

s e c t i o n 1

Basic Economic Concepts

1. Imagine a firm that manufactures textiles (pants and shirts). List the four categories of resources, and for each category, give an example of a specific resource that the firm might use to manufacture textiles.

Solution

1. The four categories of resources are land, labor, physical capital, and human capital. Possible examples of resources include the property where the factory is located (land), factory workers (labor), sewing machines (physical capital), and the design of the assembly line (human capital).
2. Describe some of the opportunity costs of the following choices.
 - a. Attend college instead of taking a job.
 - b. Watch a movie instead of studying for an exam.
 - c. Ride the bus instead of driving your car.

Solution

2.
 - a. One of the opportunity costs of going to college is not being able to take a job. By choosing to go to college, you give up the income you would have earned on the job and the valuable on-the-job experience you would have acquired. Another opportunity cost of going to college is the cost of tuition, books, supplies, and so on. On the other hand, the benefit of going to college is being able to find a better, more highly paid job after graduation in addition to the joy of learning.
 - b. Watching the movie gives you a certain benefit, but allocating your time (a scarce resource) to watching the movie also involves the opportunity cost of not being able to study for the exam. As a result, you will likely get a lower grade on the exam—and all that that implies.
 - c. Riding the bus gets you where you need to go more cheaply than, but probably not as conveniently as, driving your car. That is, some of the opportunity costs of taking the bus involve waiting for the bus, having to walk from the bus stop to where you need to go rather than parking right outside the building, and probably a slower journey. If the opportunity cost of your time is high (your time is valuable), these costs may be prohibitive.

- 3.** Use the concept of opportunity cost to explain the following situations.
- More people choose to get graduate degrees when the job market is poor.
 - More people choose to do their own home repairs when the economy is slow and hourly wages are down.
 - There are more parks in suburban areas than in urban areas.
 - Convenience stores, which have higher prices than supermarkets, cater to busy people.

Solution

- 3.**
- The worse the job market, the lower the opportunity cost of getting a graduate degree. One of the opportunity costs of going to graduate school is not being able to work. But if the job market is bad, the salary you can expect to earn is low or you might be unemployed—so the opportunity cost of going to school is also low.
 - When the economy is slow, the opportunity cost of people's time is also lower: the wages they could earn by working longer hours are lower than when the economy is booming. As a result, the opportunity cost of spending time doing your own repairs is lower—so more people will decide to do their own repairs.
 - The opportunity cost of parkland is lower in suburban areas. The price per square foot of land is much higher in urban than in suburban areas. By creating parkland, you therefore give up the opportunity to make much more money in cities than in the suburbs.
 - The opportunity cost of time is higher for busy people. Driving long distances to supermarkets takes time that could be spent doing other things. Therefore, busy people are more likely to use a nearby convenience store.
- 4.** A representative of the U.S. clothing industry recently made this statement: "Workers in Asia often work in sweatshop conditions earning only pennies an hour. American workers are more productive and, as a result, earn higher wages. In order to preserve the dignity of the American workplace, the government should enact legislation banning imports of low-wage Asian clothing."
- Which parts of this quotation are positive statements? Which parts are normative statements?
 - Is the policy that is being advocated consistent with the statement about the wages and productivities of American and Asian workers?
 - Would such a policy make some Americans better off without making any other Americans worse off? That is, would this policy be efficient from the viewpoint of all Americans?
 - Would low-wage Asian workers benefit from or be hurt by such a policy?

Solution

- 4.**
- The positive statements are:
workers in Asia . . . [are] earning only pennies an hour
American workers are more productive
American workers are more productive and, as a result, earn higher wages
The normative statement is:
the government should enact legislation banning imports of low-wage Asian clothing

- b. It is not. The statement about the productivity of American and Asian workers is about the absolute advantage that American workers have over Asian workers. However, Asian workers may still have a comparative advantage. And if that is the case, then banning imports would result in inefficiency.
- c. If America channeled more of its productive resources into producing clothing, it would have to give up producing other goods. As a result, America would be able to consume less of all goods. And this would make some Americans clearly worse off. Therefore, this policy would not be efficient.
- d. Low-wage Asian workers would also be hurt by this policy. The Asian country would channel its resources away from producing clothing toward producing other goods that it previously imported from America. But since it does not have the comparative advantage in those other goods, the Asian country would be able to consume less of all goods.

5. Are the following statements true or false? Explain your answers.

- a. “When people must pay higher taxes on their wage earnings, it reduces their incentive to work” is a positive statement.
- b. “We should lower taxes to encourage more work” is a positive statement.
- c. Economics cannot always be used to determine what society ought to do.
- d. “The system of public education in this country generates greater benefits to society than the cost of running the system” is a normative statement.
- e. All disagreements among economists are generated by the media.

Solution

- 5.**
- a. True. This is a positive or factual statement; that is, it is either right or wrong. There has been some debate about whether the statement is actually true or false, but in principle there is only one answer.
 - b. False. This is a statement about what we should do, and this statement has no clearly right or wrong answer. Your view will depend on whether you think encouraging more work is a good or a bad idea.
 - c. True. Economics is best at giving positive answers, for instance, answers about what the most efficient way is of achieving a certain aim. The question of how society ought to be organized is mostly decided in the realm of politics.
 - d. False. This is a positive statement. In principle, it is either right or wrong.
 - e. False. Some disagreements among economists arise from the fact that in building a model, one economist thinks that a certain simplification of reality is admissible but another economist may think that it is not admissible. Some disagreements arise from the fact that economists sometimes disagree about values.
- 6.** Evaluate this statement: “It is easier to build an economic model that accurately reflects events that have already occurred than to build an economic model to forecast future events.” Do you think that this is true or not? Why? What does this imply about the difficulties of building good economic models?

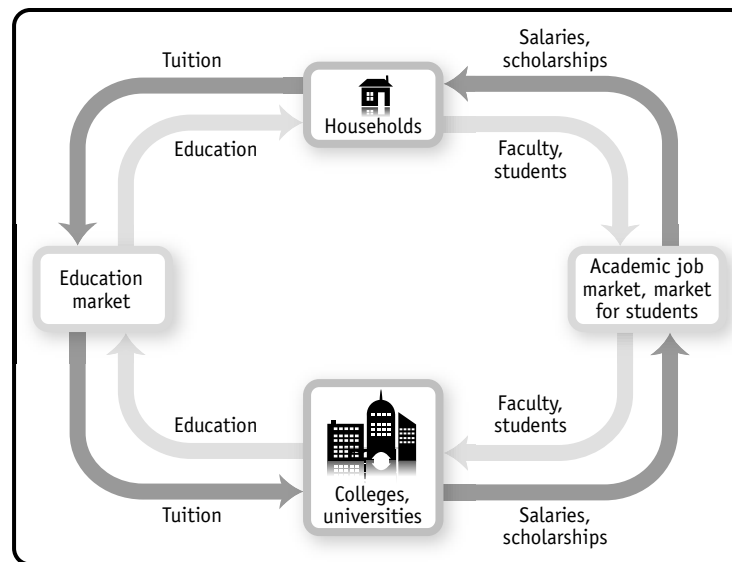
Solution

- 6.** True. With hindsight it is easier to see the important features of the situation that a model should have captured. For predictive purposes, a model needs to anticipate which features of reality are important (and so should be included) and which are unimportant (and so can be ignored). This is why the famed British economist John Maynard Keynes referred to economics as an art as well as a science.

7. An economist might say that colleges and universities “produce” education, using faculty members and students as inputs. According to this line of reasoning, education is then “consumed” by households.
- Construct a circular-flow diagram to represent the sector of the economy devoted to college education: colleges and universities represent firms, and households both consume education and provide faculty and students to universities. What are the relevant markets in this diagram? What is being bought and sold in each direction?
 - Now suppose that the government decided to subsidize 50% of all college students’ tuition. How would this affect the circular-flow diagram that you created in part a?

Solution

7. a. The accompanying diagram shows the circular flow for the education sector.



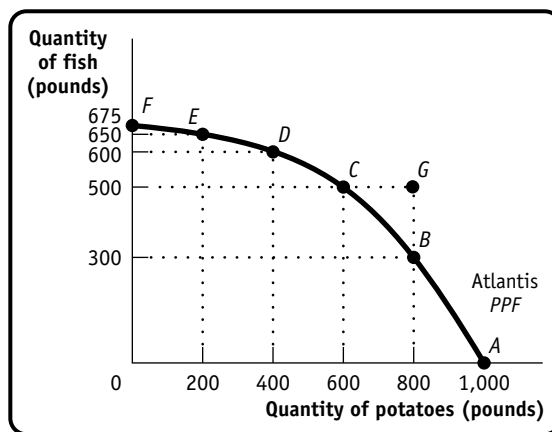
- b. If the government subsidized half of all students’ tuition, households would demand more education. As a result, colleges and universities would hire more faculty and accept more students, meaning that more money in terms of salaries and scholarships would flow from universities and colleges to the households.
8. Suppose Atlantis is a small, isolated island in the South Atlantic. The inhabitants grow potatoes and catch fish. The accompanying table shows the maximum annual output combinations of potatoes and fish that can be produced. Obviously, given their limited resources and available technology, as they use more of their resources for potato production, there are fewer resources available for catching fish.

Maximum annual output options	Quantity of potatoes (pounds)	Quantity of fish (pounds)
A	1,000	0
B	800	300
C	600	500
D	400	600
E	200	650
F	0	675

- a. Draw a production possibility curve with potatoes on the horizontal axis and fish on the vertical axis, and illustrate these options, showing points A–F.
- b. Can Atlantis produce 500 pounds of fish and 800 pounds of potatoes? Explain. Where would this point lie relative to the production possibility curve?
- c. What is the opportunity cost of increasing the annual output of potatoes from 600 to 800 pounds?
- d. What is the opportunity cost of increasing the annual output of potatoes from 200 to 400 pounds?
- e. Explain why the answers to parts c and d are not the same. What does this imply about the slope of the production possibility curve?

Solution

8. a. The accompanying diagram shows the production possibility curve for Atlantis.

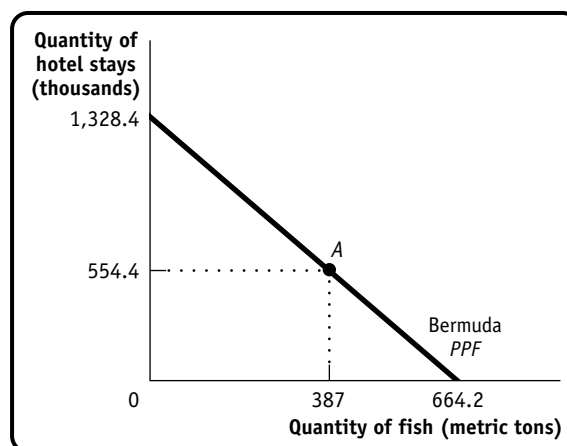


- b. No, Atlantis cannot produce 500 pounds of fish and 800 pounds of potatoes. If it produces 500 pounds of fish, the most potatoes it can produce is 600 pounds. This point would lie outside the production possibility curve, at point G on the diagram.
- c. The opportunity cost of increasing output from 600 to 800 pounds of potatoes is 200 pounds of fish. If Atlantis increases output from 600 to 800 pounds of potatoes, it has to cut fish production from 500 pounds to 300 pounds, that is, by 200 pounds.
- d. The opportunity cost of increasing output from 200 to 400 pounds of potatoes is 50 pounds of fish. If Atlantis increases output from 200 to 400 pounds of potatoes, it has to cut fish production from 650 pounds to 600 pounds, that is, by 50 pounds.
- e. The answers to parts c and d imply that the more potatoes Atlantis produces, the higher the opportunity cost becomes. For instance, as you grow more and more potatoes, you have to use less and less suitable land to do so. As a result, you have to divert increasingly more resources away from fishing as you grow more potatoes, meaning that you can produce increasingly less fish. This implies, of course, that the production possibility curve becomes steeper the farther you move along it to the right; that is, the production possibilities curve is bowed out. (Mathematicians call this shape concave.)

9. Two important industries on the island of Bermuda are fishing and tourism. According to data from the World Resources Institute and the Bermuda Department of Statistics, in the year 2009 the 306 registered fishermen in Bermuda caught 387 metric tons of marine fish. And the 2,719 people employed by hotels produced 554,400 hotel stays (measured by the number of visitor arrivals). Suppose that this production point is efficient in production. Assume also that the opportunity cost of one additional metric ton of fish is 2,000 hotel stays and that this opportunity cost is constant (the opportunity cost does not change).
- If all 306 registered fishermen were to be employed by hotels (in addition to the 2,719 people already working in hotels), how many hotel stays could Bermuda produce?
 - If all 2,719 hotel employees were to become fishermen (in addition to the 306 fishermen already working in the fishing industry), how many metric tons of fish could Bermuda produce?
 - Draw a production possibility curve for Bermuda, with fish on the horizontal axis and hotel stays on the vertical axis, and label Bermuda's actual production point for the year 2009.

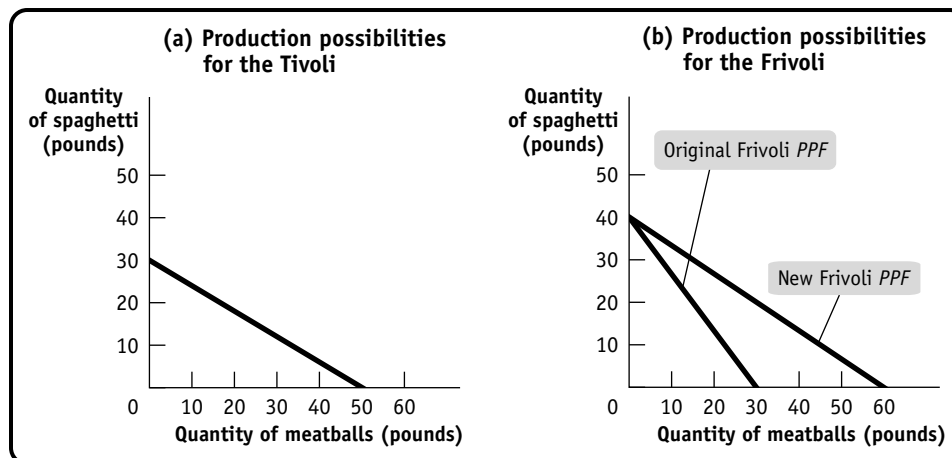
Solution

9. a. Forgoing the production of 1 metric ton of fish allows Bermuda to produce 2,000 additional hotel stays. Therefore, forgoing the production of 387 metric tons of fish allows Bermuda to produce $2,000 \times 387 = 774,000$ additional hotel stays. If all fishermen worked in the hotel industry, Bermuda could produce $554,400 + 774,000 = 1,328,400$ hotel stays.
- b. Forgoing the production of 2,000 hotel stays allows Bermuda to produce 1 additional metric ton of fish, so giving up 554,400 hotel stays allows Bermuda to produce $554,400/2,000 = 277.2$ additional metric tons of fish. If all hotel employees worked in the fishing industry, Bermuda could produce $387 + 277.2 = 664.2$ metric tons of fish.
- c. The accompanying diagram shows the production possibility frontier for Bermuda. Note that the curve is a straight line because the opportunity cost is constant. Point A is Bermuda's actual production point.



- 10.** In the ancient country of Roma, only two goods, spaghetti and meatballs, are produced. There are two tribes in Roma, the Tivoli and the Frivoli. By themselves, the Tivoli each month can produce either 30 pounds of spaghetti and no meatballs, or 50 pounds of meatballs and no spaghetti, or any combination in between. The Frivoli, by themselves, each month can produce 40 pounds of spaghetti and no meatballs, or 30 pounds of meatballs and no spaghetti, or any combination in between.
- Assume that all production possibility curves are straight lines. Draw one diagram showing the monthly production possibility curve for the Tivoli and another showing the monthly production possibility curve for the Frivoli.
 - Which tribe has the comparative advantage in spaghetti production? In meatball production?
- In A.D. 100, the Frivoli discovered a new technique for making meatballs that doubled the quantity of meatballs they could produce each month.
- Draw the new monthly production possibility curve for the Frivoli.
 - After the innovation, which tribe had an absolute advantage in producing meatballs? In producing spaghetti? Which had the comparative advantage in meatball production? In spaghetti production?

- 10.** **a.** The accompanying diagram shows the production possibilities curve for the Tivoli in panel (a) and for the Frivoli as the line labeled “Original Frivoli PPF” in panel (b).



The production possibility curve for the Tivoli was calculated as follows: the Tivoli can produce either 30 pounds of spaghetti and no meatballs, or they can produce no spaghetti but 50 pounds of meatballs. That is, the opportunity cost of 1 pound of meatballs is $\frac{3}{5}$ of a pound of spaghetti: in order to produce 1 more pound of meatballs, the Tivoli have to give up $\frac{3}{5}$ of a pound of spaghetti. This means that the slope of their production possibility curve is $-\frac{3}{5}$. A similar argument for the Frivoli shows that their production possibility curve has a slope of $-\frac{4}{3}$.

- b. For the Tivoli, the opportunity cost of 1 pound of spaghetti is $\frac{5}{3}$ pounds of meatballs. For the Frivoli, the opportunity cost of 1 pound of spaghetti is $\frac{3}{4}$ pound of meatballs. That is, the Frivoli have a comparative advantage in spaghetti production because their opportunity cost is lower.

For the Tivoli, the opportunity cost of 1 pound of meatballs is $\frac{3}{5}$ of a pound of spaghetti. For the Frivoli, the opportunity cost of 1 pound of meatballs is $\frac{4}{3}$ pounds of spaghetti. That is, the Tivoli have a comparative advantage in meatball production because their opportunity cost is lower.

- c. The Frivoli's new production possibility curve is the line labeled "New Frivoli PPF" in panel (b) of the diagram. Instead of producing 30 pounds of meatballs (if they produce no spaghetti), they can now produce 60 pounds.
- d. Now the Frivoli have the absolute advantage in both meatball production and spaghetti production. The Frivoli's opportunity cost of meatballs has now fallen to $\frac{4}{6} = \frac{2}{3}$; that is, for each pound of meatballs that the Frivoli now produce, they have to give up producing $\frac{2}{3}$ of a pound of spaghetti. Since the Frivoli's opportunity cost of meatballs ($\frac{2}{3}$) is still higher than the Tivoli's ($\frac{3}{5}$), the Tivoli still have the comparative advantage in meatball production. The Frivoli's opportunity cost of spaghetti is $\frac{3}{2}$ pounds of meatballs and the Tivoli's is $\frac{5}{3}$ pounds of meatballs, so the Frivoli have the comparative advantage in spaghetti production.

- 11.** In recent years, the United States used 124 million acres of land for wheat or corn farming. Of those 124 million acres, farmers used 50 million acres to grow 2.158 billion bushels of wheat, and 74 million acres of land to grow 11.807 billion bushels of corn. Suppose that U.S. wheat and corn farming is efficient in production. At that production point, the opportunity cost of producing one additional bushel of wheat is 1.7 fewer bushels of corn. However, farmers have increasing opportunity costs, so additional bushels of wheat have an opportunity cost greater than 1.7 bushels of corn. For each of the production points described below, decide whether that production point is (i) feasible and efficient in production, (ii) feasible but not efficient in production, (iii) not feasible, or (iv) uncertain as to whether or not it is feasible.

- a. From their original production point, farmers use 40 million acres of land to produce 1.8 billion bushels of wheat, and they use 60 million acres of land to produce 9 billion bushels of corn. The remaining 24 million acres are left unused.
- b. From their original production point, farmers transfer 40 million acres of land from corn to wheat production. They now produce 3.158 billion bushels of wheat and 10.107 billion bushels of corn.
- c. From their original production point, farmers reduce their production of wheat to 2 billion bushels and increase their production of corn to 12.044 billion bushels. Along the production possibility curve, the opportunity cost of going from 11.807 billion bushels of corn to 12.044 billion bushels of corn is 0.666 bushel of wheat per bushel of corn.

- 11. a.** This point is feasible but not efficient in production. Producing 1.8 billion bushels of wheat and 9 billion bushels of corn is less of both wheat and corn than is possible. They could produce more if all the available farmland were cultivated.

- b. At this new production point, farmers would now produce 1 billion more bushels of wheat and 1.7 billion fewer bushels of corn than at their original production point. This reflects an opportunity cost of 1.7 bushels of corn per additional bushel of wheat. But, in fact, this new production point is not feasible because we know that opportunity costs are increasing. Starting from the original production point, the opportunity cost of producing one more bushel of wheat must be higher than 1.7 bushels of corn.
- c. This new production point is feasible and efficient in production. Along the production possibilities curve, the economy must give up 0.666 bushels of wheat per additional bushel of corn. So the increase in corn production from 11.807 billion bushels to 12.044 billion bushels costs the economy $(12.044 - 11.807)$ billion bushels of corn \times 0.666 bushel of wheat per bushel of corn = 0.158 bushel of wheat. This is exactly equal to the actual loss in wheat output: the fall from 2.158 billion to 2 billion bushels of wheat.

- 12.** The Hatfield family lives on the east side of the Hatatoochie River, and the McCoy family lives on the west side. Each family's diet consists of fried chicken and corn-on-the-cob, and each is self-sufficient, raising their own chickens and growing their own corn. Explain the conditions under which each of the following statements would be true.
- a. The two families are made better off when the Hatfields specialize in raising chickens, the McCoys specialize in growing corn, and the two families trade.
 - b. The two families are made better off when the McCoys specialize in raising chickens, the Hatfields specialize in growing corn, and the two families trade.

- 12.**
- a. Gains from trade usually arise from specialization. If the Hatfields (compared to the McCoys) are better at raising chickens and the McCoys (compared to the Hatfields) are better at growing corn, then there will be gains from specialization and trade.
 - b. Similar to the answer to part a, if the McCoys (compared to the Hatfields) are better at raising chickens and the Hatfields (compared to the McCoys) are better at growing corn, then there will be gains from specialization and trade.

- 13.** According to the U.S. Census Bureau, back in July 2006 the United States exported aircraft worth \$1 billion to China and imported aircraft worth only \$19,000 from China. During the same month, however, the United States imported \$83 million worth of men's trousers, slacks, and jeans from China but exported only \$8,000 worth of trousers, slacks, and jeans to China. Using what you have learned about how trade is determined by comparative advantage, answer the following questions.
- a. Which country has the comparative advantage in aircraft production? In production of trousers, slacks, and jeans?
 - b. Can you determine which country has the absolute advantage in aircraft production? In production of trousers, slacks, and jeans?

- 13.**
- a. Since countries gain from specializing in production of the goods and services in which they have a comparative advantage, the United States must have the comparative advantage in aircraft production, and China must have the comparative advantage in production of trousers, slacks, and jeans.
 - b. Since trade has nothing to do with absolute advantage, we cannot determine from this data which country has an absolute advantage in either of these goods.

- 14.** Peter Pundit, an economics reporter, states that the European Union (EU) is increasing its productivity very rapidly in all industries. He claims that this productivity advance is so rapid that output from the EU in these industries will soon exceed that of the United States and, as a result, the United States will no longer benefit from trade with the EU.
- a.** Do you think Peter Pundit is correct or not? If not, what do you think is the source of his mistake?
 - b.** If the EU and the United States continue to trade, what do you think will characterize the goods that the EU exports to the United States and the goods that the United States exports to the EU?

- 14.** **a.** Peter Pundit is not correct. He confuses absolute and comparative advantage. Even if the EU had an absolute advantage over the United States in every product it produced, the United States would still have a comparative advantage in some products. And the United States should continue to produce those products: trade will make both the EU and the United States better off.
- b.** You should expect to see the EU export those goods in which it has the comparative advantage and the United States export those goods in which it has the comparative advantage.