"Trade Wars Are Good and Easy to Win"

opening case

At 3:50 a.m. on March 2, 2018, Donald Trump, the 45th President of the United States, took to Twitter to espouse his view on an important policy issue: international trade. He tweeted "When a country (USA) is losing many billions of dollars on trade with virtually every country it does business with, trade wars are good, and easy to win. When we are down $100 billion with a certain country and they get cute, don't trade anymore—we win big. It's easy!"

Trump's tweet was a response to backlash over his decision to impose a 25 percent tariff on imports of steel, and a 10 percent tariff on imports of aluminum. The Trump administration claimed that these tariffs were necessary to protect two industries that were important for national security. His critics had a different take. They argued that the tariffs would raise input costs for consumers of steel and aluminum, which included construction companies, manufacturers of construction equipment, appliance makers, auto manufacturers, makers of containers and packaging (e.g. beer cans), and aerospace companies. Among those hit by higher costs due to these tariffs would be two of America's largest exporters, Boeing and Caterpillar Tractor. The critics also noted that there are only 140,000 people employed in the steel and aluminum industries, whereas 6.5 million Americans are employed in industries that use steel and aluminum, where input prices have just gone up.

Trump's actions should not have been a surprise. In contrast to all U.S. presidents since World War II, Donald Trump has long voiced strong opposition to trade deals designed to lower tariff barriers and foster the free flow of goods and services between the United States and its trading partners. During the presidential election campaign, he called the North American Free Trade Agreement (NAFTA) "the worst trade deal maybe ever signed anywhere." Upon taking office, his administration launched a renegotiation of NAFTA with the aim of making the treaty more favorable to America. As a candidate, he vowed to "kill" the Trans Pacific Partnership (TPP), a free trade deal among 12 Pacific Rim countries, including the United States (but excluding China), negotiated by the Obama administration. In his first week in office, he signed an executive order formally withdrawing the United States from the TPP. He has even threatened to pull the United States out of the World Trade Organization (WTO) if the global trade body interferes with his plans to impose tariffs.

Trump's position seems to be based on a belief that trade is a game that America needs to win. He appears to equate winning with running a trade surplus. He sees the persistent U.S. trade deficit as a sign of American weakness. In his words, "you only have to look at our trade deficit to see that we are being taken to the cleaners by our trading partners." He believes that other countries have taken advantage of the United States in trade deals, and the result has been a sharp decline in manufacturing jobs in the

continued

United States. China and Mexico have been frequent targets of his criticisms. He has argued that China's trade surplus with the United States is a result of that country's currency manipulation, which has made Chinese exports artificially cheap. He seems to think that America can win at the trade game by becoming a tougher negotiator and extracting favorable terms from foreign nations that want access to the U.S. market. He has even characterized previous American trade negotiators as "stupid people," "political hacks and diplomats," and "saps" and suggested that he should become "negotiator in chief."

In contrast to Donald Trump's espoused position, the pro trade policies of the last 70 years were based upon a substantial body of economic theory and evidence that suggests free trade has a positive impact on the economic growth rate of *all* nations that participate in a free trade system. According to this work, free trade doesn't destroy jobs; it creates jobs and raises national income. To be sure, some sectors will lose jobs when a nation moves to a free trade regime, but the argument is that jobs created elsewhere in the economy will more than compensate for such losses, and in aggregate, the nation will be better off.

The United States has long been the world's largest economy, largest foreign investor, and one of the three largest exporters (along with China and Germany). As a result of America's economic power, Americans' long adherence to free trade policies has helped to set the tone for the world trading system. In large part, the post–World War II international trading system, with its emphasis on lowering barriers to international trade and investment, was only possible because of vigorous American leadership. Now with the ascendancy of Donald Trump to the presidency, that seems to be changing. Pro–free traders argue that if Trump continues to push for more protectionist trade policies—and his rhetoric and cabinet picks suggest he will—the unintended consequences could include retaliation from America's trading partners, a trade war characterized by higher tariffs, a decline in the volume of world trade, substantial job losses in the United States, and lower economic growth around the world. As evidence, they point to the last time such protectionist policies were implemented. That was in the early 1930s, when a trade war between nations deepened the Great Depression.

Sources: "Donald Trump on Free Trade," *On the Issues*, www.ontheissues.org/2016/Donald_Trump_Free_Trade.htm; Keith Bradsher, "Trump's Pick on Trade Could Put China in a Difficult Spot," *The New York Times*, January 13, 2017; William Mauldin, "Trump Threatens to Pull U.S. Out of World Trade Organization," *The Wall Street Journal*, July 24, 2016; "Trump's Antitrade Warriors," *The Wall Street Journal*, January 16, 2017; "Donald Trump's Trade Bluster," *The Economist*, December 10, 2016; and Chad Brown, "Trump's Steel and Aluminum Tariffs Are Counterproductive," Peterson Institute for International Economics, March 7, 2018.

Introduction

As discussed in the opening case of this chapter, thanks to the rise of Donald Trump, trade policy is currently at the center of political discourse in the United States and elsewhere. President Trump has made statements and taken actions that suggest he may be the most protectionist president in modern history. His administration could upend 70 years of American-led policy designed to lower barriers to the free flow of goods and services between and among nations. That policy was founded on the belief that free trade promotes economic growth in *all* nations that participate in a free trade system. Free trade is what economists call a positive-sum game; it is a policy under which all nations win. The Trump administration, in contrast, appears to see trade as a zero-sum game, in which there are winners and losers.

To truly understand the debate over trade, we need to take a close look at the intellectual foundations for trade policy; at the impact of trade policy on jobs, income, and economic growth; and at how global trade policy has evolved over the last 70 years. We should also consider the reasons for foreign direct investment (FDI) by corporations because FDI may be a substitute for trade (i.e., exports), or it may support greater global trade. For example, many car companies invest in production facilities in Mexico because that is a good base from which to export finished cars to many other countries.

This is the first of four chapters that deal with the global trade and investment environment. In this chapter, we focus on the theoretical foundations of trade policy. We will also look at what the economic evidence tells us about the relationship between trade policies and economic growth.

In Chapter 7, we chart the development of the world trading system, discuss different aspects of trade policy, and look at how trade policy is managed by national and global institutions. In Chapter 8, we discuss the reasons for foreign direct investment and the government policies adopted to manage foreign investment. In Chapter 9, we look at the reasons for creating trading blocks such as the European Union and NAFTA, and we discuss how these transnational agreements have worked out in practice. By the time you have finished these four chapters, you should have a very solid understanding of the international trade and investment environment, and you should be able to analyze in depth and critique the policy positions taken both by free traders and by people who share Donald Trump's views. You will also understand the extremely important impact that trade and investment policies have upon the practice of international business.

An Overview of Trade Theory

We open this chapter with a discussion of mercantilism. Propagated in the sixteenth and seventeenth centuries, mercantilism advocated that countries should simultaneously encourage exports and discourage imports. Although mercantilism is an old and largely discredited doctrine, its echoes remain in modern political debate and in the trade policies of many countries. Indeed, some have argued that Donald Trump espouses mercantilist views. Next, we look at Adam Smith's theory of absolute advantage. Proposed in 1776, Smith's theory was the first to explain why unrestricted free trade is beneficial to a country. **Free trade** refers to a situation in which a government does not attempt to influence through quotas or duties what its citizens can buy from another country or what they can produce and sell to another country. Smith argued that the invisible hand of the market mechanism, rather than government policy, should determine what a country imports and what it exports. His arguments imply that such a laissez-faire stance toward trade was in the best interests of a country. Building on Smith's work are two additional theories that we review. One is the theory of comparative advantage, advanced by the nineteenth-century English economist David Ricardo. This theory is the intellectual basis of the modern argument for unrestricted free trade. In the twentieth century, Ricardo's work was refined by two Swedish economists, Eli Heckscher and Bertil Ohlin, whose theory is known as the Heckscher–Ohlin theory.

free trade
The absence of barriers to the free flow of goods and services between countries.

THE BENEFITS OF TRADE

LO 6-1
Understand why nations trade with each other.

The great strength of the theories of Smith, Ricardo, and Heckscher–Ohlin is that they identify with precision the specific benefits of international trade. Common sense suggests that some international trade is beneficial. For example, nobody would suggest that Iceland should grow its own oranges. Iceland can benefit from trade by exchanging some of the products that it can produce at a low cost (fish) for some products that it cannot produce at all (oranges). Thus, by engaging in international trade, Icelanders are able to add oranges to their diet of fish.

The theories of Smith, Ricardo, and Heckscher–Ohlin go beyond this commonsense notion, however, to show why it is beneficial for a country to engage in international trade *even for products it is able to produce for itself*. This is a difficult concept for people to grasp. For example, many people in the United States believe that American consumers should buy products made in the United States by American companies whenever possible to help save American jobs from foreign competition. The same kind of nationalistic sentiments can be observed in many other countries.

However, the theories of Smith, Ricardo, and Heckscher–Ohlin tell us that a country's economy may gain if its citizens buy certain products from other nations that could be produced at home. The gains arise because international trade allows a country to *specialize* in the manufacture and export of products that can be produced most efficiently in that country, while importing products that can be produced more efficiently in other countries. Thus, it may make sense for the United States to specialize in the production and export of commercial jet aircraft because the efficient production of commercial jet aircraft requires resources that are abundant in the United States, such as a highly skilled labor force and cutting-edge technological know-how. On the other hand, it may make sense for the United States to import textiles from Bangladesh because the efficient production of textiles requires a relatively cheap labor force—and cheap labor is not abundant in the United States.

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Trade Tutorials

In this chapter, we discuss benefits and costs associated with free trade, discuss the benefits of international trade, and explain the pattern of international trade in today's world economy. The general idea is that international trade theories explain why it can be beneficial for a country to engage in trade across country borders, even though countries are at different stages of development, have different product needs, and produce different types of products. International trade theory assumes that countries—through their governments, laws, and regulations—engage in more or less trade across borders. In reality, the vast majority of trade happens across borders by companies from different countries. As related to this chapter, check out globalEDGE™'s "trade tutorials" section, where lots of information, data, and tools are compiled related to trading internationally (globaledge.msu.edu/global-resources/trade-tutorials). The potpourri of trade resources includes export tutorials, online course modules, a glossary, a free trade agreement tariff tool, and much more. The glossary includes lots of terms related to trade. For example, "trade surplus" is defined as a situation in which a country's exports exceeds its imports (i.e., it represents a net inflow of domestic currency from foreign markets). The opposite is called trade deficit and is considered a net outflow, but how is it really defined? The globalEDGE™ glossary can help.

Of course, this economic argument is often difficult for segments of a country's population to accept. With their future threatened by imports, U.S. textile companies and their employees have tried hard to persuade the government to limit the importation of textiles by demanding quotas and tariffs. Although such import controls may benefit particular groups, such as textile businesses and their employees, the theories of Smith, Ricardo, and Heckscher–Ohlin suggest that the economy as a whole is hurt by such action. One of the key insights of international trade theory is that limits on imports are often in the interests of domestic producers but not domestic consumers.

THE PATTERN OF INTERNATIONAL TRADE

The theories of Smith, Ricardo, and Heckscher–Ohlin help explain the pattern of international trade that we observe in the world economy. Some aspects of the pattern are easy to understand. Climate and natural resource endowments explain why Ghana exports cocoa, Brazil exports coffee, Saudi Arabia exports oil, and China exports crawfish. However, much of the observed pattern of international trade is more difficult to explain. For example, why does Japan export automobiles, consumer electronics, and machine tools? Why does Switzerland export chemicals, pharmaceuticals, watches, and jewelry? Why does Bangladesh export garments? David Ricardo's theory of comparative advantage offers an explanation in terms of international differences in labor productivity. The more sophisticated Heckscher–Ohlin theory emphasizes the interplay between the proportions in which the factors of production (such as land, labor, and capital) are available in different countries and the proportions in which they are needed for producing particular goods. This explanation rests on the assumption that countries have varying endowments of the various factors of production. Tests of this theory, however, suggest that it is a less powerful explanation of real-world trade patterns than once thought.



A Rolex Group logo sits on display above a luxury wristwatch store in Vienna, Austria.

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One early response to the failure of the Heckscher–Ohlin theory to explain the observed pattern of international trade was the product life-cycle theory. Proposed by Raymond Vernon, this theory suggests that early in their life cycle, most new products are produced in and exported from the country in which they were developed. As a new product becomes widely accepted internationally, however, production starts in

other countries. As a result, the theory suggests, the product may ultimately be exported back to the country of its original innovation.

In a similar vein, during the 1980s, economists such as Paul Krugman developed what has come to be known as the new trade theory. **New trade theory** (for which Krugman won the Nobel Prize in economics in 2008) stresses that in some cases, countries specialize in the production and export of particular products not because of underlying differences in factor endowments but because in certain industries the world market can support only a limited number of firms. (This is argued to be the case for the commercial aircraft industry.) In such industries, firms that enter the market first are able to build a competitive advantage that is subsequently difficult to challenge. Thus, the observed pattern of trade between nations may be due in part to the ability of firms within a given nation to capture first-mover advantages. The United States is a major exporter of commercial jet aircraft because American firms such as Boeing were first movers in the world market. Boeing built a competitive advantage that has subsequently been difficult for firms from countries with equally favorable factor endowments to challenge (although Europe's Airbus has succeeded in doing that). In a work related to the new trade theory, Michael Porter developed a theory referred to as the theory of national competitive advantage. This attempts to explain why particular nations achieve international success in particular industries. In addition to factor endowments, Porter points out the importance of country factors such as domestic demand and domestic rivalry in explaining a nation's dominance in the production and export of particular products.

new trade theory
The observed pattern of trade in the world economy may be due in part to the ability of firms in a given market to capture first-mover advantages.

TRADE THEORY AND GOVERNMENT POLICY Although all these theories agree that international trade is beneficial to a country, they lack agreement in their recommendations for government policy. Mercantilism makes a case for government involvement in promoting exports and limiting imports (one could argue that Donald Trump seems to advocate such policies). The theories of Smith, Ricardo, and Heckscher–Ohlin form part of the case for unrestricted free trade. The argument for unrestricted free trade is that both import controls and export incentives (such as subsidies) are self-defeating and result in wasted resources. Both the new trade theory and Porter's theory of national competitive advantage can be interpreted as justifying some limited government intervention to support the development of certain export-oriented industries. We discuss the pros and cons of this argument, known as strategic trade policy, as well as the pros and cons of the argument for unrestricted free trade, in Chapter 7.

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Mercantilism

LO 6-2
Summarize the different theories explaining trade flows between nations.

The first theory of international trade, mercantilism, emerged in England in the mid-sixteenth century. The principle assertion of mercantilism was that gold and silver were the mainstays of national wealth and essential to vigorous commerce. At that time, gold and silver were the currency of trade between countries; a country could earn gold and silver by exporting goods. Conversely, importing goods from other countries would result in an outflow of gold and silver from those countries. The main tenet of **mercantilism** was that it was in a country's best interests to maintain a trade surplus, to export more than it imported. By doing so, a country would accumulate gold and silver and, consequently, increase its national wealth, prestige, and power. As the English mercantilist writer Thomas Mun put it in 1630:

mercantilism
An economic philosophy advocating that countries should simultaneously encourage exports and discourage imports.

> The ordinary means therefore to increase our wealth and treasure is by foreign trade, wherein we must ever observe this rule: to sell more to strangers yearly than we consume of theirs in value.[1]

Consistent with this belief, the mercantilist doctrine advocated government intervention to achieve a surplus in the balance of trade. The mercantilists saw no virtue in a large volume of trade. Rather, they recommended policies to maximize exports and minimize imports. To achieve this, imports were limited by tariffs and quotas, while exports were subsidized.

The classical economist David Hume pointed out an inherent inconsistency in the mercantilist doctrine in 1752. According to Hume, if England had a balance-of-trade surplus with France

(it exported more than it imported), the resulting inflow of gold and silver would swell the domestic money supply and generate inflation in England. In France, however, the outflow of gold and silver would have the opposite effect. France's money supply would contract, and its prices would fall. This change in relative prices between France and England would encourage the French to buy fewer English goods (because they were becoming more expensive) and the English to buy more French goods (because they were becoming cheaper). The result would be a deterioration in the English balance of trade and an improvement in France's trade balance, until the English surplus was eliminated. Hence, according to Hume, in the long run, no country could sustain a surplus on the balance of trade and so accumulate gold and silver as the mercantilists had envisaged.

zero-sum game
A situation in which an economic gain by one country results in an economic loss by another.

The flaw with mercantilism was that it viewed trade as a zero-sum game. (A **zero-sum game** is one in which a gain by one country results in a loss by another.) It was left to Adam Smith and David Ricardo to show the limitations of this approach and to demonstrate that trade is a positive-sum game, or a situation in which all countries can benefit. Despite this, the mercantilist doctrine is by no means dead. Donald Trump appears to advocate neo-mercantilist policies.[2] Neo-mercantilists equate political power with economic power and economic power with a balance-of-trade surplus. Critics argue that several nations have adopted a neo-mercantilist strategy that is designed to simultaneously boost exports and limit imports.[3] For example, critics charge that China long pursued a neo-mercantilist policy, deliberately keeping its currency value low against the U.S. dollar in order to sell more goods to the United States and other developed nations, and thus amass a trade surplus and foreign exchange reserves (see the accompanying Country Focus).

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country FOCUS

Is China Manipulating Its Currency in Pursuit of a Neo-Mercantilist Policy?

China's rapid rise in economic power has been built on export-led growth. For decades, the country's exports have been growing faster than its imports. This has led some critics to claim that China is pursuing a neo-mercantilist policy, trying to amass record trade surpluses and foreign currency that will give it economic power over developed nations. By the end of 2014, its foreign exchange reserves exceeded $3.8 trillion, some 60 percent of which were held in U.S.-denominated assets such as U.S. Treasury bills. Observers worried that if China ever decided to sell its holdings of U.S. currency, that would depress the value of the dollar against other currencies and increase the price of imports into America.

America's trade deficit with China has been a particular cause for concern. In 2017, this reached a record $375 billion. At the same time, China has long resisted attempts to let its currency float freely against the U.S. dollar. Many have claimed that China's currency has been too cheap and that this keeps the prices of China's goods artificially low, which fuels the country's exports. China, the critics charge, is guilty of currency manipulation.

So is China manipulating the value of its currency to keep exports artificially cheap? The facts of the matter are less clear than the rhetoric. China actually started to allow the value of the *yuan* (China's currency) to appreciate against the dollar in July 2005, albeit at a slow pace. In July 2005, one U.S. dollar purchased 8.11 yuan. By January 2014 one U.S. dollar purchased 6.05 yuan, which implied a 25 percent increase in the price of Chinese exports, not what one would expect from a country that was trying to keep the price of its exports low through currency manipulation.

Moreover, in 2015 and 2016, the rate of growth in China started to slow significantly. China's stock market fell sharply, and capital started to leave the country, with investors selling yuan and buying U.S. dollars. To stop the yuan from *declining* in value against the U.S. dollar, China began to spend about $100 billion of its foreign exchange reserves *every month* to buy yuan on the open market. Far from allowing its currency to decline against the U.S. dollar, thereby giving a boost to its exports, China was trying to prop up its value, running down its foreign exchange reserves by $2 trillion in the process. This action seems inconsistent with the charges that the country is pursuing a neo-mercantilist policy by artificially depressing the value of its currency. In recognition of these developments, in late 2017 the U.S. Treasury Department declined to name China a currency manipulator and moderated its criticism of the country's foreign exchange policies. On the other hand, The Treasury said that it remained concerned by the lack of progress in reducing China's bilateral trade surplus with the United States.

Sources: S. H. Hanke, "Stop the Mercantilists," *Forbes*, June 20, 2005, p. 164; G. Dyer and A. Balls, "Dollar Threat as China Signals Shift," *Financial Times*, January 6, 2006; Richard Silk, "China's Foreign Exchange Reserves Jump Again," *The Wall Street Journal*, October 15, 2013; Terence Jeffrey, "U.S. Merchandise Trade Deficit with China Hit Record in 2015," cnsnews.com, February 9, 2016; "Trump's Chinese Currency Manipulation," *The Wall Street Journal*, December 7, 2016; Elena Holodny, "The Treasury Department Backs Down on Some of Its Criticisms of China's Currency Policies," *Business Insider*, October 18, 2017; and Ana Swanson,"U.S.-China Trade Deficit Hits Record, Fueling Trade Fight," *The New York Times*, February 6, 2018.

Absolute Advantage

LO 6-2
Summarize the different theories explaining trade flows between nations.

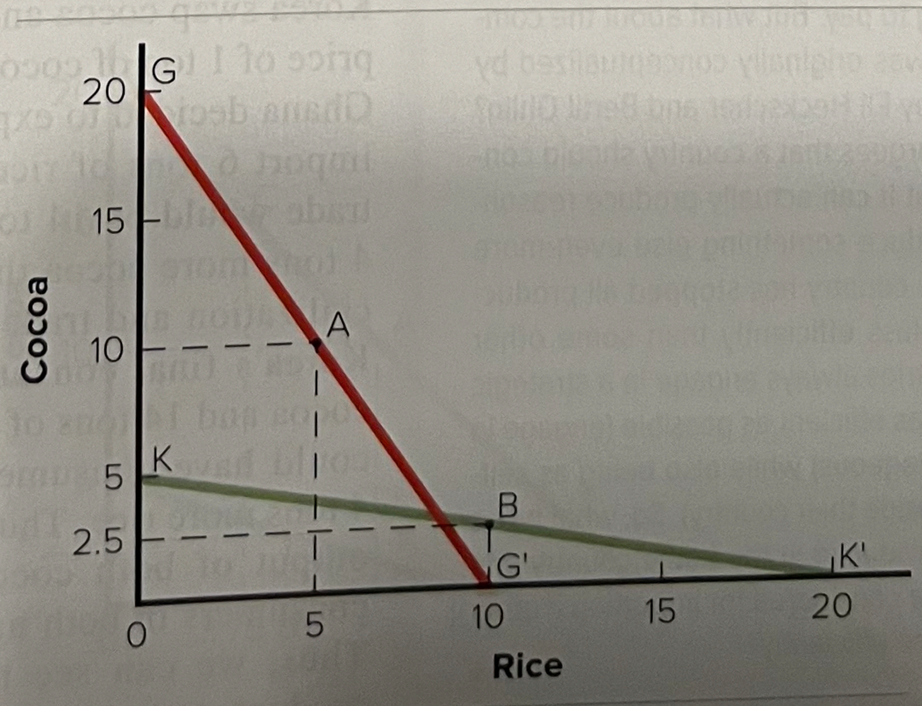
In his 1776 landmark book *The Wealth of Nations*, Adam Smith attacked the mercantilist assumption that trade is a zero-sum game. Smith argued that countries differ in their ability to produce goods efficiently. In his time, the English, by virtue of their superior manufacturing processes, were the world's most efficient textile manufacturers. Due to the combination of favorable climate, good soils, and accumulated expertise, the French had the world's most efficient wine industry. The English had an *absolute advantage* in the production of textiles, while the French had an *absolute advantage* in the production of wine. Thus, a country has an **absolute advantage** in the production of a product when it is more efficient than any other country at producing it.

absolute advantage
A country has an absolute advantage in the production of a product when it is more efficient than any other country at producing it.

According to Smith, countries should specialize in the production of goods for which they have an absolute advantage and then trade these goods for those produced by other countries. In Smith's time, this suggested the English should specialize in the production of textiles, while the French should specialize in the production of wine. England could get all the wine it needed by selling its textiles to France and buying wine in exchange. Similarly, France could get all the textiles it needed by selling wine to England and buying textiles in exchange. Smith's basic argument, therefore, is that a country should never produce goods at home that it can buy at a lower cost from other countries. Smith demonstrates that by specializing in the production of goods in which each has an absolute advantage, both countries benefit by engaging in trade.

Consider the effects of trade between two countries, Ghana and South Korea. The production of any good (output) requires resources (inputs) such as land, labor, and capital. Assume that Ghana and South Korea both have the same amount of resources and that these resources can be used to produce either rice or cocoa. Assume further that 200 units of resources are available in each country. Imagine that in Ghana it takes 10 resources to produce 1 ton of cocoa and 20 resources to produce 1 ton of rice. Thus, Ghana could produce 20 tons of cocoa and no rice, 10 tons of rice and no cocoa, or some combination of rice and cocoa between these two extremes. The different combinations that Ghana could produce are represented by the line GG′ in Figure 6.1. This is referred to as Ghana's *production possibility frontier (PPF)*. Similarly, imagine that in South Korea it takes 40 resources to produce 1 ton of cocoa and 10 resources to produce 1 ton of rice. Thus, South Korea could produce 5 tons of cocoa and no rice, 20 tons of rice and no cocoa, or some combination between these two extremes. The different combinations available to South Korea are represented by the line KK′ in Figure 6.1, which is South Korea's PPF. Clearly, Ghana has an absolute advantage in the production of cocoa. (More resources are needed to produce a ton of cocoa in South Korea than in Ghana.) By the same token, South Korea has an absolute advantage in the production of rice.

Now consider a situation in which neither country trades with any other. Each country devotes half its resources to the production of rice and half to the production of cocoa. Each country must also consume what it produces. Ghana would be able to produce 10 tons of cocoa and 5 tons of rice (point A in Figure 6.1), while South Korea would be able to produce 10 tons of rice and 2.5 tons of cocoa (point B in Figure 6.1). Without trade, the combined production of both countries would be 12.5 tons of cocoa (10 tons in Ghana plus 2.5 tons in South Korea) and 15 tons of rice (5 tons in Ghana and 10 tons in South Korea). If each country were to specialize in producing the good for which it had an absolute advantage and then trade with the other for the good it lacks, Ghana could produce 20 tons of



6.1 FIGURE
The theory of absolute advantage.

Resources Required to Produce 1 Ton of Cocoa and Rice		
	Cocoa	Rice
Ghana	10	20
South Korea	40	10
Production and Consumption without Trade		
Ghana	10.0	5.0
South Korea	2.5	10.0
Total production	12.5	15.0
Production with Specialization		
Ghana	20.0	0.0
South Korea	0.0	20.0
Total production	20.0	20.0
Consumption after Ghana Trades 6 Tons of Cocoa for 6 Tons of South Korean Rice		
Ghana	14.0	6.0
South Korea	6.0	14.0
Increase in Consumption as a Result of Specialization and Trade		
Ghana	4.0	1.0
South Korea	3.5	4.0

Which Products Should Always Be Produced at Home?

One of the key insights of international trade theory is that limits on imports are often in the interests of domestic producers but not domestic consumers. This is especially true if Adam Smith's theory of absolute advantage is in play, where one country is better at producing a product than another country. The reason is that consumers typically want the best products they can get for the amount of money they are willing to pay. But what about the comparative advantage theory that was originally conceptualized by David Ricardo and then refined by Eli Heckscher and Bertil Ohlin? Comparative advantage theory argues that a country should consider not producing products that it can actually produce reasonably well if the country can produce something else even more efficiently. In reality, not a single country has stopped all production of products they produce less efficiently than some other country. The reason is that countries always engage in a strategic balancing act! They prefer to be as efficient as possible (engage in international trade when advantageous) while also being as self-sufficient as possible (produce inside their country). So, what types of products should always be produced in the home country and which products should always be considered for importing if other countries can produce them more efficiently?

cocoa, and South Korea could produce 20 tons of rice. Thus, by specializing, the production of both goods could be increased. Production of cocoa would increase from 12.5 tons to 20 tons, while production of rice would increase from 15 tons to 20 tons. The increase in production that would result from specialization is therefore 7.5 tons of cocoa and 5 tons of rice. Table 6.1 summarizes these figures.

By engaging in trade and swapping 1 ton of cocoa for 1 ton of rice, producers in both countries could consume more of both cocoa and rice. Imagine that Ghana and South Korea swap cocoa and rice on a one-to-one basis; that is, the price of 1 ton of cocoa is equal to the price of 1 ton of rice. If Ghana decided to export 6 tons of cocoa to South Korea and import 6 tons of rice in return, its final consumption after trade would be 14 tons of cocoa and 6 tons of rice. This is 4 tons more cocoa than it could have consumed before specialization and trade and 1 ton more rice. Similarly, South Korea's final consumption after trade would be 6 tons of cocoa and 14 tons of rice. This is 3.5 tons more cocoa than it could have consumed before specialization and trade and 4 tons more rice. Thus, as a result of specialization and trade, output of both cocoa and rice would be increased, and consumers in both nations would be able to consume more. Thus, we can see that trade is a positive-sum game; it produces net gains for all involved.

Comparative Advantage

LO 6-2
Summarize the different theories explaining trade flows between nations.

David Ricardo took Adam Smith's theory one step further by exploring what might happen when one country has an absolute advantage in the production of all goods.[4] Smith's theory of absolute advantage suggests that such a country might derive no benefits from international trade. In his 1817 book *Principles of Political Economy*, Ricardo showed that this was not the case. According to Ricardo's theory of comparative advantage, it makes sense for a country to specialize in the production of those goods that it produces most efficiently and to buy the goods that it produces less efficiently from other countries, even if this means buying goods from other countries that it could produce more efficiently itself.[5] While this may seem counterintuitive, the logic can be explained with a simple example.

Assume that Ghana is more efficient in the production of both cocoa and rice; that is, Ghana has an absolute advantage in the production of both products. In Ghana it takes 10 resources to produce 1 ton of cocoa and 13.33 resources to produce 1 ton of rice. Thus, given its 200 units of resources, Ghana can produce 20 tons of cocoa and no rice, 15 tons of rice and no cocoa, or any combination in between on its PPF (the line GG′ in Figure 6.2). In South Korea, it takes 40 resources to produce 1 ton of cocoa and 20 resources to produce 1 ton of rice. Thus, South Korea can produce 5 tons of cocoa and no rice, 10 tons of rice and no cocoa, or any combination on its PPF (the line KK′ in Figure 6.2). Again assume that without trade, each country uses half its resources to produce rice and half to produce cocoa. Thus, without trade, Ghana will produce 10 tons of cocoa and 7.5 tons of rice (point A in Figure 6.2), while South Korea will produce 2.5 tons of cocoa and 5 tons of rice (point B in Figure 6.2).

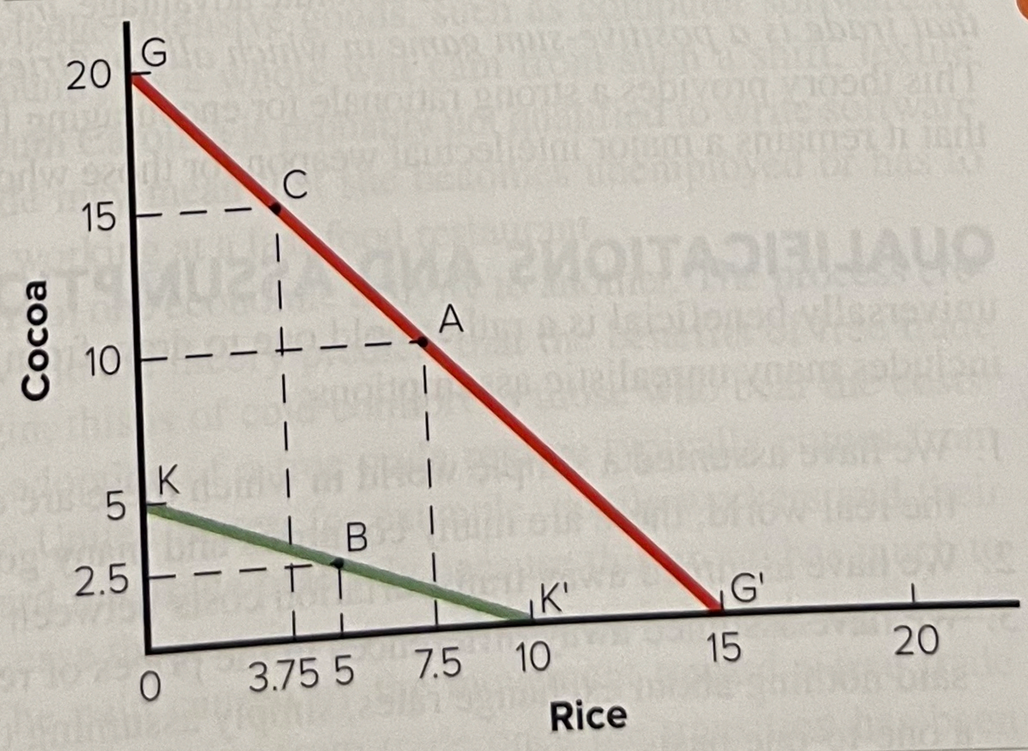
In light of Ghana's absolute advantage in the production of both goods, why should it trade with South Korea? Although Ghana has an absolute advantage in the production of both cocoa and rice, it has a comparative advantage only in the production of cocoa: Ghana can produce 4 times as much cocoa as South Korea, but only 1.5 times as much rice. Ghana is *comparatively* more efficient at producing cocoa than it is at producing rice.

Without trade the combined production of cocoa will be 12.5 tons (10 tons in Ghana and 2.5 in South Korea), and the combined production of rice will also be 12.5 tons (7.5 tons in Ghana and 5 tons in South Korea). Without trade each country must consume what it produces. By engaging in trade, the two countries can increase their combined production of rice and cocoa, and consumers in both nations can consume more of both goods.

THE GAINS FROM TRADE

Imagine that Ghana exploits its comparative advantage in the production of cocoa to increase its output from 10 tons to 15 tons. This uses up 150 units of resources, leaving the remaining 50 units of resources to use in producing 3.75 tons of rice (point C in Figure 6.2). Meanwhile, South Korea specializes in the production of rice, producing 10 tons. The combined output of both cocoa and rice has now increased. Before specialization, the combined output was 12.5 tons of cocoa and 12.5 tons of rice. Now it is 15 tons of cocoa and 13.75 tons of rice (3.75 tons in Ghana and 10 tons in South Korea). The source of the increase in production is summarized in Table 6.2.

Not only is output higher, but both countries also can now benefit from trade. If Ghana and South Korea swap cocoa and rice on a one-to-one basis, with both countries choosing to exchange 4 tons of their export for 4 tons of the import, both countries are able to consume more cocoa and rice than they could before specialization and trade



6.2 FIGURE
The theory of comparative advantage.

6.2 TABLE

Comparative Advantage and the Gains from Trade

Resources Required to Produce 1 Ton of Cocoa and Rice		
	Cocoa	**Rice**
Ghana	10	13.33
South Korea	40	20
Production and Consumption without Trade		
Ghana	10.0	7.5
South Korea	2.5	5.0
Total production	12.5	12.5
Production with Specialization		
Ghana	15.0	3.75
South Korea	0.0	10.0
Total production	15.0	13.75
Consumption after Ghana Trades 4 Tons of Cocoa for 4 Tons of South Korean Rice		
Ghana	11.0	7.75
South Korea	4.0	6.0
Increase in Consumption as a Result of Specialization and Trade		
Ghana	1.0	0.25
South Korea	1.5	1.0

(see Table 6.2). Thus, if Ghana exchanges 4 tons of cocoa with South Korea for 4 tons of rice, it is still left with 11 tons of cocoa, which is 1 ton more than it had before trade. The 4 tons of rice it gets from South Korea in exchange for its 4 tons of cocoa, when added to the 3.75 tons it now produces domestically, leave it with a total of 7.75 tons of rice, which is 0.25 ton more than it had before specialization. Similarly, after swapping 4 tons of rice with Ghana, South Korea still ends up with 6 tons of rice, which is more than it had before specialization. In addition, the 4 tons of cocoa it receives in exchange is 1.5 tons more than it produced before trade. Thus, consumption of cocoa and rice can increase in both countries as a result of specialization and trade.

The basic message of the theory of comparative advantage is that *potential world production is greater with unrestricted free trade than it is with restricted trade*. Ricardo's theory suggests that consumers in all nations can consume more if there are no restrictions on trade. This occurs even in countries that lack an absolute advantage in the production of any good. In other words, to an even greater degree than the theory of absolute advantage, *the theory of comparative advantage suggests that trade is a positive-sum game in which all countries that participate realize economic gains.* This theory provides a strong rationale for encouraging free trade. So powerful is Ricardo's theory that it remains a major intellectual weapon for those who argue for free trade.

LO 6-3

Recognize why many economists believe that unrestricted free trade between nations will raise the economic welfare of countries that participate in a free trade system.

QUALIFICATIONS AND ASSUMPTIONS

The conclusion that free trade is universally beneficial is a rather bold one to draw from such a simple model. Our simple model includes many unrealistic assumptions:

1. We have assumed a simple world in which there are only two countries and two goods. In the real world, there are many countries and many goods.
2. We have assumed away transportation costs between countries.
3. We have assumed away differences in the prices of resources in different countries. We have said nothing about exchange rates, simply assuming that cocoa and rice could be swapped on a one-to-one basis.

4. We have assumed that resources can move freely from the production of one good to another within a country. In reality, this is not always the case.
5. We have assumed constant returns to scale; that is, that specialization by Ghana or South Korea has no effect on the amount of resources required to produce one ton of cocoa or rice. In reality, both diminishing and increasing returns to specialization exist. The amount of resources required to produce a good might decrease or increase as a nation specializes in production of that good.
6. We have assumed that each country has a fixed stock of resources and that free trade does not change the efficiency with which a country uses its resources. This static assumption makes no allowances for the dynamic changes in a country's stock of resources and in the efficiency with which the country uses its resources that might result from free trade.
7. We have assumed away the effects of trade on income distribution within a country.

Given these assumptions, can the conclusion that free trade is mutually beneficial be extended to the real world of many countries, many goods, positive transportation costs, volatile exchange rates, immobile domestic resources, nonconstant returns to specialization, and dynamic changes? Although a detailed extension of the theory of comparative advantage is beyond the scope of this book, economists have shown that the basic result derived from our simple model can be generalized to a world composed of many countries producing many different goods.[6] Despite the shortcomings of the Ricardian model, research suggests that the basic proposition that countries will export the goods that they are most efficient at producing is borne out by the data.[7]

However, once all the assumptions are dropped, the case for unrestricted free trade, while still positive, has been argued by some economists associated with the "new trade theory" to lose some of its strength.[8] We return to this issue later in this chapter and in the next when we discuss the new trade theory. In a recent and widely discussed analysis, the Nobel Prize–winning economist Paul Samuelson argued that contrary to the standard interpretation, in certain circumstances the theory of comparative advantage predicts that a rich country might actually be *worse* off by switching to a free trade regime with a poor nation.[9] We consider Samuelson's critique in the next section.

EXTENSIONS OF THE RICARDIAN MODEL

Let us explore the effect of relaxing three of the assumptions identified earlier in the simple comparative advantage model. Next, we relax the assumptions that resources move freely from the production of one good to another within a country, that there are constant returns to scale, and that trade does not change a country's stock of resources or the efficiency with which those resources are utilized.

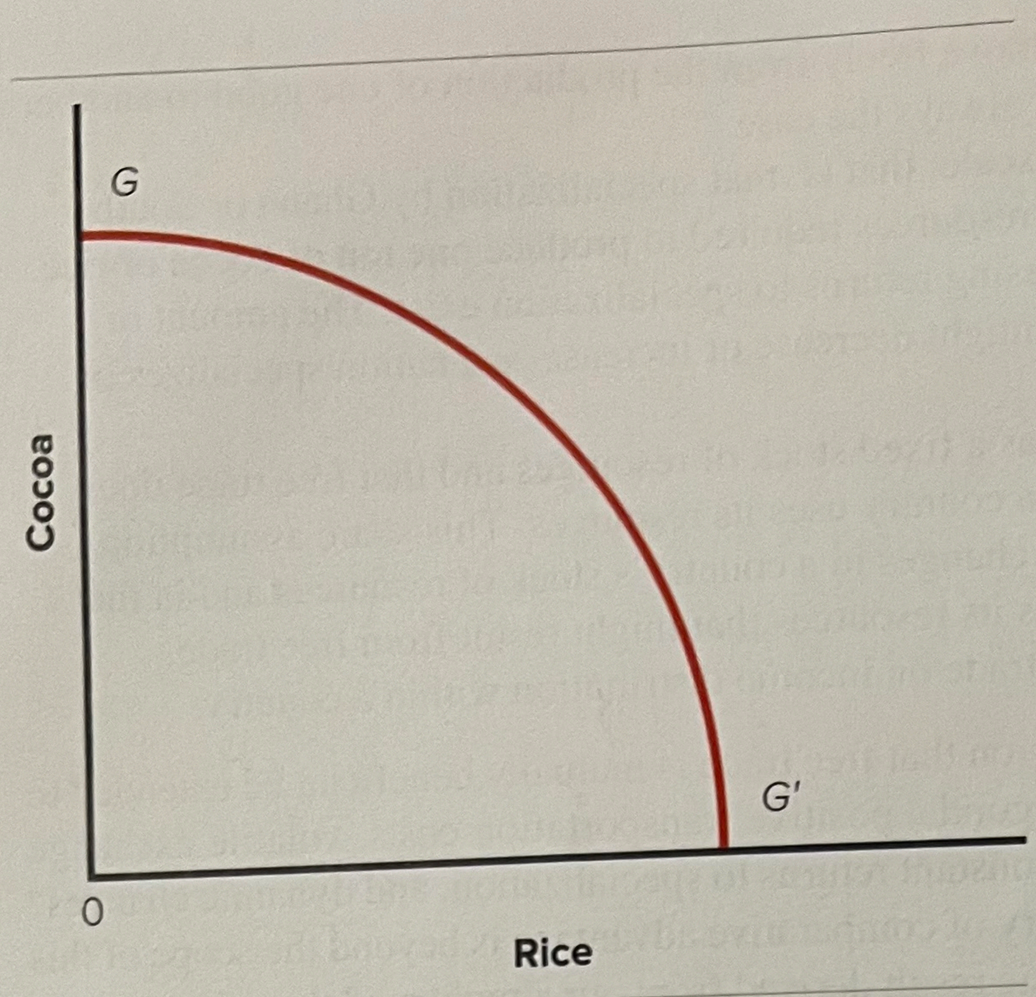
Immobile Resources

In our simple comparative model of Ghana and South Korea, we assumed that producers (farmers) could easily convert land from the production of cocoa to rice and vice versa. While this assumption may hold for some agricultural products, resources do not always shift quite so easily from producing one good to another. A certain amount of friction is involved. For example, embracing a free trade regime for an advanced economy such as the United States often implies that the country will produce less of some labor-intensive goods, such as textiles, and more of some knowledge-intensive goods, such as computer software or biotechnology products. Although the country as a whole will gain from such a shift, textile producers will lose. A textile worker in South Carolina is probably not qualified to write software for Microsoft. Thus, the shift to free trade may mean that she becomes unemployed or has to accept another less attractive job, such as working at a fast-food restaurant.

Resources do not always move easily from one economic activity to another. The process creates friction and human suffering too. While the theory predicts that the benefits of free trade outweigh the costs by a significant margin, this is of cold comfort to those who bear the costs. Accordingly, political opposition to the adoption of a free trade regime typically comes from those whose jobs are most at risk. In the United States, for example, textile workers and their unions have long opposed the move toward free trade precisely because this group has much to lose from free trade. Governments often ease the transition toward free trade by helping retrain those who lose their jobs as a result. The pain caused by the movement toward a free trade regime is a short-term phenomenon, while the gains from trade once the transition has been made are both significant and enduring.

6.3 FIGURE

Ghana's PPF under diminishing returns.



Diminishing Returns The simple comparative advantage model developed above assumes constant returns to specialization. By **constant returns to specialization** we mean the units of resources required to produce a good (cocoa or rice) are assumed to remain constant no matter where one is on a country's production possibility frontier (PPF). Thus, we assumed that it always took Ghana 10 units of resources to produce 1 ton of cocoa. However, it is more realistic to assume diminishing returns to specialization. Diminishing returns to specialization occur when more units of resources are required to produce each additional unit. While 10 units of resources may be sufficient to increase Ghana's output of cocoa from 12 tons to 13 tons, 11 units of resources may be needed to increase output from 13 to 14 tons, 12 units of resources to increase output from 14 tons to 15 tons, and so on. Diminishing returns imply a convex PPF for Ghana (see Figure 6.3), rather than the straight line depicted in Figure 6.2.

constant returns to specialization
The units of resources required to produce a good are assumed to remain constant no matter where one is on a country's production possibility frontier.

It is more realistic to assume diminishing returns for two reasons. First, not all resources are of the same quality. As a country tries to increase its output of a certain good, it is increasingly likely to draw on more marginal resources whose productivity is not as great as those initially employed. The result is that it requires ever more resources to produce an equal increase in output. For example, some land is more productive than other land. As Ghana tries to expand its output of cocoa, it might have to utilize increasingly marginal land that is less fertile than the land it originally used. As yields per acre decline, Ghana must use more land to produce 1 ton of cocoa.

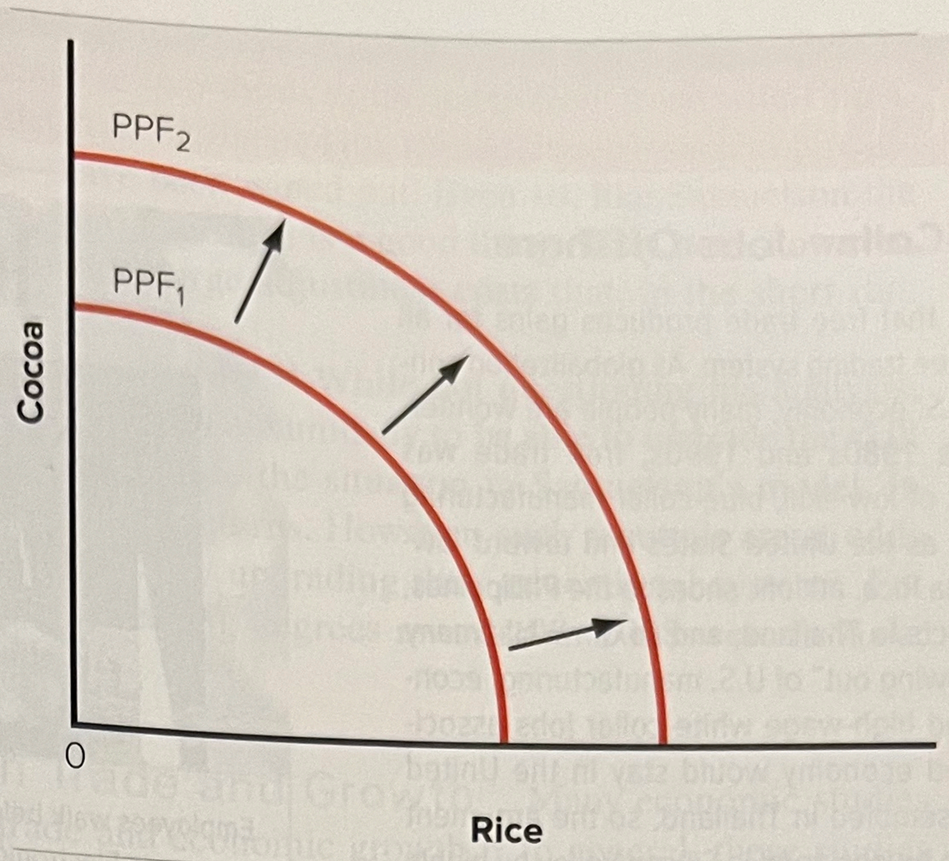
A second reason for diminishing returns is that different goods use resources in different proportions. For example, imagine that growing cocoa uses more land and less labor than growing rice and that Ghana tries to transfer resources from rice production to cocoa production. The rice industry will release proportionately too much labor and too little land for efficient cocoa production. To absorb the additional resources of labor and land, the cocoa industry will have to shift toward more labor-intensive methods of production. The effect is that the efficiency with which the cocoa industry uses labor will decline, and returns will diminish.

Diminishing returns show that it is not feasible for a country to specialize to the degree suggested by the simple Ricardian model outlined earlier. Diminishing returns to specialization suggest that the gains from specialization are likely to be exhausted before specialization is complete. In reality, most countries do not specialize, but instead produce a range of goods. However, the theory predicts that it is worthwhile to specialize until that point where the resulting gains from trade are outweighed by diminishing returns. Thus, the basic conclusion that unrestricted free trade is beneficial still holds, although because of diminishing returns, the gains may not be as great as suggested in the constant returns case.

LO 6-3
Recognize why many economists believe that unrestricted free trade between nations will raise the economic welfare of countries that participate in a free trade system.

Dynamic Effects and Economic Growth The simple comparative advantage model assumed that trade does not change a country's stock of resources or the efficiency with which it utilizes those resources. This static assumption makes no allowances for the dynamic changes that might result from trade. If we relax this assumption, it becomes apparent that opening an economy to trade is likely to generate dynamic gains of two sorts.[10] First, free trade might increase a country's stock of resources as increased supplies of labor and capital from abroad become available for use within the country. For example, this has been occurring in eastern Europe since the early 1990s, with many western businesses investing significant capital in the former communist countries.

Second, free trade might also increase the efficiency with which a country uses its resources. Gains in the efficiency of resource utilization could arise from a number of factors. For example, economies of large-scale production might become available as trade expands the size of the total market available to domestic firms. Trade might make better technology from abroad available to domestic firms; better technology can increase labor productivity or the productivity of land. (The so-called green revolution had this effect on agricultural outputs in developing countries.) Also, opening an economy to foreign competition might stimulate domestic producers to look for ways to increase their efficiency. Again, this phenomenon has arguably been occurring in the once-protected markets of eastern Europe, where many former state monopolies have had to increase the efficiency of their operations to survive in the competitive world market.



6.4 FIGURE
The influence of free trade on the PPF.

Dynamic gains in both the stock of a country's resources and the efficiency with which resources are utilized will cause a country's PPF to shift outward. This is illustrated in Figure 6.4, where the shift from PPF_1 to PPF_2 results from the dynamic gains that arise from free trade. As a consequence of this outward shift, the country in Figure 6.4 can produce more of both goods than it did before introduction of free trade. The theory suggests that opening an economy to free trade not only results in static gains of the type discussed earlier but also results in dynamic gains that stimulate economic growth. If this is so, then one might think that the case for free trade becomes stronger still, and in general it does. However, as noted, one of the leading economic theorists of the twentieth century, Paul Samuelson, argued that in some circumstances, dynamic gains can lead to an outcome that is not so beneficial.

Trade, Jobs and Wages: The Samuelson Critique

Paul Samuelson's critique looks at what happens when a rich country—the United States—enters into a free trade agreement with a poor country—China—that rapidly improves its productivity after the introduction of a free trade regime (i.e., there is a dynamic gain in the efficiency with which resources are used in the poor country). Samuelson's model suggests that in such cases, the lower prices that U.S. consumers pay for goods imported from China following the introduction of a free trade regime *may* not be enough to produce a net gain for the U.S. economy if the dynamic effect of free trade is to lower real wage rates in the United States. As he stated in a *New York Times* interview, "Being able to purchase groceries 20 percent cheaper at Wal-Mart (due to international trade) does not necessarily make up for the wage losses (in America)."[11]

Samuelson was particularly concerned about the ability to offshore service jobs that traditionally were not internationally mobile, such as software debugging, call-center jobs, accounting jobs, and even medical diagnosis of MRI scans (see the accompanying Country Focus for details). Advances in communications technology since the development of the World Wide Web in the early 1990s have made this possible, effectively expanding the labor market for these jobs to include educated people in places such as India, the Philippines, and China. When coupled with rapid advances in the productivity of foreign labor due to better education, the effect on middle-class wages in the United States, according to Samuelson, may be similar to mass inward migration into the country: It will lower the market clearing wage rate, *perhaps* by enough to outweigh the positive benefits of international trade.

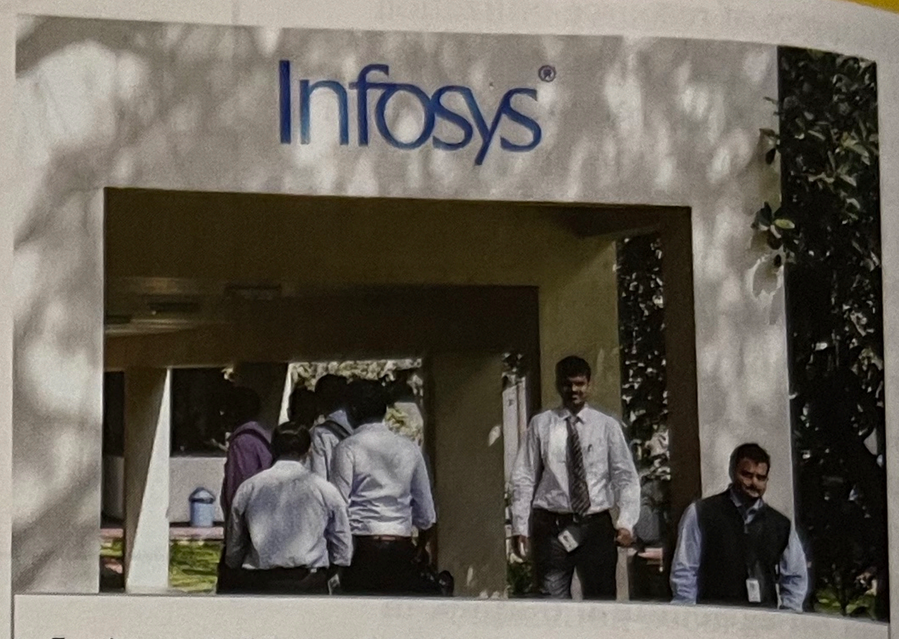
country FOCUS

Moving U.S. White-Collar Jobs Offshore

Economists have long argued that free trade produces gains for all countries that participate in a free trading system. As globalization continues to sweep through the U.S. economy, many people are wondering if this is true. During the 1980s and 1990s, free trade was associated with the movement of low-skill, blue-collar manufacturing jobs out of rich countries such as the United States and toward low-wage countries—textiles to Costa Rica, athletic shoes to the Philippines, steel to Brazil, electronic products to Thailand, and so on. While many observers bemoaned the "hollowing out" of U.S. manufacturing, economists stated that high-skill and high-wage white-collar jobs associated with the knowledge-based economy would stay in the United States. Computers might be assembled in Thailand, so the argument went, but they would continue to be designed in Silicon Valley by highly skilled U.S. engineers, and software applications would be written in the United States by programmers at Apple, Microsoft, Adobe, Oracle, and the like.

Developments over the past several decades have people questioning this assumption. Many American companies have been moving white-collar, knowledge-based jobs to developing nations where they can be performed for a fraction of the cost. For example, a few years ago Bank of America cut nearly 5,000 jobs from its 25,000-strong, U.S.-based information technology workforce. Some of these jobs were transferred to India, where work that costs $100 an hour in the United States could be done for $20 an hour. One beneficiary of Bank of America's downsizing is Infosys Technologies Ltd., a Bangalore, India, information technology firm where 250 engineers now develop information technology applications for the bank. Other Infosys employees are busy processing home loan applications for U.S. mortgage companies. Nearby in the offices of another Indian firm, Wipro Ltd., radiologists interpret 30 CT scans a day for Massachusetts General Hospital that are sent over the Internet. At yet another Bangalore business, engineers earn $10,000 a year designing leading-edge semiconductor chips for Texas Instruments. Nor is India the only beneficiary of these changes.

Some architectural work also is being outsourced to lower-cost locations. Flour Corp., a Texas-based construction company, employs engineers and drafters in the Philippines, Poland, and India to turn layouts of industrial facilities into detailed specifications. For a Saudi Arabian chemical plant Flour designed, 200 young engineers based in the Philippines earning less than $3,000 a year collaborated in real time over the Internet with elite U.S. and British engineers who make up to $100,000 a year. Why did Flour do this? According to the company, the answer was simple. Doing so reduces the prices of a project by 15 percent, giving the company a cost-based competitive advantage in the global market for construction design. Also troubling for future job growth in the United States, some high-tech start-ups are outsourcing significant work right from inception. For example, Zoho Corporation, a California-based start-up offering online web applications for small businesses, has about 20 employees in the United States and more than 1,000 in India!



Employees walk below the Infosys Ltd. logo at the company's campus in Electronics City in Bangalore, India.

©Vivek Prakash/Bloomberg/Getty Images

Sources: P. Engardio, A. Bernstein, and M. Kripalani, "Is Your Job Next?" *BusinessWeek*, February 3, 2003, pp. 50–60; "America's Pain, India's Gain," *The Economist*, January 11, 2003, p. 57; M. Schroeder and T. Aeppel, "Skilled Workers Mount Opposition to Free Trade, Swaying Politicians," *The Wall Street Journal*, October 10, 2003, pp. A1, A11; D. Clark,"New U.S. Fees on Visas Irk Outsources," *The Wall Street Journal*, August 16, 2010, p. 6; and J. R. Hagerty, "U.S. Loses High Tech Jobs as R&D Shifts to Asia," *The Wall Street Journal*, January 18, 2012, p. B1.

Having said this, it should be noted that Samuelson concedes that free trade has historically benefited rich countries (as data discussed later seem to confirm). Moreover, he notes that introducing protectionist measures (e.g., trade barriers) to guard against the theoretical possibility that free trade may harm the United States in the future may produce a situation that is worse than the disease they are trying to prevent. To quote Samuelson: "Free trade may turn out pragmatically to be still best for each region in comparison to lobbyist-induced tariffs and quotas which involve both a perversion of democracy and non-subtle deadweight distortion losses."[12]

One notable recent study by MIT economist David Autor and his associates found evidence in support of Samuelson's thesis. The study has been widely quoted in the media and cited by politicians. Autor and his associates looked at every county in the United States for its manufacturers' exposure to competition from China.[13] The researchers found that regions most exposed to China tended not only to lose more manufacturing jobs, but also to see overall employment decline. Areas with higher exposure to China also had larger increases in workers receiving

unemployment insurance, food stamps, and disability payments. The costs to the economy from the increased government payments amounted to two-thirds of the gains from trade with China. In other words, many of the ways trade with China has helped the United States—such as providing inexpensive goods to U.S. consumers—have been wiped out. Even so, like Samuelson the authors of this study argued that in the long run, free trade is a good thing. They note, however, that the rapid rise of China has resulted in some large adjustment costs that, in the short run, significantly reduce the gains from trade.

Other economists have dismissed Samuelson's fears.[14] While not questioning his analysis, they note that as a practical matter, developing nations are unlikely to be able to upgrade the skill level of their workforce rapidly enough to give rise to the situation in Samuelson's model. In other words, they will quickly run into diminishing returns. However, such rebuttals are at odds with data suggesting that Asian countries are rapidly upgrading their educational systems. For example, about 56 percent of the world's engineering degrees awarded in 2008 were in Asia, compared with 4 percent in the United States![15]

Evidence for the Link between Trade and Growth Many economic studies have looked at the relationship between trade and economic growth.[16] In general, these studies suggest that as predicted by the standard theory of comparative advantage, countries that adopt a more open stance toward international trade enjoy higher growth rates than those that close their economies to trade. Jeffrey Sachs and Andrew Warner created a measure of how "open" to international trade an economy was and then looked at the relationship between "openness" and economic growth for a sample of more than 100 countries from 1970 to 1990.[17] Among other findings, they reported

> We find a strong association between openness and growth, both within the group of developing and the group of developed countries. Within the group of developing countries, the open economies grew at 4.49 percent per year, and the closed economies grew at 0.69 percent per year. Within the group of developed economies, the open economies grew at 2.29 percent per year, and the closed economies grew at 0.74 percent per year.[18]

A study by Wacziarg and Welch updated the Sachs and Warner data through the late 1990s. They found that over the period 1950–1998, countries that liberalized their trade regimes experienced, on average, increases in their annual growth rates of 1.5–2.0 percent compared to preliberalization times.[19] An exhaustive survey of 61 studies published between 1967 and 2009 concluded: "The macroeconomic evidence provides dominant support for the positive and significant effects of trade on output and growth."[20]

The message seems clear: Adopt an open economy and embrace free trade, and your nation will be rewarded with higher economic growth rates. Higher growth will raise income levels and living standards. This last point has been confirmed by a study that looked at the relationship between trade and growth in incomes. The study, undertaken by Jeffrey Frankel and David Romer, found that on average, a 1 percentage point increase in the ratio of a country's trade to its gross domestic product increases income per person by at least 0.5 percent.[21] For every 10 percent increase in the importance of international trade in an economy, average income levels will rise by at least 5 percent. Despite the short-term adjustment costs associated with adopting a free trade regime, which can be significant, trade would seem to produce greater economic growth and higher living standards in the long run, just as the theory of Ricardo would lead us to expect.[22]

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Heckscher–Ohlin Theory

LO 6-2

Summarize the different theories explaining trade flows between nations.

Ricardo's theory stresses that comparative advantage arises from differences in productivity. Thus, whether Ghana is more efficient than South Korea in the production of cocoa depends on how productively it uses its resources. Ricardo stressed labor productivity and argued that differences in labor productivity between nations underlie the notion of comparative advantage. Swedish economists Eli Heckscher (in 1919) and Bertil Ohlin (in 1933) put forward a different explanation of comparative advantage. They argued that comparative advantage arises from

factor endowments
A country's endowment with resources such as land, labor, and capital.

differences in national factor endowments.[23] By **factor endowments** they meant the extent to which a country is endowed with such resources as land, labor, and capital. Nations have varying factor endowments, and different factor endowments explain differences in factor costs; specifically, the more abundant a factor, the lower its cost. The Heckscher–Ohlin theory predicts that countries will export those goods that make intensive use of factors that are locally abundant, while importing goods that make intensive use of factors that are locally scarce. Thus, the Heckscher–Ohlin theory attempts to explain the pattern of international trade that we observe in the world economy. Like Ricardo's theory, the Heckscher–Ohlin theory argues that free trade is beneficial. Unlike Ricardo's theory, however, the Heckscher–Ohlin theory argues that the pattern of international trade is determined by differences in factor endowments, rather than differences in productivity.

The Heckscher–Ohlin theory has commonsense appeal. For example, the United States has long been a substantial exporter of agricultural goods, reflecting in part its unusual abundance of arable land. In contrast, China has excelled in the export of goods produced in labor-intensive manufacturing industries. This reflects China's relative abundance of low-cost labor. The United States, which lacks abundant low-cost labor, has been a primary importer of these goods. Note that it is relative, not absolute, endowments that are important; a country may have larger absolute amounts of land and labor than another country but be relatively abundant in one of them.

THE LEONTIEF PARADOX

The Heckscher–Ohlin theory has been one of the most influential theoretical ideas in international economics. Most economists prefer the Heckscher–Ohlin theory to Ricardo's theory because it makes fewer simplifying assumptions. Because of its influence, the theory has been subjected to many empirical tests. Beginning with a famous study published in 1953 by Wassily Leontief (winner of the Nobel Prize in economics in 1973), many of these tests have raised questions about the validity of the Heckscher–Ohlin theory.[24] Using the Heckscher–Ohlin theory, Leontief postulated that because the United States was relatively abundant in capital compared to other nations, the United States would be an exporter of capital-intensive goods and an importer of labor-intensive goods. To his surprise, however, he found that U.S. exports were less capital intensive than U.S. imports. Because this result was at variance with the predictions of the theory, it has become known as the *Leontief paradox*.

No one is quite sure why we observe the Leontief paradox. One possible explanation is that the United States has a special advantage in producing new products or goods made with innovative technologies. Such products may be less capital intensive than products whose technology has had time to mature and become suitable for mass production. Thus, the United States may be exporting goods that heavily use skilled labor and innovative entrepreneurship, such as computer software, while importing heavy manufacturing products that use large amounts of capital. Some empirical studies tend to confirm this.[25] Still, tests of the Heckscher–Ohlin theory using data for a large number of countries tend to confirm the existence of the Leontief paradox.[26]

This leaves economists with a difficult dilemma. They prefer the Heckscher–Ohlin theory on theoretical grounds, but it is a relatively poor predictor of real-world international trade patterns. On the other hand, the theory they regard as being too limited, Ricardo's theory of comparative advantage, actually predicts trade patterns with greater accuracy. The best solution to this dilemma may be to return to the Ricardian idea that trade patterns are largely driven by international differences in productivity. Thus, one might argue that the United States exports commercial aircraft and imports textiles not because its factor endowments are especially suited to aircraft manufacture and not suited to textile manufacture, but because the United States is relatively more efficient at producing aircraft than textiles. A key assumption in the

Should Factor Endowments or Productivity Drive Trade?

Ricardo's theory of trade suggests that it makes sense for a country to specialize in production of those products that it produces most efficiently and to buy the products that it produces less efficiently from other countries, even if this means that the country is buying products that in reality it could produce more efficiently itself. This means that Ricardo showed that a country can derive advantages by trade even though it has an absolute advantage in producing all products. The Heckscher-Ohlin theory of trade suggests that comparative advantage for a country arises from differences in national factor endowments (i.e., the extent to which a country is endowed with such resources as land, labor, and capital). Ricardo's argument focused on relative productivity, while Heckscher-Ohlin's argument focused on having important resources. If you can only have one of the two—better relative productivity or lots of resources such as land, labor, and capital—which would you prefer, and why?

Heckscher–Ohlin theory is that technologies are the same across countries. This may not be the case. Differences in technology may lead to differences in productivity, which in turn, drives international trade patterns.[27] Thus, Japan's success in exporting automobiles from the 1970s onward has been based not only on the relative abundance of capital but also on its development of innovative manufacturing technology that enabled it to achieve higher productivity levels in automobile production than other countries that also had abundant capital. Empirical work suggests that this theoretical explanation may be correct.[28] The new research shows that once differences in technology across countries are controlled for, countries do indeed export those goods that make intensive use of factors that are locally abundant, while importing goods that make intensive use of factors that are locally scarce. In other words, once the impact of differences of technology on productivity is controlled for, the Heckscher–Ohlin theory seems to gain predictive power.

The Product Life-Cycle Theory

Raymond Vernon initially proposed the product life-cycle theory in the mid-1960s.[29] Vernon's theory was based on the observation that for most of the twentieth century, a very large proportion of the world's new products had been developed by U.S. firms and sold first in the U.S. market (e.g., mass-produced automobiles, televisions, instant cameras, photocopiers, personal computers, and semiconductor chips). To explain this, Vernon argued that the wealth and size of the U.S. market gave U.S. firms a strong incentive to develop new consumer products. In addition, the high cost of U.S. labor gave U.S. firms an incentive to develop cost-saving process innovations.

Just because a new product is developed by a U.S. firm and first sold in the U.S. market, it does not follow that the product must be produced in the United States. It could be produced abroad at some low-cost location and then exported back into the United States. However, Vernon argued that most new products were initially produced in America. Apparently, the pioneering firms believed it was better to keep production facilities close to the market and to the firm's center of decision making, given the uncertainty and risks inherent in introducing new products. Also, the demand for most new products tends to be based on nonprice factors. Consequently, firms can charge relatively high prices for new products, which obviates the need to look for low-cost production sites in other countries.

Vernon went on to argue that early in the life cycle of a typical new product, while demand is starting to grow rapidly in the United States, demand in other advanced countries is limited to high-income groups. The limited initial demand in other advanced countries does not make it worthwhile for firms in those countries to start producing the new product, but it does necessitate some exports from the United States to those countries.

Over time, demand for the new product starts to grow in other advanced countries (e.g., Great Britain, France, Germany, and Japan). As it does, it becomes worthwhile for foreign producers to begin producing for their home markets. In addition, U.S. firms might set up production facilities in those advanced countries where demand is growing. Consequently, production within other advanced countries begins to limit the potential for exports from the United States.

As the market in the United States and other advanced nations matures, the product becomes more standardized, and price becomes the main competitive weapon. As this occurs, cost considerations start to play a greater role in the competitive process. Producers based in advanced countries where labor costs are lower than in the United States (e.g., Italy and Spain) might now be able to export to the United States. If cost pressures become intense, the process might not stop there. The cycle by which the United States lost its advantage to other advanced countries might be repeated once more, as developing countries (e.g., Thailand) begin to acquire a production advantage over advanced countries. Thus, the locus of global production initially switches from the United States to other advanced nations and then from those nations to developing countries.

The consequence of these trends for the pattern of world trade is that over time, the United States switches from being an exporter of the product to an importer of the product as production becomes concentrated in lower-cost foreign locations.

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LO 6-2

Summarize the different theories explaining trade flows between nations.

PRODUCT LIFE-CYCLE THEORY IN THE TWENTY-FIRST CENTURY Historically, the product life-cycle theory seems to be an accurate explanation of international trade patterns. Consider photocopiers: The product was first developed in the early 1960s by Xerox in the United States and sold initially to U.S. users. Originally, Xerox exported photocopiers from the United States, primarily to Japan and the advanced countries of Western Europe. As demand began to grow in those countries, Xerox entered into joint ventures to set up production in Japan (Fuji-Xerox) and Great Britain (Rank-Xerox). In addition, once Xerox's patents on the photocopier process expired, other foreign competitors began to enter the market (e.g., Canon in Japan and Olivetti in Italy). As a consequence, exports from the United States declined, and U.S. users began to buy some photocopiers from lower-cost foreign sources, particularly Japan. More recently, Japanese companies found that manufacturing costs are too high in their own country, so they have begun to switch production to developing countries such as Thailand. Thus, initially the United States and now other advanced countries (e.g., Japan and Great Britain) have switched from being exporters of photocopiers to importers. This evolution in the pattern of international trade in photocopiers is consistent with the predictions of the product life-cycle theory that mature industries tend to go out of the United States and into low-cost assembly locations.

However, the product life-cycle theory is not without weaknesses. Viewed from an Asian or European perspective, Vernon's argument that most new products are developed and introduced in the United States seems ethnocentric and dated. Although it may be true that during U.S. dominance of the global economy (from 1945 to 1975), most new products were introduced in the United States, there have always been important exceptions. These exceptions appear to have become more common in recent years. Many new products are now first introduced in Japan (e.g., video-game consoles) or South Korea (e.g., Samsung smartphones). Moreover, with the increased globalization and integration of the world economy discussed in Chapter 1, an increasing number of new products (e.g., tablet computers, smartphones, and digital cameras) are now introduced simultaneously in the United States and many European and Asian nations. This may be accompanied by globally dispersed production, with particular components of a new product being produced in those locations around the globe where the mix of factor costs and skills is most favorable (as predicted by the theory of comparative advantage). In sum, although Vernon's theory may be useful for explaining the pattern of international trade during the period of American global dominance, its relevance in the modern world seems more limited.

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LO 6-2

Summarize the different theories explaining trade flows between nations.

New Trade Theory

The new trade theory began to emerge in the 1970s when a number of economists pointed out that the ability of firms to attain economies of scale might have important implications for international trade.[30] **Economies of scale** are unit cost reductions associated with a large scale of output. Economies of scale have a number of sources, including the ability to spread fixed costs over a large volume and the ability of large-volume producers to utilize specialized employees and equipment that are more productive than less specialized employees and equipment. Economies of scale are a major source of cost reductions in many industries, from computer software to automobiles and from pharmaceuticals to aerospace. For example, Microsoft realizes economies of scale by spreading the fixed costs of developing new versions of its Windows operating system, which runs to about $10 billion, over the 2 billion or so personal computers on which each new system is ultimately installed. Similarly, automobile companies realize economies of scale by producing a high volume of automobiles from an assembly line where each employee has a specialized task.

economies of scale

Cost advantages associated with large-scale production.

New trade theory makes two important points: First, through its impact on economies of scale, trade can increase the variety of goods available to consumers and decrease the average cost of those goods. Second, in those industries in which the output required to attain economies of scale represents a significant proportion of total world demand, the global market may be able to support only a small number of enterprises. Thus, world trade in certain products may be dominated by countries whose firms were first movers in their production.

INCREASING PRODUCT VARIETY AND REDUCING COSTS

Imagine first a world without trade. In industries where economies of scale are important, both the variety of goods that a country can produce and the scale of production are limited by the size of the market. If a national market is small, there may not be enough demand to enable producers to realize economies of scale for certain products. Accordingly, those products may not be produced, thereby limiting the variety of products available to consumers. Alternatively, they may be produced but at such low volumes that unit costs and prices are considerably higher than they might be if economies of scale could be realized.

Now consider what happens when nations trade with each other. Individual national markets are combined into a larger world market. As the size of the market expands due to trade, individual firms may be able to better attain economies of scale. The implication, according to new trade theory, is that each nation may be able to specialize in producing a narrower range of products than it would in the absence of trade, yet by buying goods that it does not make from other countries, each nation can simultaneously increase the *variety* of goods available to its consumers and *lower the costs* of those goods; thus, trade offers an opportunity for mutual gain even when countries do not differ in their resource endowments or technology.

Suppose there are two countries, each with an annual market for 1 million automobiles. By trading with each other, these countries can create a combined market for 2 million cars. In this combined market, due to the ability to better realize economies of scale, more varieties (models) of cars can be produced, and cars can be produced at a lower average cost, than in either market alone. For example, demand for a sports car may be limited to 55,000 units in each national market, while a total output of at least 100,000 per year may be required to realize significant scale economies. Similarly, demand for a minivan may be 80,000 units in each national market, and again a total output of at least 100,000 per year may be required to realize significant scale economies. Faced with limited domestic market demand, firms in each nation may decide not to produce a sports car, because the costs of doing so at such low volume are too great. Although they may produce minivans, the cost of doing so will be higher, as will prices, than if significant economies of scale had been attained. Once the two countries decide to trade, however, a firm in one nation may specialize in producing sports cars, while a firm in the other nation may produce minivans. The combined demand for 110,000 sports cars and 160,000 minivans allows each firm to realize scale economies. Consumers in this case benefit from having access to a product (sports cars) that was not available before international trade and from the lower price for a product (minivans) that could not be produced at the most efficient scale before international trade. Trade is thus mutually beneficial because it allows the specialization of production, the realization of scale economies, the production of a greater variety of products, and lower prices.

ECONOMIES OF SCALE, FIRST-MOVER ADVANTAGES, AND THE PATTERN OF TRADE

A second theme in new trade theory is that the pattern of trade we observe in the world economy may be the result of economies of scale and first-mover advantages. **First-mover advantages** are the economic and strategic advantages that accrue to early entrants into an industry.[31] The ability to capture scale economies ahead of later entrants, and thus benefit from a lower cost structure, is an important first-mover advantage. New trade theory argues that for those products where economies of scale are significant and represent a substantial proportion of world demand, the first movers in an industry can gain a scale-based cost advantage that later entrants find almost impossible to match. Thus, the pattern of trade that we observe for such products may reflect first-mover advantages. Countries may dominate in the export of certain goods

LO 6-3

Recognize why many economists believe that unrestricted free trade between nations will raise the economic welfare of countries that participate in a free trade system.

first-mover advantages

Advantages accruing to the first to enter a market.

Can We Continue to Rely on Economies of Scale?

Economies of scale are unit cost reductions associated with a large scale of output. As we discuss in the text, economies of scale have a number of sources, including the ability to spread fixed costs over a large volume and the ability of large-volume producers to utilize specialized employees and equipment that are more productive than less specialized employees and equipment. Economies of scale have been a major source of cost reductions in many industries—from computer software to automobiles and from pharmaceuticals to aerospace. But some of these economies of scale advantages were realized when production platforms for computers, automobiles, and so on were used for years and spread across large numbers of customers. With more and more innovations coming on the market faster and faster every year and more and more customers wanting customized products (even if the customization is small), how can companies continue to rely on economies of scale as a strategic advantage? Will large, mass market–type companies that are selling large quantities of specific products always have economies of scale advantages vis-à-vis small and medium-sized companies?

because economies of scale are important in their production and because firms located in those countries were the first to capture scale economies, giving them a first-mover advantage.

For example, consider the commercial aerospace industry. In aerospace, there are substantial scale economies that come from the ability to spread the fixed costs of developing a new jet aircraft over a large number of sales. It has cost Airbus some $15 billion to develop its superjumbo jet, the 550-seat A380. To recoup those costs and break even, Airbus will have to sell at least 250 A380 planes. If Airbus can sell more than 350 A380 planes, it will apparently be a profitable venture. Total demand over the next 20 years for this class of aircraft is estimated to be between 400 and 600 units. Thus, the global market can probably profitably support only one producer of jet aircraft in the superjumbo category. It follows that the European Union might come to dominate in the export of very large jet aircraft, primarily because a European-based firm, Airbus, was the first to produce a superjumbo jet aircraft and realize scale economies. Other potential producers, such as Boeing, might be shut out of the market because they will lack the scale economies that Airbus will enjoy. By pioneering this market category, Airbus may have captured a *first-mover advantage* based on *scale economies* that will be difficult for rivals to match, and that will result in the European Union becoming the *leading exporter* of very large jet aircraft.

IMPLICATIONS OF NEW TRADE THEORY

New trade theory has important implications. The theory suggests that nations may benefit from trade even when they do not differ in resource endowments or technology. Trade allows a nation to specialize in the production of certain products, attaining scale economies and lowering the costs of producing those products, while buying products that it does not produce from other nations that specialize in the production of other products. By this mechanism, the variety of products available to consumers in each nation is increased, while the average costs of those products should fall, as should their price, freeing resources to produce other goods and services.

The theory also suggests that a country may predominate in the export of a good simply because it was lucky enough to have one or more firms among the first to produce that good. Because they are able to gain economies of scale, the first movers in an industry may get a lock on the world market that discourages subsequent entry. First-movers' ability to benefit from increasing returns creates a barrier to entry. In the commercial aircraft industry, the fact that Boeing and Airbus are already in the industry and have the benefits of economies of scale discourages new entry and reinforces the dominance of America and Europe in the trade of midsize and large jet aircraft. This dominance is further reinforced because global demand may not be sufficient to profitably support another producer of midsize and large jet aircraft in the industry. So although Japanese firms might be able to compete in the market, they have decided not to enter the industry but to ally themselves as major subcontractors with primary producers (e.g., Mitsubishi Heavy Industries is a major subcontractor for Boeing on the 777 and 787 programs).

New trade theory is at variance with the Heckscher–Ohlin theory, which suggests a country will predominate in the export of a product when it is particularly well endowed with those factors used intensively in its manufacture. New trade theorists argue that the United States is a major exporter of commercial jet aircraft not because it is better endowed with the factors of production required to manufacture aircraft, but because one of the first movers in the industry, Boeing, was a U.S. firm. The new trade theory is not at variance with the theory of comparative advantage. Economies of scale increase productivity. Thus, the new trade theory identifies an important source of comparative advantage.

This theory is quite useful in explaining trade patterns. Empirical studies seem to support the predictions of the theory that trade increases the specialization of production within an industry, increases the variety of products available to consumers, and results in lower average prices.[32] With regard to first-mover advantages and international trade, a study by Harvard business historian Alfred Chandler suggests the existence of first-mover advantages is an important factor in explaining the dominance of firms from certain nations in specific industries.[33] The number of firms is very limited in many global industries, including the chemical industry, the heavy construction-equipment industry, the heavy truck industry, the tire industry, the consumer electronics industry, the jet engine industry, and the computer software industry.

Perhaps the most contentious implication of the new trade theory is the argument that it generates for government intervention and strategic trade policy.[34] New trade theorists stress the role of luck, entrepreneurship, and innovation in giving a firm first-mover advantages. According to this argument, the reason Boeing was the first mover in commercial jet aircraft manufacture—rather than firms such as Great Britain's De Havilland and Hawker Siddeley or Holland's Fokker, all of which could have been—was that Boeing was both lucky and innovative. One way Boeing was lucky is that De Havilland shot itself in the foot when its Comet jet airliner, introduced two years earlier than Boeing's first jet airliner, the 707, was found to be full of serious technological flaws. Had De Havilland not made some serious technological mistakes, Great Britain might have become the world's leading exporter of commercial jet aircraft. Boeing's innovativeness was demonstrated by its independent development of the technological know-how required to build a commercial jet airliner. Several new trade theorists have pointed out, however, that Boeing's research and development (R&D) was largely paid for by the U.S. government; the 707 was a spin-off from a government-funded military program (the entry of Airbus into the industry was also supported by significant government subsidies). Herein is a rationale for government intervention: By the sophisticated and judicious use of subsidies, could a government increase the chances of its domestic firms becoming first movers in newly emerging industries, as the U.S. government apparently did with Boeing (and the European Union did with Airbus)? If this is possible, and the new trade theory suggests it might be, we have an economic rationale for a proactive trade policy that is at variance with the free trade prescriptions of the trade theories we have reviewed so far. We consider the policy implications of this issue in Chapter 7.

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National Competitive Advantage: Porter's Diamond

LO 6-2

Summarize the different theories explaining trade flows between nations.

Michael Porter, the famous Harvard strategy professor, has also written extensively on international trade.[35] Porter and his team looked at 100 industries in 10 nations. Like the work of the new trade theorists, Porter's work was driven by a belief that existing theories of international trade told only part of the story. For Porter, the essential task was to explain why a nation achieves international success in a particular industry. Why does Japan do so well in the automobile industry? Why does Switzerland excel in the production and export of precision instruments and pharmaceuticals? Why do Germany and the United States do so well in the chemical industry? These questions cannot be answered easily by the Heckscher–Ohlin theory, and the theory of comparative advantage offers only a partial explanation. The theory of comparative advantage would say that Switzerland excels in the production and export of precision instruments because it uses its resources very productively in these industries. Although this may be correct, this does not explain why Switzerland is more productive in this industry than Great Britain, Germany, or Spain. Porter tries to solve this puzzle.

Porter theorizes that four broad attributes of a nation shape the environment in which local firms compete, and these attributes promote or impede the creation of competitive advantage (see Figure 6.5). These attributes are

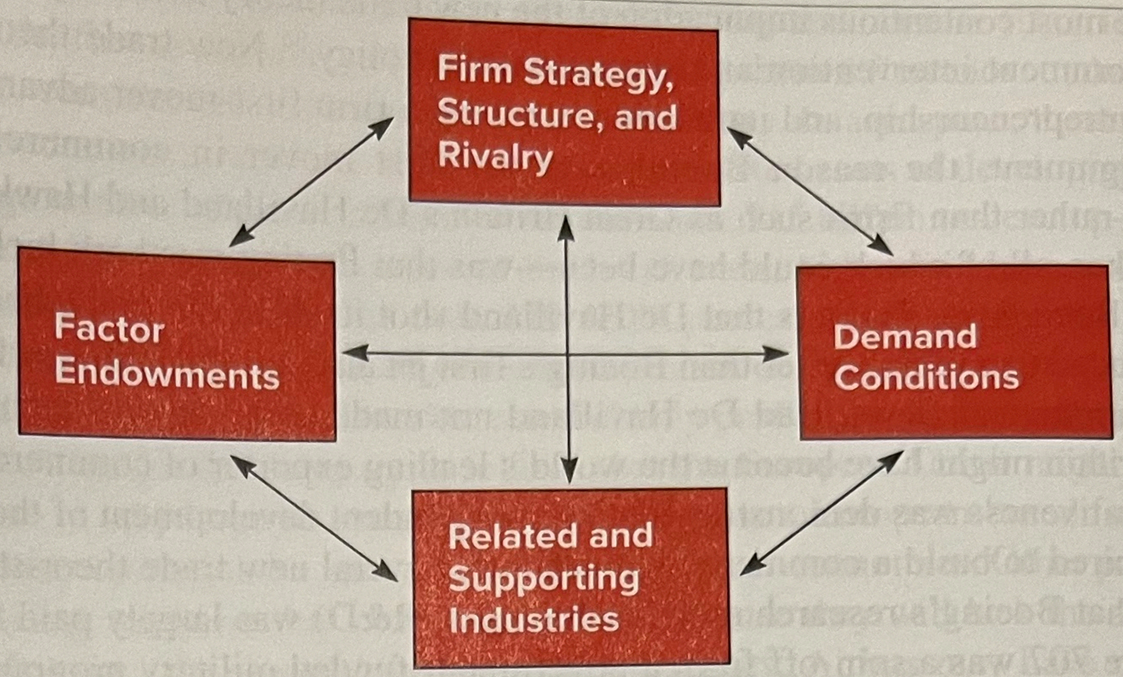
- *Factor endowments*—a nation's position in factors of production, such as skilled labor or the infrastructure necessary to compete in a given industry.
- *Demand conditions*—the nature of home demand for the industry's product or service.
- *Related and supporting industries*—the presence or absence of supplier industries and related industries that are internationally competitive.
- *Firm strategy, structure, and rivalry*—the conditions governing how companies are created, organized, and managed and the nature of domestic rivalry.

Porter speaks of these four attributes as constituting the *diamond*. He argues that firms are most likely to succeed in industries or industry segments where the diamond is most favorable. He also argues that the diamond is a mutually reinforcing system. The effect of one attribute is contingent on the state of others. For example, Porter argues favorable demand conditions will

6.5 FIGURE

The determinants of national competitive advantage: Porter's diamond.

Source: Michael E. Porter, The Competitive Advantage of Nations *(New York: Free Press, 1990; republished with a new introduction, 1998), p. 72.*



not result in competitive advantage unless the state of rivalry is sufficient to cause firms to respond to them.

Porter maintains that two additional variables can influence the national diamond in important ways: chance and government. Chance events, such as major innovations, can reshape industry structure and provide the opportunity for one nation's firms to supplant another's. Government, by its choice of policies, can detract from or improve national advantage. For example, regulation can alter home demand conditions, antitrust policies can influence the intensity of rivalry within an industry, and government investments in education can change factor endowments.

FACTOR ENDOWMENTS

Factor endowments lie at the center of the Heckscher–Ohlin theory. While Porter does not propose anything radically new, he does analyze the characteristics of factors of production. He recognizes hierarchies among factors, distinguishing between *basic factors* (e.g., natural resources, climate, location, and demographics) and *advanced factors* (e.g., communication infrastructure, sophisticated and skilled labor, research facilities, and technological know-how). He argues that advanced factors are the most significant for competitive advantage. Unlike the naturally endowed basic factors, advanced factors are a product of investment by individuals, companies, and governments. Thus, government investments in basic and higher education, by improving the general skill and knowledge level of the population and by stimulating advanced research at higher education institutions, can upgrade a nation's advanced factors.

The relationship between advanced and basic factors is complex. Basic factors can provide an initial advantage that is subsequently reinforced and extended by investment in advanced factors. Conversely, disadvantages in basic factors can create pressures to invest in advanced factors. An obvious example of this phenomenon is Japan, a country that lacks arable land and mineral deposits and yet through investment has built a substantial endowment of advanced factors. Porter notes that Japan's large pool of engineers (reflecting a much higher number of engineering graduates per capita than almost any other nation) has been vital to Japan's success in many manufacturing industries.

DEMAND CONDITIONS

Porter emphasizes the role home demand plays in upgrading competitive advantage. Firms are typically most sensitive to the needs of their closest customers. Thus, the characteristics of home demand are particularly important in shaping the attributes of domestically made products and in creating pressures for innovation and quality. Porter argues that a nation's firms gain competitive advantage if their domestic consumers are sophisticated and demanding. Such consumers pressure local firms to meet high standards of product quality and to produce innovative products. For example, Porter notes that Japan's sophisticated and knowledgeable buyers of cameras helped stimulate the Japanese camera industry to improve product quality and to introduce innovative models.

RELATED AND SUPPORTING INDUSTRIES

The third broad attribute of national advantage in an industry is the presence of suppliers or related industries that are internationally competitive. The benefits of investments in advanced factors of production by related and supporting industries can spill over into an industry, thereby helping it achieve a strong competitive position internationally. Swedish strength in fabricated steel products (e.g., ball bearings and cutting tools) has drawn on strengths in Sweden's specialty steel industry. Technological leadership in the U.S. semiconductor industry provided the basis for U.S. success in personal computers and several other technically advanced electronic products. Similarly, Switzerland's success in pharmaceuticals is closely related to its previous international success in the technologically related dye industry.

One consequence of this process is that successful industries within a country tend to be grouped into clusters of related industries. This was one of the most pervasive findings of Porter's study. One such cluster Porter identified was in the German textile and apparel sector, which included high-quality cotton, wool, synthetic fibers, sewing machine needles, and a wide range of textile machinery. Such clusters are important because valuable knowledge can flow between the firms within a geographic cluster, benefiting all within that cluster. Knowledge flows occur when employees move between firms within a region and when national industry associations bring employees from different companies together for regular conferences or workshops.[36]

FIRM STRATEGY, STRUCTURE, AND RIVALRY

The fourth broad attribute of national competitive advantage in Porter's model is the strategy, structure, and rivalry of firms within a nation. Porter makes two important points here. First, different nations are characterized by different management ideologies, which either help them or do not help them build national competitive advantage. For example, Porter noted the predominance of engineers in top management at German and Japanese firms. He attributed this to these firms' emphasis on improving manufacturing processes and product design. In contrast, Porter noted a predominance of people with finance backgrounds leading many U.S. firms. He linked this to U.S. firms' lack of attention to improving manufacturing processes and product design. He argued that the dominance of finance led to an overemphasis on maximizing short-term financial returns. According to Porter, one consequence of these different management ideologies was a relative loss of U.S. competitiveness in those engineering-based industries where manufacturing processes and product design issues are all-important (e.g., the automobile industry).

Porter's second point is that there is a strong association between vigorous domestic rivalry and the creation and persistence of competitive advantage in an industry. Vigorous domestic rivalry induces firms to look for ways to improve efficiency, which makes them better international competitors. Domestic rivalry creates pressures to innovate, to improve quality, to reduce costs, and to invest in upgrading advanced factors. All this helps create world-class competitors. Porter cites the case of Japan:

> Nowhere is the role of domestic rivalry more evident than in Japan, where it is all-out warfare in which many companies fail to achieve profitability. With goals that stress market share, Japanese companies engage in a continuing struggle to outdo each other. Shares fluctuate markedly. The process is prominently covered in the business press. Elaborate rankings measure which companies are most popular with university graduates. The rate of new product and process development is breathtaking.[37]

How Important Is Education?

Both the Heckscher-Ohlin and Michael Porter theories of trade focus to a large degree on "factor endowments." The Heckscher-Ohlin theory specifies endowments such as resources as land, labor, and capital as being critical, while the Porter theory recognizes hierarchies among these factor endowments. Education-related endowments such as skilled labor, research facilities, and technological know-how are what Porter calls "advanced factors." A long-standing argument across multiple governmental organizations, research studies, and prominent individuals is that education drives economic, social, and environmental well-being of countries (i.e., countries adopt sustainability principles the more educated the people in the country are relative to people in the global marketplace—see Chapter 5). The extension of this argument is that education helps people become better citizens of a country. But what do you think education does to a customer's product needs and wants? Do they want more foreign products if they have more years of education (e.g., graduate degree) compared with fewer years of education (e.g., high school)? Or does education not influence the type of products bought by customers (i.e., foreign-made or home-country made)?

Sources: T. Healy and S. Cote, "The Well-Being of Nations: The Role of Human and Social Capital," Organisation for Economic Cooperation and Development (OECD) (2001); S. Samuel, "Importance of Education in a Country's Progress," HowToLearn.com, March 13, 2013; K. Matsui, "The Economic Benefits of Educating Women," *Bloomberg Businessweek*, March 7, 2013.

LO 6-4
Explain the arguments of those who maintain that government can play a proactive role in promoting national competitive advantage in certain industries.

EVALUATING PORTER'S THEORY

Porter contends that the degree to which a nation is likely to achieve international success in a certain industry is a function of the combined impact of factor endowments, domestic demand conditions, related and supporting industries, and domestic rivalry. He argues that the presence of all four components is usually required for this diamond to boost competitive performance (although there are exceptions). Porter also contends that government can influence each of the four components of the diamond—either positively or negatively. Factor endowments can be affected by subsidies, policies toward capital markets, policies toward education, and so on. Government can shape domestic demand through local product standards or with regulations that mandate or influence buyer needs. Government policy can influence supporting and related industries through regulation and influence firm rivalry through such devices as capital market regulation, tax policy, and antitrust laws.

If Porter is correct, we would expect his model to predict the pattern of international trade that we observe in the real world. Countries should be exporting products from those industries where all four components of the diamond are favorable, while importing in those areas where the components are not favorable. Is he correct? We simply do not know. Porter's theory has not been subjected to detailed empirical testing. Much about the theory rings true, but the same can be said for the new trade theory, the theory of comparative advantage, and the Heckscher–Ohlin theory. It may be that each of these theories, which complement each other, explains something about the pattern of international trade.

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Focus on Managerial Implications

LO 6-5
Understand the important implications that international trade theory holds for management practice.

LOCATION, FIRST-MOVER ADVANTAGES, AND GOVERNMENT POLICY

Why does all this matter for business? There are at least three main implications for international businesses of the material discussed in this chapter: location implications, first-mover implications, and government policy implications.

Location

Underlying most of the theories we have discussed is the notion that different countries have particular advantages in different productive activities. Thus, from a profit perspective, it makes sense for a firm to disperse its productive activities to those countries where, according to the theory of international trade, they can be performed most efficiently. If design can be performed most efficiently in France, that is where design facilities should be located; if the manufacture of basic components can be performed most efficiently in Singapore, that is where they should be manufactured; and if final assembly can be performed most efficiently in China, that is where final assembly should be performed. The result is a global web of productive activities, with different activities being performed in different locations around the globe depending on considerations of comparative advantage, factor endowments, and the like. If the firm does not do this, it may find itself at a competitive disadvantage relative to firms that do.

First-Mover Advantages

According to the new trade theory, firms that establish a first-mover advantage with regard to the production of a particular new product may subsequently dominate global trade in that product. This is particularly true in industries where the global market can profitably support only a limited number of firms, such as the aerospace market, but early commitments may also seem to be important in less concentrated industries. For the individual firm, the clear message is that it pays to invest substantial financial resources in trying to build a first-mover, or early mover, advantage, even if that means several years of losses before a new venture becomes profitable. The idea is to preempt the available demand, gain cost advantages related to volume, build an enduring brand ahead of later competitors, and, consequently, establish a long-term sustainable competitive advantage. Although the details of how to achieve this are beyond the scope of this book, many publications offer strategies for exploiting first-mover advantages and for avoiding the traps associated with pioneering a market (first-mover disadvantages).[38]

Government Policy The theories of international trade also matter to international businesses because firms are major players on the international trade scene. Business firms produce exports, and business firms import the products of other countries. Because of their pivotal role in international trade, businesses can exert a strong influence on government trade policy, lobbying to promote free trade or trade restrictions. The theories of international trade claim that promoting free trade is generally in the best interests of a country, although it may not always be in the best interest of an individual firm. Many firms recognize this and lobby for open markets.

For example, when the U.S. government announced its intention to place a tariff on Japanese imports of liquid crystal display (LCD) screens in the 1990s, IBM and Apple Computer protested strongly. Both IBM and Apple pointed out that (1) Japan was the lowest-cost source of LCD screens; (2) they used these screens in their own laptop computers; and (3) the proposed tariff, by increasing the cost of LCD screens, would increase the cost of laptop computers produced by IBM and Apple, thus making them less competitive in the world market. In other words, the tariff, designed to protect U.S. firms, would be self-defeating. In response to these pressures, the U.S. government reversed its posture.

Unlike IBM and Apple, however, businesses do not always lobby for free trade. In the United States, for example, restrictions on imports of steel have periodically been put into place in response to direct pressure by U.S. firms on the government (the latest example being in March 2018 when the Trump administration placed a 25 percent tariff on imports of foreign steel). In some cases, the government has responded to pressure from domestic companies seeking protection by getting foreign companies to agree to "voluntary" restrictions on their imports, using the implicit threat of more comprehensive formal trade barriers to get them to adhere to these agreements (historically, this has occurred in the automobile industry). In other cases, the government used what are called "antidumping" actions to justify tariffs on imports from other nations (these mechanisms will be discussed in detail in Chapter 7).

As predicted by international trade theory, many of these agreements have been self-defeating, such as the voluntary restriction on machine tool imports agreed to in 1985. Shielded from international competition by import barriers, the U.S. machine tool industry had no incentive to increase its efficiency. Consequently, it lost many of its export markets to more efficient foreign competitors. Because of this misguided action, the U.S. machine tool industry shrunk during the period when the agreement was in force. For anyone schooled in international trade theory, this was not surprising.[39]

Finally, Porter's theory of national competitive advantage also contains policy implications. Porter's theory suggests that it is in the best interest of business for a firm to invest in upgrading advanced factors of production (for example, to invest in better training for its employees) and to increase its commitment to research and development. It is also in the best interests of business to lobby the government to adopt policies that have a favorable impact on each component of the national diamond. Thus, according to Porter, businesses should urge government to increase investment in education, infrastructure, and basic research (because all these enhance advanced factors) and to adopt policies that promote strong competition within domestic markets (because this makes firms stronger international competitors, according to Porter's findings).

Key Terms

free trade, p. 153
new trade theory, p. 155
mercantilism, p. 155
zero-sum game, p. 156
absolute advantage, p. 157
constant returns to specialization, p. 162
factor endowments, p. 166
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