

The Power of Trade and Comparative Advantage

Facts and Tools

1. Use the idea of the “division of knowledge” to answer the following questions.
 - a. Which country has more knowledge: Utopia, where in the words of Karl Marx, each person knows just enough about hunting, fishing, and cattle raising to “hunt in the morning, fish in the afternoon, [and] rear cattle in the evening,” or Drudgia, where one-third of the population learns only about hunting, one-third only about fishing, and one-third only about cattle raising?
 - b. Which planet has more knowledge: Xeroxia, each of whose one million inhabitants knows the same list of one million facts, or Differentia, whose one million inhabitants each know a different set of one million facts? How many facts are known in Xeroxia? How many facts are known in Differentia?

Solution

1.
 - a. There is more knowledge in Drudgia.
 - b. In Xeroxia, people know one million facts. In Differentia, people know one trillion facts, a million times more. We would expect Differentia to have a higher standard of living.
2. In the *Wealth of Nations*, Adam Smith said that one reason specialization makes someone more productive is because “a man commonly saunters a little in turning his hand from one sort of employment to another.” How can you use this observation to improve your pattern of studying for your four or five college courses this semester?

Solution

2. You should set aside long blocks of time (perhaps 1 to 2 hours) for each individual course, rather than switching every 15 minutes from reading biology to reading economics and back again. Every time you switch jobs, you waste some time getting used to the new task.
3. “Opportunity cost” is one of the tougher ideas in economics. Let’s make it easier by starting with some simple examples. In the following examples below, find the opportunity cost: Your answer should be a rate, as in “1.5 widgets per year” or “6 lectures per month.” Ignoring Adam Smith’s insight from the previous question, assume that these relationships are simple linear ones, so that if you put in twice the time you get twice the output, and half the time yields half the output.
 - a. Erin has a choice between two activities: She can repair one transmission per hour or she can repair two fuel injectors per hour. What is the opportunity cost of repairing one transmission?

- b. Katie works at a customer service center and every hour she has a choice between two activities: answering 200 telephone calls per hour or responding to 400 emails per hour. What is the opportunity cost of responding to 400 phone calls?
- c. Deirdre has a choice between writing one more book this year or five more articles this year. What is the opportunity cost of writing half of a book this year, in terms of articles?

Solution

- 3. a. 2 fuel injectors.
 - b. 800 emails.
 - c. 2.5 articles.
- 4. a. American workers are commonly paid much more than Chinese workers. *True or false:* This is largely because American workers are typically more productive than Chinese workers.
 - b. Julia Child, an American chef (and World War II spy) who reintroduced French cooking to Americans in the 1960s, was paid much more than most American chefs. *True or false:* This was largely because Julia Child was much more productive than most American chefs.

Solution

- 4. a. True. Productivity differences are the biggest reason for wage differences.
 - b. True. Although Julia Child could not cook a 3-minute egg any faster than any other chef, her valuable output included her television show and many cookbooks. Thus, as a celebrity chef and cookbook author, Julia Child produced much more GDP than the typical restaurant chef and was more productive.
- 5. According to the *Wall Street Journal* (August 30, 2007, “In the Balance”), it takes about 30 hours to assemble a vehicle in the United States. Let’s use that fact plus a few invented numbers to sum up the global division of labor in auto manufacturing. In international economics, “North” is shorthand for the high-tech developed countries of East Asia, North America, and Western Europe, while “South” is shorthand for the rest of the world. Let’s use that shorthand here.
 - a. Consider the following productivity table: Which region has an absolute advantage at making high-quality cars? And low-quality cars?

	Number of Hours to Make One High-Quality Car	Number of Hours to Make One Low-Quality Car
North	30	20
South	60	30

- b. Using the information in the productivity table, estimate the opportunity cost of making high- or low-quality cars in the North and in the South. Which region has a comparative advantage (i.e., lowest opportunity cost) for manufacturing high-quality cars? For low-quality cars?

	Opportunity Cost of Making One High-Quality Car	Opportunity Cost of Making One Low-Quality Car
North	____low-quality cars	____high-quality cars
South	____low-quality cars	____high-quality cars

- c. One million hours of labor are available for making cars in the North, and another 1 million hours of labor are available for making cars in the South.

In a no-trade world, let's assume that two-thirds of the auto industry labor in each region is used to make high-quality cars and one-third is used to make low-quality cars. Solve for how many of each kind of car will be produced in North and South, and add up to determine total global output of each type of car. (Why will both kinds of cars be made? Because the low-quality cars will be less expensive.)

	Output of High-Quality Cars	Output of Low-Quality Cars
North		
South		
Global output		

- d. Now allow specialization. If each region completely specializes in the type of car in which it holds the comparative advantage, what will global output of high-quality cars be? Of low-quality cars? In the following table, report your answers. Is global output in each kind of car higher than before? (We'll solve a problem with the final step of trade in the Thinking and Problem Solving section.)

	Output of High-Quality Cars	Output of Low-Quality Cars
North		
South		
Global output		

Solution

5. a. North has an absolute advantage at both high-quality and low-quality cars.
b. After calculating opportunity costs horizontally within countries, compare them vertically across countries to determine who has a comparative advantage. North's comparative advantage is high-quality cars (lower opportunity cost of making high-quality cars). South's comparative advantage is low-quality cars (lower opportunity cost of making low-quality cars).

	Opportunity Cost of Making One High-Quality Car	Opportunity Cost of Making One Low-Quality Car
North	1.5 low-quality cars	2/3 high-quality cars
South	2 low-quality cars	0.5 high-quality cars

- c. Output with no trade.

	Output of High-Quality Cars	Output of Low-Quality Cars
North	22,222	16,667
South	11,111	11,111
Global output	33,333	27,778

- d. Given this setup, the number of high-quality cars is identical with specialization and the number of low-quality cars increases:

	Output of High-Quality Cars	Output of Low-Quality Cars
North	33,333	0
South	0	33,333
Global output	33,333	33,333

6. It has been reported that John Lennon was once asked whether Ringo was the best drummer in the world, and he quipped, “He’s not even the best drummer in the Beatles!” (Paul also drummed on some of the White Album.) Assuming that this story is true and that Lennon was correct, explain, using economics, why it could still make sense to have Ringo on drums.

Solution 6. Even if Paul were a better drummer than Ringo, Ringo could have a comparative advantage in drumming. If Paul was a little bit better than Ringo on drums and much better than Ringo at playing bass and singing (surely true), then the total output of The Beatles could be increased by not having the best drummer on drums.

Thinking and Problem Solving

1. Fit each of the following examples into one of these reasons for trade:
- I. Division of knowledge
 - II. Comparative advantage
- a. Two recently abandoned cats, Bingo and Tuppy, need to quickly learn how to catch mice in order to survive. If they also remain well groomed, they stand a better chance of surviving: Good grooming reduces the risk of disease and parasites. Each cat could go it alone, focusing almost exclusively on learning to catch mice. The alternative would be for Bingo to specialize in learning how to groom well and for Tuppy to specialize in learning how to catch mice well.
- b. President Barack Obama, a graduate of Harvard Law, hires attorneys who are less skilled than himself to do routine legal work.

Solution 1. a. Division of knowledge
b. Comparative advantage

2. Nobel Laureate Paul Samuelson said that comparative advantage is one of the few ideas in economics that is both “true and not obvious.” Since it’s not obvious, we should practice with it a bit. In each of the cases, who has the absolute advantage at each task, and who has the comparative advantage?

a. In 30 minutes, Kana can either make miso soup or she can clean the kitchen. In 15 minutes, Mitchell can make miso soup; it takes Mitchell an hour to clean the kitchen.

b. In one hour, Ethan can bake 20 cookies or lay the drywall for two rooms. In one hour, Sienna can bake 100 cookies or lay the drywall for three rooms.

c. Kara can build two glass sculptures per day or she can design two full-page newspaper advertisements per day. Sara can build one glass sculpture per day or design four full-page newspaper ads per day.

- d. Data can write 12 excellent poems per day or solve 100 difficult physics problems per day. Riker can write one excellent poem per day or solve 0.5 difficult physics problems per day.

Solution

2. a. Mitchell's absolute and comparative advantages are at miso; Kana's absolute and comparative advantages are at cleaning.
 b. Sienna has an absolute advantage at both, but her comparative advantage is at baking cookies. Ethan's comparative advantage is at laying drywall.
 c. Kara's absolute and comparative advantages are at sculpture, while Sara's absolute and comparative advantages are at newspaper ad design.
 d. Data has an absolute advantage at both, but Riker has a comparative advantage at writing poetry.
3. The federal education reform law known as No Child Left Behind requires every state to create standardized tests that measure whether students have mastered key subjects. Since the same test is given to all students in the same grade in the state, this encourages all schools within a state to cover the same material. According to the division of knowledge model, what are the costs of this approach?

Solution

3. The cost is that with everyone knowing the same thing, our "hive mind," our social knowledge, is less powerful than it could be. For instance, some parts of a state might emphasize statistics courses in high school while other parts might emphasize geometry and other parts might emphasize number theory. Each could be useful at a particular place and time, but few students would have the time to master all three fields. But it's not necessary for everyone to master all three: It's enough to have a few (thousand) people who master each field, just in case a need arises. Undergraduate university education is more specialized than high school, graduate university education is more specialized yet. Indeed, the ideal of a graduate education is that at some point the PhD candidate knows something that no one else in the world knows!
4. In this chapter, we've often emphasized how specialization and exchange can create more *output*. But sometimes the output from voluntary exchange is difficult to measure and doesn't show up in GDP statistics. In each of the following cases, explain how the two parties involved might be able to make themselves *both* better off just by making a voluntary exchange.
- a. Alan received two copies of *Gears of War* as birthday gifts. Burton received two copies of *Halo* as birthday gifts.
- b. Jeb has a free subscription to *Field and Stream* but isn't interested in hunting. George has a free subscription to the *Miami Herald* but isn't all that interested in Florida news.
- c. Pat has a lot of love to give, but it is worthless unless received by another. Terry is in the same sad situation.

Solution

4. a. Alan could give one of his copies of *Gears* to Burton, who could offer one of his copies of *Halo*.
 b. They could swap free subscriptions, and both be better off, especially if both men have the last name Bush. At the very least, both parties are no worse off after the exchange.
 c. If they offer love to each other, both will be better off at no cost: A classic positive-sum game.

5. Many people talk about manufacturing jobs leaving the United States and going to other places, like China. Why isn't it possible for all jobs to leave the United States and go overseas (as some people fear)?

Solution

5. This is not possible because every nation has to have a comparative advantage in something. The greater China's comparative advantage in manufacturing, for example, the greater the United States' comparative advantage must be in some other type of production. (This can be seen in Table 2.1: The numbers in each row are just reciprocals, so the lower the opportunity cost of a shirt in Mexico, the greater the opportunity cost of a computer in Mexico.) The more and more that firms want to locate manufacturing processes in countries like China, the more that those countries would give up (the higher the opportunity cost) if they pursued other nonmanufacturing activities. Even if it were cheaper to produce everything in China—thus giving China something like an absolute advantage in all production—trade is based on comparative advantage, not absolute advantage.
6. Suppose the following table shows the number of labor hours needed to produce airplanes and automobiles in the United States and South Korea, but one of the numbers is unknown.

	Number of Hours to Produce One Airplane	Number of Hours to Produce One Auto
South Korea	2,000	?
United States	800	5

- Without knowing the number of labor hours required to produce an auto in South Korea, you can't figure out which country has the comparative advantage in which good. Can you give an example of a number for the empty cell of the table that would give the United States the comparative advantage in the production of airplanes? What about South Korea?
- Who has the absolute advantage in the production of airplanes? What about autos?
- What exact number would you have to place in the empty cell of the table for it to be impossible that trade between the United States and South Korea could benefit both nations?

Solution

6. a. Any number less than 12.5 will give the United States the comparative advantage in airplanes. Any number higher than 12.5 will give South Korea the comparative advantage in airplanes.
- b. The United States clearly has the absolute advantage in the production of airplanes. We do not know who has the absolute advantage in the production of autos. If the missing number is greater than 5, the United States has the absolute advantage in autos; if the missing number is less than 5, South Korea has the absolute advantage.
- c. If the missing number was exactly equal to 12.5, then the opportunity cost of one airplane would be 160 autos in both countries. In this case, no possible benefits exist from trade, because neither country can produce either good at a lower cost than can the other country.
7. In the chapter, you saw how to create a production possibilities frontier for the United States and Mexico. Let's take a look at how to combine these PPFs to make one PPF for the U.S.–Mexico trade alliance. You'll use the same set of axes that was

used in the chapter: computers on the vertical axis and shirts on the horizontal axis. Refer to Figure 2.1 and Table 2.1 as needed.

- a. First, you need to plot the endpoints of the PPF by figuring out the maximum numbers of computers and shirts. If both the United States and Mexico produced only computers, how many would they produce? What if they only produced shirts? Plot these two points and label them as *A* (all computers) and *Z* (all shirts). The PPF for the U.S.–Mexico trade alliance is going to look a little different from the PPFs for the individual countries, so we don't want to simply connect the two points with a straight line. We need to figure out the rate at which the U.S.–Mexico trade alliance gives up computers to get shirts (or vice versa).
- b. Starting at point *A*, if citizens of the United States or Mexico decided they wanted more shirts, where would those shirts be produced? Why? What do you think the PPF should look like as the U.S.–Mexico trade alliance initially moves away from point *A*?
- c. Starting at point *Z*, if citizens of the United States or Mexico decided they wanted more computers, where would those computers be produced? Why? What do you think the PPF should look like as the U.S.–Mexico trade alliance initially moves away from point *Z*?
- d. Plot the point at which each country is completely specializing in the good for which it has the comparative advantage. Label this point *B*. Connect points *A*, *B*, and *Z*. This is the PPF for the U.S.–Mexico trade alliance. Can you describe how this PPF is a combination of the two nations' separate PPFs?
- e. Suppose now that a third nation, Haiti, enters the trade alliance. In Haiti, the opportunity cost of a computer is 12 shirts, and Haiti has the labor necessary to produce 1 computer (or 12 shirts). Can you draw a new PPF for the U.S.–Mexico–Haiti trade alliance?
- f. Okay, what will happen to the PPF as more and more countries join the trade alliance? What would it look like with an infinite number of countries?

Solution 7. The order in which strategies can be eliminated is B will never play Red, thus A will never play Red, thus B will never play Blue, thus A will never play Green, and thus B will never play Green. At this point, it is determined that B will always play Yellow, so A will play Yellow in response. The equilibrium is {Yellow, Yellow} with a payoff of (5, 1).

Challenges

1. In the computers and shirts example from the chapter, the United States traded one computer to Mexico in exchange for three shirts. This is not just an arbitrary ratio of shirts to computers, however. Let's explore the *terms of trade* a little bit more.
 - a. Why is trading away a computer for three shirts a good trade for the United States? Why is it also a good deal for Mexico?
 - b. What if, instead, the agreed-upon terms of trade were one computer for eight shirts. Would this trade still benefit both the United States and Mexico?
 - c. What is the maximum (and minimum) number of shirts that a computer can trade for if the United States and Mexico are both to benefit from the trade?

Solution 1. a. This is a good deal for the United States, because it only gave up one shirt to produce the computer, so receiving three shirts benefits the United States. It is a good deal for Mexico because Mexico would have to give up six shirts to

produce one computer on its own, so if Mexico can gain one computer by giving up only three shirts, this deal makes that country better off.

- b. This trade would benefit the United States, which will still be receiving more shirts (eight) than it gave up in order to produce the computer (one). However, this would not benefit Mexico because Mexico could have produced its own computer at an opportunity cost of just eight shirts, which would be a better deal than trading at this rate.
- c. The number of shirts traded for each computer must be higher than one so that it benefits the United States but less than six so that it benefits Mexico.

2.



Go to www.Ted.com and watch Thomas Thwaites's talk, "How I built a toaster—from scratch." How much money and time do you think Thwaites spent building his toaster? How long do you think it would have taken Thwaites to earn enough money in, say, a minimum wage job to buy a toaster? Comment on the division of labor and the importance of specialization in increasing productivity.

Solution

- 2. Thwaites seems to have spent several thousand dollars and about a year to "build" his toaster, which probably would have killed him had he tried to plug it in. If he had gone to Walmart, Thwaites could have bought a toaster for about \$15 or two hours of work at the minimum wage. In other words, the division of labor and specialization meant that Thwaites' productivity was multiplied by a factor of at least one thousand. Thwaites was able to purchase something that he could not have produced on his own without much, much greater effort and expense if at all.

2

The Power of Trade and Comparative Advantage

Learning Objectives

After completing this chapter students should:

- > understand that trade makes people better off when preferences differ.
- > know that trade increases productivity through specialization and the division of knowledge.
- > understand comparative and absolute advantage and how comparative advantage increases productivity.
- > know that trade improves the welfare of both low-productivity and high-productivity countries.

Chapter Outline

Trade and Preferences

Specialization, Productivity, and the Division of Knowledge

Comparative Advantage

The Production Possibility Frontier

Opportunity Costs and Comparative Advantage

Comparative Advantage and Wages

Adam Smith on Trade

Trade and Globalization

Takeaway

Chapter Narrative

This chapter illustrates how trade promotes cooperation that allows both highly productive countries and less productive countries to gain through trading with each other. The chapter provides examples of trade between individuals and trade between countries. Included is the famous Adam Smith quotation illustrating the link between trade among individuals and trade among countries: “What is prudence in the conduct of every private family can scarce be folly in that of a great kingdom.” It is important to emphasize to students that the same principles explain all trade, whether between countries or individuals.

Trade and Preferences

This section tells the story of the founding of eBay. A young computer programmer, Pierre Omidyar, finished the code for what would become eBay in 1995. To test it out he posted a broken laser pointer to the site and asked for a dollar. It sold for \$14.83. He was so surprised that he contacted the buyer to make sure that he understood it was broken. It turns out that the buyer was a collector of broken laser pointers! Trade transformed something that was worthless to Omidyar to something that was valuable to someone else. Value was increased simply by a swap between people with different preferences. Today eBay operates in more than 30 countries and earns billions of dollars in revenue. When people with different preferences trade with each other on eBay, each person becomes better off, and so does eBay, by facilitating the transaction. The short lesson of this section: trade increases value by moving goods from people who value them less to people who value them more.

Teaching Tip: It is easy to demonstrate to students how trade can increase value among individuals. Describe (or actually perform) an exercise in which each student randomly draws one item from a box containing a mixture of different candy bars. Students do not know the brand of candy they will receive until it is drawn from the box, and they must keep the first item selected. Once each student has drawn an item from the box, ask them to rate on a scale from one to ten how happy they are with what they received from the random draw. Add up the total rating for the class. The total rating provides a measure of total happiness or value for the class. Then announce that everyone has one minute to trade their candy bar with anyone else in the class, and they may trade as many times as they wish during this time. When the trading has ended, ask students again to rate their happiness, and once again add up the ratings for the class. The rating should be higher after the trading. Explain to the class that the level of happiness, or value, increased through trade, even though no new candy was given. The increase in value simply results from moving the candy around so that it winds up with the people who value it most.

Specialization, Productivity, and the Division of Knowledge

When people trade, it allows them to specialize in producing one thing rather than trying to produce everything they need. Try asking your students how well they would eat and

how well-clothed they would be if they had to produce all their own food and clothing. Specialization increases production in two ways. First, by specializing in farming, for example, farmers learn a lot more about farming than other people, so they become better at it. Second, they can afford to buy large-scale farming machines that are more productive because they are going to produce in far greater quantities than individuals would produce for their own use.

Most instructors are used to emphasizing specialization and the division of *labor*. *Modern Principles* is different in that this section emphasizes the division of *knowledge*. The human brain is limited, and if knowledge is divided across many brains and then trade occurs, we can collectively benefit from more knowledge than any one mind could hold. If every person in society produced the same thing as the neighbors, the combined knowledge of a society of a million people would barely exceed the knowledge of one brain.

In a modern economy, trade allows us to harness far more knowledge through specialization. The book considers a Valentine's Day rose that may have been grown in Kenya, flown to Amsterdam on a refrigerated airplane, and ultimately trucked to Topeka by drivers drinking Columbian coffee. Each person involved understands only a small part the whole process, but because of trade, their collective knowledge is able to deliver the rose.

Neurosurgeons, heart surgeons, and other medical specialists all have very specialized knowledge and are able to acquire that knowledge only because they can trade with other people. If it weren't for the cook, housecleaner, and dog walker, these doctors would never be able to acquire their expert skills because they would be too busy performing all of these tasks for themselves. The person who specializes as a dog walker is a vital part of the productive gains from specialization, just as the neurosurgeon is.

When trade increases across larger areas and includes more people, it allows society to harness even more knowledge. The opening up of the former communist bloc and China has brought billions more minds into the international division of knowledge and makes us all more productive.

Comparative Advantage

The third reason to trade is to take advantage of people's differing abilities. The book contrasts absolute advantage with comparative advantage using the example of Martha Stewart. An absolute advantage in production exists when a country or person can produce the same good using fewer inputs than another country or person. But *comparative* advantage exists when a country or person can produce the same good at a lower opportunity cost. Martha Stewart doesn't do her own ironing. She may be the world's best ironer. But she can do her ironing only at the expense of time away from running her business. Her blouses might look slightly better if she did them herself, but the gain would be small compared to the losses that would result from having someone else run her business while she irons. She has an absolute advantage in ironing *and* running a business but a comparative advantage only at running her business.

The Production Possibility Frontier

The production possibilities frontier (PPF) shows all of the combinations of goods that a

country can produce given its productivity and supply of inputs. The book plots a PPF for the United States and Mexico in Figure 2.1.

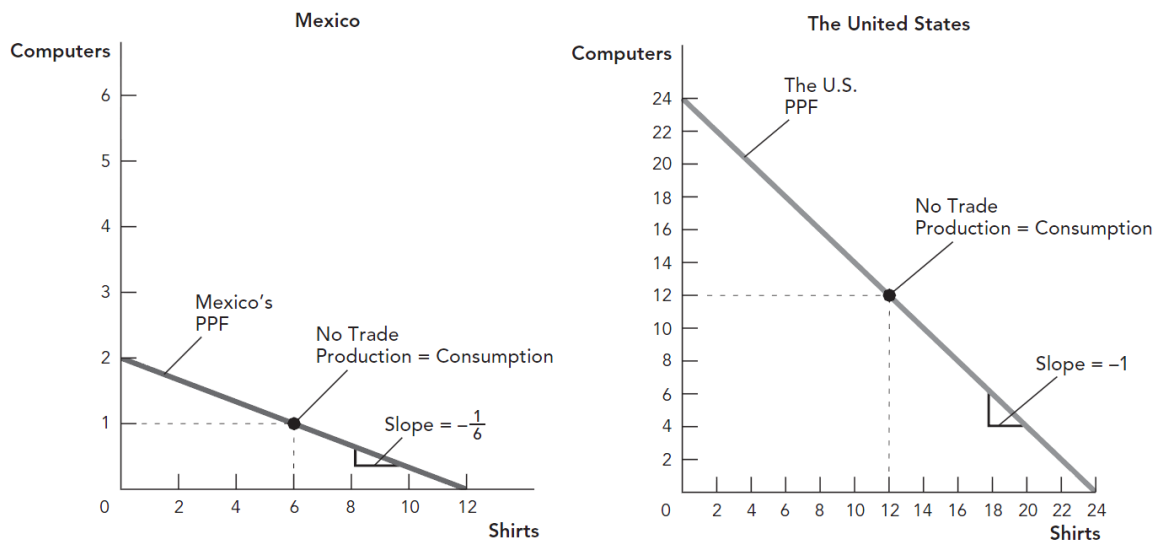


Figure 2.1: Production and Consumption in Mexico and the United States without Trade

Potential Pitfall: Students will be confused throughout the discussion of trade if they do not understand the basics of the PPF. Take the time to explain the key points of working with these graphs. Explain that producing combinations of goods outside the PPF is impossible with given resources and technology. Points inside the PPF are inefficient. Points on the PPF are efficient. Then explain how the slope of the PPF relates to the opportunity costs of producing each good. Do not move on until students can take a PPF and calculate the opportunity costs of producing both goods in both countries, as shown in Table 2.1 in the text. It may be worthwhile to provide your own example for students to work for themselves.

TABLE 2.1 Opportunity Costs		
Country	Opportunity Cost of 1 Computer	Opportunity Cost of 1 Shirt
Mexico	6 shirts	1/6 of a computer
United States	1 shirt	1 computer

The United States is the low-cost producer of computers.

Mexico is the low-cost producer of shirts.

Emphasize that even though Mexico is less productive than the United States, it still has a comparative advantage in producing shirts, as shown in Table 2.1. The theory of

comparative advantage says that to increase its wealth a country should produce the goods it can make at low cost and buy the goods that it can make only at high cost. The book illustrates this by supposing that the United States and Mexico each devote 12 units of labor to producing shirts and 12 units to producing computers. Find the spots on their respective PPFs.

The book then moves 12 units of Mexico's labor out of computers and into shirt production and two units of U.S. labor out of shirt production and into computer production. This allows Mexico to trade three shirts to the United States for one computer. You can illustrate that they both reach a point outside of their original PPF. You might want to trace some more points outside of the PPF that Mexico and the United States could achieve with specialization and trade.

Teaching Tip: Students sometimes have a hard time understanding that the gains from trade come from the fact that one country is a lower-cost producer of each good. I like to tell a story from Steven Landsburg's *The Armchair Economist*. Suppose there are two ways to make cars. One is the way you are familiar with on an assembly line in Detroit. The other is to grow crops in Iowa and then truck them to this fancy new machine parked in an Oakland, California, harbor. You put the crops in the machine and push it out of view offshore and three months later it pulls back up to the docks and spits out cars. Which method should you use to make cars? Obviously, whichever is cheaper. That fancy machine is a boat that trades the crops to Japan for cars. Trade is just a production technology that can lower costs.

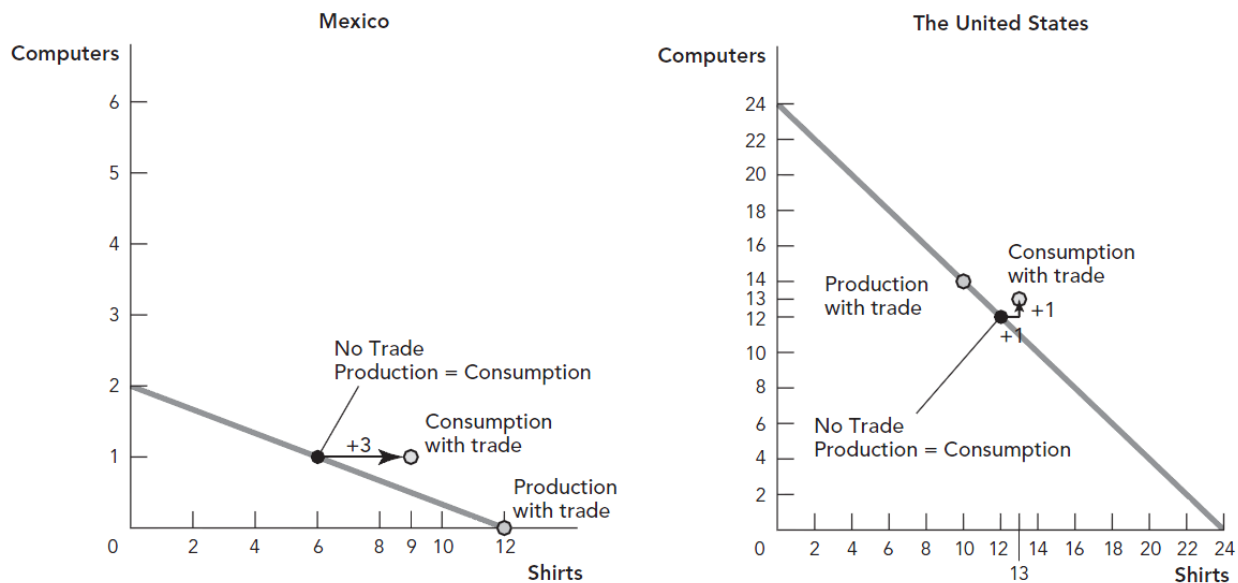


Figure 2.2: Production and Consumption in Mexico and the United States with Trade

Teaching Tip: Emphasize to students that consumption must equal production when there is no trade. In other words, when you don't trade, you can consume only what you produce yourself. But with trade, consumption can exceed production. That is, trade allows a country to move beyond its PPF. You can make a big deal out of this—even refer to it as the “magic” of trade—since it allows you to reach points that were previously considered out of reach. It is worthwhile to emphasize, however, that we still are not producing beyond the PPF; we are only consuming at points beyond the PPF.

Potential Pitfall: Many students will be concerned that there are no gains from trade for a high-productivity country when it trades with a low-productivity country. Emphasize that unless each country can produce every good at the exact same opportunity costs, there will always be gains from trade. The key is that the difference in opportunity costs allows each country to produce something more cheaply than the other. The same way it makes sense for Martha Stewart to trade with a housekeeper, it makes sense for productive nations to trade with less productive ones.

Comparative Advantage and Wages

Another common fear is that rich countries can't compete with poor countries that pay low wages. The book deals with this fear by incorporating wages into the example of trade between the United States and Mexico. Assume a computer sells for \$300 and shirts for \$100 (consistent with the 3-to-1 trade). The value of Mexican consumption is $1 \times \$300$ plus $6 \times \$100$ for \$900 total divided by 24 workers equals an average wage of \$37.50. In the United States, $12 \times \$300$ plus $9 \times \$100$ equals \$4,800 divided by 24 workers for an average wage of \$200.

Despite the fact that Mexico is a low-wage nation and the United States a high-wage nation, they both still gain from trade. After trade, the book's example shows that Mexico gets $1 \times \$300$ plus $9 \times \$100$ for \$1,200, or an average wage of \$50, while the U.S. wage rises to \$216.67. The fact that productivity is lower in Mexico is what causes Mexican wages to be lower. Specialization and trade let all workers improve their wage regardless of their initial level of productivity.

Adam Smith on Trade

The book briefly introduces students to Adam Smith, who reinforces the concept that specialization and trade make sense for countries for the same reason they make sense for individuals.

Trade and Globalization

The Roman Empire had plenty of trade. The Dark Ages saw a decrease in long-distance trade, and the Renaissance saw it expand again. Global trade was common in the nineteenth century as well. Technology changes what goods are traded globally, but globalization itself is not new. Global trade isn't fundamentally different from domestic trade. The book introduces Don Boudreaux's quote, “Globalization is the advance of

human cooperation across national boundaries.”

□ Takeaway

Trade makes people better off when their preferences differ. Trade also increases productivity through specialization and the division of knowledge. When countries specialize and trade according to comparative advantage, they produce the goods they can produce at low cost and trade for the goods they can produce only at high cost. Everyone and every country have a comparative advantage in something, so all can gain from trade.

The logic of trade for individuals is relatively easy for students to accept, but they likely have tons of myths in their head when it comes to international trade. It will probably take some time to dispel these myths and help them understand the logic of trade. I suggest one exercise to get you started.

In- and Out-of-Class Exercise

To have your students internalize how trade between two countries benefits both countries and how many misconceptions surround the topic, you can ask each student to bring in a news article critical of international trade. Ask them to identify why the author of the article thinks international trade in the particular case isn't beneficial. Ask the students to assess the merit of the objection. Then use each criticism and student response as the basis for a brief class discussion. It may be helpful to provide students with an online resource for finding articles.