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Chapter 2
Production Possibilities, Opportunity Cost, and Economic Growth

CHAPTER IN A NUTSHELL

In this chapter, you continue your quest to learn the economic way of thinking. The chapter begins with the three basic questions each economy must answer: (1) What to produce? (2) How to produce? and (3) For whom to produce? The chapter then introduces concepts which economists use to analyze choice-the production possibilities curve and opportunity costs. The production possibilities curve indicates various maximum combinations of the output of two goods a simple economy can produce. The economy can achieve economic growth by pushing the production possibilities curve outward. This shift in the curve can be caused by increasing resources and/or advances in technology.

KEY CONCEPTS

Economic growth
Investment
Law of increasing opportunity costs
Marginal analysis
Opportunity cost
Production possibilities curve
Technology
What, How, and For Whom questions

LEARNING OBJECTIVES

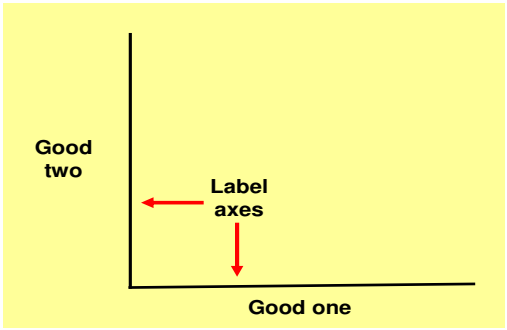
After completing this chapter, you should be able to:

1. Identify the opportunity cost of an action.
2. Describe what it means to think at the margin.
3. Generate the graph of a production possibilities curve for any two commodities.
4. Explain why the slope of a production possibilities curve is not constant.
5. Given a graph of a production possibilities curve, determine the opportunity cost for producing each commodity.
6. Given a graph of a production possibilities curve, identify a combination of outputs as inefficient, efficient, feasible, or infeasible.
7. 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.

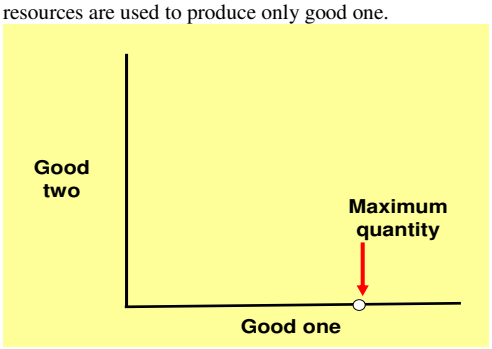
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THE ECONOMIST'S TOOL KIT
Plotting the Production Possibilities Curve

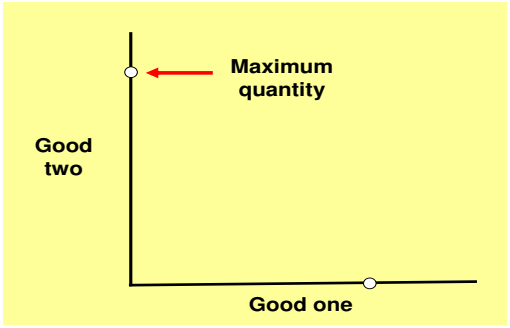
Step one: Draw and label a set of coordinate axes.



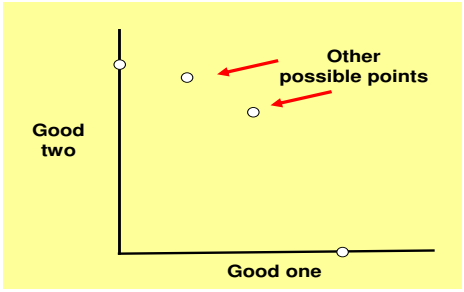
Step two: Plot the maximum quantity that can be produced if all resources are used to produce only good one.



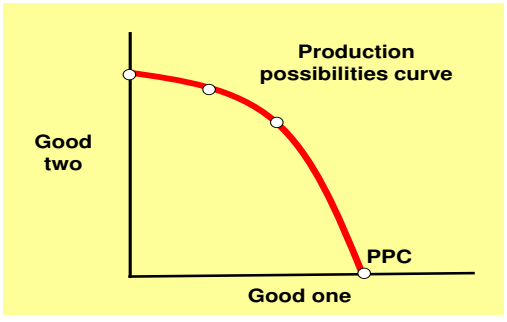
Step three: Plot the maximum quantity that can be produced if all resources are used to produce only good two.



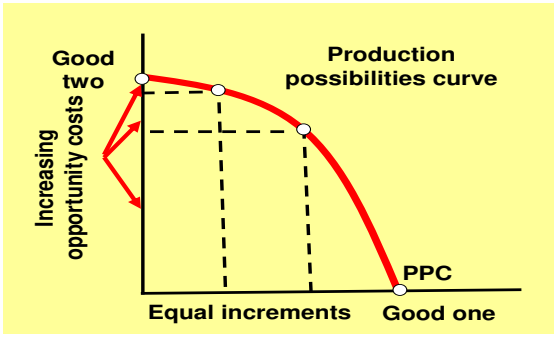
Step four: Plot other maximum possible combinations of both goods that can be produced if all resources are used to produce only two goods.



Step five: Draw a smooth curve connecting these points and label it PPC. This curve is the production possibilities curve.



Step six: Verify that increasing opportunity, measured on the vertical axis, occurs as equal increments of good one are produced along the horizontal axis and the slope gets steeper.



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COMPLETION QUESTIONS

1. The _____ problem concerns the division of output among society's citizens. The _____ question asks exactly which goods are to be produced and in what quantities. The _____ question requires society to decide the resource mix used to produce goods.

2. _____ is the best alternative forgone for a chosen option.

3. The basic approach that compares additional benefits of a change against the additional costs of the change is called _____.

4. The _____ represents the maximum possible combinations of two outputs that can be produced in a given period of time. Inefficient production occurs at any point inside the curve and all points along the curve are efficient points.

5. The _____ states that the opportunity cost increases as production of an output expands.

6. _____ occurs when the production possibilities curve shifts outward as the result of changes in the resource base or advance in technology.

7. Factories, equipment, and inventories produced in the present are called _____which can be used to shift the production possibilities curve outward in the future.

8. The body of knowledge and skills applied to how goods are produced is _____.

MULTIPLE CHOICE

1. Which of the following is *not* one of the three fundamental economic questions?
   a. What happens when you add to or subtract from a current situation?
   b. For whom to produce?
   c. How to produce?
   d. What to produce?

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2. Which of the following does *not* illustrate opportunity cost?
   a. If I study, I must give up going to the football game.
   b. If I buy a computer, I must do without a 35" television.
   c. *More* consumer spending now means *more* spending in the future.
   d. If I spend more on clothes, I must spend less on food.

3. Which of the following would be *most* likely to cause the production possibility curve for computers and education to shift outward?
   a. A choice of more computers and less education.
   b. A choice of more education and less computers.
   c. A reduction in the labor force.
   d. An increase in the quantity of resources.

Exhibit 1 Production possibility curve data

	A	B	C	D	E	F
Capital goods	15	14	12	9	5	0
Consumer goods	0	2	4	6	8	10

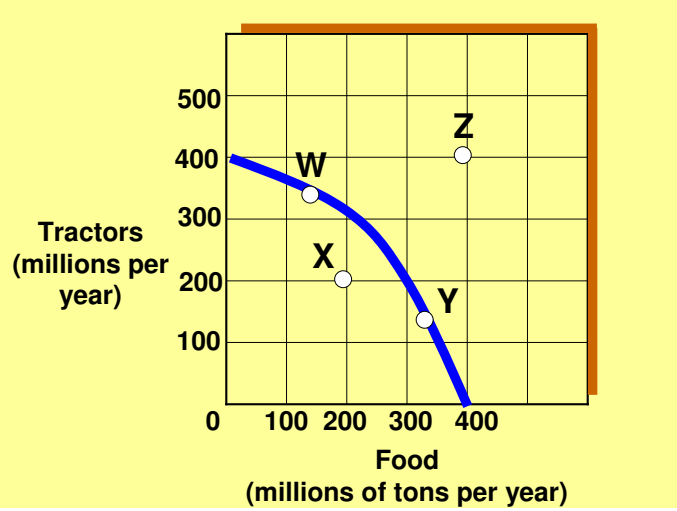
4. As shown in Exhibit 1, the concept of increasing opportunity costs is reflected in the fact that:
   a. the quantity of consumer goods produced can never be zero.
   b. the labor force in the economy is homogeneous.
   c. greater amounts of capital goods must be sacrificed to produce an additional 2 units of consumer goods.
   d. a graph of the production data is a downward-sloping straight line.

5. As shown in Exhibit 1, a total output of 0 units of capital goods and 10 units of consumer goods is:
   a. the maximum possible output of capital goods for this economy.
   b. an inefficient way of using the economy's scarce resources.
   c. the result of efficient use of the economy's resources.
   d. unobtainable in this economy.

6. As shown in Exhibit 1, a total output of 14 units of capital goods and 0 units of consumer goods is:
   a. the result of maximum use of the economy's labor force.
   b. an efficient way of using the economy's scarce resources.
   c. unobtainable in this economy.
   d. less than the maximum rate of output for this economy.

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Exhibit 2 Production possibilities curve



7. If the economy represented in Exhibit 2 is operating at Point W:
   a. no tractor production must be forgone to produce more food in the current period.
   b. resources are not fully used.
   c. some tractor production must be forgone to produce more food in the current period.
   d. increased food production would be impossible.

8. Which of the following moves from one point to another in Exhibit 2 would represent an increase in economic efficiency?
   a. Z to W
   b. W to Y
   c. W to X
   d. X to Y

9. Movement along the production possibilities curve shown in Exhibit 2 indicates:
   a. that labor is not equally productive or homogeneous.
   b. declining opportunity costs.
   c. all inputs are homogeneous.
   d. All of the answers above are correct.

10. In order for the economy shown in Exhibit 2 to reach point Z, it must:
   a. suffer resource unemployment.
   b. experience an increase in its resources and/or an improvement in its technology.
   c. use its resources more efficiently than at point W or Y.
   d. All of the answers above are correct.

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11. The following two alternatives exist for a student who has one evening in which to prepare for two exams on the following day:

Possibility	Score in Economics	Score in Accounting
A	95	80
B	80	90

The opportunity cost of receiving a 90 rather than an 80 on the accounting exam is represented by how many points on the economics exam?
a. 15 points.
b. 80 points.
c. 90 points.
d. 10 points.

12. On a production possibilities curve, a change from economic inefficiency to economic efficiency is obtained by:
a. movement along the curve.
b. movement from outside the frontier to a point on the curve.
c. movement from a point inside the frontier to a point on the curve.
d. a change in the slope of the curve.

13. One of the assumptions underlying the production possibilities curve for any given economy is that:
a. the state of technology is changing.
b. there is an unlimited supply of available resources.
c. there is full employment and no underemployment of resources when the economy is operating on the curve.
d. goods can be produced in unlimited quantities.

14. Any point on the production possibilities curve illustrates:
a. minimum production combinations.
b. maximum production combinations.
c. economic growth.
d. a nonfeasible production combination.

15. A production possibilities curve has "good X" on the horizontal axis and "good Y" on the vertical axis. On this diagram, the opportunity cost of good X, in terms of good Y, is represented by the:
a. distance to the curve from the horizontal axis.
b. distance to curve from the vertical axis.
c. movement along the curve.
d. None of the answers above are correct.

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16. As production of a good increases, opportunity costs rise because:
    a. there will be more inefficiency.
    b. people always prefer having more goods.
    c. of inflationary pressures.
    d. workers are not equally suited to all tasks.

17. Which of the following would be *most* likely to cause the production possibility curve for tanks and cars to shift outward?
    a. A reduction in the labor force.
    b. A choice of more tanks and fewer cars.
    c. A choice of more cars and fewer tanks.
    d. An increase in the quantity of natural resources.

18. Which of the following cause(s) economic growth?
    a. Answers c and d are correct.
    b. Answers d and e are correct.
    c. The production of more scarce goods
    d. A technological improvement
    e. The production of more capital goods

19. A source of economic growth is:
    a. unemployment.
    b. inefficiency.
    c. less resources.
    d. greater entrepreneurship.

20. In economics, investment refers to the process of accumulating:
    a. capital goods.
    b. inefficiency.
    c. money.
    d. stocks and bonds.

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TRUE OR FALSE

1. T F The opportunity cost of a good is the good or service forgone for a chosen good or service.

2. T F If some resources were used inefficiently, the economy would tend to operate outside its production possibilities curve.

3. T F Of all the points on the production possibilities curve, only one point represents an efficient division of labor.

4. T F The most efficient point on the production possibilities curve is the midpoint on the curve.

5. T F On the production possibilities curve, a movement between points that yields a loss of one good in order to raise the output of another good will maintain efficient production.

6. T F If more of one good can be produced without loss of output of another along the same production possibilities curve, the economy must have been operating efficiently.

7. T F All points on the production possibilities curve represent efficient levels of production.

8. T F Investment is an economic term for the act of increasing the stock of money available for business loans.

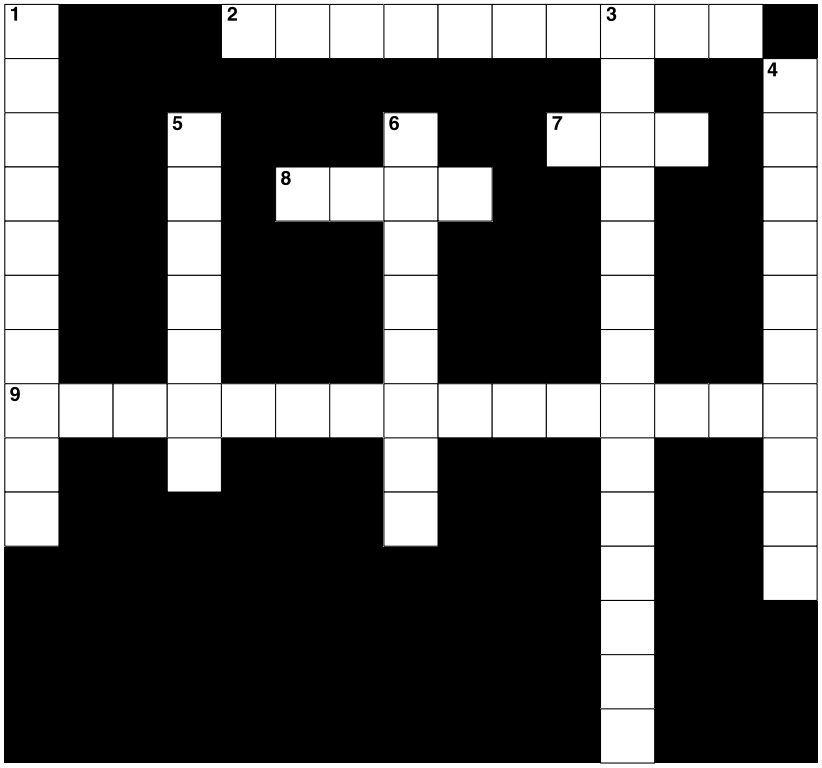
9. T F What to produce, how to produce, and for whom to produce are the three fundamental economic questions.

10. T F Unemployment or underemployment of labor might explain why an economy would be operating inside its production possibilites curve (PPC).

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CROSSWORD PUZZLE

Fill in the crossword puzzle from the list of key concepts. Not all of the concepts are used.



ACROSS

2. The accumulation of capital.
7. The basic economic question of which resources to use in production.
8. The basic economic question of which goods and services to produce.
9. The best alternative sacrificed.

DOWN

1. The application of knowledge to production.
3. An outward shift of the production possibilities curve.
4. The _____ possibilities curve shows the maximum combinations of two outputs than an economy can produce, given its available resources and technology.
5. The basic economic question of who receives goods and services.
6. _____ analysis means additions to or subtractions from a current situation .

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ANSWERS

Completion Questions

1. for whom, what, how
2. opportunity cost
3. marginal analysis
4. production possibilities curve
5. law of increasing opportunity costs
6. economic growth
7. investment
8. technology

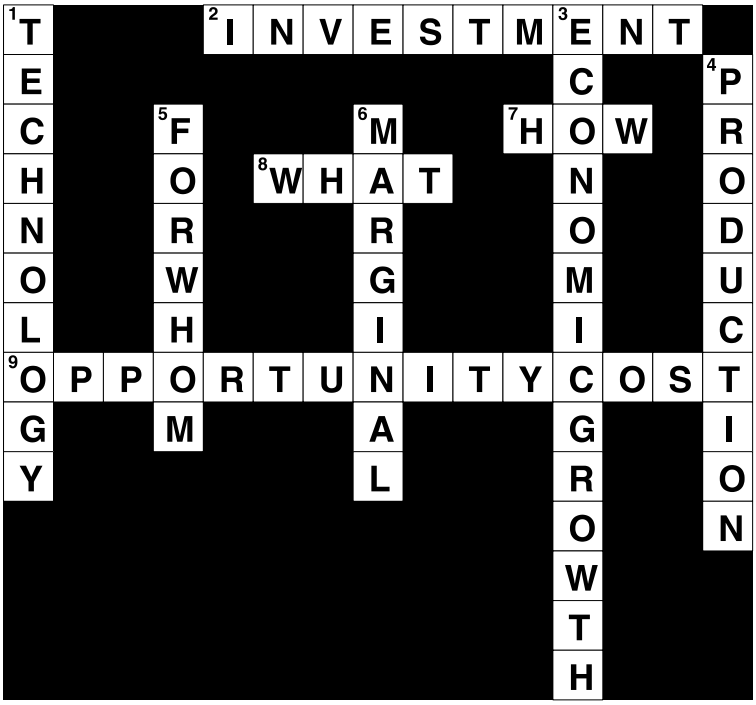
Multiple Choice

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

True or False

1. True 2. False 3. False 4. False 5. True 6. False 7. True 8. False 9. True 10. True

Crossword Puzzle



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