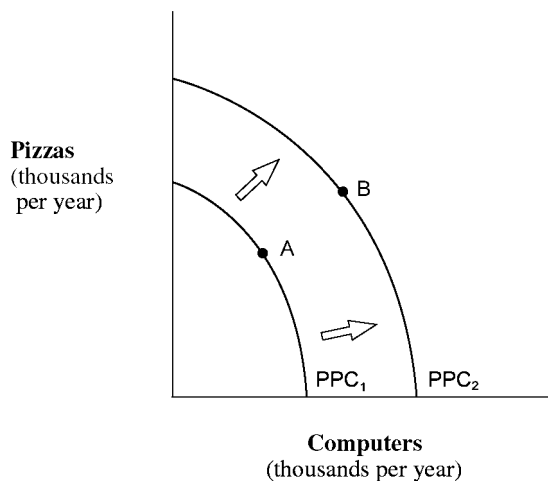
*Games #117*— Objective: To illustrate the impact of specialization of resources on the construction of a production possibilities frontier.

### ANSWERS TO: "You're the Economist" and "Global Economics:" "Analyze the Issue"

#### **FEDEX WASN'T AN OVERNIGHT SUCCESS**

Draw a production possibilities curve for an economy producing only pizzas and computers. Explain how Fred Smith and other entrepreneurs affect the curve.

*Suppose the economy produces only pizzas and computers at point A on the production possibilities curve  $PPC_1$ . Holding all other factors constant, the impact of an entrepreneur is to shift the curve outward to  $PPC_2$ . The reason is that the entrepreneur provides a new way to produce more output with the same resources and technology. In the case of Fred Smith, overnight mail service speeded up the delivery of vital parts and communications needed to operate businesses. As a result, the economy can move from point A to point B and produce more pizzas and computers in the same period of time.*

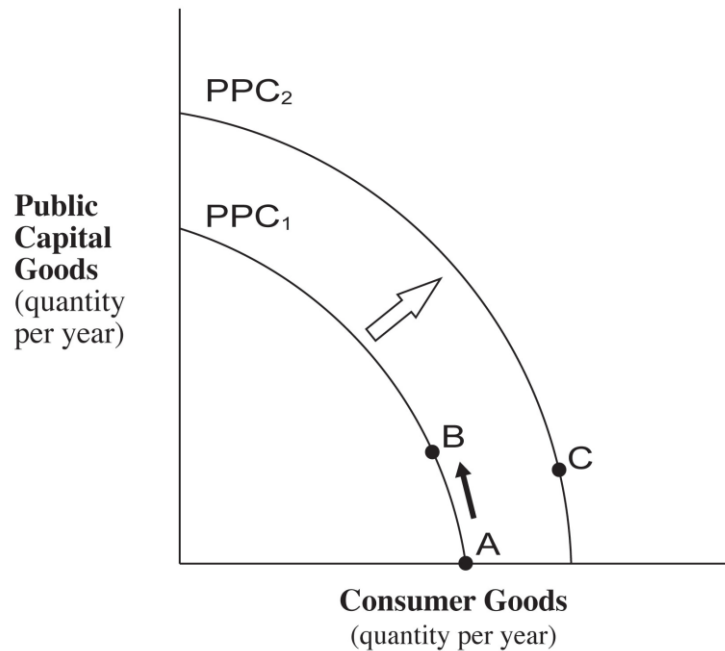


#### **HOW DOES PUBLIC CAPITAL AFFECT A NATION'S CURVE?**

Construct a production possibilities curve for a hypothetical country. Put public capital goods per year on the vertical axis and consumer goods per year on the horizontal axis. Not shown directly in your graph, assume that this country produces just enough private capital per year to replace its depreciated capital. Assume further that this country is without public capital and is operating at point A where consumer goods are at a maximum. Based on the above research and using a production possibilities curve show and explain what happens to this country's private capital, production possibilities curve, and standard of living if it increases its output of public capital.



At point A, this country's production possibilities curve will remain at  $PPC_1$  and achieve no growth because its private capital output only replaces its depreciated capital used to produce consumer goods. Now assume an increase in public capital goods output as a tradeoff for less output of consumer goods, as shown as movement from point A to point B. The predicted result would be an increase in the production of new private capital stock because of the benefits from infrastructure. Since private capital output increases, the economy grows from  $PPC_1$  to  $PPC_2$  and the standard of living rises because this country can produce greater consumer goods per year at point C on  $PPC_2$ .

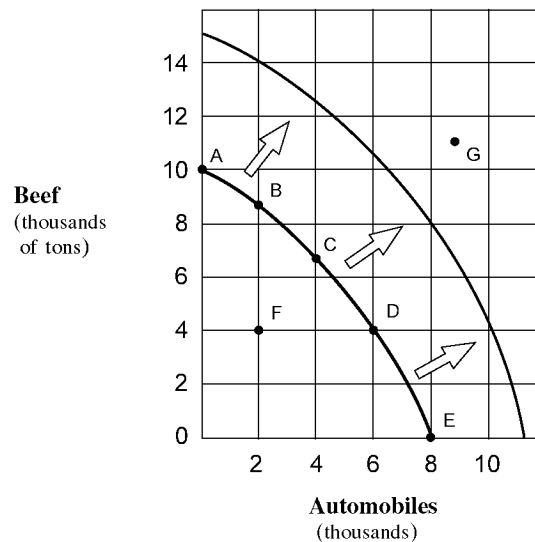


### ANSWERS TO EVEN-NUMBERED "Study Questions and Problems"

2. The cost of the car is independent of the price charged for the car. The true cost is the opportunity cost of producing it. For example, the same resources could have been used to produce a truck for the military.
4. Decision (a) produces the greatest opportunity cost because the alternative use of a lot in Tokyo is much more valuable than the use of a square mile of desert.

6. See the figure below.

(a) (Points A-B) 1 thousand tons of beef, (Points D-E) 4 thousand tons of beef, and (Points B-A) 2 thousand automobiles.

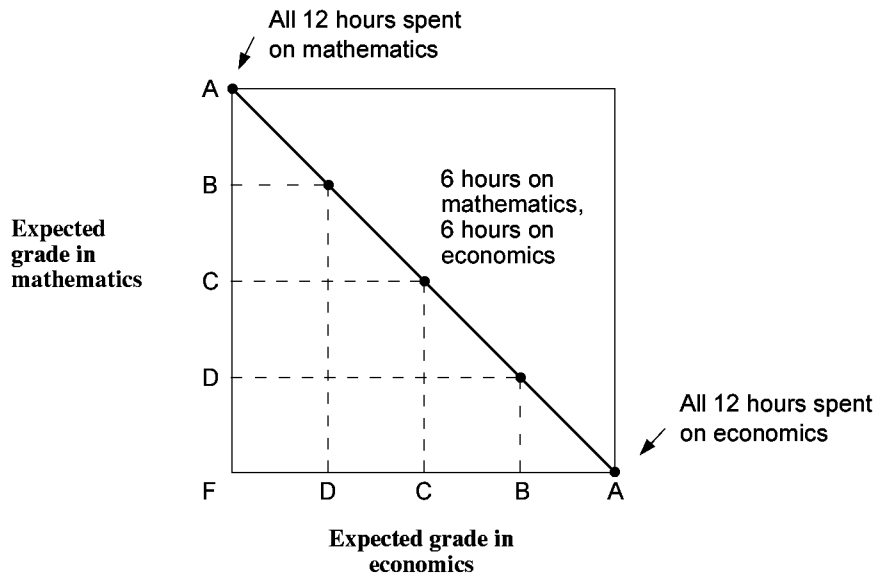


- (b) Point F is an inefficient point because it is possible to produce either more automobiles or more beef without producing less of the other output. Point G is impossible to produce, given the definition of the production possibilities curve as the maximum combinations that can be produced with existing resources and technology. Points A through E are efficient because more of one of the products can be produced only by incurring an opportunity cost in terms of the other product.
- (c) The law of increasing costs is reflected. Moving from the origin along the horizontal axis, each 2 thousand unit increase in the output of automobiles results in greater declines in beef production, measured along the vertical axis. Beef declines (in thousands of units) between points A-B, B-C, C-D, and D-E are -1, -2, -3, and -4, respectively. These values reflect the changing slope that determines the bowed-outward shape of the production possibilities curve.
- (d) Any one of the four factors of production could be increased or improved, and this would expand the economy's production capacity. An advance in technology would also shift the curve outward. A decline in the quantity or the quality of resources would shift the production curve to the left. Students should be able to translate a 50 percent increase in the production combinations into their graph.
8. The production possibilities curve is convex, looking down from above, because of the law of increasing costs. This law states that resources are not perfectly interchangeable from production of one type of output to another.

10. (a) **Maximum Production Possibilities for Expected Grades in Mathematics and Economics**

Number of hours studied		Expected grade	Number of hours in economics		Expected grade studied
in mathematics					
12	0				F
	3	A			D
9	6	B			C
6	9	C			B
3	12	D			A
0		F			

(b) Figure 2A-2



One assumption is that the number of hours does not vary. Another is that the student has correctly determined that there is a one-to-one trade off. One letter grade in economics is always exchanged for one letter grade in mathematics.

(c) The curve is not bowed outward and, instead, is a downward-sloping straight line reflecting constant opportunity costs. Selecting any of the output combinations requires shifting 3 hours study time from one subject to another. Each change in 3 hours of study time reflects a constant slope of one letter grade gain for one letter grade loss.

12. *Investment is the act of increasing an economy's stock of capital. This process means that an economy is replacing worn-out capital and producing a net gain in new factories, equipment, and other capital goods that increase the productivity of the other factors of production. The increased quantity of capital results in additional capacity of the economy to produce goods and services. Thus, the production possibilities curve shifts rightward, and economic growth is achieved.*

### **CHAPTER 2 SUMMARY QUIZ**

1. Which of the following statements is true?
  - a. An opportunity cost is what must be given up in order to get something else.
  - b. The three fundamental economic questions refer to What to produce? How to produce? and When to produce?
  - c. The term "investment" refers to the purchase of stocks and bonds and other financial securities.
  - d. The law of increasing opportunity cost implies that as production of one type of good is expanded then fewer and fewer of other goods must be given up.
  
2. Which of the following statements is *false*?
  - a. Marginal analysis is an examination of the effects of additions or subtractions from a current situation.
  - b. The production possibilities curve shows the maximum combination of two outputs that an economy can produce, given its available resources and technology.
  - c. Technology is the body of knowledge and skills applied to how goods are produced.
  - d. Economic growth is illustrated as an inward shift of the production possibilities curve.
  
3. Given a production possibilities curve, a point:
  - a. inside the curve represents unemployment.
  - b. on the curve represents full employment.
  - c. outside the curve is currently unattainable.
  - d. all of the above.
  
4. A rightward (an outward) shift of a nation's production possibilities curve could be caused by:
  - a. a decrease in technology.
  - b. an increase in resources.
  - c. producing more consumer and fewer capital goods.
  - d. a decline in the labor force's level of education and skills.

### **ANSWERS TO CHAPTER 2 SUMMARY QUIZ**

1. a
2. d
3. d
4. b



