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CHAPTER 2

ECONOMIC TOOLS AND ECONOMIC SYSTEMS

SOLUTIONS TO END OF CHAPTER PROBLEMS

1. This question highlights the importance of ignoring sunk costs in marginal decision making. Once you have purchased the meal, you cannot get your money back whether or not you finish the meal. There is no benefit to overeating.

2. The opportunity cost is the total cost of going to Florida and includes dollar costs incurred as well as the forgone opportunity of working. Assuming you would work for 5 days if you stayed home, the opportunity cost of going to Florida would total $1,000: the $700 cost of going to Florida plus the net value of what you could have earned—$300 ($400 in earnings less expenses of $100)—if you stayed home.

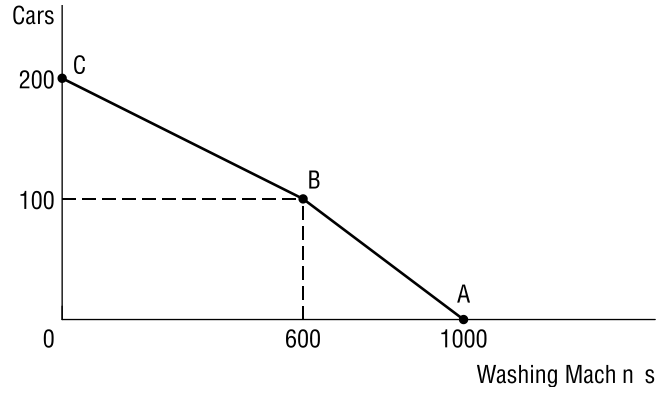
3.
   a. In the United Kingdom, the opportunity cost of one unit of wheat is 1/3 unit of cloth (producing one unit of wheat uses 2 labor hours, the amount of resource that would allow you to produce only 1/3 unit of cloth). In the United States, the opportunity cost of one unit of wheat is 1/5 unit of cloth (producing one unit of wheat uses 1 labor hour, the amount of resource that would allow you to produce only 1/5 unit of cloth).
   b. The United States has an absolute advantage in both goods; it is able to produce both products with fewer resources than the United Kingdom requires.
   c. The United States has a comparative advantage in wheat because it has the lowest opportunity cost of producing (1/5 unit of cloth versus 1/3 unit of cloth for the United Kingdom), while the United Kingdom has the comparative advantage in cloth. (The opportunity cost of cloth in the United States is 5 units of wheat. The opportunity cost of cloth in the United Kingdom is 3 units of wheat.)
   d. The United States should specialize in wheat, and the United Kingdom should specialize in cloth. The country with the lower opportunity cost of producing a good should specialize in producing that output.

4. Students' answers will vary according to their experiences. One specialized market is that for military weapons. The stock exchange provides a specialized market for buying and selling company shares, and there are specialized markets for selling government bonds and foreign currencies. Specialized retail outlets could include movie theaters specializing in "art" films, wine shops, cheese shops, language schools, and so forth. Media such as the Web allow firms in specialized markets to advertise their products at relatively low costs and also permit customers to conduct interactive on-line searches for relatively specialized goods and services.

5.

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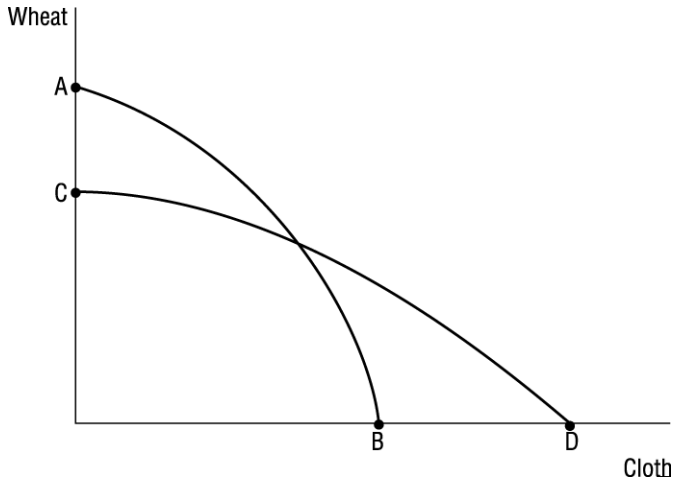


a. The PPF drawn above is composed of two straight-line segments: AB and BC.
b. The cost of a car when 50 cars are produced is 4 washing machines. In segment AB, as you move from 0 to 100 cars, you must give up 1,000 − 600 = 400 washing machines. Thus, each additional car costs 400/100 = 4 washing machines along segment AB of this PPF.
c. The cost of a car when 150 cars are produced is 6 washing machines. In segment BC of this PPF, as you move from 100 to 200 cars, you must forgo 600 washing machines. Thus, each additional car costs 600/100 = 6 washing machines along segment BC of this PPF. 150 cars cost you 6 washing machines.
d. The cost of a washing machine when 50 cars are produced is one-fourth of a car. In segment AB, as you move from 600 to 1,000 washing machines, you must forgo 100 cars. {[100/(1000 − 600)]} = ¼, the slope of segment AB of the PPF. Note: The PPF would indicate that when 50 cars are produced, 800 washing machines can be produced.
The cost of an additional washing machine when 150 cars are produced is one-sixth of a car. In segment BC, as you move from 0 to 600 washing machines, you must forego 100 cars. (100/600) = 1/6, the slope of segment BC of the PPF. Note: The PPF indicates that when 150 cars are produced, only 300 washing machines are produced. Also note that the answers to this question are the inverse of the answers to questions (b) and (c).
e. As you increase the production level of either good, its opportunity cost eventually increases. When you go from 50 cars produced to 150 cars produced, the cost in terms of washing machines forgone rises from 4 washing machines to 6 washing machines. When you go from 300 washing machines produced to 800 washing machines produced, the opportunity cost in terms of cars forgone rises from 1/6 of a car to 1/4 of a car.

6. The PPF will shift inward along the axis measuring cloth production and outward along the axis measuring wheat production. This is represented by a shift from CD to AB on the following graph:

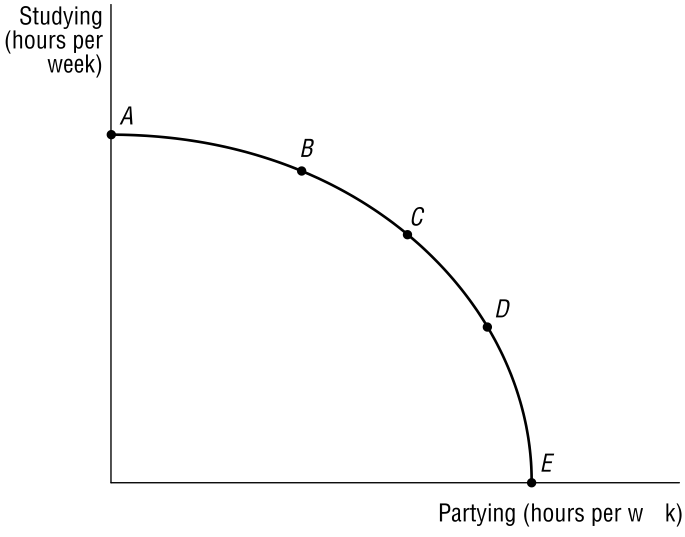
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7.

a.



b. Moving upward and to the left along the PPF could be represented by a move from point C to point B. You would be giving up some partying to engage in more studying. You would have to adjust your schedule so that you would frequent places where there were inducements to study rather than to party. The library, a quiet spot in the cafeteria, or a café playing classical music and offering quiet solitude would be your quest for at least a few more hours of the week.

c. The PPF drawn assumes that you have a fixed amount of time as well as some capital. The time you have available can't change; there are only 24 hours in a day. However, your study skills could be enhanced by training or by acquiring a new computer. This increase in skills and capital in the production of studying would shift the PPF outward along the vertical axis indicating that you are able to accomplish more studying with the same time constraint. A parallel shift in the PPF could occur if that new computer also allowed you greater satisfaction partying, if, for example, the Internet opened you to new opportunities for parties.

8. Items a, c, and d all decrease the amount of labor available; thus, the PPF would shift inward. Item b increases the available labor, and thus the PPF would shift outward.

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9. The government represents an element of command in the U.S. economy. Government accounts for about one-third of all economic activity. In addition, government regulates the private economy in a number of areas including antitrust laws, workplace safety, zoning, food safety, illegal activities, and so on. Elements of tradition or custom would include style of dress, similarity in choice of children's occupations to that of their parents, and fierce adherence to the English system of measurement rather than the metric system used by the rest of the world.

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CHAPTER 2
ECONOMIC TOOLS AND ECONOMIC SYSTEMS

In this chapter, you will find:
Learning Outcomes
Chapter Outline with PowerPoint Script
Chapter Summary
Teaching Points (as on Prep Card)
Solutions to Problems Appendix
Experiential Assignment

INTRODUCTION

This chapter emphasizes key ideas in economic analysis, such as opportunity cost, the production possibilities frontier, absolute and comparative advantage, the division of labor and the gains from specialization, and how economic systems answer the three economic questions of what, how, and for whom. All these ideas address the economic problem of how to allocate scarce resources among unlimited wants. The use of graphs was introduced in the Appendix to Chapter 1. In this chapter, graphs are integrated into the discussion.

LEARNING OUTCOMES

2-1 Describe the relationship between choice and opportunity cost

Resources are scarce, but human wants are unlimited. Because you cannot satisfy all your wants, you must choose, and whenever you choose, you must forgo some option. Choice involves an opportunity cost. The opportunity cost of the selected option is the value of the best alternative forgone.

2-2 Explain how comparative advantage, specialization, and exchange affect economic outcomes (output)

The law of comparative advantage says that the individual, firm, region, or country with the lowest opportunity cost of producing a particular good should specialize in that good. Specialization according to the law of comparative advantage promotes the most efficient use of resources. The specialization of labor increases efficiency by (a) taking advantage of individual preferences and natural abilities, (b) allowing each worker to develop expertise and experience at a particular task, (c) reducing the need to shift between different tasks, and (d) allowing for the introduction of more specialized machines and large-scale production techniques.

2-3 Outline how economies function as production systems

The production possibilities frontier, or PPF, shows the productive capabilities of an economy when all resources are used efficiently. The frontier's bowed-out shape reflects the law of increasing opportunity cost, which arises because some resources are not perfectly adaptable to the production of different goods. Over time, the frontier can shift in or out as a result of changes in the availability of resources, in technology, or in the rules of the game. The frontier demonstrates several economic concepts, including efficiency, scarcity, opportunity cost, the law of increasing opportunity cost, economic growth, and the need for choice.

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2-4 Describe different economic systems and the decision-making rules that define them

All economic systems, regardless of their decision-making processes, must answer three basic questions: What is to be produced? How is it to be produced? And for whom is it to be produced? Economies answer the questions differently, depending on who owns the resources and how economic activity is coordinated. Economies can be directed by market forces, by the central plans of government, or, in most cases, by a mix of the two.

CHAPTER OUTLINE WITH POWERPOINT SCRIPT

CHOICE AND OPPORTUNITY COST

USE POWERPOINT SLIDE 3 FOR THE FOLLOWING SECTION

Opportunity Cost: The value of the best alternative forgone when an item or activity is chosen. Because of scarcity, whenever people make a choice, another opportunity is forgone.

USE POWERPOINT SLIDE 4 FOR THE FOLLOWING SECTION

Opportunity Cost Is Subjective: Only the individual making a choice can identify the most attractive alternative.

- Calculating opportunity cost requires time and information: learning about alternatives is costly and time consuming; some choices are based on limited or even wrong information.
- Time is the ultimate constraint: even the richest person in the world suffers from scarcity of time; each activity involves an opportunity cost.
- Opportunity cost varies with circumstances: opportunity cost depends on your alternatives.

USE POWERPOINT SLIDE 5 FOR THE FOLLOWING SECTION

Sunk Cost and Choice

Sunk cost is a cost that has already been incurred and cannot be recovered; it is irrelevant for future and present economic decisions.

Economic decision makers should ignore sunk costs and consider only those costs that are affected by the choice.

COMPARATIVE ADVANTAGE, SPECIALIZATION, AND EXCHANGE

USE POWERPOINT SLIDES 6–7 FOR THE FOLLOWING SECTION

The law of comparative advantage: The individual, firm, region or country with the *lower opportunity cost* of producing a particular output should specialize in producing that output.

Absolute advantage versus comparative advantage

- **Absolute advantage**: The ability to produce a product with fewer resources than other producers require.
- **Comparative advantage**: The ability to produce a product at a lower opportunity cost than other producers face. Resources are allocated most efficiently when production and trade conform to the law of comparative advantage.
- Absolute advantage focuses on who uses the fewest resources, while comparative advantage focuses on what else those resources could produce.

USE POWERPOINT SLIDE 8-9 FOR THE FOLLOWING SECTION

Specialization and Exchange

Barter: A system of exchange in which products are traded directly for other products

Money: A medium of exchange in economies with extensive specialization

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USE POWERPOINT SLIDES 10–11 FOR THE FOLLOWING SECTION

Division of Labor and Gains from Specialization

Division of labor: breaking down the production of a good into separate tasks
Specialization of labor: focusing work effort on a particular product or a single task
Takes advantage of individual preferences and natural abilities
Allows workers to develop more experience at a task
Reduces the need to shift between tasks
Permits the introduction of labor-saving machinery
May be tedious and injury prone because of repetitive motion

THE ECONOMY'S PRODUCTION POSSIBILITIES

USE POWERPOINT SLIDES 12–16 FOR THE FOLLOWING SECTION

Efficiency and the Production Possibilities Frontier

The production possibilities frontier (PPF) is a simple model designed to depict the production capabilities of an economy, given current resources. The PPF assumes the following:
Output is limited to two broad classes of products: consumer goods and capital goods.
Production takes place over a given time period.
The economy's resources are fixed in quantity and quality over this period.
The available technology does not change during the period.
The "rules of the game" are fixed.

- **The PPF** identifies possible combinations of the two types of goods that can be produced when all available resources are employed efficiently. Resources are employed efficiently when there is no change that could increase the production of one good without decreasing the production of the other good.

Efficient production: getting the most from available resources, indicated by points *along* the production possibilities frontier.

Inefficient and Unattainable Production

Inefficient production: points *inside* the PPF
Unattainable production: points outside the PPF

USE POWERPOINT SLIDE 17 FOR THE FOLLOWING SECTION

Shape of the Production Possibilities Frontier

The PPF derives its *bowed-out* (concave) shape from the law of increasing opportunity cost.
Opportunity cost increases as the economy produces more of one good and less of the other because resources in the economy are not all perfectly adaptable to the production of both types of goods.
If all resources were perfectly adaptable to alternative uses, the PPF would be a straight line, reflecting a constant opportunity cost along the PPF.

USE POWERPOINT SLIDES 18–21 FOR THE FOLLOWING SECTION

What Can Shift the Production Possibilities Frontier?

Economic Growth: reflected by an outward shift of the PPF
Changes in resource availability: people working longer hours, war
Increases in the capital stock: more capital goods produced during this period shifts the PPF outward the next period
Technological change and more know-how: discoveries that employ resources more efficiently
Improvements in the rules of the game: improvements in the formal and informal institutions that support the economy shift the PPF outward

USE POWERPOINT SLIDE 22 FOR THE FOLLOWING SECTION

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What We Learn from the PPF
It illustrates the concepts of efficiency, scarcity, opportunity cost, economic growth, and the need for choice.
It does not tell us which combination to choose. How society goes about choosing depends on the nature of the economic system.

USE POWERPOINT SLIDES 23–29 FOR THE FOLLOWING SECTION
ECONOMIC SYSTEMS
Three Questions Every Economic System Must Answer:
- What goods and services are to be produced?
- How are goods and services to be produced?
- For whom are goods and services to be produced?

Pure Capitalism: Individual decision making through markets includes:
- Private ownership of all resources.
- Market prices generated in free markets guide resources to their most productive use.
- Goods and services are channeled to consumers who value them the most.
- Adam Smith: market forces allocate resources as if by an "invisible hand"—an unseen force that harnesses the pursuit of self-interest to direct resources where they earn the greatest reward.
- **Flaws of a pure market system**:
- No central authority protects property rights, enforces contracts, or ensures that rules of the game are followed.
- People with no resources to sell could starve.
- Some producers may try to monopolize markets by eliminating the competition.
- The production or consumption of some goods involves damaging byproducts (i.e., pollution).
- Private firms have no incentive to produce public goods.
- Market economies experience economic fluctuations
- Because of these limitations, *government* has been given some role in most market economies.

Pure Command System: Resources are directed and production is coordinated not by market forces but by the "command," or central plan, of government.
- In theory, property is owned communally; central plans spell out answers to what, for whom, and how much; and individual choices are incorporated into central plans (communism).
- **Flaws of a pure command system**:
- Running an economy is so complicated and requires so much information that some resources are used inefficiently.
- Because nobody in particular owns resources, each person has less incentive to employ them in their highest-valued use, so some resources are wasted.
- Central plans may be more reflective of the preferences of central planners than the preferences of society.
- Because government is responsible for all production, the variety of products tends to be more limited than in a capitalist economy.
- Each individual has less personal freedom in making economic choices.
- Because profit has no place in a command economy, people have less incentive to invent new and better products or find more efficient ways to make existing products

USE POWERPOINT SLIDE 30–31 FOR THE FOLLOWING SECTION
Mixed and Transitional Economies
No country exemplifies either type of economic system in its pure form.

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The United States represents a mixed system, with government directly accounting for about one-third of all economic activity. In addition, government regulates the private sector in a variety of ways (e.g., antitrust laws, workplace safety, environmental quality, and zoning activities).
Economies Based on Custom or Religion: Molded largely by custom or religion—for example, the caste system in India or charging interest under Islamic law.

CHAPTER SUMMARY

Resources are scarce, but human wants are unlimited. Because you cannot satisfy all your wants, you must choose, and whenever you choose, you must forgo some option. Choice involves an opportunity cost. The opportunity cost of the selected option is the value of the best alternative forgone.

The law of comparative advantage says that the individual, firm, region, or country with the lowest opportunity cost of producing a particular good should specialize in that good. Specialization according to the law of comparative advantage promotes the most efficient use of resources.

The specialization of labor increases efficiency by (a) taking advantage of individual preferences and natural abilities, (b) allowing each worker to develop expertise and experience at a particular task, (c) reducing the need to shift between different tasks, and (d) allowing for the introduction of more specialized machines and large-scale production techniques.

The production possibilities frontier, or PPF, shows the productive capabilities of an economy when all resources are used efficiently. The frontier's bowed-out shape reflects the law of increasing opportunity cost, which arises because some resources are not perfectly adaptable to the production of different goods. Over time, the frontier can shift in or out as a result of changes in the availability of resources, in technology, or in the rules of the game. The frontier demonstrates several economic concepts, including efficiency, scarcity, opportunity cost, the law of increasing opportunity cost, economic growth, and the need for choice.

All economic systems, regardless of their decision-making processes, must answer three basic questions: What is to be produced? How is it to be produced? And for whom is it to be produced? Economies answer the questions differently, depending on who owns the resources and how economic activity is coordinated. Economies can be directed by market forces, by the central plans of government, or, in most cases, by a mix of the two.

TEACHING POINTS

1. This chapter contains several fundamental concepts that should be fully discussed because they are used throughout the text to discuss economic choice in a variety of settings. When discussing opportunity cost and choice, be sure to distinguish between those costs that are associated with marginal decision making and those that are not (i.e., sunk costs). Also, many students will not immediately recognize that non-monetary costs are components of opportunity costs so it helps to emphasize this point.

2. Comparative advantage is a second important concept emphasized in this chapter. For additional examples of comparative advantage, consider the classic example in which an attorney can type and file faster and more accurately than a secretary. Because of comparative advantage, it will usually be beneficial to hire a secretary rather than to do the typing and filing since the opportunity cost is lower. Another example would be for Hawaii to specialize in pineapple growing and then trade with Idaho for potatoes. This chapter makes the point that opportunity cost is a relative concept, based on relative rather than absolute resource requirements in the production of goods. Because comparative advantage

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implies the specialization of resource use, trade becomes important in allocating goods to consumers. Students often note that self-reliance is an admirable concept. The discussion of comparative advantage shows that specialization and exchange lead to a more efficient allocation of resources.

3. When drawing the production possibilities frontier, partition the horizontal axis into equal segments and then show the ever-increasing amounts of the alternative good that must be sacrificed to obtain more of the good in question. You thereby illustrate the law of increasing opportunity costs. Students often confuse increasing total and increasing marginal opportunity costs. You should emphasize, through your construction, that it is incremental costs that are increasing. Draw your curve large with plenty of bow in it. Numerical examples are helpful to some students.

4. Sometimes people claim that the PPF is bowed out because of the law of diminishing returns. Diminishing returns, of course, assumes an increase in one type of resource, holding other resources constant. This is not the case along the PPF, since all resources tend to be reallocated between goods with movement along the PPF. You could incorporate the law of diminishing returns into your discussion by fixing capital between the sectors and then shifting only labor resources. The text's approach, however, is to assume that resources are not homogeneous; some are specific to the production of a particular good. The result is increasing opportunity costs and a bowed-out PPF.

5. Once the PPF is understood in terms of its construction and shape, it is important to emphasize the concepts that it illustrates. Scarcity is reflected by the fact that some output combinations are not feasible. The infinite output combinations that are feasible illustrate choice. Efficiency is illustrated when production occurs along the PPF, and the shape of the PPF illustrates the law of increasing opportunity costs. Furthermore, if resources are different, then the required specialization of resource usage implies that some form of trading occurs in order for each resource owner to consume all (both) goods.

6. A discussion of shifts in the production possibilities frontier leads naturally to a consideration of the sources of economic growth. Technological advance shifts the PPF. Such advances take time and require society to save, just as the accumulation of physical capital does. Emphasize that the PPF need not always shift out in a balanced way. Technological advance is often specific to an industry. Improvements to the rules of the game and in the education and health of the population may also lead to an outward shift in the PPF.

7. This chapter closes by considering how different economic systems answer the three economic questions. You may wish to discuss how numerous political systems have shifted toward more market-based economies over the past century to emphasize the capitalist approach. The chapter contains a fairly short reference to Adam Smith and his notion of the "invisible hand". You may want to discuss this important concept in more detail.

SOLUTIONS TO END OF CHAPTER PROBLEMS

1. (*Sunk Cost and Choices*) Suppose you go to a restaurant and buy an expensive meal. Halfway through, despite feeling full, you decide to clean your plate. After all, you think, you paid for the meal, so you are going to eat all of it. What's wrong with this thinking*?*

   This question highlights the importance of ignoring sunk costs in marginal decision making. Once you have purchased the meal, you cannot get your money back whether or not you finish the meal. There is no benefit to overeating.

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2. (*Opportunity Cost*) You can either spend spring break either working at home for $80 per day for five days or go to Florida for the week. If you stay home, your expenses will total about $100. If you go to Florida, the airfare, hotel, food and miscellaneous expenses will total about $700. What's your opportunity cost of going to Florida?

   The opportunity cost is the total cost of going to Florida and includes dollar costs incurred as well as the forgone opportunity of working. Assuming you would work for 5 days if you stayed home, the opportunity cost of going to Florida would total $1,000: the $700 cost of going to Florida plus the net value of what you could have earned—$300 ($400 in earnings less expenses of $100)—if you stayed home.

3. (*Absolute and Comparative Advantage*) You have the following information concerning the production of wheat and cloth in the United States and the United Kingdom:

	Labor Hours Required to Produce One Unit	
	United Kingdom	**United States**
Wheat	2	1
Cloth	6	5

   a. What is the opportunity cost of producing a unit of wheat in the United Kingdom? In the United States?
   b. Which country has an absolute advantage in producing wheat? In producing cloth?
   c. Which country has a comparative advantage in producing wheat? In producing cloth?
   d. Which country should specialize in producing wheat? In producing cloth?

   a. *In the United Kingdom, the opportunity cost of one unit of wheat is 1/3 unit of cloth (producing one unit of wheat uses 2 labor hours, the amount of resource that would allow you to produce only 1/3 unit of cloth). In the United States, the opportunity cost of one unit of wheat is 1/5 unit of cloth (producing one unit of wheat uses 1 labor hour, the amount of resource that would allow you to produce only 1/5 unit of cloth).*
   b. *The United States has an absolute advantage in both goods; it is able to produce both products with fewer resources than the United Kingdom requires.*
   c. *The United States has a comparative advantage in wheat because it has the lowest opportunity cost of producing (1/5 unit of cloth versus 1/3 unit of cloth for the United Kingdom), while the United Kingdom has the comparative advantage in cloth. (The opportunity cost of cloth in the United States is 5 units of wheat. The opportunity cost of cloth in the United Kingdom is 3 units of wheat.)*
   d. *The United States should specialize in wheat, and the United Kingdom should specialize in cloth. The country with the lower opportunity cost of producing a good should specialize in producing that output.*

4. (*Specialization*) Provide some examples of specialized markets or retail outlets. What makes the Web so conducive to specialization*?*

   Students' answers will vary according to their experiences. One specialized market is that for military weapons. The stock exchange provides a specialized market for buying and selling company shares, and there are specialized markets for selling government bonds and foreign currencies. Specialized retail outlets could include movie theaters specializing in "art" films, wine shops, cheese shops, language schools, and so forth. Media such as the Web allow firms in specialized markets to

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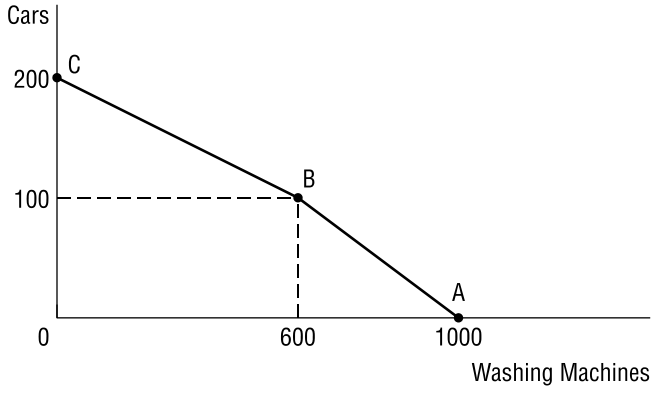
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advertise their products at relatively low costs and also permit customers to conduct interactive on-line searches for relatively specialized goods and services.

5. (*Shape of the PPF*) Suppose a production possibilities frontier includes the following combinations:

Cars	Washing Machines
0	1,000
100	600
200	0

a. Graph the PPF, assuming that it has no curved segments.
b. What is the cost of producing an additional car when 50 cars are being produced?
c. What is the cost of producing an additional car when 150 cars are being produced?
d. What is the cost of producing an additional washing machine when 50 cars are being produced? When 150 cars are being produced?
e. What do your answers tell you about opportunity costs?



a. The PPF drawn above is composed of two straight-line segments: AB *and* BC.
b. The cost of a car when 50 cars are produced is 4 washing machines. In segment AB*, as you move from 0 to 100 cars, you must give up 1,000 − 600 = 400 washing machines. Thus, each additional car costs 400/100 = 4 washing machines along segment* AB *of this PPF.*
c. The cost of a car when 150 cars are produced is 6 washing machines. In segment BC *of this PPF, as you move from 100 to 200 cars, you must forgo 600 washing machines. Thus, each additional car costs 600/100 = 6 washing machines along segment* BC *of this PPF. 150 cars cost you 6 washing machines.*
d. The cost of a washing machine when 50 cars are produced is one-fourth of a car. In segment AB*, as you move from 600 to 1,000 washing machines, you must forgo 100 cars. {[100/(1000 − 600)]} = ¼, the slope of segment* AB *of the PPF.* Note: *The PPF would indicate that when 50 cars are produced, 800 washing machines can be produced.*
The cost of an additional washing machine when 150 cars are produced is one-sixth of a car. In segment BC*, as you move from 0 to 600 washing machines, you must forego 100 cars. (100/600) = 1/6, the slope of segment* BC *of the PPF. Note: The PPF indicates that when 150 cars are produced, only 300 washing machines are produced. Also note that the answers to this question are the inverse of the answers to questions (b) and (c).*
e. As you increase the production level of either good, its opportunity cost eventually increases. When you go from 50 cars produced to 150 cars produced, the cost in terms of washing machines forgone rises from 4 washing machines to 6 washing machines. When you go from 300 washing

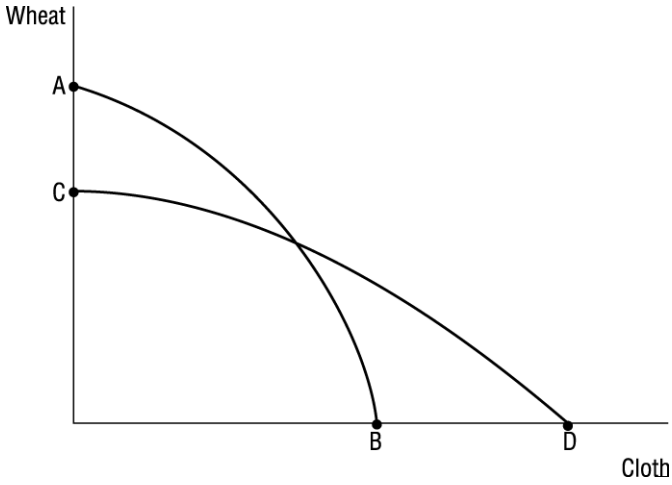
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machines produced to 800 washing machines produced, the opportunity cost in terms of cars forgone rises from 1/6 of a car to 1/4 of a car.

6. (*Production Possibilities*) Suppose an economy uses two resources (labor and capital) to produce two goods (wheat and cloth). Capital is relatively more useful in producing cloth, and labor is relatively more useful in producing wheat. If the supply of capital falls by 10 percent and the supply of labor increases by 10 percent, how will the PPF for wheat and cloth change?

The PPF will shift inward along the axis measuring cloth production and outward along the axis measuring wheat production. This is represented by a shift from CD *to* AB *on the following graph:*



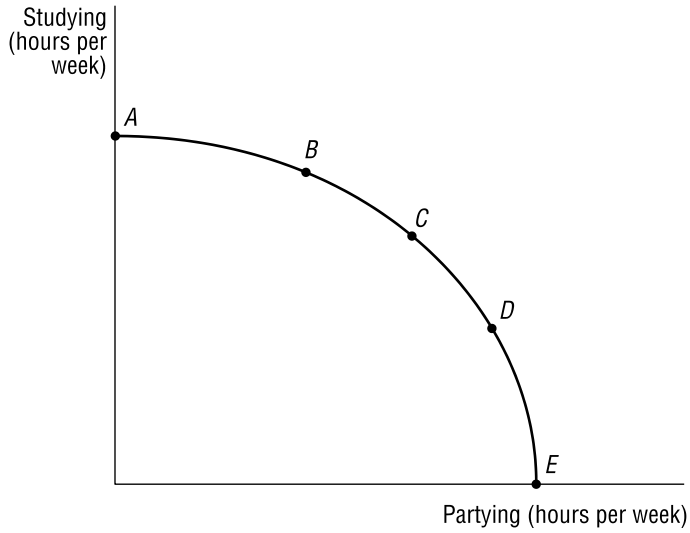
7. (*Production Possibilities*) There's no reason why a production possibilities frontier could not be used to represent the situation facing an individual. Imagine your own PPF. Right now—today—you have certain resources—your time, your skills, perhaps, some capital. And you can produce various outputs. Suppose you can produce combinations of two outputs, call them studying and partying.

   a. Draw your PPF for studying and partying. Be sure to label the axes of the diagram appropriately. Label the points where the PPF intersects the axes, as well as several other points along the frontier.
   b. Explain what it would mean for you to move upward and to the left along your personal PPF. What kinds of adjustments would you have to make in your life to make such a movement along the frontier?
   c. Under what circumstances would your personal PPF shift outward? Do you think the shift would be a "parallel" one? Why, or why not?

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a.



b. Moving upward and to the left along the PPF could be represented by a move from point C to point B. You would be giving up some partying to engage in more studying. You would have to adjust your schedule so that you would frequent places where there were inducements to study rather than to party. The library, a quiet spot in the cafeteria, or a café playing classical music and offering quiet solitude would be your quest for at least a few more hours of the week.

c. The PPF drawn assumes that you have a fixed amount of time as well as some capital. The time you have available can't change; there are only 24 hours in a day. However, your study skills could be enhanced by training or by acquiring a new computer. This increase in skills and capital in the production of studying would shift the PPF outward along the vertical axis indicating that you are able to accomplish more studying with the same time constraint. A parallel shift in the PPF could occur if that new computer also allowed you greater satisfaction partying, if, for example, the Internet opened you to new opportunities for parties.

8. (*Shifting Production Possibilities*) Determine whether each of the following would cause the economy's PPF to shift inward, outward, or not at all:
   a. An increase in average length of annual vacations
   b. An increase in immigration
   c. A decrease in the average retirement age
   d. The migration of skilled workers to other countries

Items a, c, and d all decrease the amount of labor available; thus, the PPF would shift inward. Item b increases the available labor, and thus the PPF would shift outward.

9. (*Economic Systems*) The United States is best described as having a "mixed" economy. What are some elements of command in the U.S. economy? What are some traditional elements?

The government represents an element of command in the U.S. economy. Government accounts for about one-third of all economic activity. In addition, government regulates the private economy in a number of areas including antitrust laws, workplace safety, zoning, food safety, illegal activities, and so on. Elements of tradition or custom would include style of dress, similarity in choice of children's

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occupations to that of their parents, and fierce adherence to the English system of measurement rather than the metric system used by the rest of the world.

Experiential Assignment

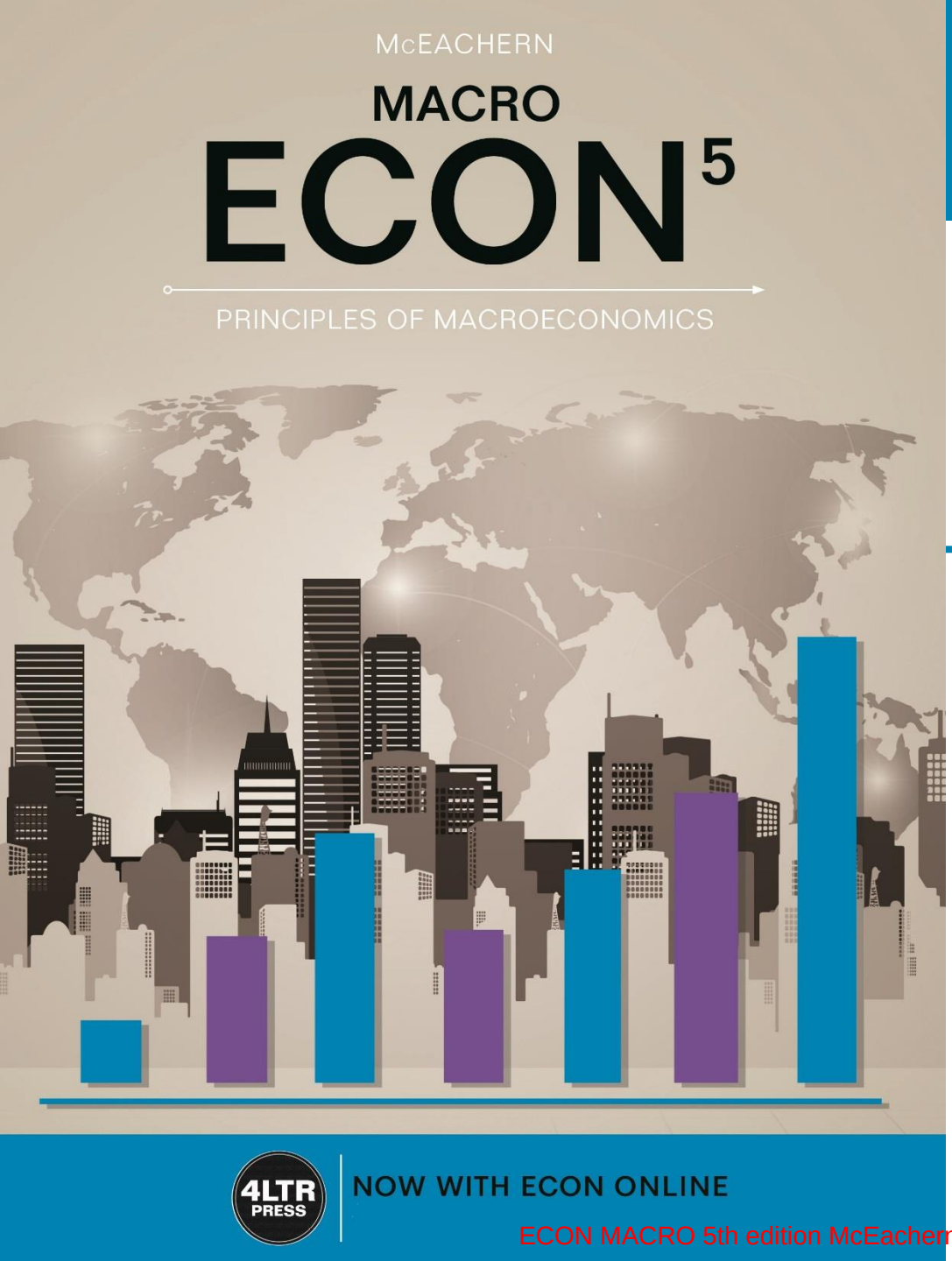
1. The following are some data on the U.S. economy taken from the *Economic Report of the President* at http://www.gpo.gov/fdsys/ (you may have to use the Search tool and type in for example "Economic Report of the President 2014"—or whatever year you are interested in). (Reports from before 2004 can be found at http://fraser.stlouisfed.org/publications/ERP/ .)

Year	Unemployment Rate	Real Government Spending (billions)	Real Civilian Spending (billions)
1982	9.7%	$ 947.7	$3,672.6
1983	9.6	960.1	3,943.6
1996	5.4	1,257.9	5,670.5
1997	4.9	1,270.6	5,920.8

a. Have students sketch a production possibilities frontier for the years 1982 and 1983, showing the trade-off between public sector (government) and private-sector (civilian) spending. Assume that resource availability and technology were the same in both years, but notice that the unemployment rate was relatively high.
b. Have students sketch a PPF for the years 1996 and 1997. Assume that resource availability and technology were the same in both years but higher than in 1982 and 1983. Note that the unemployment rate in the late 1990s was much lower than in the early 1980s.
c. Ask them what lessons they learned about the U.S. economy of the past 30 years.

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2

Economic Tools and Economic Systems

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LEARNING OUTCOMES

1 Describe the relationship between choice and opportunity cost

2 Explain how comparative advantage, specialization, and exchange affect output

3 Outline how economies function as production systems

4 Describe different economic systems and the decision-making rules that define them

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Choice and Opportunity Cost

- Scarcity involves making choices
- Opportunity cost
  - *Value of the best alternative forgone when an item or activity is chosen*
  - *Also known as opportunity lost*
  - *Two aspects*
    - Monetary aspect
    - Non-monetary aspect

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Opportunity Cost

- Is subjective
  - *Refers to value of "the road not taken"*
- Calculating opportunity cost
  - *Requires time and information*
- Time is the ultimate constraint
- Opportunity cost:
  - *Varies with circumstance*
  - *Depends on the alternative*

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Sunk Cost and Choice

- Sunk cost:
  - *Has already been incurred*
  - *Cannot be recovered*
  - *Is irrelevant for present and future economic decisions*
- For economic decision making
  - *Relevant- costs affected by the choice*
  - *Irrelevant- sunk costs*

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Law of Comparative Advantage

- *Individual, firm, region, or country with the lowest opportunity cost of producing a particular good should specialize in that good*
- Specialization and exchange:
  - *Make everyone better off*

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Law of Comparative Advantage (continued)

- Absolute advantage
  - *Ability to make something using fewer resources than other producers*
- Comparative advantage
  - *Ability to make something at a lower opportunity cost than other producers face*

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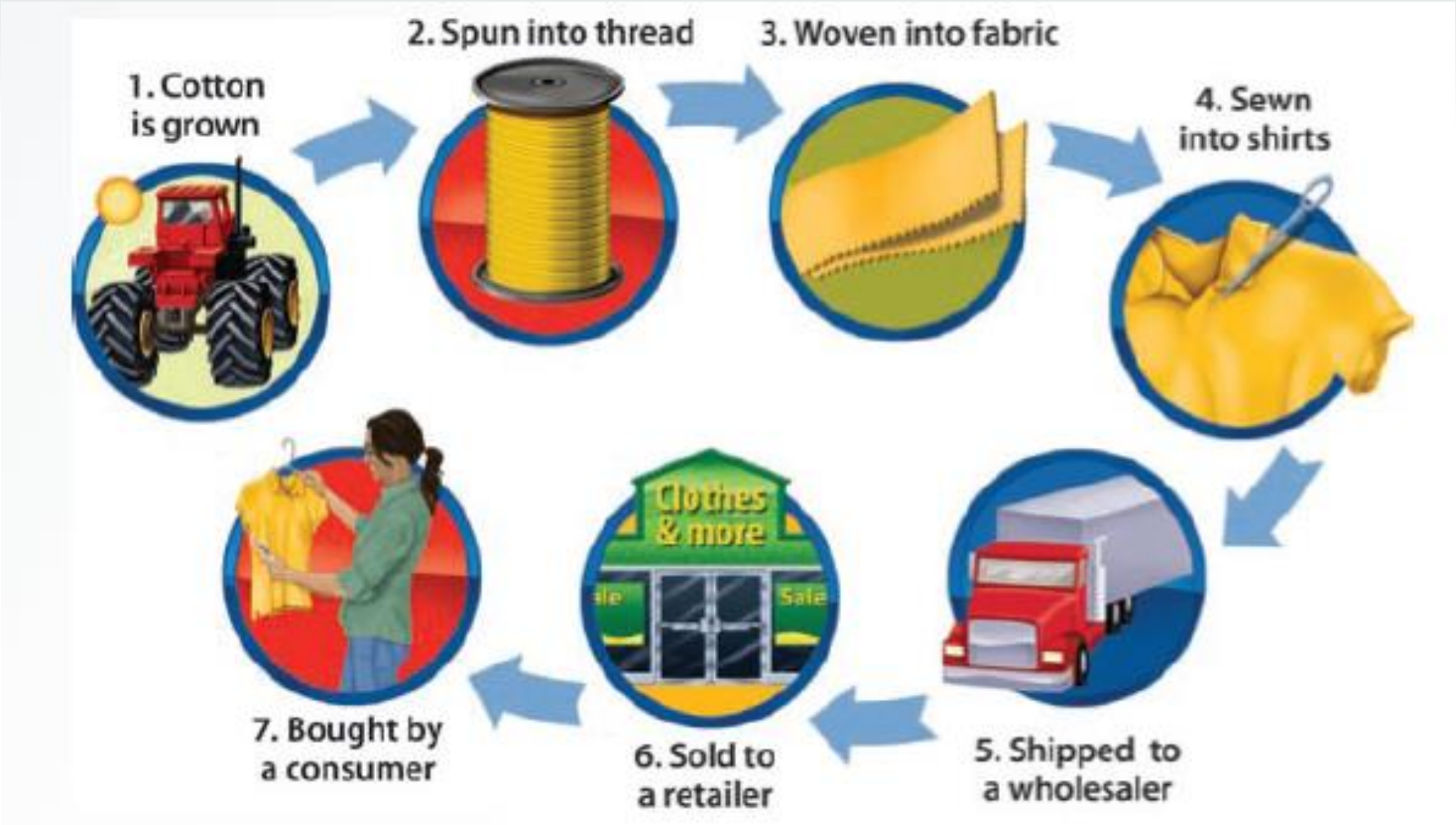
Specialization and Exchange

- **Barter**
  - *Direct exchange of one product for another without using money*
  - *Possible in simple economies*
    - Few goods, little specialization
- Money facilitates exchange
- Degree of specialization
  - *Limited by the extent of the market*

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Exhibit 1

Specialization in the Production of Cotton Shirts



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Division of Labor

- *Breaking down the production of a good into separate tasks*
- *Benefit*
  - Increased productivity
- *Downside:*
  - Repetitive
  - Tedious
  - Routine tasks – robots

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Division of Labor (continued)

- **Specialization of labor**
  - *Takes advantage of individual preferences and natural abilities*
  - *Allows workers to develop more experience at a particular task*
  - *Reduces the need to shift between different tasks*
  - *Permits the introduction of labor-saving machinery*

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Efficiency and the PPF

- **Production Possibilities Frontier (PPF)**
  - *Economy's production combinations*
  - *Assumptions*
    - Output limited to consumer and capital goods
    - Production limited to a given period
    - Fixed resources (quantity, quality)
    - Fixed technology
    - Fixed "rules of the game"

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Efficiency and the PPF (continued 1)

- PPF
  - *Curve showing alternative combinations of goods that can be produced when available resources are used efficiently*
  - *Boundary line between inefficient and unattainable combinations*

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Efficiency and the PPF (continued 2)

- **Efficiency**
  - *When there is no way resources can be reallocated to increase the production of one good without decreasing the production of another*
  - *Getting the most from available resources*
- Efficient combinations: along the PPF

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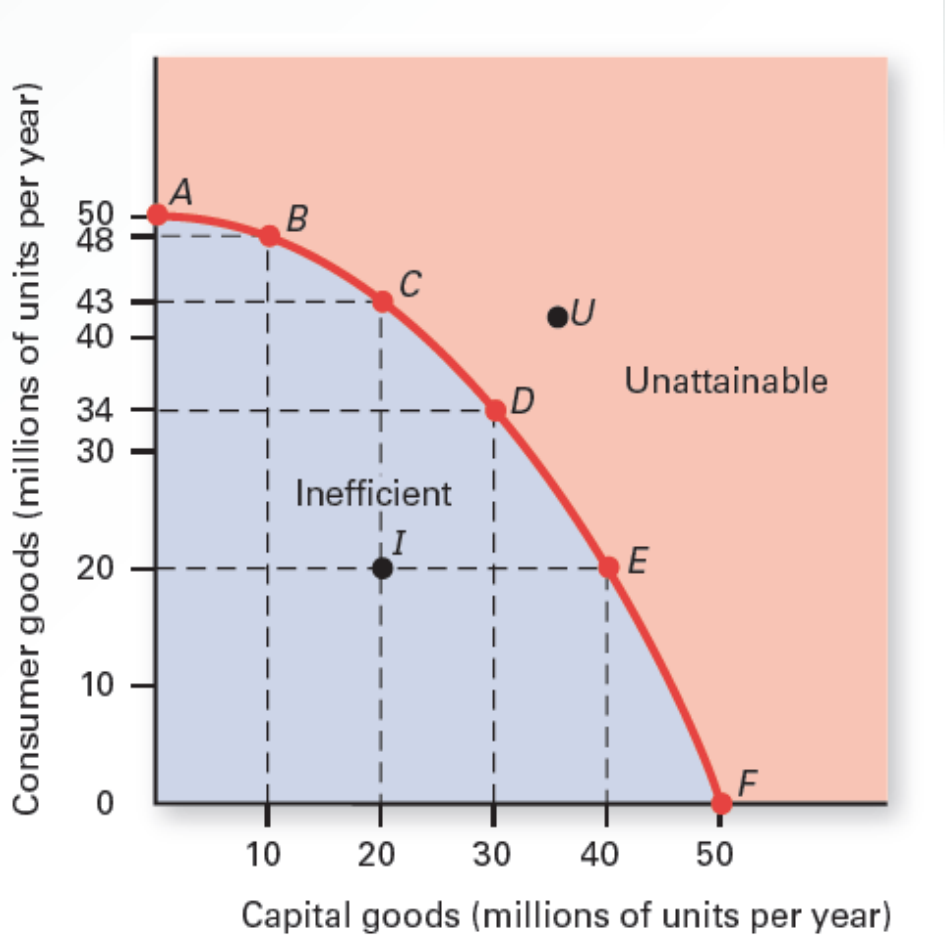
Efficiency and the PPF (continued 3)

- Inefficient combinations
  - *Output combinations inside the PPF*
- Unattainable combinations
  - *Output combinations outside the PPF*

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Exhibit 2

The Economy's Production Possibilities Frontier



If the economy uses its available resources and technology efficiently to produce consumer goods and capital goods, that economy is on the production possibilities frontier, AF. The PPF is bowed out to reflect the law of increasing opportunity cost; the economy must sacrifice more and more units of consumer goods to produce an additional increment of capital goods. Note that more consumer goods must be given up in moving from E to F than in moving from A to B, although in each case the gain in capital goods is 10 million units. Points inside the PPF, such as I, represent inefficient use of resources. Points outside the PPF, such as U, represent unattainable combinations.

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The Shape of the PPF

- Moving down along a PPF:
  - *Involves giving up some consumer goods to get more capital goods*
  - *The slope of the PPF*
  - *Based on the **law of increasing opportunity** cost*
    - To produce more of one good, a successively larger amount of the other good must be sacrificed

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What Can Shift the PPF?

- **Economic growth**
  - *Refers to an increase in the economy's ability to produce goods and services*
  - *Causes an outward shift of the economy's PPF*
- Economic growth can occur due to:
  - *Increases in capital stock*
  - *Technological change*

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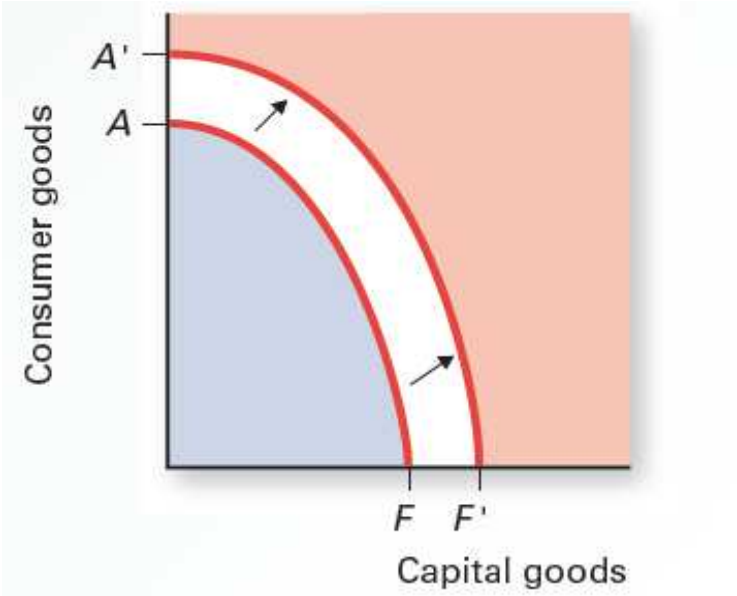
What Can Shift the PPF? (continued)

- *Increases in resource availability*
  - Size, health of labor force
  - Skills of labor force
  - Availability of other resources
- *Improvements in the rules of the game*
  - Formal and informal institutions

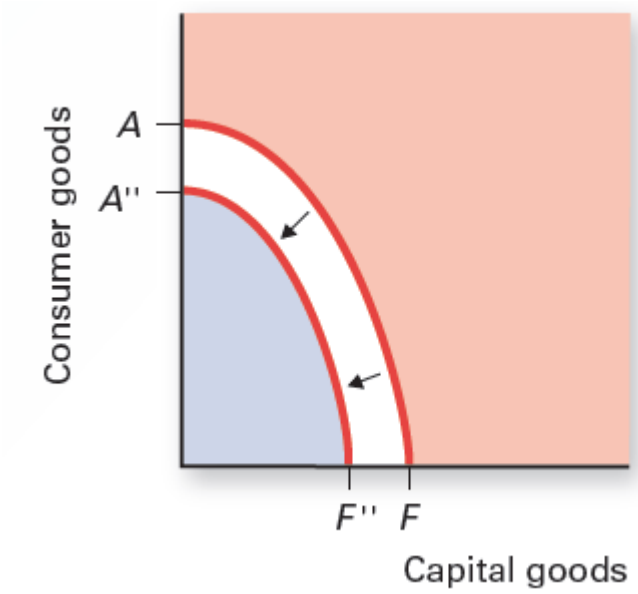
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Exhibit 3 (a), (b) Shifts of the Economy's Production Possibilities Frontier

(a) Increase in available resources, technology breakthrough, or improvement in the rules of the game



(b) Decrease in available resources or greater uncertainty in the rules of the game

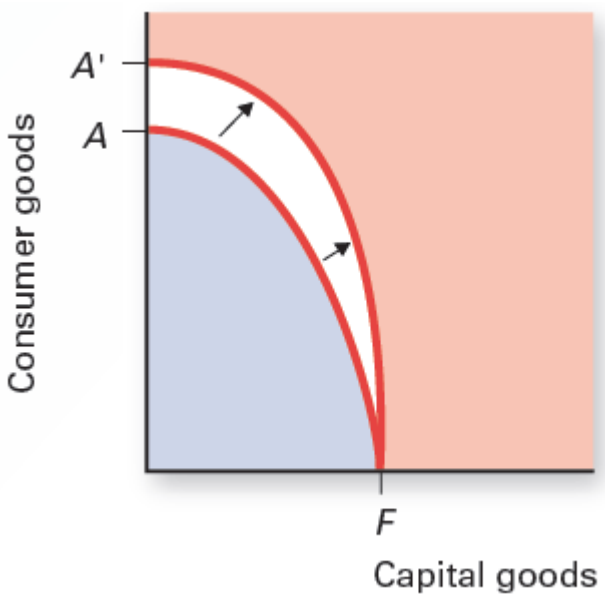


When the resources available to an economy change, the PPF shifts. If more resources become available, if technology and the know-how improve, or if the rules of the game improve, the PPF shifts outward, as in panel (a), indicating that more output can be produced. A decrease in available resources causes the PPF to shift inward, as in panel (b).

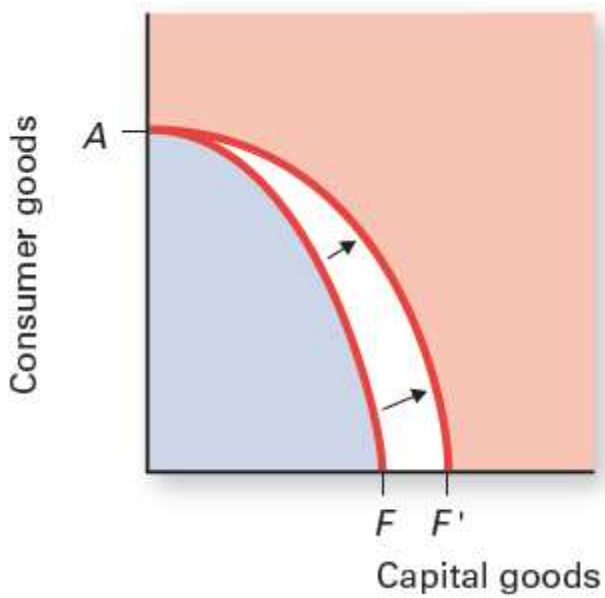
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Exhibit 3 (c), (d) Shifts of the Economy's Production Possibilities Frontier

(c) Change in resources, technology, or rules that benefits consumer goods



(d) Change in resources, technology, or rules that benefits capital goods



Panel (c) shows a change affecting consumer goods production. More consumer goods can now be produced at any given level of capital goods. Panel (d) shows a change affecting capital goods production.

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What We Learn from the PPF?

- Efficiency
- Scarcity
- Opportunity cost
  - *Law of increasing opportunity cost*
- Economic growth
- Choice
  - *Made based on costs and benefits*

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Economic Systems

- Three questions
  - *What?*
  - *How?*
  - *For whom?*
- **Economic system**
  - *Set of mechanisms and institutions that resolve the what, how, and for whom questions*

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Economic Systems (continued)

- Categorized on the basis of:
  - *Ownership of resources*
  - *Allocation of resources*
  - *Incentives*
- Range from
  - ***Pure capitalism*** *to* ***Pure command system***

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Pure Capitalism

- **Private property rights**
  - *Owner's right to use, rent, or sell resources or property*
- Unregulated markets answer the three questions
  - *Resources – most productive use*
  - *Goods and services – most valued*
  - *Voluntary buying and selling*

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Pure Capitalism (continued)

- Supported by Adam Smith (1723–1790)
  - *Market forces allocate resources as if by an "invisible hand"*
    - Unseen force that harnesses the pursuit of self-interest to direct resources where they earn the greatest reward
  - *Although each individual pursues his or her self-interest, the "invisible hand" promotes general welfare*

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Pure Capitalism: Flaws

- No central authority
- People with no resources could starve
- Monopolization of some markets
- Side effects that can harm people not involved in transactions
- No public goods
- Economic fluctuations

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Pure Command System

- Public or communal ownership of property
- Government planners:
  - *Draft central plans*
  - *Direct resources*
  - *Coordinate production*
  - *Answer the three economic questions*
- Communism

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Pure Command System: Flaws

- Resources
  - *Used inefficiently*
  - *Wasted (no incentives)*
- Governed by preferences of planners
- Limited variety of products
- Less freedom of economic choice
- Less incentive to develop better products as nobody can earn profit

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Mixed and Transitional Economies

- Government in a **mixed system**:
  - *Accounts for economic activity*
  - *Regulates the private sector*
- Increasing role of government
  - *In capitalist economies*
- Increasing role of markets
  - *In command economies*

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Economies Based on Custom or Religion

- Family relations play a significant role:
  - *In organizing economic activity*
  - *In coordinating economic activity*
- Customs:
  - *Limit business growth*
  - *Affect pattern of consumption and choice of occupation*

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KEY TERMS

- Opportunity cost
- Sunk cost
- Law of comparative advantage
- Absolute advantage
- Comparative advantage
- Barter
- Division of labor
- Specialization of labor
- Production possibilities frontier
- Efficiency
- Law of increasing opportunity cost
- Economic growth
- Economic system
- Pure capitalism
- Private property rights
- Pure command system
- Mixed system

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SUMMARY

- Resources are scarce in relation to wants. Therefore, whenever a choice is made and an opportunity is passed, some opportunity cost is incurred
- Specialization and exchange make everyone better off
- Economies use a set of mechanisms and institutions to resolve the what, how, and for whom to produce questions
- The different types of economic systems include- pure capitalist, pure command, mixed, and economies based on custom and religion

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