

Chapter 2

The Economic Problem

Chapter Summary

1. Scarcity exists in every society because human material wants are unlimited, whereas the economic resources necessary to produce the goods and services to satisfy these wants are limited. All economies therefore have an economic problem: deciding what to produce, how to produce, and who shall receive the goods and services produced.
2. This economic problem of limited production can be presented as a production-possibility frontier—the maximum alternative combinations of goods and services that can be produced at a point in time.
3. Economic growth occurs when the economy's productive capabilities increase; this growth in productive capability is depicted as an outward shift of the economy's production-possibility frontier.
4. When production is at its maximum, increased output of Good A requires reduced production of other goods, i.e., there is an opportunity cost to the increased production of Good A. The principle of increasing costs states that continuous expansion in the production of Good A is secured only by sacrificing increasing amounts of other goods.
5. Decisions on what goods and services to produce are made by government command or through a market mechanism. With a market system, decisions are determined by potential buyers' ability and willingness to pay for the goods and services produced.

Important Terms

Capital. Goods such as tools, machines, factories, and transportation networks which are used in and/or facilitate the production of goods and services that satisfy human wants. The terms *capital* and *capital resources* are interchangeable.

Command economy. An economy in which the government directs the allocation of resources, the output of goods and services, and the distribution of the resulting output.

Economic efficiency. A state in which it is impossible to produce additional output of a particular good or service without decreasing the output of other goods or services.

Economic growth. An increase in the economy's productive capabilities due to an increase in the quantity or quality of economic resources and/or a change in technology.

Economic problem. Because of limited productive capabilities, there is a need to make decisions about what to produce, how to produce, and the distribution of output.

Factors of production. The inputs—land, labor, and capital—necessary for the production of goods and services. The terms *factors of production* and *economic resources* are interchangeable.

Labor. The mental and physical skills of individuals which are used to produce goods and services. The terms *labor* and *human resources* are interchangeable.

Land. The economy's natural resources—land, trees, oil, minerals—which can be used to produce goods and services. The terms *land* and *natural resources* are interchangeable.

Market economy. An economy in which individuals and businesses freely decide where to employ economic resources, freely decide which goods and services to produce, and freely distribute the resulting output.

Opportunity cost. What must be sacrificed in order to implement an alternative action. In terms of producing goods and services it is the output that will no longer be produced in order to increase the output of a specific good or service.

Principle of increasing costs. More units of one good are given up to produce an additional unit of an alternative good.

Production possibility. The maximum amount of goods and services which can be produced at a point in time with existing resources and a given state of technology.

Scarcity. Exists because economic resources are unable to supply (produce) all the goods and services demanded.

Outline of Chapter 2: The Economic Problem

- 2.1 The Problem of Scarcity
- 2.2 The Production-Possibility Frontier
- 2.3 The Principle of Increasing Costs
- 2.4 Scarcity and the Market System

2.1 THE PROBLEM OF SCARCITY

Economics is the study of scarcity—the study of the allocation of scarce resources to satisfy human wants. People's material wants, for the most part, are unlimited: it seems that the more people have, the more they want. Output, on the other hand, is limited by the state of technology and the quantity and quality of the economy's resources, i.e., by the quantity and quality of human, capital, and natural resources. Because economic resources and the output of goods and services are limited, the production of each good and service involves a cost. Thus, each good and service produced is supplied at a price greater than zero.

Scarcity is a fundamental problem for every society. Decisions must be made regarding *what to produce*, *how to produce*, and *for whom to produce*. *What to produce* involves decisions about the kinds and quantities of goods and services to produce. *How to produce* requires decisions about what techniques to use and how the economic resources (labor, capital, and land) are to be combined in producing output. And *for whom to produce* involves decisions on the distribution of output—how what has been produced is to be distributed among the members of a society.

EXAMPLE 2.1. *What to produce:* Every society must somehow decide how many luxurious mansions and how many low-cost apartments to construct, how many full-size and compact cars to build, how many schools to erect and teachers to train, how much food and medical services to supply, and how many civilian and defense goods and services to provide. *How to produce:* Since goods such as houses and cars and services such as education and medical treatments can usually be produced with many different techniques and combinations of labor, capital, and land, it is crucial to determine which of the many techniques and available factor combinations should be used. *For whom to produce:* Payment of income to individuals in the society, the price of each good and service, and the personal preferences of each individual will determine the distribution of goods and services (output) among the members of society.

Decisions on what to produce and how to produce involve opportunity costs. An *opportunity cost* is what is sacrificed to implement an alternative action, i.e., what is given up to produce or obtain a particular good or service. For example, the opportunity cost of expanding a country's military arsenal in a full-employment economy is the decreased production of nonmilitary goods and services. Opportunity costs are found in every situation in which scarcity necessitates decision making.

EXAMPLE 2.2. Opportunity costs exist for society as a whole. The greater the number of people trained to provide medical services, the fewer are available to be lawyers, teachers, or accountants. Therefore, the opportunity cost of training more people to provide medical services is the amount of legal, educational, and accounting services that will not exist. As more of a society's capital equipment is used to produce cars, less capital is available to produce washing machines, motorboats, or bicycles. The opportunity cost of increased capital in the automobile industry is the amount of capital no longer available to produce washing machines, motorboats, or bicycles. Similarly, when more land is used to produce wheat, less is available to produce corn. The opportunity cost of expanded wheat production is the decreased amount of corn production.

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Opportunity costs also exist for an individual. Time is a scarce resource. The more time one devotes to studying, the less time one has for leisure activities such as sports, TV, and socializing. And, of course, there is an opportunity cost in last-minute cramming for examinations—the time that otherwise would have been allocated to sleeping the night before the examination.

2.2 THE PRODUCTION-POSSIBILITY FRONTIER

A production-possibility frontier shows the maximum amount of alternative combinations of goods and services that a society can produce at a given time when there is full utilization of economic resources and technology. Table 2-1 presents alternative combinations of guns and butter output for a hypothetical economy. (Guns represent the output of military goods, while butter represents the production of nonmilitary goods and services.) In choosing what to produce, decision makers have a choice of producing, for example, alternative C—5000 guns and 14 million units of butter—or any of the other alternatives. This production-possibility schedule is plotted in Fig. 2-1. The curve, labeled PP, is called the production-possibility frontier. Point C on the production-possibility curve represents a position of full employment of the economy's resources and full use of its technology; at point C, 5000 guns and 14 million units of butter are produced. Point D is another possible alternative, one in which more guns and fewer units of butter are produced.

The production-possibility frontier depicts not only limited productive capability and therefore the problem of scarcity, but also the concept of opportunity cost. When an economy is on the production-possibility curve, such as at point C, gun production can be increased only by decreasing butter output. Thus, to move from alternative C (5000 guns and 14 million units of butter) to alternative D (9000 guns and 6 million units of butter), 8 million fewer units of butter are produced in order to increase gun production 4000 units. The opportunity cost of the additional 4000 units of gun production is 8 million units of butter.

The production-possibility frontier shifts outward over time as more resources become available and/or technology is improved. Growth in the economy's productive capability is depicted in Fig. 2-1 by the outward shift of the production-possibility frontier from PP to P'P'. Suppose the economy is at point C, producing 5000 guns and 14 million units of butter. When the production-possibility frontier shifts upward from PP to P'P', 4000 additional guns can be produced without sacrificing any butter production. This example of growth in productive capacity should not be construed as a refutation of the law of opportunity cost. Fewer sacrifices may be made when growth occurs. However, when there is efficient utilization of resources and an absence of growth, additional gun production is possible only when the output of butter is decreased.

Points on a production-possibility frontier are efficient; points within the frontier are inefficient and points outside the frontier are unattainable. Points C and D on production-possibility frontier PP are efficient because all available resources are utilized and there is full use of existing technology. Positions outside the production-possibility frontier PP are unattainable since the production-possibility frontier defines the maximum amount that can be produced at a given time. Positions within a production-possibility frontier are inefficient because some resources are either unemployed or underemployed, i.e., either not employed at all or employed at tasks that do not fully utilize the production capability of the resource.

EXAMPLE 2.3. On production-possibility frontier PP in Fig. 2-1, point C represents full and efficient utilization of resources. For curve PP, alternative C' is unattainable since output cannot exceed the economy's productive capabilities, i.e., output cannot extend beyond the limits depicted by the production-possibility frontier PP. Once the production-possibility frontier has shifted outward to P'P', alternative C then represents inefficient utilization of resources—resources are either unemployed or underemployed since alternative C is inside production-possibility frontier P'P'.

Table 2-1

Alternative Outputs	Guns (thousand units)	Butter (million units)
A	0	20
B	2	18
C	5	14
D	9	6
E	10	0

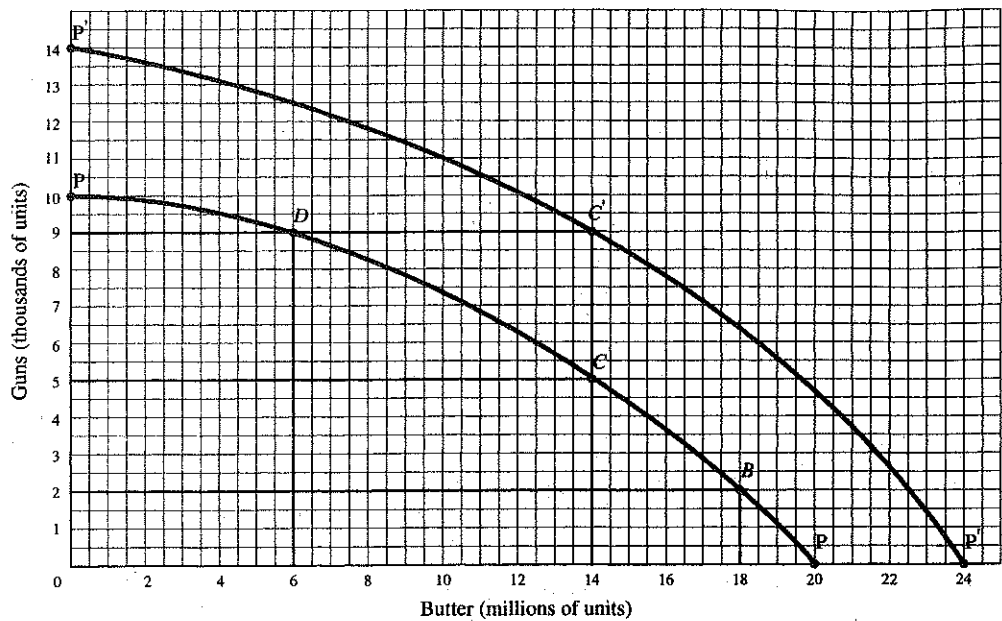


Fig. 2-1

2.3 THE PRINCIPLE OF INCREASING COSTS

Resources are not equally efficient in the production of goods and services, i.e., they are not equally productive when used to produce an alternative good. This imperfect substitutability of resources is due to differences in the skills of labor and to the specialized function of most machinery and many buildings. Thus, when the decision is made to produce more guns and less butter, the resources reallocated to the production of guns are usually less productive. It therefore follows that as larger amounts of resources are transferred from the production of butter to the production of guns, increasing units of butter are given up for fewer incremental units of guns. This increasing opportunity cost of gun production illustrates the principle of increasing costs.

EXAMPLE 2.4. An economy's production-possibility schedule for food and clothing is presented in Table 2-2. In moving from alternative A to alternative B we find that by reducing clothing production from 10 to 9 units, enough resources are released to produce the first unit of food. Thus, the cost to produce this first unit of food is the 1 unit of clothing that is given up. (Cost here is represented in terms of units of goods, not as a money cost.) A movement from B to C shows that we must give up 2 units of clothing (from 9 to 7) to produce the second unit of food. Thus, the cost of this second unit of food equals the 2 units of clothing that are given up. To get the third unit of food, 3 units of clothing must be given up (a movement from C to D). Finally, the cost of getting the fourth unit of food is 4 units of clothing. Thus, as we produce more food, we incur higher and higher costs in terms of units of clothing forgone. There is an increasing cost of food production because we are employing more resources in the production of food which are best suited to clothing production and increasingly less productive when employed in the production of food.

Table 2-2

Alternative or Point	Units of Food (millions)	Units of Clothing (thousands)	Cost of Additional Units of Food
A	0	10	
B	1	9	
C	2	7	
D	3	4	
E	4	0	

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2.4 SCARCITY AND THE MARKET SYSTEM

As we have seen, two of the most important economic decisions faced by a society are deciding what goods and services to produce and how to allocate resources among their competing uses. The combination of goods and services produced can be resolved by government command or through a market system. In a *command economy*, a central planning board determines the mix of output. The experience with central planning, however, has not been very successful, as evidenced by the changing economic and political events in the 1990s in the command economies of Eastern Europe and the former U.S.S.R. In a *market economy*, economic decisions are decentralized and are made by the collective wisdom of the marketplace, i.e., prices resolve the three fundamental economic questions of *what*, *how*, and *for whom*. The only goods and services produced are those which individuals are willing to purchase at a price sufficient to cover the cost of producing them. Because resources are scarce, goods and services are produced using the technique and resource combination which minimizes the cost of production. And the goods and services produced are sold (distributed) to those who are willing and have the money income to pay their prices. What develops is a circular flow which is directed by the collective wants of the employable individuals in the society (see Example 2.5).

EXAMPLE 2.5. The circular flow integral to a market system is presented in Fig. 2-2. (1) Business firms purchase or hire the economic resources owned by individuals in order to produce goods and services. (2) Business firms make a monetary payment to individuals for the use of these resources. (3) Individuals use the income received for the use of their resources to purchase the goods and services produced by business firms. (4) Individuals receive the goods and services produced by business firms.

What goods and services are produced is determined by the spending preferences of individuals; *how* these goods and services are produced depends upon the relative scarcity of the resources needed for production and the state of technology; to *whom* the output is distributed is determined by the income received by individuals in supplying resources to business firms.

In a mixed economy such as that of the United States, this process is modified by government action. The production of items such as roads, government services, and elementary education is commanded by government; government pays for these goods and services by taxing those who own natural resources and by taxing personal and business income.

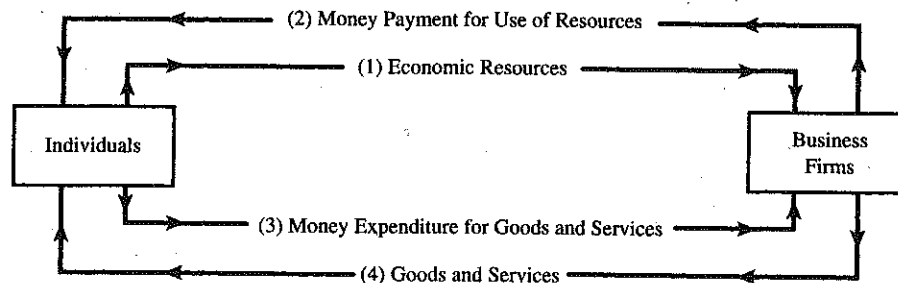


Fig. 2-2

Solved Problems

THE PROBLEM OF SCARCITY

- 2.1. (a) What are economic resources?
 (b) Explain the meaning of (1) land, (2) capital, and (3) labor as used in economics.
- (a) *Economic resources* consist of land (natural resources), capital (human-made resources), and labor (human resources). These resources are not free; they command a price because they are scarce and are essential to the production of goods and services.
- (b) (1) *Land* consists of an economy's natural resources, "gifts of nature" such as minerals, forests, rivers, and agricultural land. Owners of land receive rental income when it is used to produce goods or services.
 (2) *Capital* is human-made resources and consists of tools, equipment, machinery, buildings, and trans-

portation networks which are used in and/or facilitate the production of goods and services. *Financial capital* consists of financial instruments, such as savings accounts, bonds, and stocks, which come into being when individuals save and then lend this saving for the creation of tools, equipment, machinery, and so on. Capital resources are classified as *real capital* to differentiate them from financial capital. Owners of real capital receive an interest return.

(3) *Labor* consists of human beings who possess a wide array of skills which are needed to produce goods and services. The skills of labor vary, ranging from the relatively lower-skilled talents of a supermarket checkout clerk to the skills of a highly trained surgeon. Since some labor skills are scarcer and more productive than others, individuals who possess specialized skills which are in high demand receive greater compensation. *Entrepreneurial ability* is a very special labor skill. An entrepreneur is a person who forms a firm, hires economic resources, and produces goods or services that society wants. While labor resources receive wages, an entrepreneur's payment consists of profits earned by forming and managing a profitable firm.

- 2.2. (a) Why is there limited output?
 (b) Why does the problem of scarcity exist?
 (c) Explain the statement "Economics is the study of scarcity."
 (a) Goods and services are not abundant and available for the asking; they must be produced by employing human, capital, and natural resources. A car is manufactured, for example, by employing labor, by utilizing machines, and by using natural resources such as oil (plastics) and iron and coal (steel). Wheat is grown by farmers who sow seeds in agricultural land with the use of tractors and tillers. A society's production of goods and services is thereby limited by the quantity and quality of its economic resources.
 (b) Scarcity exists worldwide because people want more goods and services than can be produced by each economy's limited supply of economic resources.
 (c) Since an economy cannot produce all the goods and services it wants, there are competing and therefore conflicting uses for scarce economic resources. Decisions must be made regarding the use of resources and therefore the production of goods and services. Economics is thus the study of the allocation of scarce resources among competing uses—i.e., the study of scarcity.
- 2.3. (a) Why is *what* to produce a problem for every society?
 (b) Why is *how* to produce a problem?
 (c) Why is *for whom* to produce a problem?
 (a) *What* to produce focuses upon the decisions that society makes about the quantity and quality of goods and services to produce. Since economic resources are limited, no economy can produce all the goods and services a society may want. And since more of one good or service means less of others, every society must choose which and how much of each good and service to produce.
 (b) *How* to produce concerns decisions on the technique and the combination of economic resources to be used in producing a good or service. Since a good or service can normally be produced with numerous resource combinations and by different techniques, decisions must be made on which to use. Production is limited; therefore, society should choose the technique which has the smallest resource use (the least possible cost) for each unit of good and service produced.
 (c) *For whom* to produce focuses upon the distribution of the economy's output. A difficult problem of choice arises regarding the quantity of output that will flow to each member of society.
- 2.4. (a) What is meant by the term *opportunity cost*?
 (b) How does opportunity cost relate to the problem of scarcity?
 (a) The economist uses the term *opportunity cost* to indicate the benefits forgone when a specific decision is made. Where there are two options and one is chosen, the opportunity cost of the option chosen is the opportunity (option) forgone. For example, the opportunity cost of studying economics is the time one could have spent on alternative activities. In taking this approach, the economist makes no judgment about the decisions made since it is assumed that the options selected provide the greatest anticipated benefits.
 (b) The problem of scarcity exists because of limited production. Thus, each society must make choices about what to produce and how to produce. The opportunity cost of what to produce consists of the goods and services which are sacrificed in order to produce the selected combination of goods and services. For example, the opportunity cost of producing military goods is the quantity of consumer goods that is not available because of the decision to produce military goods.

THE PRODUCTION-POSSIBILITY FRONTIER

2.5. Table 2-3(a) presents a production-possibility schedule for a hypothetical economy which produces only food and clothing.



- (a) What does this production-possibility schedule show?
- (b) Suppose production is currently set at 3 million units of food and 5 thousand units of clothing. How can this economy increase food production by 1 million units when there is no change in technology or the quantity of economic resources?
- (c) What is the opportunity cost of increasing food production 1 million units?
- (d) Use the data from Table 2-3(a) to establish the opportunity cost of producing additional units of food in 1 million increments when food production is initially zero.
- (e) Why are food costs rising?

Table 2-3(a)

Alternative or Point	Units of Food (millions)	Units of Clothing (thousands)
A	0	8.0
B	1	7.5
C	2	6.5
D	3	5.0
E	4	3.0
F	5	0.0

- (a) A production-possibility schedule presents the alternative combinations of two goods that society can produce, assuming that all its resources and the best technology available are used. Table 2-3(a) shows that this economy can produce either no food and 8 thousand units of clothing, 1 million units of food and 7.5 thousand units of clothing, 2 million units of food and 6.5 thousand units of clothing, 3 million units of food and 5 thousand units of clothing, 4 million units of food and 3 thousand units of clothing, or 5 million units of food and no clothing. Since we assume that society is utilizing all its resources and the best technology, this society can produce more units of food only by releasing economic resources from clothing production and thereby producing less clothing.
- (b) This economy can increase food production only by decreasing clothing production. Increasing food production 1 million units necessitates moving from alternative *D* to alternative *E*. Society's production changes from 3 million units of food and 5 thousand units of clothing to 4 million units of food and 3 thousand units of clothing. Thus, 2 thousand units of clothing must be given up to increase food production 1 million units.
- (c) The opportunity cost of producing the additional 1 million units of food is the 2 thousand units of clothing that society no longer produces.
- (d) The opportunity cost of producing additional units of food is presented in Table 2-3(b). From Table 2-3(b), we see that the opportunity cost of 1 million units of food is 0.5 thousand units of clothing when alternative *B* rather than *A* is selected, i.e., when moving from no food production to 1 million units of food. The opportunity cost of an additional 1 million units of food, i.e., selecting alternative *C* rather than *B*, is 1 thousand units of clothing. The opportunity cost of additional food production is 1.5, 2.0, and 3.0 thousand units of clothing. Note that the cost of additional food production is rising. Economists classify this rising cost as the principle of increasing cost.
- (e) The cost of producing additional food rises because resources are not homogeneous. That is, the economic resources of a nation are not equally efficient in the production of food and clothing. In producing the first 1 million units of food (alternative *B*), the economy uses those resources which are most efficient in food production and least efficient in clothing production. Thus, the amount of clothing given up to produce the first 1 million units of food is very little. But as we continue to expand food production by decreasing clothing production, the economic resources that must be utilized to produce food are less and less productive in food production and more and more productive in clothing production. As a result, the cost of expanding food production in terms of reduced clothing production increases.

Table 2-3(b)

Alternative or Point	Units of Food (millions)	Units of Clothing (thousands)	Cost of Additional Units of Food
A	0	8.0	0.5
B	1	7.5	1.0
C	2	6.5	1.5
D	3	5.0	2.0
E	4	3.0	3.0
F	5	0.0	

- 2.6. (a) Use the data from Table 2-3(a) to draw a production-possibility frontier. Plot clothing production on the vertical axis and food production on the horizontal axis. Label the production alternatives A, B, C, D, E, and F on the curve.
- (b) On the same figure, label as point U the production of 3 thousand units of clothing and 3 million units of food and as point H the production of 6 thousand units of clothing and 3.5 million units of food. What do points U and H indicate?
- (c) What is the difference between unemployed and underemployed economic resources?
- (d) When is production efficient?
- (a) The production-possibility frontier drawn from the data in Table 2-3(a) is shown in Fig. 2-3.

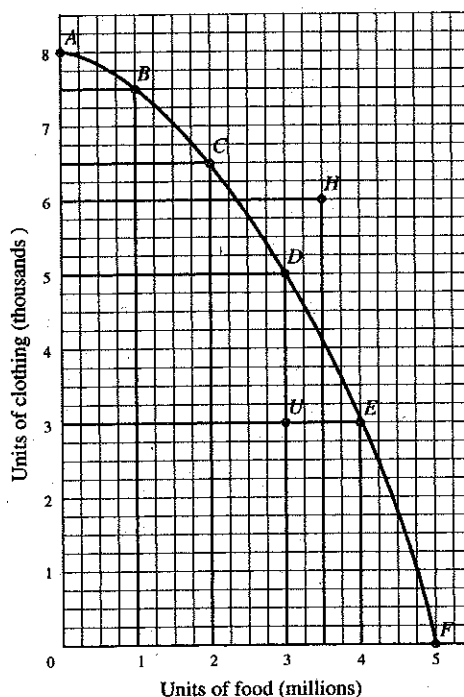


Fig. 2-3

- (b) Since point U is inside the production-possibility frontier, the economy is producing below its potential, indicating that economic resources are not fully employed and/or the best technology available is not being utilized. Economic resources are therefore unemployed or underemployed. By fully employing its resources and using the best technology available, this society can move from point U to point E on the production-possibility frontier. In doing so, 3 thousand units of clothing continue to be produced while

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food production increases from 3 to 4 million units. Point *H* is unattainable. It is outside the production-possibility frontier and consists of a combination of food and clothing which this economy cannot produce with its currently available resources and technology.

- (c) There is *full employment* of labor resources when those who are willing and able to work are employed. Unemployment exists when labor resources willing and able to work are not employed. *Underemployment* exists when resources are employed but are not producing the maximum amount of goods and services which they could produce.
- (d) Efficient production exists when economic resources are fully employed and output is at its maximum level. Thus, points on the production-possibility frontier are efficient. Points within the production-possibility frontier are inefficient.

2.7. What is meant by the term *economic growth*? What are the sources of economic growth?

Economic growth occurs when the productive capabilities of an economy increase. It is indicated by an outward shift of the production-possibility frontier, indicating that the economy can expand the output of a good in a full-employment economy without decreasing the output of other goods and services. Increases in resources and improved resource skills and technological progress are the sources of economic growth.

2.8. Suppose an economy has the production-possibility frontier depicted in Fig. 2-4.

- (a) What implication does the selection of point *A* or *C* have regarding the economy's current and future production of consumer goods and services?
- (b) What linkage is there between saving and economic growth?

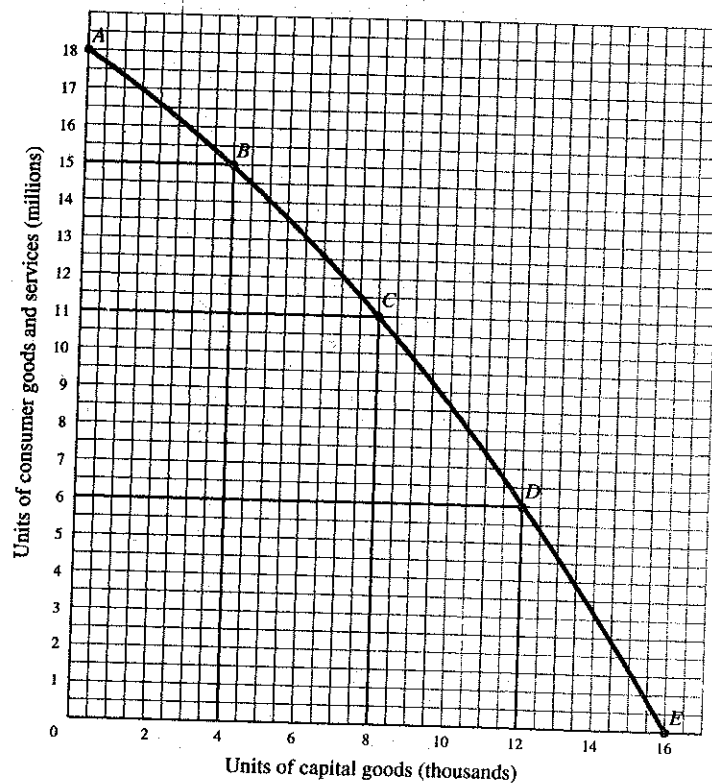


Fig. 2-4

- (a) At point *A*, society has more consumer goods and services in the current period. Point *C*, however, provides the possibility of a larger quantity of consumer goods and services in the future because of additions to the economy's stock of capital resources. In producing at point *C* and thereby increasing the economy's supply of capital resources, the economy's productive capabilities expand and thereby provide an increased output of consumer goods and services in a future period. In fact, if society maintains such a mix of capital

- and consumer goods output over time, consumer goods and services production will exceed the 18 million units of consumer goods and services produced in the current period in selecting point A.
- (b) As discussed in (a), society must forgo purchases of consumer goods and services now if it is to increase its supply of capital and thereby expand production capabilities. Thus, people must be willing to have fewer goods and services now, that is, they must be willing to save, so that resources can be used in the current period to produce capital goods.

2.9. We continue the analysis presented in Problem 2.8, where the selection of point C in Fig. 2-4 results in the production of 11 million units of consumer goods and services. Figure 2-5 depicts a production-possibility frontier for the resources available to produce the 11 million units of consumer goods and services. In Fig. 2-5 production is set at point G. At G the economy is producing 6 million units of consumer goods and 5 million units of consumer services.

- (a) What eventually happens to production-possibility frontier $FGHIJ$ as a result of the production of 8 thousand units of capital in Problem 2.8?
- (b) What eventually happens to production-possibility frontier $FGHIJ$ as a result of the production of 8 thousand units of capital in Problem 2.8 when this capital is technologically more advanced and therefore more productive?
- (c) Would your answer to (b) differ if, while new capital is being built, employee training programs enhance the skills of the labor force?

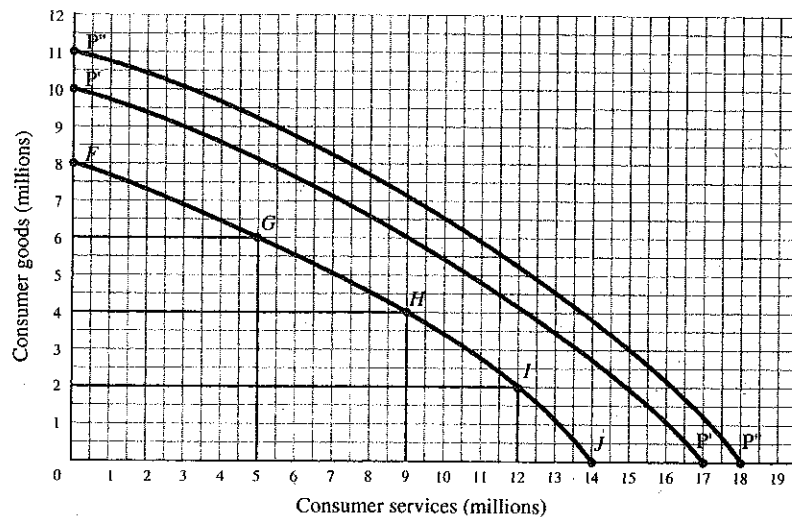


Fig. 2-5

- (a) The 8 thousand units of capital produced increase the economy's economic resources and expand its production capabilities. Thus, we would expect the production-possibility frontier to shift outward, from $FGHIJ$ to $P'P'$.
- (b) When capital additions are technologically more advanced, productive capabilities are enhanced by the capital additions as well as the new technology. Thus, we could expect the production-possibility frontier to shift outward to, say, $P''P''$.
- (c) Greater labor skills would further expand productive capabilities, and the production-possibility frontier could be expected to shift beyond $P''P''$.

THE PRINCIPLE OF INCREASING COSTS

2.10. Table 2-4 presents a production-possibility schedule for the production of food and clothing.

- (a) Using the table, find the opportunity cost of increasing food production in increments of 1 million units.
- (b) Would you expect the opportunity cost of increasing food production to be constant? Why?

Table 2-4

Alternative	Units of Food (millions)	Units of Clothing (thousands)
A	0	8
B	1	6
C	2	4
D	3	2
E	4	0

- (a) The opportunity cost of increasing food production from 0 units (alternative A) to 1 million units (alternative B) is 2 thousand units of clothing (clothing production is reduced from 8 thousand units in alternative A to 6 thousand units in alternative B). Further 1 million unit increases in food production also necessitate a 2 thousand unit decrease in clothing production. Thus, in this schedule, the opportunity cost of 1 million units increments of food production is a constant 2 thousand unit decrease in food production.
- (b) The production-possibility schedule in Table 2-4 is unrealistic. All economic resources are not equally efficient when employed in the production of food and the production of clothing. For example, a farmer may be skilled in planting and harvesting food but not in the manufacture of clothing, and capital resources, such as a tractor, may increase the production of food but are of little use in manufacturing clothing. Because economic resources are not equally efficient in the production of alternative goods, the opportunity cost of expanding the production of an alternative good is likely to increase rather than be constant.

2.11. Fig. 2-6 presents a production-possibility curve for food and clothing.

- (a) What is the opportunity cost of increasing food production from 0 to 2 thousand units, from 2 thousand to 4 thousand units, and from 4 thousand to 6 thousand units?
- (b) What is happening to the opportunity cost of increasing food production from 0 to 6 thousand units?
- (c) Explain how the slope of the production-possibility frontier implies increasing costs for the production of clothing and increasing costs in the production of food.

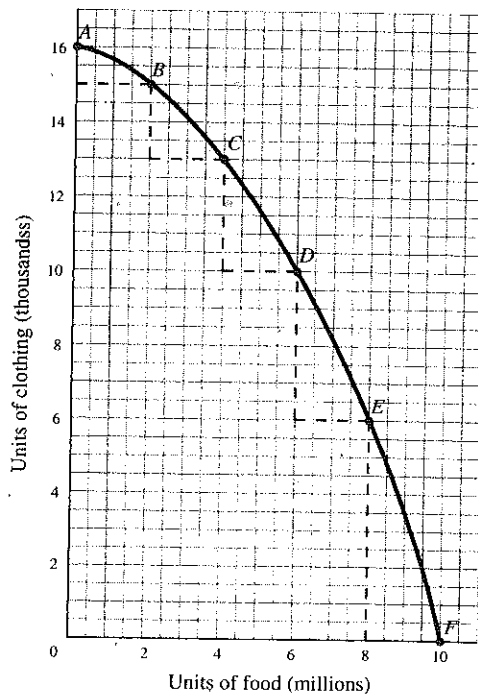


Fig. 2-6

- (a) In increasing food production from 0 to 2 million units, production of clothing decreases from 16 million units to 15 million units; thus, the opportunity cost of producing the first 2 million units of food is 1 thousand units of clothing. The opportunity cost of a second and third additional 2 million units is 2 thousand units of clothing and 3 thousand units of clothing.
- (b) The opportunity cost of increasing food production is increasing from 1 thousand units of clothing to 2 to 3 thousand units of clothing.
- (c) Increasing clothing and food costs are reflected in a concave (outward-sloping) production-possibility curve. Moving down the production-possibility curve from point *A* to points *B*, *C*, *D*, *E*, and *F* shows that to produce 2 million incremental units of food (the 2-million-unit-length horizontal dashed lines in Fig. 2-6), we must give up more and more units of clothing (the vertical dashed lines of increasing length). The increasing cost of clothing production can be found by moving up the production-possibility curve from point *F* to points *E*, *D*, *C*, *B*, and *A*. The opportunity cost of producing the first 6 thousand units of clothing (alternative *F* to alternative *E*) is 2 million units of food. The opportunity cost of producing an additional 4 thousand units of clothing is 2 million units of food. The opportunity cost of producing a third increment of 2 thousand units of clothing is 2 million units of food.

SCARCITY AND THE MARKET SYSTEM

2.12. What are the distinguishing characteristics of a capitalist market economy?

- (1) In a capitalist market economy (also referred to as a free-enterprise or *laissez-faire* system), most economic resources are owned directly or indirectly by individuals rather than by the government.
- (2) Individuals are free to rent out the resources they own for the highest price they can obtain. Individuals are also free to spend their income to buy goods and services that maximize their satisfaction. Entrepreneurs have the freedom to set up new business enterprises; to run them by hiring resources in whatever combination they deem most efficient; to use technology which minimizes production costs; and to sell their output in markets where profits can be maximized.
- (3) There is competition—the existence in the marketplace of many sellers and buyers with each participant too small to affect the price of the goods and services produced.
- (4) Government exists to provide defense and a core of services which otherwise might not be supplied and to enforce general rules for protecting economic and political freedom.

2.13. (a) Explain how division of labor and specialization enhance production in an advanced society.

(b) Explain why money is used in an advanced society.

- (a) Through the division of labor and specialization, the population within a given geographic region, instead of being self-sufficient and producing the full range of goods and services wanted, can concentrate its energies and time in the production of only one or a few goods and services in which its efficiency is greatest. Thus, specialization and division of labor allow greater output. By then exchanging some of the goods and services so produced for other goods and services, the population as a whole ends up consuming a larger number and greater diversity of goods and services than would otherwise be the case.
- (b) The use of money facilitates exchange and thereby promotes efficient use of resources. When money is not used, goods must be bartered for goods. Thus a producer of shoes would have to find someone who wants shoes in exchange for the good the cobbler wants to buy. Barter is very time-consuming and in this example can reduce the amount of time the cobbler has to make shoes. In using money, all parties receive a money income, which they can then use to purchase goods and services.

2.14. (a) How does one solve the problem of *what* to produce in a free-enterprise, capitalist economy?

(b) in a mixed economy?

(c) in a centralized, command economy?

- (a) In a *free-enterprise economy*, the only goods and services produced are those whose price in the market is at least equal to the producer's cost of producing output. When a price greater than the cost of producing that good or service prevails, producers are induced to increase production. If the product's price falls below the cost of production, producers reduce supply. What to produce is thereby determined by the market price of each good and service in relation to the cost of producing each good and service.
- (b) In a *mixed economy*, government replaces, regulates, or modifies the price mechanism. For example, in the United States, government produces some goods itself (police protection, roads, etc.) and finances these expenditures by taxing the income of individuals and businesses. It also influences what to produce by imposing direct regulations on producers and/or by imposing taxes on specific goods and services.
- (c) In a *centralized, command economy*, a planning committee determines the economy's output of goods and services. The inability of the command economies of the former Soviet Union and Eastern Europe in the post-World War II period to expand production as rapidly as did the market economies of the United States, Japan, and Germany has resulted in a movement away from centralized planning and toward a market system in the 1990s.

- 2.15. (a) How does the price-mechanism solve the problem of *how* to produce in a capitalist economy?
 (b) How does the price-mechanism solve the problem of *for whom* to produce in a capitalist economy?
- (a) Because producers need to cover at least their production costs in supplying a product to the market, they choose the production technique that has the lowest cost of production. Thus, when a product can be produced by using various combinations of labor and capital, the producer selects that combination which has the lowest per unit cost. Should the price of labor increase and that of capital remain unchanged, it follows that a producer would alter the production technique and use less labor and more capital.
 - (b) Goods and services are produced for those who have the money to pay for them. The higher the income of an individual, the more the economy will be geared to produce the commodities he or she wants and is willing to purchase.

2.16. Figure 2-7 presents the circular flow of economic resources, income, and goods and services for a capitalist market economy.

- (a) Explain the top loop where there is a flow of economic resources and money between individuals and business firms. Explain the bottom loop where there is a flow of money and goods and services.
- (b) Explain why a cost to business firms represents income for individuals, and vice versa.

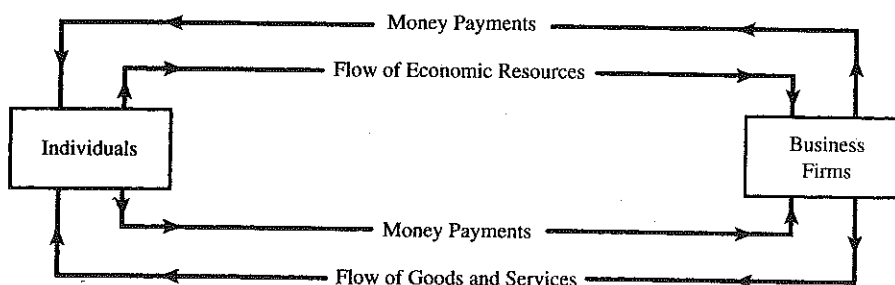


Fig. 2-7

- (a) In a capitalist market economy, resources are privately owned, i.e., they are owned by individuals. The top loop shows that business firms can produce only by purchasing the use of economic resources from individuals; individuals receive money payments for the use of these resources. The bottom loop shows that individuals use their money income to purchase goods and services from business firms.
- (b) The top loop in Fig. 2-7 shows that business firms purchase the use of economic resources from individuals. Thus, the cost of production for business firms is the money income of individuals. The bottom loop shows individuals purchasing output from business firms. The cost of purchasing these goods and services to individuals is the money income (the money receipts) of business firms.

Multiple Choice Questions

1. Scarcity exists in every society because there are
 - (a) limited wants and abundant resources,
 - (b) limited resources and unlimited production capabilities,
 - (c) limited resources and unlimited wants,
 - (d) limited production capabilities and an unlimited quantity of economic resources.
2. The word *economic* refers to something that
 - (a) is scarce,
 - (b) is limited,
 - (c) commands a price,
 - (d) all of the above.
3. In economics the term *opportunity cost* refers to
 - (a) the monetary cost of a good or service,
 - (b) the money cost of hiring an economic resource,
 - (c) the value of a good or service forgone,
 - (d) the money cost of providing a good or service.
4. The production-possibility frontier depicts
 - (a) the maximum amount of alternative combinations of two goods that an economy can produce at a point in time,
 - (b) the limited amount of resources that an economy has at a point in time,
 - (c) the alternative combination of capital and labor inputs used in producing goods and services over time,
 - (d) the economy's employment level at a point in time.
5. A point inside the production-possibility curve indicates
 - (a) inefficiency,
 - (b) unemployed resources,
 - (c) that existing resources can produce at a higher level of output,
 - (d) all of the above,
 - (e) none of the above.
6. The production-possibility curve shifts outward when
 - (a) there is an increase in the opportunity cost of a good,
 - (b) increased drug use decreases the skills of the labor force,
 - (c) there is a technological advance,
 - (d) unemployed resources are called back to work.
7. Increasing costs indicate that
 - (a) all resources are equally efficient,
 - (b) all resources are equally inefficient,
 - (c) the output of a good can be increased only by giving up larger and larger quantities of alternative goods,
 - (d) the output of a good can be increased only by using more economic resources.
8. The economic problem of *what* to produce refers to the decision of
 - (a) which goods and services and how much of each are to be produced,
 - (b) which goods are good for society,

- (c) which goods and services to produce to maximize the rate of economic growth,
 - (d) what combination of resources and production techniques to use.
9. The economic problem of *how* to produce refers to the decision of
- (a) who should be given the authority to produce goods and services,
 - (b) how many people in the population are to be employed,
 - (c) how much of current production should go toward consumption rather than saving,
 - (d) which of the production techniques is to be used.
10. The economic problem of *for whom* to produce refers to the decision of
- (a) how to allocate economic resources,
 - (b) how many of the wants of various members of society are to be satisfied,
 - (c) how much to produce for import or export,
 - (d) how much saving should go on in the economy.

True or False Questions

11. _____ Scarcity is the fundamental economic problem for every society.
12. _____ A production-possibility frontier depicts the unlimited wants of a society.
13. _____ There is no problem deciding *what* to produce when the economy's resources increase over time.
14. _____ When there is full employment, the decision to produce more of one good necessitates decreased production of another good.
15. _____ Unemployment or underemployment exists when output is at a point inside the production-possibility curve.
16. _____ In an economy with technological advance and increased economic resources, the decision to produce more of one good necessitates decreased production of another good.
17. _____ There are increasing costs of production because economic resources are not equally efficient in the production of all goods and services.
18. _____ Economic resources are able to produce more goods and services at a point in time when exchange is effected through the use of money rather than through a system of barter.
19. _____ The circular flow depicts the alternative combinations of goods and services an economy can produce at a point in time.
20. _____ The market system resolves the problem of what to produce by considering the prices that individuals are willing to pay for goods and services and the costs associated with producing them.

Answers to Multiple Choice and True or False Questions

1. (c)

6. (c)

11. (T)

16. (F)

2. (d)

7. (c)

12. (F)

17. (T)

3. (c)

8. (a)

13. (F)

18. (T)

4. (a)

9. (d)

14. (T)

19. (F)

5. (d)

10. (b)

15. (T)

20. (T)