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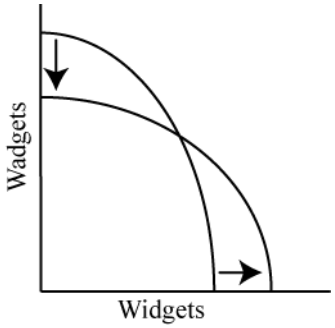
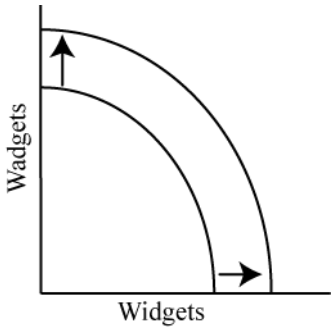
Chapter 2: The Production Possibility Model, Trade, and Globalization

Questions and Exercises

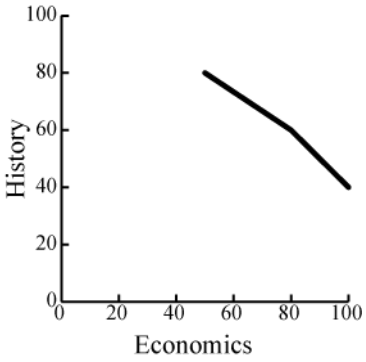
1. In the figure to the right, wadget production is measured on the vertical axis and widget production is measured on the horizontal axis. If the society becomes more productive in its output of widgets, it can produce more of them, and the end point of the curve on the horizontal axis will move to the right, as shown. If the society is also less productive in its production of wadgets, the end point on the vertical axis will move down, as shown. The result is a new production possibility curve.



2. If a society became equally more productive in the production of both widgets and wadgets, the production possibility curve would shift out to the right as shown in the accompanying graph.



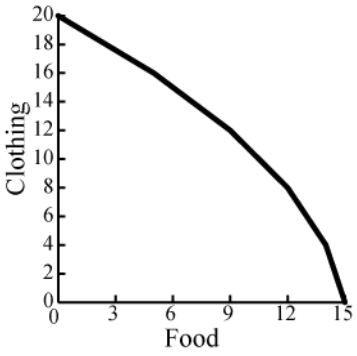
3. Any production possibility curve that shows the principle of increasing marginal opportunity costs must be bowed out. The accompanying grade production possibility curve embodies the principle of increasing marginal opportunity costs. The table is presented below. Notice that for each 20-point gain in the History grade the amount of points lost on the Economics grade steadily increases.



History	Economics
40	100
60	80
80	50

4. The theory of comparative advantage underlies the shape of the production possibility curve. By taking advantage of each person's comparative advantage, higher total output can be reached than if each produced all goods on his or her own, or if each produced goods for which he or she did not have a comparative advantage. As more and more of a good is produced, resources that have less of a comparative advantage are brought into the production of a good, causing the production possibility curve to be bowed outward.

5. a. See the accompanying graph.
   b. As the output of food increases, the marginal opportunity cost is increasing. To illustrate, giving up 4 of clothing (from 20 to 16) results in a gain of 5 food (from 0 to 5), but giving up another 4 clothing (from 16 to 12) results in a gain of 4 food (from 5 to 9), and this pattern continues.
   c. If the country gets better at producing food, the place where the production possibility curve intersects the horizontal axis will move to the right.

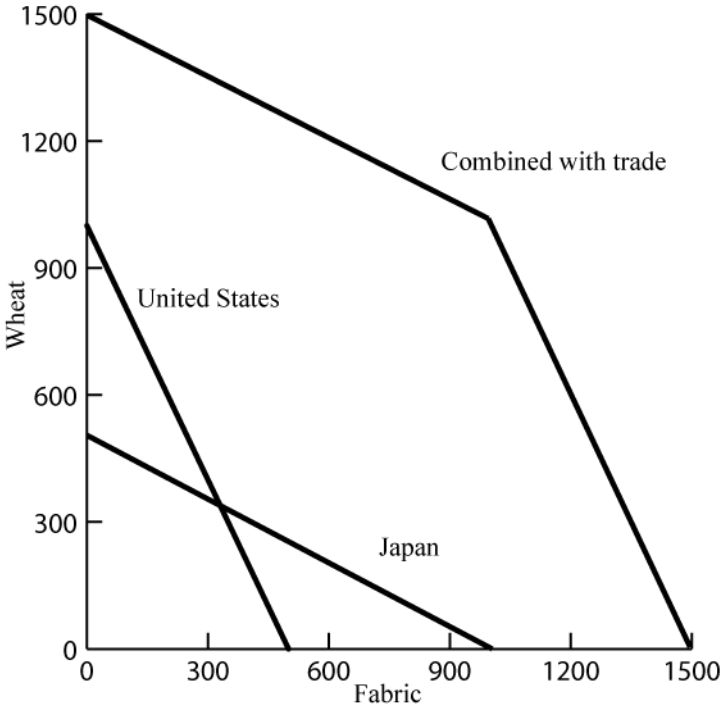


   d. If the country gets equally better at producing food and clothing, the production possibility curve will shift out along both axes by the same proportion.

6. There are no gains from trade when neither of two countries has a comparative advantage in either of two goods.

7. The fact that the production possibility model tells us that trade is good does not mean that in the real world, free trade is the best policy. The production possibility model does not take into account the importance of institutions and government in trade. For example, the model does not take into account externalities associated with some trades, the provision of public goods, or the need for a stable set of institutions or rules. The production possibility model shows maximum total output, but that is not the only societal goal to take into account when formulating policy.

8. a. See the accompanying graph.
   b. The United States has a comparative advantage in the production of wheat because it can produce 2 additional tons of wheat for every 1 fewer bolt of cloth while Japan can produce 1 additional ton of wheat for every 2 fewer bolts of cloth. Japan has a comparative advantage in producing cloth.
   c. The United States should trade wheat to Japan in return for bolts



of cloth. One possibility is that the United States produces 1000 tons of wheat and Japan produces 1000 bolts of fabric. The United States trades 400 tons of wheat for 400 yards of fabric. The United States ends up with 600 tons of wheat and 400 yards of fabric while Japan ends up with 400 tons of wheat and 600 yards of fabric. Both end up with more of each good.

d. The combined production possibility curve with specialization and trade is shown in the graph. It is the outermost curve.

9. a. A Toyota in the U.S. costs 9/8 Chevrolets, while in Japan a Toyota costs 2 Chevrolets.
   b. Japan has the comparative advantage in producing Chevrolets.
   c. Since Japan has the comparative advantage in producing Chevrolets, it should produce Chevrolets and the U.S. should produce Toyotas, regardless of the fact that the U.S. demands more Chevrolets than Toyotas. This answer assumes equal shipping costs.

10. Globalization increases competition by allowing greater specialization and division of labor. Because companies can move operations to countries with a comparative advantage, they can lower production costs and increase competitive pressures. The decreased importance of geographical location increases the size of potential markets, increasing the number of suppliers in each market and thus increasing competition.

11. The law of one price rules, meaning that U.S. wages can only exceed foreign wages to the degree that U.S. workers are more productive than foreign workers. The adjustments, therefore, that will need to occur will equalize wage rates. So, either Western nominal wages will grow slowly and foreign nominal wages will grow rapidly and catch up or U.S. exchange rates will decline to equalize wages. Some combination of the two is most likely. It is possible that there will develop areas of production/services that will allow U.S. wages to remain high.

12. The wage differential between countries can be reduced by changes in exchange rates. A fall in a country's exchange rate will lower its relative wage, and a rise in a country's exchange rate will raise its relative wage.

13. Outsourcing is one of the mechanisms that maintains the law of one price. Because wages adjusted for productivity differences are lower in other countries, firms choose to outsource work to people in foreign countries. As they do so, wage will be bid up until wages, adjusted for productivity differences, are equal between the two countries.

Issues to Ponder

1. This statement can be true or false depending on the implicit assumptions made in the analysis. It is true given that individuals will eliminate all inefficiencies they see through trading. It might be false if not everyone knows all the benefits and the inefficiencies, or does not have the opportunity to correct the inefficiencies, or if the costs of eliminating the inefficiency are too high.

2. If a particular distribution of income is one of society's goals, a particular production technique that leads to greater output, but also an undesirable distribution of income, might be considered an inefficient method of production. Remember, efficiency is achieving a goal as cheaply as possible. Maximizing output is not the only goal of a society.

3. a. From the numbers alone, one would choose not to work because the opportunity cost of working is giving up an $80,000 increase in lifetime income while the benefit is $32,000 of income now. Although there is a correlation between working time and GPA, we cannot conclude that working an after-school job causes the decrease in GPA. Therefore one might be able to maintain a decent GPA while working. Moreover, earning money might be the priority for a particular student to reach a goal, such as saving for college that will lead to even greater lifetime earnings.
   b. It depends on the particular student. Working takes time from study and thus might be a reason for the decrease in GPA. But the situation varies from student to student.

4. If there were decreasing marginal opportunity costs, the production possibility curve would be convex (bowed in) with respect to the origin instead of concave (bowed out). This means that (in terms of the example on page 28 of the text) we would gain more and more guns for every pound of butter we give up. An example of this is found in a situation in which practice makes perfect; i.e., smaller and smaller numbers of hours devoted to a task, or sport, will result in bigger and bigger gains in performance.

5. The fact that lawns occupy more land in the United States than any single crop does not mean that the United States is operating inefficiently. Although the cost of enjoying lawns is not included in GDP, lawns are nevertheless produced consumption goods and are included in the production possibility curve for the United States. The high proportion of land devoted to lawns implies that the United States has sufficient food that it can devote a fair amount of land to the production of goods for enjoyment such as lawns.

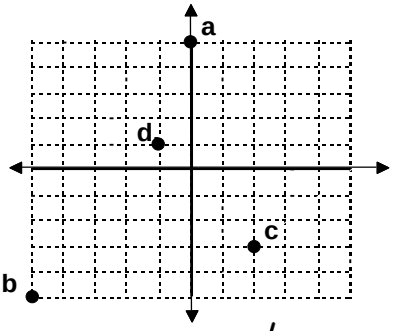
6. Following the hint that society's production possibility curve reflects more than just technical relationships, we realize that trust is an input to production to the extent that it is necessary for transactions. If everyone could fake honesty, the

production possibility curve would shift inward since no one could trust anyone else leading to the disintegration of markets. If some could fake honesty, those few will gain at the expense of others. This is an example of the tragedy of the commons.

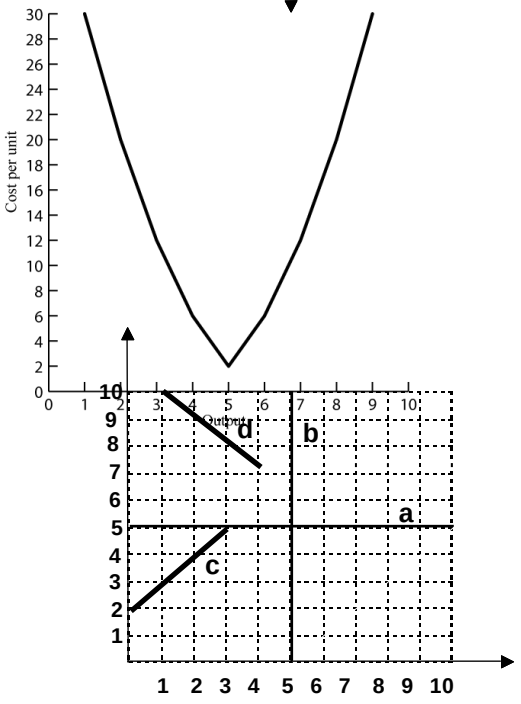
7. a. Firms may produce in Germany, because (1) transportation costs to/from the other countries may be very high, so that if these costs are included, it would not be efficient to produce there; (2) there might be tariffs or quotas for imports into Germany that will prevent producing elsewhere; (3) the productivity of German labor may be so much higher that unit labor costs in Germany are the lowest; and (4) historical circumstances may have led to production in Germany and the cost of moving production may exceed potential gains.
   b. There would probably not be a significant movement of workers right away. One would expect some movement from Greece and Italy into Germany, but this is limited by social restrictions such as language, culture and the economic climate in Germany, which currently has high unemployment. Movement in the long run, however, may be substantial.
   c. I would want to know about the rule of law in Thailand that will govern business practices, the stability of the government, and the infrastructure. All of these will affect the cost of production.

Chapter 2: Appendix A

1. See the accompanying graph.



2. See the accompanying graph.
   a. The relationship is nonlinear because it is curved, not straight.
   b. From 0 to 5, cost declines as quantity rises (inverse relationship). From 5 to 10, cost rises as quantity rises (direct relationship).
   c. From 0 to 5, the slope is negative (slopes down). From 5 to 10, the slope is positive (slopes up).
   d. The slope between 1 and 2 units is the change in cost (30-20) divided by the change in quantity (1 - 2), or -10.



3. See the accompanying graph.

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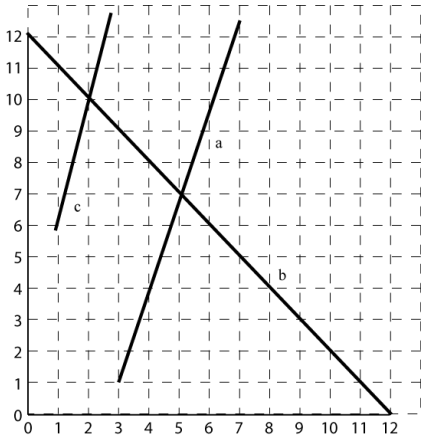
4. a. 1 b. -3 c. 1/3 d. -3/4 e. 0

5. a. C b. A and E c. B and D d. B is a local maximum; D is a local minimum.

6. a. See line a in the accompanying graph.
   b. See line b in the accompanying graph.
   c. See line c in the accompanying graph.



7. a. y = 5x + 1,000 b. y = 3x + 1,500.

8. a. line graph b. bar graph c. pie chart d. line graph