

Chapter 3: Interdependence and the Gains from Trade

Chapter Objectives

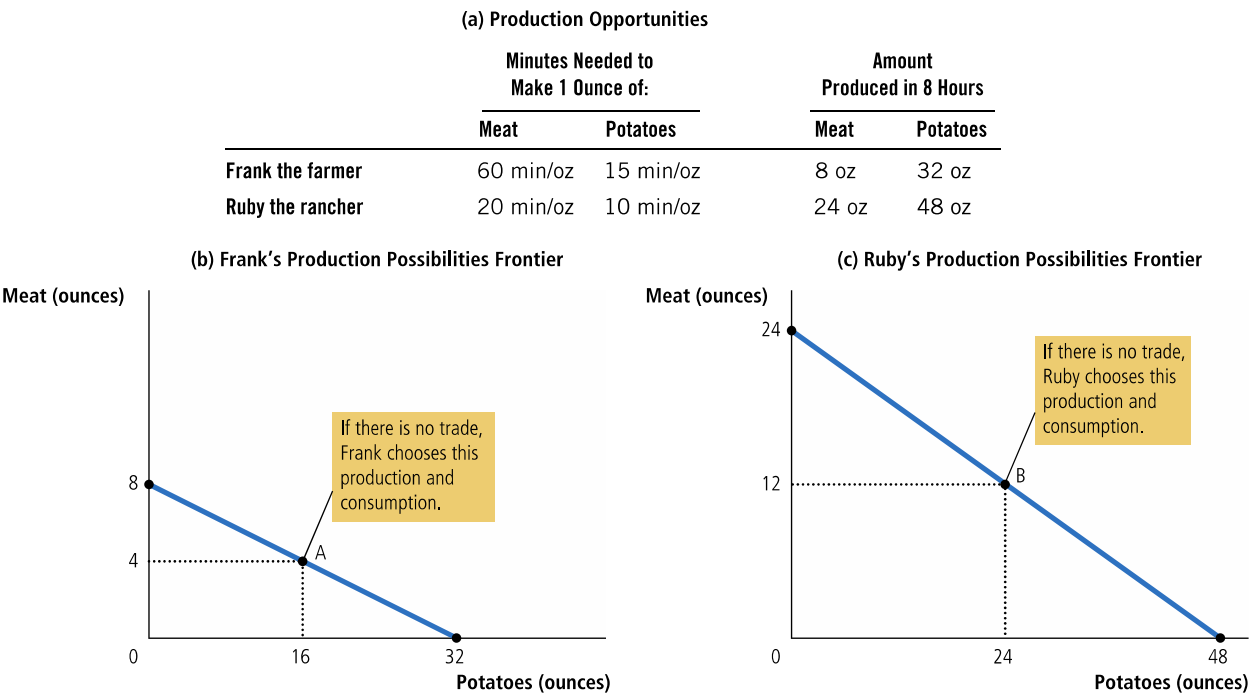
Little Picture: understanding the principles of comparative and absolute advantage to understand why trade occurs between individuals and nations.

Big Picture: learning why trade takes place to better understand microeconomics, i.e., what forces determine individual and household economic decisions and what forces determine the price of a good or service.

The core concept of this chapter is **comparative advantage**, and leading into this topic is another discussion of the production possibilities frontier (PPF), but with a new twist.

Panel (a) shows the production opportunities available to Frank the farmer and Ruby the rancher. Panel (b) shows the combinations of meat and potatoes that Frank can produce. Panel (c) shows the combinations of meat and potatoes that Ruby can produce. Both production possibilities frontiers are derived assuming that Frank and Ruby each work 8 hours per day. If there is no trade, each person's production possibilities frontier is also his or her consumption possibilities frontier.

FIGURE 1
The Production Possibilities Frontier



Notice that the frontiers above are straight lines, unlike the PPFs found in Figures 2 and 3 in chapter 2, which were bowed outward or "concave with respect to the graph's origin," in a more unambiguous, technical description.

The straight-line frontiers above mean that *opportunity costs are constant along the curve* (constant slope = constant cost). For example, in the graphs above, as the farmer or rancher travels down his or her curve, increasing his or her consumption of

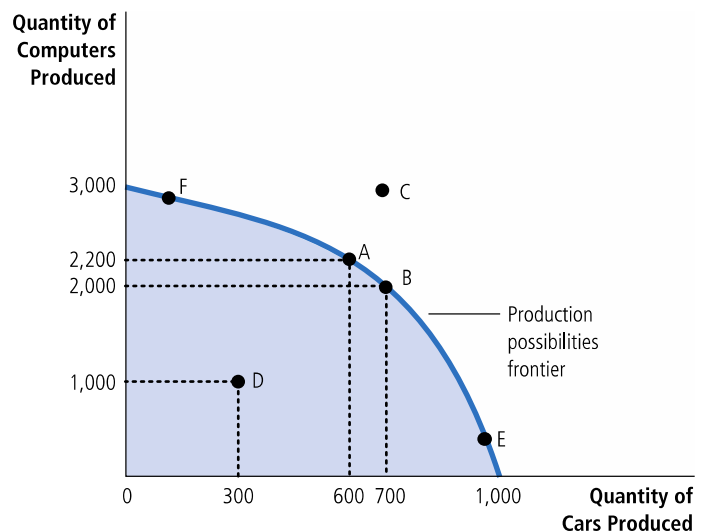
potatoes at the expense of meat, neither has to give up more and more meat to get an additional potato. To acquire each additional potato, the farmer or rancher only has to trade away the same amount of meat each time that he or she decides to trade away a piece of meat for a potato. Under constant costs this also works in reverse when the farmer or rancher moves back "up the hill" in the opposite direction along the curve to load up on meat at the expense of potatoes. In summary, on a straight-line PPF, the cost of getting an extra potato (meat given up) is the same all along the PPF.

Recall that this is certainly not the case for the curved PPFs in chapter 2. On curved PPFs, opportunity costs increase gradually for movements away from the middle of the frontier toward either of its endpoints.

FIGURE 2

The Production Possibilities Frontier

The production possibilities frontier shows the combinations of output—in this case, cars and computers—that the economy can possibly produce. The economy can produce any combination on or inside the frontier. Points outside the frontier are not feasible given the economy's resources. The slope of the production possibilities frontier measures the opportunity cost of a car in terms of computers. This opportunity cost varies, depending on how much of the two goods the economy is producing.



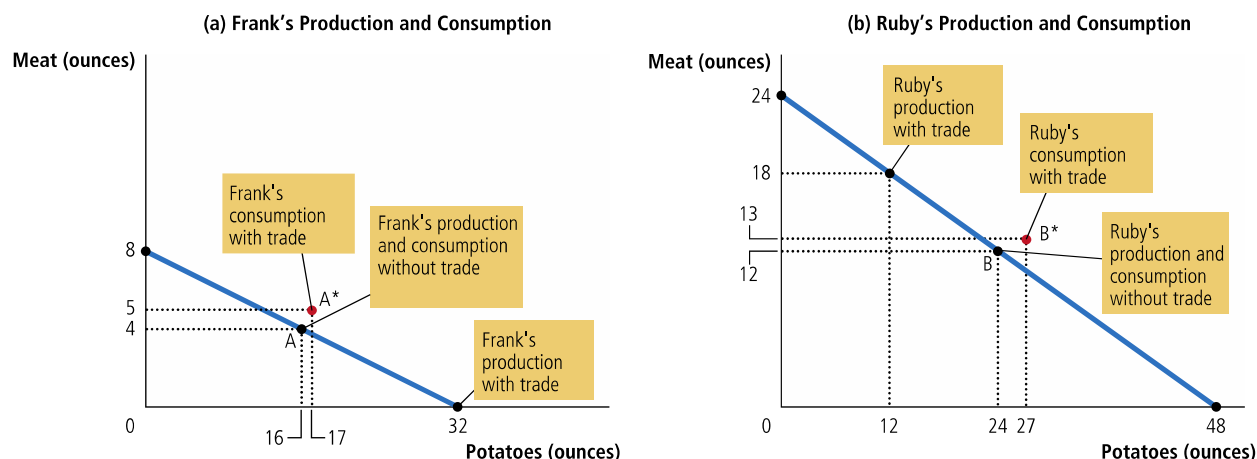
The consumer in the graph above (Figure 2 from chapter 2) has to give up increasing amounts of computers to get an additional car as he or she moves down the frontier away from point F all the way past points A and B heading toward point E. Similarly, in terms of opportunity costs, additional amounts of cars must be given up to get each additional computer as the consumer moves from point E all the way up the frontier past points B and then A toward point F.

The dialogue between the rancher and the farmer in the section "3-1b Specialization and Trade" explains how specialization and trade can make two individuals (and by extension, two or more nations) better off.

The proposed trade between Frank the farmer and Ruby the rancher offers each of them a combination of meat and potatoes that would be impossible in the absence of trade. In panel (a), Frank gets to consume at point A* rather than point A. In panel (b), Ruby gets to consume at point B* rather than point B. Trade allows each to consume more meat and more potatoes.

FIGURE 2

How Trade Expands the Set of Consumption Opportunities



(c) The Gains from Trade: A Summary

	Frank		Ruby	
	Meat	Potatoes	Meat	Potatoes
Without Trade:				
Production and Consumption	4 oz	16 oz	12 oz	24 oz
With Trade:				
Production	0 oz	32 oz	18 oz	12 oz
Trade	Gets 5 oz	Gives 15 oz	Gives 5 oz	Gets 15 oz
Consumption	5 oz	17 oz	13 oz	27 oz
GAINS FROM TRADE:				
Increase in Consumption	+1 oz	+1 oz	+1 oz	+3 oz

The results can also be seen graphically. Graph (a) above shows that after trade takes place, the farmer would have one additional ounce of potatoes and one additional ounce of meat per day. The rancher would have three additional ounces of potatoes and one additional ounce of meat.

The main lesson of this section? **Both parties are better off after trade takes place.**

A Common Error

One common confusion is to mistake **absolute advantage** for comparative advantage. Absolute advantage is using less inputs (physical materials, time, etc.) to produce a good or service than another producer. In the book's example of the rancher and farmer, the rancher is the lower-input producer of potatoes given that she can produce an ounce of potatoes in five fewer minutes than the farmer. By quantity of input

(time), the rancher is the lower-input producer of potatoes from the absolute-advantage perspective.

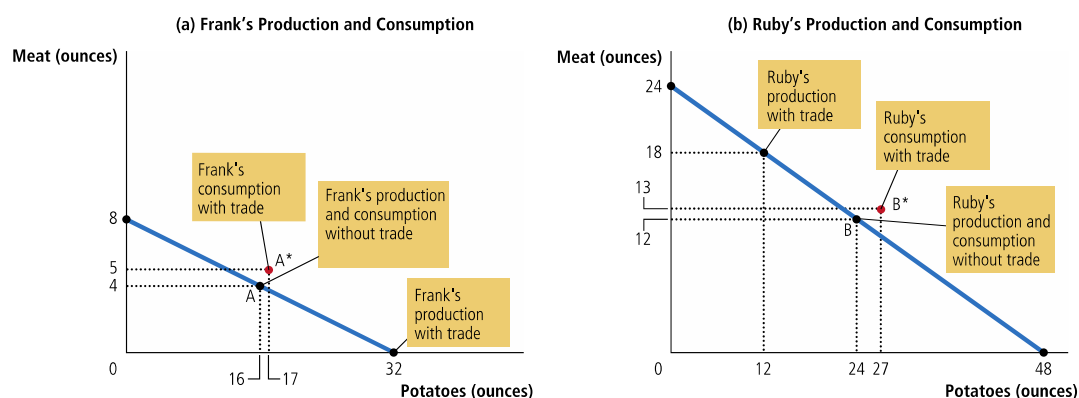
Another example would be John and Joe solving their calculus homework problems. John solves 20 problems in an hour. Joe solves the same 20 problems in two hours. John clearly has the absolute advantage with respect to solving calculus problems.

Unlike absolute advantage, comparative advantage involves comparing *opportunity costs*. With comparative advantage, we notice that the rancher's opportunity cost of producing 1 ounce of potatoes is half an ounce of meat. On the other hand, the farmer's opportunity cost of producing 1 ounce of potatoes is a quarter ounce of meat. In other words, the rancher is the higher-cost producer of potatoes and the farmer is the lower-cost producer. Notice how who wins the contest of advantages has now completely flipped: the rancher holds the absolute advantage in producing both potatoes and meat but she does not have a comparative advantage in the production of both: the farmer holds the comparative advantage with respect to potatoes.

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As we saw earlier with the rancher and the farmer (Figure 2 immediately above), if they engage in trade based on comparative advantage (opportunity cost), then the production of goods in their small economy increases. This would not have happened had we followed the criterion of absolute advantage. *Comparative advantage, therefore, is the basis for which decisions on trade are based.* Beyond ranchers and farmers, such a phenomenon also applies to large economies.

If you're still not completely clear on the difference between absolute and comparative advantage, definitely read the highly entertaining section in the textbook, "Should Serena Williams Mow Her Own Lawn?" It is entertaining and insightful and should drive the distinction home!

Discussion Topics (topics requiring examples are marked with an asterisk *)

Please copy these topics exactly as written--shortening them can cause you to omit follow-up questions and thus lose points.

1. Summarize Ruby the rancher and Frank the farmer's reasons for deciding to engage in specialization and trade (no example is required).
2. absolute advantage*
3. How are comparative advantage and opportunity cost related?
4. Why is the question of who trades for which goods answered by who has the comparative advantage rather than the absolute advantage?
5. Robinson Crusoe can either gather 10 pineapples or catch 1 fish per hour. Friday can gather 30 pineapples or catch 2 fish per hour. What is the opportunity cost of catching one fish for Crusoe? What is the cost of catching one fish for Friday? Who has the absolute advantage in catching fish? Who has the comparative advantage in catching fish?
6. What are the legacies of Adam Smith and David Ricardo with respect to the economics of trade?
7. Should Serena Williams mow her lawn or hire Forrest Gump? Who has the absolute advantage? Who has the comparative advantage? (Explain this situation in detail, no example is required.)
8. How did economist Emily Oster decide to divide up the chores between her and her husband at home? While she held the absolute advantage in dishwashing over her husband early in their relationship, what happened over time?
9. Should the U.S. trade with other nations? (Explain why or why not in detail using the concepts outlined in the chapter, no example is required.)
10. exports*
11. The world's fastest typist can also competently perform brain surgery. Should she create all her documents or hire an assistant? (Explain in detail, no example is required.)