

International Trade

Learning Outcomes

- 17-1** Outline the gains from trade, and explain why countries might still decide to trade even if no country had a comparative advantage
- 17-2** Explain how trade restrictions harm an economy, and why they persist
- 17-3** Identify international efforts to reduce trade barriers
- 17-4** Summarize five arguments often used to justify trade restrictions, and describe some unintended consequences of protecting certain industries from international competition

“Why don't we produce everything ourselves?”

This morning you pulled on your Levi's jeans from Mexico, pulled over your Roots sweater from Canada, and laced up your Timberland boots from Thailand. After a breakfast that included bananas from Honduras and coffee from Colombia, you climbed into your Volvo from Sweden fueled by Venezuelan oil and headed for a lecture by a visiting professor from Hungary. If the United States is such a rich and productive country, why do we import so many goods and services? Why don't we produce everything ourselves? How can the U.S. economy grow if we import more goods and services? And why do some U.S. producers try to block imports? Answers to these and other questions are addressed in this chapter.

The world is a giant shopping mall, and Americans are big spenders. For example, the U.S. population is less than 5 percent of the world's population, but Americans buy 25 percent of the Rolls Royces and more than 50 percent of the diamonds sold around the world. Americans also buy Japanese cars, French wine, European vacations, Chinese products galore, and millions of other goods and services from around the globe. Foreigners buy U.S. products too—grain, aircraft, movies, software, trips to New York City, and millions of other goods and services.

In this chapter, we examine the gains from international trade and the effects of trade restrictions on the allocation of resources. The analysis is based on the familiar tools of demand and supply.

What do **you** think?

The U.S. government should eliminate all trade restrictions.

Strongly Disagree

Strongly Agree

1 2 3 4 5 6 7

Topics discussed in Chapter 17 include

- Gains from trade
- Absolute and comparative advantage revisited
- Tariffs and quotas
- Cost of trade restrictions
- Arguments for trade restrictions
- Free trade agreements

17-1 The Gains From Trade

A Virginia family that sits down to a dinner of Kansas prime rib, Idaho potatoes, and California string beans, with Georgia peach cobbler for dessert, is benefiting from interstate trade. You already understand why the residents of one state trade with those of another. Back in Chapter 2, you learned about the gains arising from specialization and exchange. You may recall how you and your roommate could maximize output when you each specialized. The law of comparative advantage says that the individual with the lowest opportunity cost of producing a particular good should specialize in that good. Just as individuals benefit from specialization and exchange, so do states and, indeed, nations. To reap the gains that arise from specialization, countries engage in international trade. *Each country specializes in making goods with the lowest opportunity cost.*

17-1a A Profile of Exports and Imports

Just as some states are more involved in interstate trade than others, some nations are more involved in international trade than others. For example,

exports account for about one-quarter of the gross domestic product (GDP) in Canada and the United Kingdom; about one-third of GDP in Germany, Sweden, and Switzerland; and about half of GDP in the Netherlands. Despite the perception that Japan has a huge export sector, exports make up only about one-sixth of its GDP.

U.S. Exports

U.S. exports of goods and services amounted to \$2.2 trillion, or 14 percent of GDP in 2012. The left panel of

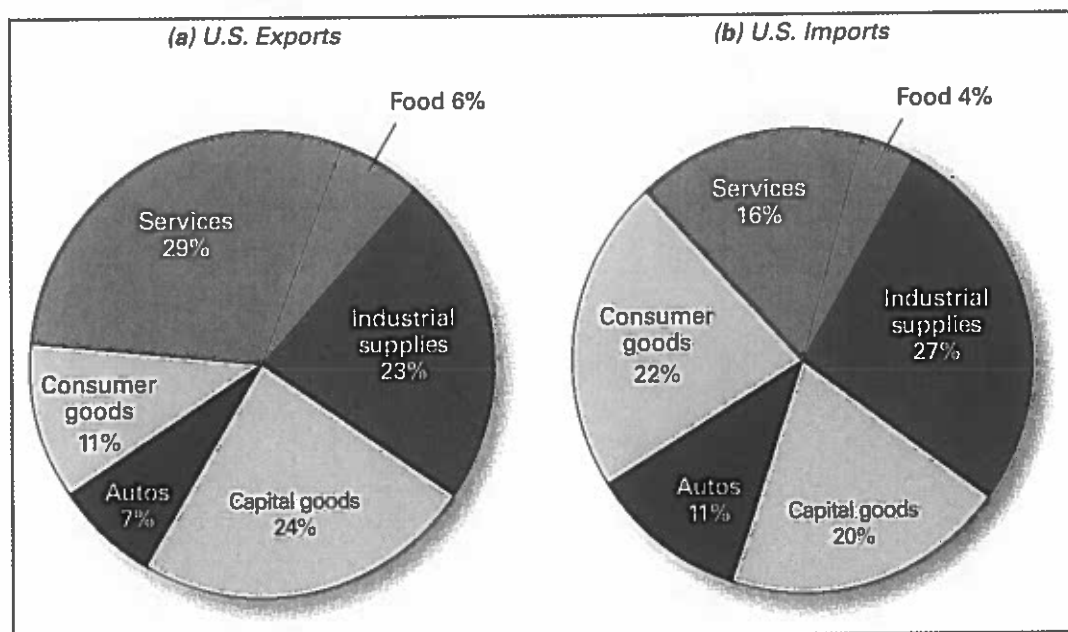
Exhibit 1 shows the composition by major category. The largest category is services, which accounted for 29 percent of U.S. exports in 2012.

U.S. service exports include transportation, insurance,

banking, education, consulting, and tourism. Capital goods ranked second at 24 percent of exports, with aircraft the largest export industry (Boeing is the top U.S. exporter). The third most important are industrial supplies, at 23 percent of the total, with chemicals and plastics at the top of this list. Capital goods and industrial supplies, which help foreign producers make stuff, together accounted for nearly half of U.S. exports. Consumer goods (except food and autos, which appear separately) accounted for only 11 percent of exports (pharmaceuticals tops this group).

Exhibit 1

Composition of U.S. Exports and Imports in 2012



SOURCES: Based on government estimates in "International Data," *Survey of Current Business*, 93 (August 2013), Table F1, p. D68.

Consumer goods also include entertainment products, such as movies and recorded music.

U.S. Imports

U.S. imports of goods and services in 2012 totaled \$2.7 trillion, or 17 percent relative to GDP. The right panel of Exhibit 1 shows the composition of U.S. imports. The biggest category, at 27 percent, is industrial supplies, with petroleum products accounting for most of this. Although consumer goods accounted for only 11 percent of U.S. exports, they were 22 percent of U.S. imports, with pharmaceuticals the largest item. Ranked third in importance is capital goods, at 20 percent, with computers the largest item. Note that services, which accounted for 29 percent of U.S. exports, were only 16 percent of imports.

Trading Partners

World trade totaled about \$18 trillion in 2012, or 22 percent of world output that year. To give you some feel for America's trading partners, here were the top 10 destinations for U.S. exports of goods and services for 2012 in order of importance: Canada, Mexico, China, Japan, the United Kingdom, Germany, Brazil, South Korea, the Netherlands, and France. The top 10 sources of U.S. imports in order of importance were China, Canada, Mexico, Japan, Germany, the United Kingdom, South Korea, France, India, and Taiwan.

17-1b Production Possibilities without Trade

The rationale behind most international trade is obvious. The United States grows little coffee because our climate is not suited to coffee. More revealing, however, are the gains from trade where the comparative advantage is not so obvious. Suppose that just two goods—food and clothing—are produced and consumed and that there are only two countries in the world—the United States, with a labor force of 100 million workers, and the mythical country of Izodia, with 200 million workers. The conclusions derived from this simple model have general relevance for international trade.

Exhibit 2

Production Possibilities Schedules for the United States and Izodia

(a) The United States						
Production Possibilities with 100 Million Workers (millions of units per day)						
	U_1	U_2	U_3	U_4	U_5	U_6
Food	600	480	360	240	120	0
Clothing	0	60	120	180	240	300
(b) Izodia						
Production Possibilities with 200 Million Workers (millions of units per day)						
	I_1	I_2	I_3	I_4	I_5	I_6
Food	200	160	120	80	40	0
Clothing	0	80	160	240	320	400

Exhibit 2 presents production possibilities tables for each country, based on the size of the labor force and the productivity of workers in each country. The exhibit assumes that each country has a given technology and that labor is efficiently employed. If no trade occurs between countries, Exhibit 2 also represents each country's consumption possibilities table. The production numbers imply that each worker in the United States can produce either 6 units of food or 3 units of clothing per day. If all 100 million U.S. workers produce food, they make 600 million units per day, as shown in column U_1 in panel (a). If all U.S. workers make clothing, they produce 300 million units per day, as shown in column U_6 . The columns in between show some workers making food and some making clothing. Because a U.S. worker can produce either 6 units of food or 3 units of clothing, the opportunity cost of 1 more unit of clothing is 2 units of food.

Suppose Izodian workers are less educated, work with less capital, and farm less fertile soil than U.S. workers, so each Izodian worker can produce only 1 unit of food or 2 units of clothing per day. If all 200 million Izodian workers specialize in food, they can make 200 million units per day, as shown in column I_1 in panel (b) of Exhibit 2. If they all make clothing, total output is 400 million units per day, as shown in column I_6 . Some intermediate production possibilities are also listed in the exhibit. Because an Izodian worker can produce either 1 unit of food or 2 units of clothing, the opportunity cost of 1 more unit of clothing is $\frac{1}{2}$ unit of food.

We can convert the data in Exhibit 2 to a production possibilities frontier for each country, as shown in Exhibit 3. In each diagram, the amount of food produced is measured on the vertical axis and the

amount of clothing on the horizontal axis. U.S. combinations are shown in the left panel by U_1 , U_2 , and so on. Izodian combinations are shown in the right panel by I_1 , I_2 , and so on. Because we assume for simplicity that resources are perfectly adaptable to the production of each commodity, each production possibilities curve is a straight line. The slope of this line differs between countries because

the opportunity cost of production differs between countries. The slope equals the opportunity cost of clothing—the amount of food a country must give up to produce another unit of clothing. The U.S. slope is -2 , and the Izodian slope is $-\frac{1}{2}$. The U.S. slope is steeper because its opportunity cost of producing clothing is greater.

Exhibit 3 illustrates possible combinations of food and clothing that residents of each country can produce and consume if all resources are efficiently employed and there is no trade between the two countries. Autarky is the situation of national self-sufficiency, in which there is no economic interaction with foreign producers or consumers. Suppose that U.S. producers maximize profit and U.S. consumers maximize utility with the combination of 240 million units of food and 180 million units of clothing—combination U_4 . This is called *autarky equilibrium*. Suppose also that Izodians are in autarky equilibrium, identified as combination I_3 , of 120 million units of food and 160 million units of clothing.

17-1c Consumption Possibilities Based on Comparative Advantage

autarky

National self-sufficiency; no economic interaction with foreigners

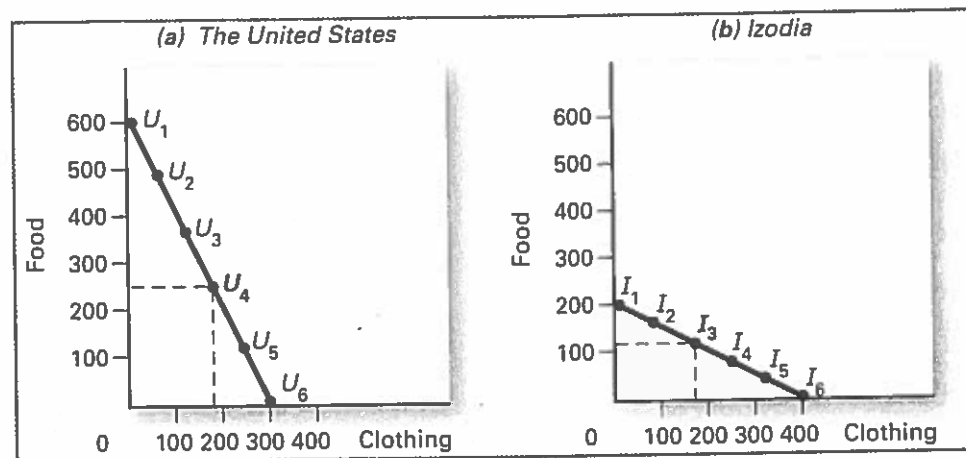
terms of trade

How much of one good exchanges for a unit of another good

In our example, each U.S. worker can produce more clothing and more food per day than can each Izodian worker, so Americans have an *absolute advantage* in the production of both goods. Recall from Chapter 2 that

Exhibit 3

Production Possibilities Frontiers for the United States and Izodia Without Trade (millions of units per day)



having an absolute advantage means being able to produce something using fewer resources than other producers require. Should the U.S. economy remain in autarky—that is, self-sufficient in both food and clothing productions—or could there be gains from specialization and trade?

“According to the law of comparative advantage, each country should specialize in producing the good with the lower opportunity cost.”

As long as the opportunity cost of production differs between the two countries, there are gains from specialization and trade. According to the law of comparative advantage, each country should specialize in producing the good with the lower opportunity cost. The opportunity cost of producing 1 more unit of clothing is 2 units of food in the United States compared with $\frac{1}{2}$ unit of food in Izodia. Because the opportunity cost of producing clothing is lower in Izodia than in the United States, both countries gain if Izodia specializes in clothing and exports some to the United States, and the United States specializes in food and exports some to Izodia.

Before countries can trade, however, they must agree on how much of one good exchanges for another—that is, they must agree on the terms of trade. As long as Americans can get more than $\frac{1}{2}$ a unit of clothing for each unit of food

produced, and as long as Izodians can get more than $\frac{1}{2}$ a unit of food for each unit of clothing produced, both countries will be better off specializing. Suppose that market forces shape the terms of trade so that 1 unit of clothing exchanges for 1 unit of food. Americans thus trade 1 unit of food to Izodians for 1 unit of clothing. To produce 1 unit of clothing themselves, Americans would have to sacrifice 2 units of food. Likewise, Izodians trade 1 unit of clothing to Americans for 1 unit of food, which is only half what Izodians would sacrifice to produce 1 unit of food themselves.

Exhibit 4 shows that with 1 unit of food trading for 1 unit of clothing, Americans and Izodians can consume anywhere along their blue consumption possibilities frontiers. The consumption possibilities frontier shows a nation's possible combinations of goods available as a result of specialization and exchange. (Note that the U.S. consumption possibilities curve does not extend to the right of 400 million units of clothing, because Izodia could produce no more than that.) The amount each country actually consumes depends on the relative preferences for food and clothing. Suppose Americans select combination U in panel (a) and Izodians select point I in panel (b).

Without trade, the United States produces and consumes 240 million units of food and 180 million units of clothing. With trade, Americans specialize to produce 600 million units of food; they eat 400 million units and exchange the rest for 200 million units of Izodian clothing.

This consumption combination is reflected by point U. Through exchange, Americans increase their consumption of both food and clothing.

Without trade, Izodians produce and consume 120 million units of food and 160 million units of clothing. With trade, Izodians specialize to produce 400 million units of clothing; they wear 200 million and exchange the rest for 200 million units of U.S. food. This consumption combination is shown by point I. Through trade, Izodians, like Americans, are able to increase their consumption of both goods. How is this possible?

Because Americans are more efficient in the production of food and Izodians more efficient in the production of clothing, total output increases when each specializes. Without specialization, world production is 360 million units of food and 340 million units of clothing. With specialization, food increases to 600 million units and clothing to 400 million units. Thus, both countries increase consumption with trade. Although the United States has an absolute advantage in both goods, differences in

the opportunity cost of production between the two nations ensure that specialization and exchange result in mutual gains. Remember that comparative advantage, not absolute advantage, creates gains from specialization and trade. The only constraint on trade is that, for each good,

world production must equal world consumption.

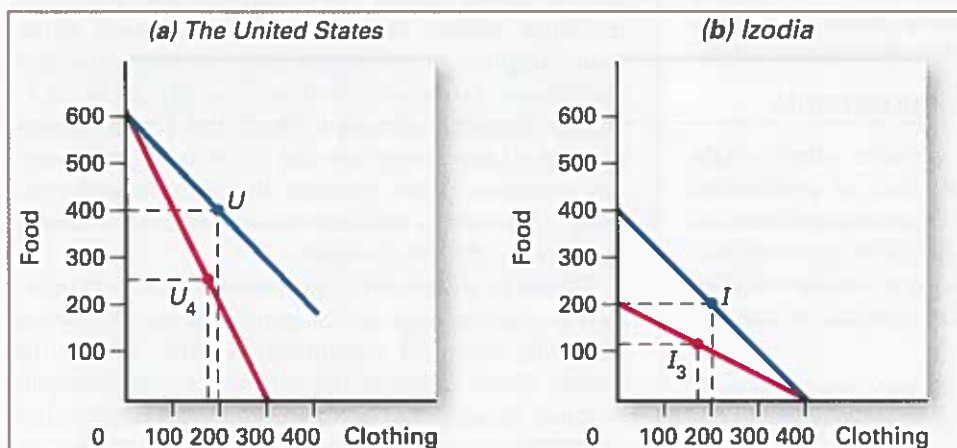
We simplified trade relations in our example to highlight the gains from specialization and exchange. We assumed that each country would completely specialize in producing a particular good,

that resources were equally adaptable to the production of either good, that the costs of transporting goods from one country to another were inconsequential, and that there were no problems in arriving at the terms of trade. The world is not that simple. For example, we don't expect a country to produce just one good. Regardless, there is broad evidence that specialization based on the law of comparative

“Remember that comparative advantage, not absolute advantage, creates gains from specialization and trade.”

Exhibit 4

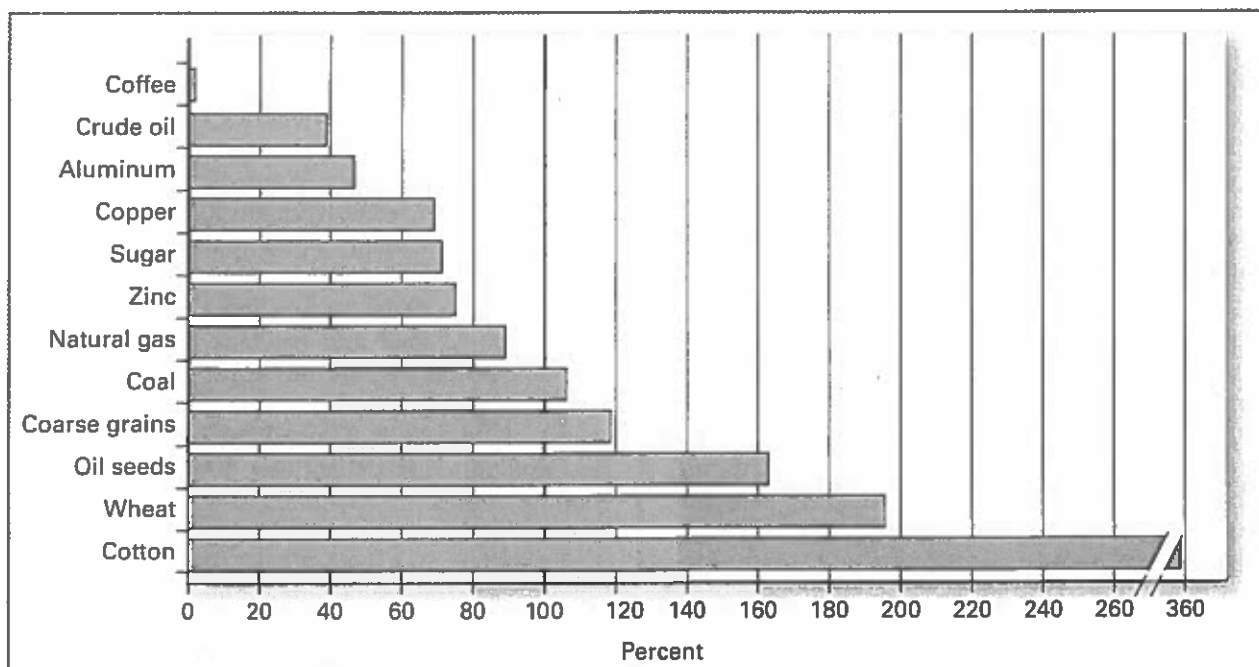
Production (and Consumption) Possibilities Frontiers With Trade (millions of units per day)



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Exhibit 5

U.S. Production as a Percentage of U.S. Consumption for Various Resources



SOURCE: Based on annual figures selected from *The Economist Pocket World in Figures: 2012 Edition* (Profile Books, 2012).

advantage still leads to gains from trade. For example, after examining the productivity of 17 crops on 1.6 million parcels of land in 55 countries around the world, researchers found strong evidence that international trade arises from comparative advantage.¹

17-1d Reasons for International Specialization

Countries trade with one another—or, more precisely, people, firms, and governments in one country trade with those in another—because each side expects to gain from exchange. How do we know what each country should produce and what each should trade?

Differences in Resource Endowments

Differences in resource endowments often create differences in the opportunity cost of production across countries. Some countries are blessed with an abundance of fertile land and favorable growing seasons. The United States, for example, has been called the “breadbasket of the world” because of its rich

farmland ideal for growing wheat and corn. Coffee grows best in the climate and elevation of Colombia, Brazil, and Vietnam. Honduras has the ideal climate for bananas. Thus, the United States exports wheat and corn and imports coffee and bananas. Seasonal differences across countries also encourage trade. For example, in the winter, Americans import fruit from Chile, and Canadians travel to Florida for sun and fun. In the summer, Americans export fruit to Chile, and Americans travel to Canada for camping and hiking.

Resources are often concentrated in particular countries: crude oil in Saudi Arabia, fertile soil in the United States, copper ore in Chile, rough diamonds in South Africa. The United States grows abundant supplies of oil seeds such as soybeans and sunflowers, but does not have enough crude oil to satisfy domestic demand. Thus, the United States exports oil seeds and imports crude oil. More generally, countries export products they can produce more cheaply in return for products that are unavailable domestically or are cheaper elsewhere.

Exhibit 5 shows, for 12 key resources, U.S. production as a percentage of U.S. consumption. If production falls short of consumption, this means the United States imports the difference. For example, because America grows coffee only in Hawaii, U.S. production is only 1 percent of U.S. consumption, so

1. Arnaud Costinot and David Donaldson, “Ricardo’s Theory of Comparative Advantage: Old Idea, New Evidence,” *American Economic Review*, 102 (May 2012): 453–458.



nearly all coffee is imported. The exhibit also shows that U.S. production falls short of consumption for crude oil and for metals such as zinc, copper, and aluminum. If production exceeds consumption, the United States exports the difference. For example, U.S.-grown cotton amounts to 352 percent of U.S. cotton consumption, so most U.S.-grown cotton is exported. U.S. production also exceeds consumption for other crops, including wheat, oil seeds (soybeans, sunflower seeds, cottonseeds), and coarse grains (corn, barley, oats). In short, when it comes to basic resources, the United States is a net importer of crude oil and metals and a net exporter of farm crops.

Economies of Scale

If production is subject to *economies of scale*—that is, if the long-run average cost of production falls as a firm expands its scale of operation—countries can gain from trade if each nation specializes. Such specialization allows firms in each nation to produce more, which reduces average costs. For example, one country can make computer chips that are sold in many countries, and another country can make cars that are sold in many countries. The primary reason for establishing the single integrated market of the European Union was to offer producers there a large, open market of now more than 500 million consumers. Producers could thereby achieve economies of scale. Firms and countries producing at the lowest opportunity costs are most competitive in international markets. For example, 60 percent of the world's buttons come from a single Chinese city. Another Chinese city is the source of most of the world's socks.

Differences in Tastes

Even if all countries had identical resource endowments and combined those resources with equal efficiency, each country would still gain from trade as long as tastes differed across countries. Consumption



patterns differ across countries and some of this results from differences in tastes. For example, the Czechs and Irish drink three times as much beer per capita as do the Swiss and Swedes. The French drink three times as much wine as do Australians. The Danes eat twice as much pork as do Americans. Americans eat twice as much chicken as do Hungarians. Americans like chicken, but not all of it. The United States is the world's leading exporter of chicken feet, and China is the world's leading importer (Tyson Foods alone ships about three billion chicken feet to China each year). Soft drinks are four times more popular in the United States than in Europe. The English like tea; Americans, coffee. Algeria has an ideal climate for growing grapes (vineyards there date back to Roman times). But Algeria's population is 99 percent Muslim, a religion that forbids alcohol consumption. Thus, Algeria exports wine.

More Variety

Yet another reason for trade is to increase the *variety* of goods and services available. People prefer having a choice of products, and international trade helps broaden that choice.² For example, trade expands your selection of automobiles, computers, clothing, drugs, wine, cheese, ethnic foods, music, movies, and hundreds of other items.

17-2 Trade Restrictions and Welfare Loss

Despite the benefits of exchange, nearly all countries at one time or another erect trade barriers, which benefit some domestic producers but harm other domestic producers and all domestic consumers. In this section, we consider the effects of trade barriers and the reasons they are imposed.

2. Marc Melitz and Daniel Trefler, "Gains from Trade When Firms Matter," *Journal of Economic Perspectives*, 26 (Spring 2012): 91–118.

17-2a Consumer Surplus and Producer Surplus From Market Exchange

Before we explore the net effects of world trade on social welfare, let's develop a framework showing the benefits that consumers and producers get from market exchange. Consider the hypothetical market for apples shown in Exhibit 6. The height of the demand curve shows what consumers are willing and able to pay for each additional pound of apples. In effect, the height of the demand curve shows the *marginal benefit* consumers expect from each pound of apples. For example, the demand curve indicates that some consumers in this market are willing to pay \$3.00 or more per pound for the first few pounds of apples. But every consumer gets to buy apples at the market-clearing price, which here is \$1.00 per pound. Most consumers thus get a bonus, or a surplus, from market exchange.

The blue-shaded triangle below the demand curve and above the market price reflects the *consumer surplus* in this market, which is the difference between the most that consumers would pay for 60 pounds of apples per day and the actual amount they do pay. We all enjoy a consumer surplus from most products we buy.

Producers usually derive a similar surplus. The height of the supply curve shows what producers are willing and able to accept for each additional pound of apples. That is, the height of the supply curve shows the expected *marginal cost* from producing each additional pound. For example, the supply curve indicates that some producers face a marginal cost of \$0.50 or less per pound for supplying the first few pounds. But every producer gets to sell apples for the market-clearing price of \$1.00 per pound. The gold-shaded triangle above the supply curve and below the market price reflects the *producer surplus*, which is the difference between the actual amount that producers receive for 60 pounds and what they would accept to supply that amount.

The point is that market exchange usually generates a surplus, or a bonus, for both consumers and producers. In the balance of this chapter, we look at the gains from international trade and how trade restrictions affect consumer and producer surplus.

world price

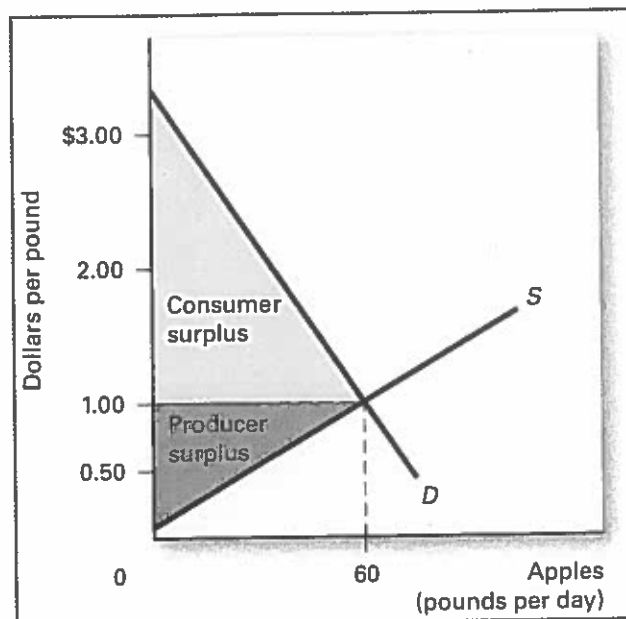
The price at which a good is traded on the world market; determined by the world demand and world supply for the good

17-2b Tariffs

A tariff, a term first introduced in Chapter 3, is a tax on imports. (Tariffs can apply to exports, too, but we will focus

Exhibit 6

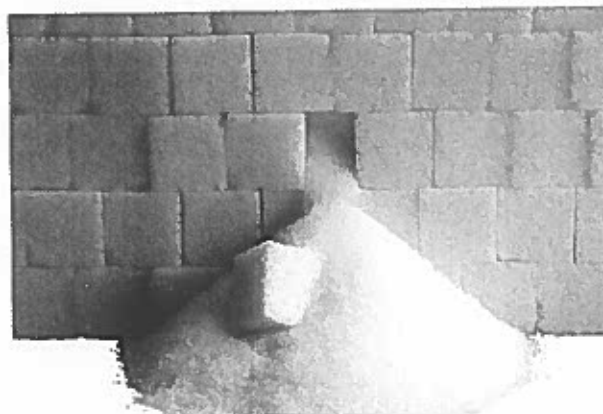
Consumer Surplus and Producer Surplus



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on import tariffs.) A tariff can be either *specific*, such as a tariff of \$5 per barrel of oil, or *ad valorem*, such as 10 percent on the import price of jeans. Consider the effects of a specific tariff on a particular good. In Exhibit 7, D is the U.S. demand for sugar and S is the supply of sugar from U.S. growers (there are about 10,000 U.S. sugarcane growers). Suppose that the world price of sugar is \$0.10 per pound. The world price is determined by the world supply and demand for a product. It is the price at which any supplier can sell output on the world market and at which any demander can purchase output on the world market.

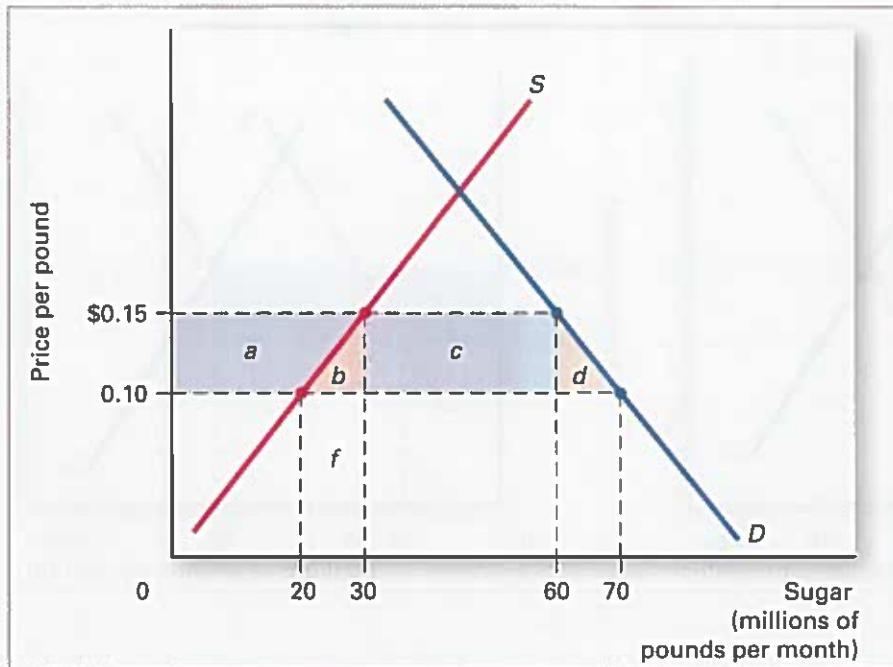
With free trade, any U.S. consumers could buy any amount desired at the world price of \$0.10 per pound, so the quantity demanded is 70 million pounds per month, of which U.S. producers supply



PETER SZEGELY/ALAMY

Exhibit 7

Effect of a Tariff



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20 million pounds and importers supply 50 million pounds. Because U.S. buyers can purchase sugar at the world price, U.S. producers can't charge more than that. Now suppose that a specific tariff of \$0.05 is imposed on each pound of imported sugar, raising the U.S. price from \$0.10 to \$0.15 per pound. U.S. producers can therefore raise their own price to \$0.15 per pound without losing business to imports. At the higher price, the quantity supplied by U.S. producers increases to 30 million pounds, but the quantity demanded by U.S. consumers declines to 60 million pounds. Because quantity demanded has declined and quantity supplied by U.S. producers has increased, U.S. imports fall from 50 million to 30 million pounds per month.

Because the U.S. price is higher after the tariff, U.S. consumers are worse off. Their loss in consumer surplus is identified in Exhibit 7 by the combination of the blue- and pink-shaded areas. Because both the U.S. price and the quantity supplied by U.S. producers have increased, their total revenue increases by the areas *a* plus *b* plus *f*. But only area *a* represents an increase in producer surplus. Revenue represented by the areas *b* plus *f* merely offsets the higher marginal cost U.S. producers face in expanding sugar output from 20 million to 30 million pounds per month. Area *b* represents part of the net welfare loss to the domestic economy because those

10 million pounds could have been imported for \$0.10 per pound rather than produced domestically at a higher marginal cost.

Government revenue from the tariff is identified by area *c*, which equals the tariff of \$0.05 per pound multiplied by the 30 million pounds imported, for tariff revenue of \$1.5 million per month. Tariff revenue is a loss to consumers, but because the tariff goes to the government, it can be used to lower taxes or to increase public services, so it's not a loss to the U.S. economy. Area *d* shows a loss in consumer surplus because less sugar is consumed at the higher price. This loss is not redistributed to anyone else, so area *d* reflects part of the net welfare loss of the tariff. Therefore, areas

b and *d* show the domestic economy's net welfare loss of the tariff; the two triangles measure a loss in consumer surplus that is not offset by a gain to anyone in the domestic economy.

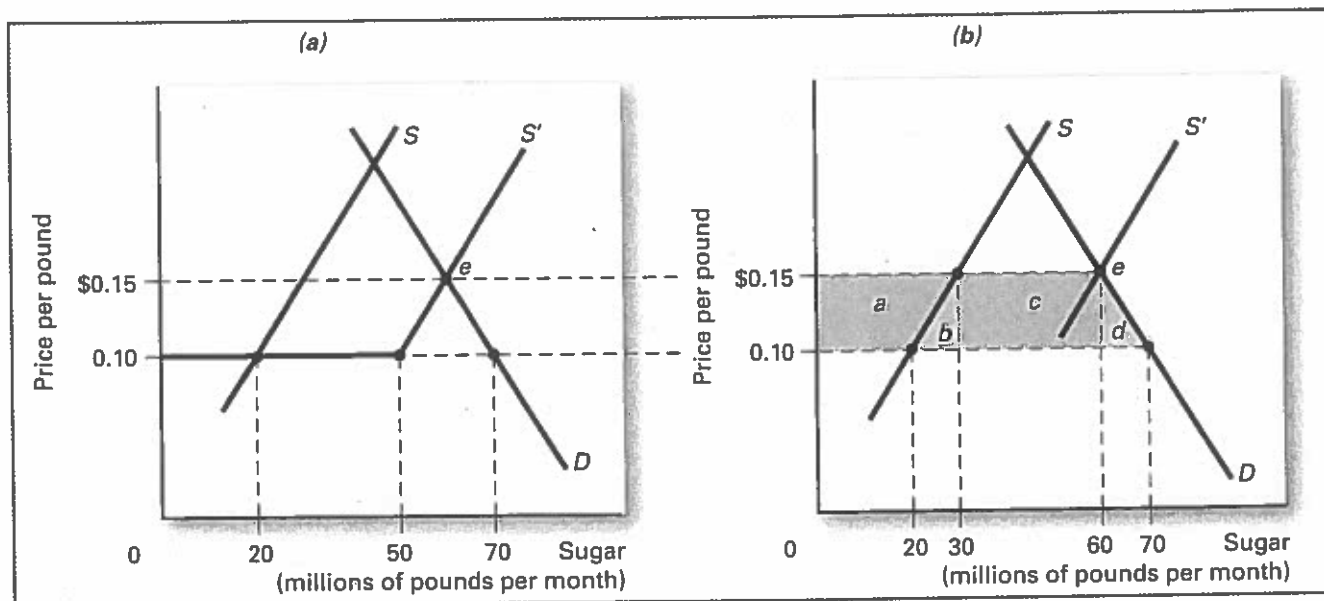
In summary: Of the total loss in U.S. consumer surplus (areas *a*, *b*, *c*, and *d*) resulting from the tariff, area *a* goes to U.S. producers, area *c* becomes government revenue, but areas *b* and *d* are net losses in domestic social welfare.

17-2c Import Quotas

An import quota is a legal limit on the amount of a commodity that can be imported. Quotas usually target imports from certain countries. For example, a quota may limit furniture from China or shoes from Brazil. To have an impact on the domestic market, a quota must be less than what would be imported with free trade. Consider a quota on the U.S. market for sugar. In panel (a) of Exhibit 8, *D* is the U.S. demand curve and *S* is the supply curve of U.S. sugar producers. Suppose again that the world price of sugar is \$0.10 per pound. With free trade, that price would prevail in the U.S. market as well, and a total of 70 million pounds would be demanded per month. U.S. producers would supply 20 million pounds and

Exhibit 8

Effect of a Quota



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importers, 50 million pounds. With a quota of 50 million pounds or more per month, the U.S. price would remain the same as the world price of \$0.10 per pound, and the U.S. quantity would be 70 million pounds per month. In short, a quota of at least 50 million pounds would not raise the U.S. price above the world price because 50 million pounds were imported without a quota. A more stringent quota, however, would cut imports, which, as we'll see, would raise the U.S. price.

Suppose U.S. trade officials impose an import quota of 30 million pounds per month. As long as the U.S. price is at or above the world price of \$0.10 per pound, foreign producers will supply 30 million pounds. So at prices at or above \$0.10 per pound, the total supply of sugar to the U.S. market is found by adding 30 million pounds of imported sugar to the amount supplied by U.S. producers. U.S. and foreign producers would never sell in the U.S. market for less than \$0.10 per pound because they can always get that price on the world market. Thus, the supply curve that sums domestic production and imports is horizontal at the world price of \$0.10 per pound and remains so until the quantity supplied reaches 50 million pounds.

Again, for prices above \$0.10 per pound, the new supply curve, S' , adds horizontally the 30-million-pound quota to S , the supply curve of U.S. producers. The U.S. price is found where this new supply curve, S' , intersects the domestic demand

curve, which in Exhibit 8 occurs at point e . By limiting imports, the quota raises the domestic price of sugar above the world price and reduces quantity below the free trade level. (Note that to compare more easily the effects of tariffs and quotas, this quota is designed to yield the same equilibrium price and quantity as the tariff examined earlier.)

Panel (b) of Exhibit 8 shows the distribution and efficiency effects of the quota. As a result of the quota, U.S. consumer surplus declines by the combined blue and pink areas. Area a becomes U.S. producer surplus and thus involves no loss of U.S. welfare. Area c shows the increased economic profit to those permitted by the quota to sell Americans 30 million pounds for \$0.15 per pound, or \$0.05 above the world price. If foreign exporters rather than U.S. importers reap this profit, area c reflects a net loss in U.S. welfare.

Area b shows a welfare loss to the U.S. economy, because sugar could have been purchased abroad for \$0.10 per pound, and the U.S. resources employed to increase sugar production could instead have been used more efficiently producing other goods. Area d is also a welfare loss because it reflects a reduction in consumer surplus with no offsetting gain to anyone. Thus, areas b and d in panel (b) of Exhibit 8 measure the minimum U.S. welfare loss from the quota. If the profit from quota rights (area c) accrues to foreign producers, this increases the U.S. welfare loss.

17-2d Quotas in Practice

The United States has granted quotas to specific countries. These countries, in turn, distribute these quota rights to their exporters through a variety of means. *By rewarding domestic and foreign producers with higher prices, the quota system creates two groups intent on securing and perpetuating these quotas.* Lobbyists for foreign producers work the halls of Congress, seeking the right to export to the United States. This strong support from producers, coupled with a lack of opposition from consumers (who remain rationally ignorant for the most part), has resulted in quotas that have lasted decades. For example, sugar quotas have been around more than 50 years. For the past three decades, U.S. sugar prices have been double the world price, on average, costing U.S. consumers billions. Sugar growers, who account for only 1 percent of U.S. farm sales, have accounted for 17 percent of political contributions from agriculture.³

Some economists have argued that if quotas are to be used, the United States should auction them off to foreign producers, thereby capturing at least some of the difference between the world price and the U.S. price. Auctioning off quotas would not only increase federal revenue at a time when it's desperately needed, but an auction would reduce the profitability of getting quota rights, which would reduce pressure on Washington to perpetuate them. American consumers are not the only victims of sugar quotas. Thousands of poor farmers around the world miss out on an opportunity to earn a living by growing sugar cane for export to America.

17-2e Tariffs and Quotas Compared

Consider the similarities and differences between a tariff and a quota. Because both have identical effects on the price in our example, they both lead to the same change in quantity demanded. In both cases, U.S. consumers suffer the same loss of consumer surplus, and U.S. producers reap the same gain of producer surplus. The primary difference is that the revenue from the tariff goes to the U.S. government, whereas the revenue from the quota goes to whoever secures the right to sell foreign goods in the U.S. market. *If quota rights accrue to foreigners, then the domestic*

economy is worse off with a quota than with a tariff. But even if quota rights go to domestic importers, quotas, like tariffs, still increase the domestic price, restrict quantity, and thereby reduce consumer surplus and economic welfare. Quotas and tariffs can also raise production costs. For example, U.S. candy manufacturers face higher production costs because of sugar quotas, making them less competitive on world markets. Finally, and most importantly, quotas and tariffs encourage foreign governments to retaliate with quotas and tariffs of their own, thus shrinking U.S. export markets, so the welfare loss is greater than shown in Exhibits 7 and 8.

17-2f Other Trade Restrictions

Besides tariffs and quotas, a variety of other measures limit free trade. A country may provide export subsidies to encourage exports and low-interest loans to foreign buyers. Some countries impose domestic content requirements specifying that a certain portion

of a final good must be produced domestically. Other requirements masquerading as health, safety, or technical standards often discriminate against foreign goods.

For example, European

countries once prohibited beef from hormone-fed cattle, a measure aimed at U.S. beef. Purity laws in Germany bar many non-German beers. Until the European Community adopted uniform standards, differing technical requirements forced manufacturers to offer as many as seven different versions of the same TV for that market. Sometimes exporters will voluntarily limit exports, as when Japanese automakers agreed to cut exports to the United States. The point is that *tariffs and quotas are only two of many devices used to restrict foreign trade.*

Recent research on the cost of protectionism indicates that international trade barriers slow the introduction of new goods and better technologies. So, rather than simply raising domestic prices, trade restrictions slow economic progress.

17-3 Efforts to Reduce Trade Barriers

Although some groups in the economy have a special interest in restricting trade, the trend has been toward freer trade. In this section, we examine international efforts to lower trade barriers.

“Tariffs and quotas are only two of many devices used to restrict foreign trade.”



3. Michael Schroeder, “Sugar Growers Hold Up Push for Free Trade,” *Wall Street Journal*, 3 February 2004.

17-3a Freer Trade by Multilateral Agreement

Mindful of how high tariffs cut world trade during the Great Depression, the United States, after World War II, invited its trading partners to negotiate lower tariffs and other trade barriers. The result was the General Agreement on Tariffs and Trade (GATT), an international trade treaty adopted in 1947 by 23 countries, including the United States. Each GATT member agreed to (1) reduce tariffs through multinational negotiations, (2) reduce import quotas, and (3) treat all members equally with respect to trade.

Trade barriers have been reduced through trade negotiations, or "trade rounds," under the auspices of GATT. Trade rounds offer a package approach rather than an issue-by-issue approach to trade negotiations. Concessions that are necessary but otherwise difficult to defend in domestic political terms can be made more acceptable in the context of a larger package that also contains politically and economically attractive benefits. Most early

GATT trade rounds were aimed at reducing tariffs. The Kennedy Round in the mid-1960s included new provisions against dumping, which is selling a commodity abroad for less than is charged in the home market or less than the cost of production. The Tokyo Round of the 1970s was a more sweeping attempt to extend and improve the system.

The most recently completed round was launched in Uruguay in September 1986 and ratified by 123 participating countries in 1994. The number of signing countries now exceeds 150. This so-called Uruguay Round, the most comprehensive of the eight postwar multilateral trade negotiations, included 550 pages of tariff reductions on 85 percent of world trade. The Uruguay Round also created the World Trade Organization (WTO) to succeed GATT.

General Agreement on Tariffs and Trade (GATT)

An international tariff-reduction treaty adopted in 1947 that resulted in a series of negotiated "rounds" aimed at freer trade; the Uruguay Round created GATT's successor, the World Trade Organization (WTO)

Dumping

Selling a product abroad for less than charged in the home market or for less than the cost of production

Uruguay Round

The final multilateral trade negotiation under GATT; this 1994 agreement cut tariffs, formed the World Trade Organization (WTO), and will eventually eliminate quotas

World Trade Organization (WTO)

The legal and institutional foundation of the multilateral trading system that succeeded GATT in 1995

17-3b World Trade Organization

The World Trade Organization (WTO) provides the legal and institutional foundation for world trade. Although GATT was a multilateral agreement with no institutional foundation, the WTO is a permanent institution in Geneva, Switzerland. A staff of about 500 economists and lawyers helps shape policy and resolves trade disputes among member countries. Although GATT involved only merchandise trade, the WTO also covers services and trade-related aspects of intellectual property, such as books, movies, and computer programs. The WTO will eventually phase out quotas, but tariffs will remain legal. As a result of the Uruguay Round, average tariffs fell from 6 percent to 4 percent of the value of imports (when GATT began in 1947, tariffs averaged 40 percent).

Although GATT relied on voluntary cooperation, the WTO settles disputes in a way that is faster, more automatic, and less susceptible to blockage than the GATT system was. The WTO resolved more trade disputes in its first decade than GATT did in nearly 50 years. Since 2000, developing countries have filed 60 percent of the disputes.

17-3c Common Markets

Some countries looked to the success of the U.S. economy, which is essentially a free trade zone across 50 states, and have tried to develop free trade zones of their own. The largest and best known is the European Union, which began in 1958 with a half dozen countries and by 2010 had expanded to 27 countries and over 500 million people. The idea was to create a barrier-free European market like the United States in which goods, services, people, and capital are free to flow to their highest-valued use. As of 2013, 17 members of the European Union had also adopted a common currency, the euro, which replaced national currencies in 2002.

The United States, Canada, and Mexico have developed a free trade pact called the North American Free Trade Agreement (NAFTA). Through NAFTA, Mexico hopes to attract more U.S. investment by guaranteeing companies that locate there duty-free access to U.S. markets, which is where over two-thirds of Mexico's exports go. Mexico's 117 million people represent an attractive export market for U.S. producers, and Mexico's oil reserves could ease U.S. energy problems. The United States would also like to support Mexico's efforts to become more market oriented, as is reflected, for example, by Mexico's privatization of its phone system and banks. Creating job opportunities in Mexico also reduces pressure

for Mexicans to cross the U.S. border illegally to find work. After more than a decade of NAFTA, agricultural exports to Mexico have doubled, as has overall trade among the three nations, but Americans still buy much more from Mexicans and Canadians than the other way around.

Free trade areas are springing up around the world. The United States signed a free trade agreement with five Central American countries and the Dominican Republic, called CAFTA-DR. Ten Latin American countries form Mercosur. The association of Southeast Asian nations consists of 10 members that make up ASEAN. And South Africa and its four neighboring countries form the Southern African Customs Union. Regional trade agreements require an exception to WTO rules because bloc members can make special deals among themselves and thus discriminate against outsiders. Under WTO's requirements, any trade concession granted to one country must usually be granted to all other WTO members.

Incidentally, economic initiatives such as the European Union binds nations together economically so they are less likely to go to war against each other. War with countries that are trading partners would involve more economic loss than war with

other countries. That's yet another benefit of freer trade.

Still, economic integration is not a perfect solution, as evidenced by recent financial problems in the euro zone, which arose because unsustainable government deficits in some member countries such as Greece and Spain reduced confidence in the common currency. Member countries became much more vulnerable to fiscal problems in other member countries.

“Free trade areas are springing up around the world.”

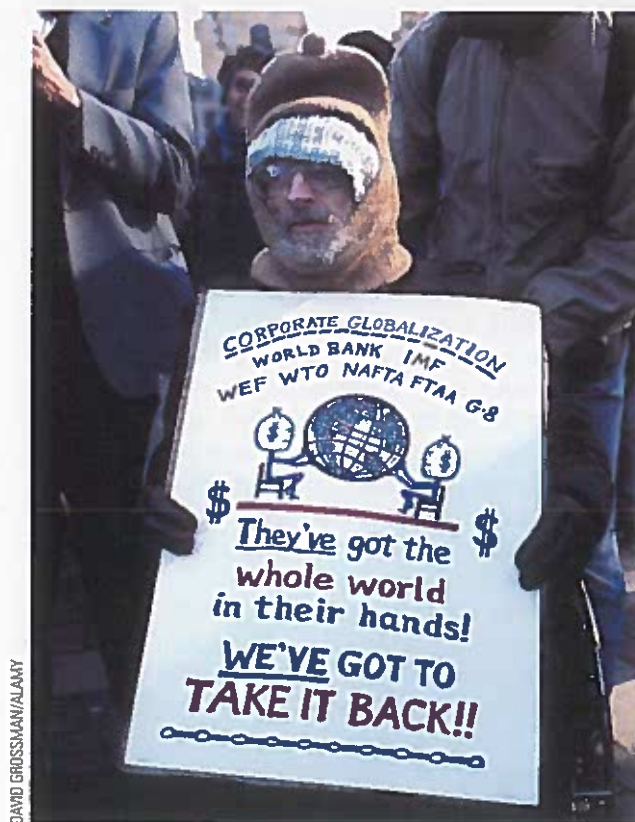
17-4 Arguments for Trade Restrictions

Trade restrictions are often little more than handouts for the domestic industries they protect. Given the loss in social welfare that results from these restrictions, it would be more efficient simply to transfer money from domestic consumers to domestic producers. But such a bald payoff would be politically unpopular. Arguments for trade restrictions avoid mention of transfers to domestic producers and instead cite loftier goals. As we shall now see, none of these goals makes a strong case for restrictions, but some make a little more sense than others.

“Trade restrictions are often little more than handouts for the domestic industries they protect.”

17-4a National Defense Argument

Some industries claim they need protection from import competition because their output is vital for national defense. Products such as strategic metals and military hardware are often insulated from foreign competition by trade restrictions. Thus, national defense considerations outweigh concerns about efficiency and equity. How valid is this argument? Trade restrictions may shelter the defense industry, but other means, such as government subsidies, might be more efficient. Or the government could stockpile basic military hardware so that maintaining an ongoing productive capacity would become



DAVID GROSSMAN/ALAMY

less critical. Still, technological change could make certain weapons obsolete. Because most industries can play some role in national defense, instituting trade restrictions on this basis can get out of hand. For example, many decades ago U.S. wool producers secured trade protection at a time when some military uniforms were still made of wool.

The national defense argument has also been used to discourage foreign ownership of U.S. companies in some industries. For example, in 2005 a Chinese state-owned company was prevented from buying Unocal Oil. And in 2010, the Congressional Steel Caucus tried to block a Chinese plan to buy a Mississippi steel plant, saying that such a deal “threatens American jobs and our national security.”⁴

17-4b Infant Industry Argument

The infant industry argument was formulated as a rationale for protecting emerging domestic industries from foreign competition. In industries where a firm’s average cost of production falls as output expands, new firms may need protection from imports until these firms grow enough to become competitive. Trade restrictions let new firms achieve the economies of scale necessary to compete with mature foreign producers.

But how do we identify industries that merit protection, and when do they become old enough to look after themselves? Protection often fosters inefficiencies. The immediate cost of such restrictions is the net welfare loss from higher domestic prices. These costs may become permanent if the industry never realizes the expected economies of scale and thus never becomes competitive. As with the national defense argument, policy makers should be careful in adopting trade restrictions based on the infant industry argument. Here again, temporary production subsidies may be more efficient than import restrictions.

17-4c Antidumping Argument

As we have noted already, *dumping* is selling a product abroad for less than in the home market or less than the cost of production. Exporters may be able to sell the good for less overseas because of export subsidies, or firms may simply find it profitable to sell for less in foreign markets where consumers are more sensitive to prices. But why shouldn’t U.S. consumers pay as little as possible? If dumping is persistent,

4. Yijun Zhang, “China Steel Group Accuses U.S. Lawmakers of Protectionism,” *Wall Street Journal*, 5 July 2010.

the increase in consumer surplus would more than offset losses to domestic producers. There is no good reason why consumers should not be allowed to buy imports for a persistently lower price.

An alternative form of dumping, termed *predatory dumping*, is the temporary sale abroad at prices below cost to eliminate competitors in that foreign market. Once the competition is gone, so the story goes, the exporting firm can raise the price in the foreign market. The trouble with this argument is that if dumpers try to take advantage of their monopoly position by sharply increasing the price, then other firms, either domestic or foreign, could enter the market and sell for less. There are few documented cases of predatory dumping.

Sometimes dumping may be *sporadic*, as firms occasionally try to unload excess inventories. Retailers hold periodic “sales” for the same reason. Sporadic dumping can be unsettling for domestic producers, but the economic impact is not a matter of great public concern. Regardless, all dumping is prohibited in the United States by the Trade Agreements Act of 1979, which calls for the imposition of tariffs when a good is sold for less in the United States than in its home market or less than the cost of production. In addition, WTO rules allow for offsetting tariffs when products are sold for “less than fair value” and when there is “material injury” to domestic producers. For example, U.S. producers of lumber and beer frequently accuse their Canadian counterparts of dumping.

17-4d Jobs and Income Argument

One rationale for trade restrictions that is commonly heard in the United States, and is voiced by WTO protesters, is that they protect U.S. jobs and wage levels. Using trade restrictions to protect domestic jobs is a strategy that dates back centuries. One problem with such a policy is that other countries usually retaliate by restricting their imports to save their jobs, so international trade is reduced, jobs are lost in export industries, and potential gains from trade fail to materialize. That happened big time during the Great Depression, as high tariffs choked trade and jobs.

Wages in other countries, especially developing countries, are often a fraction of wages in the United States. For example, General Motors (GM) workers in Michigan earn about \$50 per hour versus \$7 for GM workers in Mexico, \$4.50 in China, and \$1 in India. Looking simply at differences in wages, however, narrows the focus too much. Wages represent just



one component of the total production cost and may not necessarily be the most important. Employers are interested in the labor cost per unit of output, which depends on both the wage and labor productivity. Wages are high in the United States partly because U.S. labor productivity remains the highest in the world. High productivity can be traced to better education and training and to the abundant computers, machines, and other physical capital that make workers more productive. U.S. workers also benefit greatly from better management and a relatively stable business climate.

But what about the lower wages in many developing countries? Low wages are often linked to workers' lack of education and training, to the meager physical capital available to each worker, and to a business climate that is less stable and hence less attractive for producers. For example, the total value of manufacturing output is about the same in the United States as in China, but Americans produce that output with only about 10 percent of the manufacturing workforce that's employed in China.⁵ What's more, advances in technology are making differences in labor costs across

5. "Manufacturing and Innovation: Back to Making Stuff," *The Economist*, 21 April 2012.

countries less relevant. One example is, as noted earlier, that in the original iPad, manufacturing labor accounted for only \$33 of its \$499 retail price, and the final assembly in China accounted for just \$8 of that \$33.⁶

Once multinational firms build plants and provide technological know-how in developing countries, U.S. workers lose some of their competitive edge, and their relatively high wages could price some U.S. products out of the world market. This has already happened in the consumer electronics and toy industries. China makes 80 percent of the toys sold in the United States. Some U.S. toy sellers, such as the makers of Etch A Sketch, would no longer exist had they not outsourced manufacturing to China.

Domestic producers do not like to compete with foreign producers whose costs are lower, so they often push for trade restrictions. But if restrictions negate any cost advantage a foreign producer might have, the law of comparative advantage becomes inoperative and domestic consumers are denied access to the lower-priced goods.

Over time, as labor productivity in developing countries increases, wage differentials among countries will narrow, much as they narrowed between the northern and southern United States during the last century. As technology and capital spread, U.S. workers, particularly unskilled workers, cannot expect to maintain wage levels that are far above comparable workers in other countries. So far, research and development has kept U.S. producers on the cutting edge of technological developments, but staying ahead in the technological race is a constant battle. As a sign of the times about how competition could squeeze down the wage gap across countries, the Volkswagen factory in Tennessee pays workers only about half of what GM pays in Michigan, yet many thousands of job seekers in 2011 applied for the 2,000 openings there.

17-4e Declining Industries Argument

Where an established domestic industry is in jeopardy of closing because of lower-priced imports, could there be a rationale for temporary import restrictions? After all, domestic producers employ many industry-specific resources—both specialized labor and specialized machines. This human and physical capital is worth less in its best alternative use. If the extinction of the domestic industry

6. "The Third Industrial Revolution," *The Economist*, 21 April 2012.

“Why does a nation try to influence the value of its currency?”

How can the United States export more than nearly any other country yet still have the world's highest trade deficit? Are high trade deficits a worry? What's the official “fudge factor” used to compute the balance of payments? What's meant by a “strong dollar”? Why does a nation try to influence the value of its currency? Answers to these and other questions are explored in this chapter, which focuses on international finance.

If Starbucks wants to buy 1,000 espresso machines from the German manufacturer Krups, it will be quoted a price in euros. Suppose the machines cost a total of €1 million (euros). How much is that in dollars? The dollar cost

will depend on the exchange rate. When trade takes place across international borders, two currencies are usually involved. Supporting the flows of goods and services are flows of currencies that fund international transactions. The exchange rate between currencies—the price of one in terms of the other—is how the price of a product in one country translates into the price facing a buyer in another country. Cross-border trade therefore depends on the exchange rate.

In this chapter, we examine the market forces that affect the value of one currency in terms of another.

What do **you** think?

The current euro exchange rate makes this a good time for a European vacation.

Strongly Disagree

Strongly Agree

1 2 3 4 5 6 7

Topics discussed in Chapter 18 include

- Balance of payments
- Trade deficits and surpluses
- Foreign exchange markets
- Purchasing power parity
- Flexible exchange rates
- Fixed exchange rates
- International monetary system
- Bretton Woods agreement
- Managed float

18-1 Balance of Payments

A country's gross domestic product, or GDP, measures the economy's income and output during a given period, usually quarterly or yearly. To account for dealings abroad, countries must also keep track of international transactions. A country's *balance of payments*, as introduced in Chapter 3, summarizes all economic transactions during a given period between residents of that country and residents of other countries. Residents include people, firms, organizations, and governments.

18-1a International Economic Transactions

The balance of payments measures economic transactions between a country and the rest of the world, whether these transactions involve goods and services, real and financial assets, or transfer payments. The balance of payments measures a flow of transactions during a particular period. Some transactions do not involve actual payments. For example, if Time magazine ships a new printing press to its Australian subsidiary, no payment is made, yet an economic transaction involving another country has occurred. Similarly, if CARE sends food to Africa or the Pentagon provides military assistance to the Middle East, these transactions must be captured in the balance of payments. So remember, although we speak of the *balance of payments*, a more descriptive phrase would be the *balance-of-economic transactions*.

Balance-of-payments accounts are maintained according to the principles of *double-entry bookkeeping*. Some entries are called *credits*, and others are called *debits*. As you will see, the balance of payments consists of several individual accounts. An individual account may not balance, but a deficit in one or more accounts must be offset by a net surplus in the other accounts. Because total credits must equal total debits, there is a *balance of payments*—hence, the name. During a given period, such as a year, the inflow of receipts from the rest of the world, which are entered as credits, must equal the outflow of payments to the rest of the world, which are entered as debits.

The first of two major categories in the balance of payments is the current

account. The current account records *current flows* of funds into and out of the country, including imports and exports of goods and services, net income earned by U.S. residents from foreign assets, and net transfer payments from abroad. These are discussed in turn.

“The current account records *current flows* of funds into and out of the country, including imports and exports of goods and services, net income earned by U.S. residents from foreign assets, and net transfer payments from abroad.”

18-1b The Merchandise Trade Balance

The *merchandise trade balance*, a term introduced in Chapter 3, equals the value of merchandise exports minus the value of merchandise imports. The merchandise account reflects trade in goods, or tangible products (stuff you can put in a box), like French wine or U.S. computers, and is often referred to simply as the *trade balance*. The value of U.S. merchandise exports is a credit in the U.S. balance-of-payments account because U.S. residents get paid for the exported goods. The value of U.S. merchandise imports is a debit in the balance-of-payments account because U.S. residents pay foreigners for imported goods.

If merchandise exports exceed merchandise imports, the trade balance is in *surplus*. If merchandise imports exceed merchandise exports, the trade balance is in *deficit*. The merchandise trade balance, which is reported monthly, influences foreign exchange markets, the stock market, and other financial markets. The trade balance depends on a variety of factors, including the relative strength and competitiveness of the domestic economy compared with other economies and the relative value of the domestic currency compared with other currencies. Strong

“If merchandise exports exceed merchandise imports, the trade balance is in *surplus*. If merchandise imports exceed merchandise exports, the trade balance is in *deficit*.”

economies with growing incomes tend to buy more of everything, including imports.

U.S. merchandise trade since 1960 is depicted in Exhibit 1, where exports, the blue line, and imports, the red line, are expressed as a percentage of GDP. During the 1960s, exports exceeded imports, and the resulting trade surpluses are shaded blue. Since 1976, imports have exceeded exports, and the resulting trade deficits are shaded pink. Trade deficits as a percentage of GDP increased from 1.3 percent in 1991 to a peak of 6.3 percent in 2006. The recession of 2007–2009 slowed U.S. imports more than U.S. exports, so by 2009 the trade deficit relative to GDP fell to 3.6 percent, the lowest in more than a decade. Since then, merchandise imports increased more than merchandise exports, so the U.S. trade deficit rose to \$741.5 billion in 2012, or 4.6 percent relative to GDP that year.

Because per capita income in the United States ranks among the highest in the world, the United States imports more goods from each of the world's major economies than it exports to them. Exhibit 2 shows the U.S. merchandise trade deficit with major economies or regions of the world in 2012. The \$315 billion trade deficit with China was by far the largest, much larger than that with Latin America or the combined 27 countries of the European Union.



The Chinese bought \$110 billion in U.S. goods in 2012, but sold \$425 billion to Americans, or about \$3,500 per U.S. household. So China sold America about four times more than it bought from America. Chances are, most of the utensils in your kitchen are from China; most toys are also Chinese made. The United States is the world's biggest importer and has a trade surplus with only a few major economies, including Australia, Brazil, and the Netherlands.

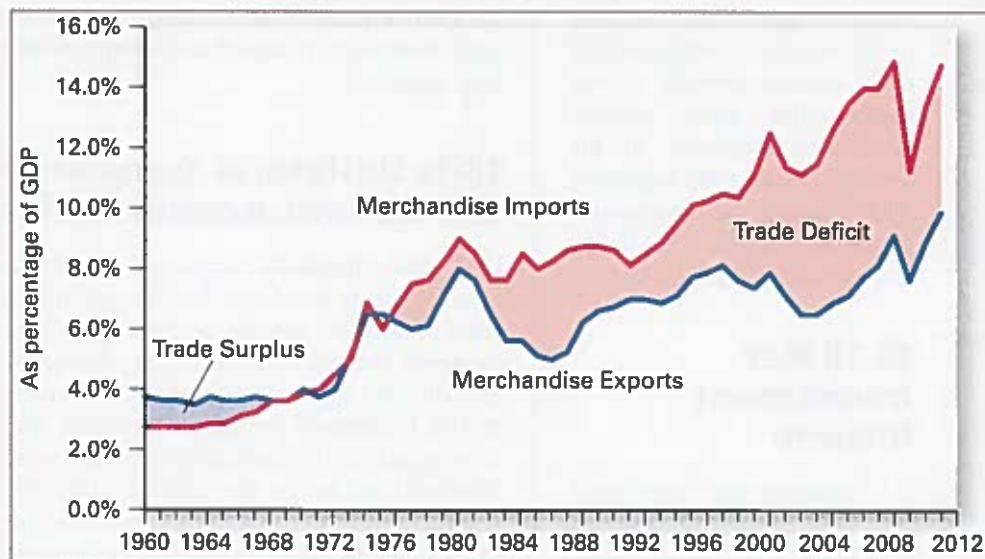
18-1c Balance on Goods and Services

The merchandise trade balance focuses on the flow of goods, but services are also traded internationally. Services are intangibles, such as transportation, insurance, banking, education, consulting, and tourism. Services are often called “invisibles” because they are not tangible. The value of U.S. service exports, as when an Irish tourist visits New York City, is listed as a credit in the U.S. balance-of-payments account because U.S. residents get paid for these services. The value of U.S. service imports, like computer programming outsourced to India, is listed as a debit in the balance-of-payments account because U.S. residents must pay for the imported services.

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Exhibit 1

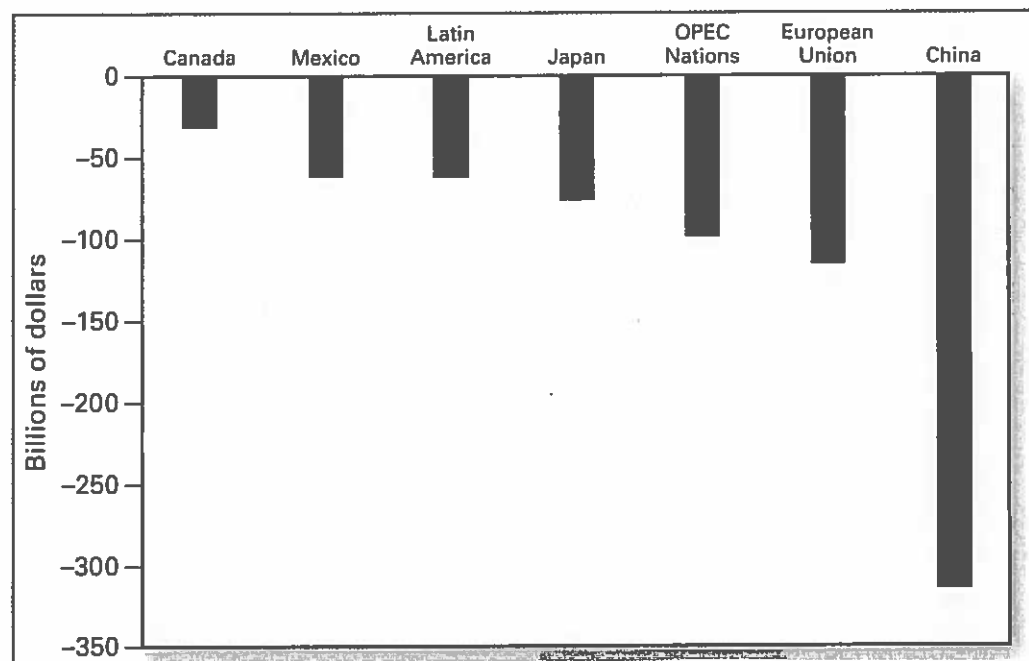
U.S. Imports Have Topped Exports Since 1976, but Both Dropped During the Great Recession



SOURCE: Developed from merchandise trade data from the *Economic Report of the President*, February 2012, and *Survey of Current Business*, 92 (June 2012), U.S. Department of Commerce. For the latest data, go to <http://bea.gov>.

Exhibit 2

U.S. Merchandise Trade Deficits in 2012 by Country or Region



SOURCE: Developed from data in "Exports, Imports, and Trade Balance by Country and Area: 2012 Annual Totals," Exhibit 13, U.S. Bureau of Economic Analysis, at http://www.census.gov/foreign-trade/Press-Release/2012pr/final_revisions/exh13cy.pdf

Because the United States exports more services than it imports, services have been in surplus for the last three decades. In 2012, the surplus in the services account totaled \$206.8 billion. The balance on goods and services is the export value of goods and services minus the import value of goods and services, or net exports, a component of GDP. Because deficits in the merchandise trade account dominated surpluses in the services account, net exports of goods and services have been in deficit for decades. That deficit in 2012 totaled \$534.7 billion.

18-1d Net Investment Income

U.S. residents earn investment income, such as interest and dividends, from foreign assets. This investment income flows to the United States and is a

credit in the balance-of-payments account. On the other side, foreigners earn investment income on their U.S. assets, and this payment flows out of the United States. This outflow is a debit in the balance-of-payments account. Net investment income from abroad is U.S. investment earnings from foreign assets minus foreigners' earnings from their U.S. assets. This figure bounces around from year to year between a positive and a negative number. In 2012, net investment income from foreign holdings totaled \$223.9 billion.

18-1e Unilateral Transfers and the Current Account Balance

Unilateral transfers consist of government transfers to foreign residents, foreign aid, money workers send to families abroad, personal gifts to friends and relatives abroad, contributions of foreign charities, and the like. Money sent out of the country is a debit in the balance-of-payments account. For example, immigrants in the United States often send money to families back home. Net unilateral transfers abroad equal the unilateral transfers received from abroad by U.S. residents minus unilateral transfers sent to foreign residents by U.S. residents. U.S. net unilateral transfers have been negative since World War II,

balance on goods and services
The portion of a country's balance-of-payments account that measures the value of a country's exports of goods and services minus the value of its imports of goods and services

net investment income from abroad
Investment earnings by U.S. residents from their foreign assets minus investment earnings by foreigners from their assets in the United States

net unilateral transfers abroad
The unilateral transfers (gifts and grants) received from abroad by U.S. residents minus the unilateral transfers U.S. residents send abroad

except for 1991, when the U.S. government received sizable transfers from foreign governments to help pay their share of the Persian Gulf War. In 2012, net unilateral transfers were a negative \$129.7 billion, with private transfers accounting for most of that (government grants and transfer payments made up the rest). Net unilateral transfers abroad averaged about \$1,100 per U.S. household.

The United States places few restrictions on money sent out of the country. Other countries, particularly developing countries, strictly limit the amount that may be sent abroad. More generally, many developing countries, such as China, restrict the convertibility of their currency into other currencies.

When we add net unilateral transfers to net exports of goods and services and net income from assets owned abroad, we get the **balance on current account**, which is reported quarterly. Thus, the current account includes all international transactions in currently produced goods and services, net income from foreign assets, and net unilateral transfers. It can be negative, reflecting a current account deficit; positive, reflecting a current account surplus; or zero. In 2012, the current account deficit was \$440.5 billion.

18-1f The Financial Account

The current account records international transactions in goods, services, asset income, and unilateral transfers. The **financial account** records international purchases of assets, including financial assets, such as stocks, bonds, and bank balances, and real assets such as land, housing, factories, and other physical assets. For example, U.S. residents purchase foreign securities to earn a higher return and to diversify their investments. Money flows out when Americans buy foreign assets or build factories overseas. Money flows in when foreigners buy U.S. assets or build factories here. The international purchase or sale of assets is recorded in the financial account.

Between 1917 and 1982, the United States ran a financial account deficit, meaning that U.S.

“Money flows out when Americans buy foreign assets or build factories overseas. Money flows in when foreigners buy U.S. assets or build factories here.”

residents purchased more foreign assets than foreigners purchased U.S. assets. The net income from these foreign assets improved our current account balance. But in 1983, for the first time in 65 years, foreigners bought more U.S. assets than U.S. residents purchased abroad. Since 1983, foreigners have continued to buy more U.S. assets most years than the other way around, meaning there has usually been a surplus in the financial account. This is not as bad as it sounds, because foreign purchases of assets in the United States add to America's productive capacity and promote employment and labor productivity here. But any income from these assets flows to their foreign owners, not to Americans. Remember, the investment income from these assets shows up in the current account. Foreigners find America an attractive place to invest because U.S. capital markets are the deepest and most liquid in the world. In 2012, the financial account surplus was \$446.4 billion.

18-1g Deficits and Surpluses

Nations, like households, operate under a budget constraint. Spending cannot exceed income plus cash on hand and borrowed funds. We have distinguished between *current* transactions, which include exports, imports, asset income, and unilateral transfers, and *financial* transactions, which reflect net purchases of foreign real and financial assets. Any surplus or deficit in one account must be offset by deficits or surpluses in other balance-of-payments accounts.

Exhibit 3 presents the U.S. balance-of-payments statement for 2012. All transactions requiring payments from foreigners to U.S. residents are entered as credits, indicated by a plus sign (+), because they result in an inflow of funds from foreign residents to U.S. residents. All transactions requiring payments to foreigners from U.S. residents are entered as debits, indicated by a minus sign (-), because they result in an outflow of funds from U.S. residents to foreign residents. As you can see, a surplus in the financial account of \$446.4 billion more than offset a current account deficit of \$440.5 billion. A statistical discrepancy is required to balance the payments, and that amounts to a negative \$5.9 billion. Think of the statistical discrepancy as the official “fudge factor” that (1) measures the error in the

balance on current account

The portion of the balance-of-payments account that measures a country's balance on goods and services, net investment income from abroad, plus net unilateral transfers abroad

financial account

The record of a country's international transactions involving purchases or sales of financial and real assets

Exhibit 3

U.S. Balance of Payments for 2012 (billions of dollars)

Current Account	
1. Merchandise exports	+1,561.2
2. Merchandise imports	-2,302.7
3. Merchandise trade balance (1 + 2)	-741.5
4. Service exports	+649.3
5. Service imports	-442.5
6. Goods and services balance (3 + 4 + 5)	-534.7
7. Net investment income from abroad	+223.9
8. Net unilateral transfers	-129.7
9. Current account balance (6 + 7 + 8)	-440.5
Financial Account	
10. Change in U.S. owned assets abroad	-97.5
11. Change in foreign-owned assets in United States	+543.9
12. Financial account balance (10 + 11)	+446.4
13. Statistical discrepancy	-5.9
TOTAL (9 + 12 + 13)	0.0

SOURCE: Computed from estimates in "U.S. International Transactions," *Survey of Current Business*, 93 (August 2013), Table F.1., p. D-68.

balance of payments and (2) satisfies the double-entry bookkeeping requirement that total debits must equal total credits.

Foreign exchange is the currency of another country needed to carry out international transactions. A country runs a deficit in its current account when the amount of foreign exchange received from exports, from foreign assets, and from unilateral transfers falls short of the amount needed to pay for imports, pay foreign holders of U.S. assets, and make unilateral transfers. If the current account is in deficit, the necessary foreign exchange must come from a net inflow in the financial account. Such an inflow in the financial account could stem from borrowing from foreigners, selling domestic stocks and bonds to foreigners, selling a steel plant in Pittsburgh or a ski lodge in Aspen to foreigners, and so forth.

If a country runs a current account surplus, the foreign exchange received from exports, from foreign assets, and from unilateral transfers from abroad exceeds the amount needed to pay for imports, to pay foreign holders of U.S. assets, and to make unilateral transfers abroad. If the current account is in surplus, this excess foreign exchange results in a net outflow in the financial account through

exchange rate

The price, measured in one country's currency, of purchasing one unit of another country's currency

lending abroad, buying foreign stocks and bonds, buying a shoe plant in Italy or a villa on the French Riviera, and so forth.

When all transactions are considered, accounts must balance. The statistical discrepancy ensures that, in the aggregate, accounts sum to zero. A deficit in a particular account should not necessarily be viewed as a source of concern, nor should a surplus be a source of satisfaction. The deficit in the U.S. current account in recent years has usually been offset by a financial account surplus. As a result, foreigners have been acquiring more claims on U.S. assets.

18-2 Foreign Exchange Rates and Markets

Now that you have some idea about international flows, we can take a closer look at the forces that determine the underlying value of the currencies involved. Let's begin by looking at exchange rates and the market for foreign exchange.

18-2a Foreign Exchange

Foreign exchange, recall, is foreign money needed to carry out international transactions. The exchange rate is the price measured in one country's currency of buying one unit of another country's currency. Exchange rates are determined by the interaction of the households, firms, private financial institutions, governments, and central banks that buy and sell foreign exchange. The exchange rate fluctuates to equate the quantity of foreign exchange demanded with the quantity supplied. Typically, foreign exchange is made up of bank deposits denominated in the foreign currency. When foreign travel is involved, foreign exchange often consists of foreign paper money.

The foreign exchange market incorporates all the arrangements used to buy and sell foreign exchange. This market is not so much a physical place as a network of telephones and computers connecting financial centers all over the world. Perhaps you have seen pictures of foreign exchange traders in New York, Frankfurt, London, or Tokyo in front of computer screens amid a tangle of phone lines. The foreign exchange market is like an all-night diner—it never closes. A trading center is always open somewhere in the world.

We will consider the market for the euro in terms of the dollar. But first, a little more about the euro. For decades the nations of Western Europe tried to increase their economic cooperation and trade. These

USD	807	812	
EUR	1047	1070	
RUR	-255	0262	
GBP	8288	8200	
CAD	07	9117	
PLZ	08	08	
ILS	2000	368	
CHF	8760	8800	
JPY	0077	0120	
NOK	1009	1700	
SEK			

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countries believed they would be more productive and more competitive with the United States if they acted less like many separate economies and more like the 50 United States, with a single set of trade regulations and a single currency. Imagine the hassle involved if each of the 50 states had its own currency.

In 2002, euro notes and coins entered circulation in the 12 European countries adopting the common currency. The big advantage of a common currency is that Europeans no longer have to change money every time they cross a border or trade with another country in the group. Again, the inspiration for this is the United States, arguably the most successful economy in world history.

So the euro is the common currency of the euro zone, as the now 17-country region is usually called. The price, or exchange rate, of the euro in terms of the dollar is the number of dollars required to purchase one euro. An increase in the number of dollars needed to purchase a euro indicates weakening, or **depreciation**, of the dollar. A decrease in the number of dollars needed to purchase a euro indicates strengthening, or **appreciation**, of the dollar. Put another way, a decrease in the number of euros needed to purchase

a dollar is a depreciation of the dollar, and an increase in the number of euros needed to purchase a dollar is an appreciation of the dollar.

Because the exchange rate is usually a market price, it is determined by demand and supply: The equilibrium price is the one that equates quantity demanded with quantity supplied. To simplify the analysis, suppose that the United States and the euro zone make up the entire world, so the demand and supply for euros in international finance is the demand and supply for foreign exchange from the U.S. perspective.

18-2b The Demand for Foreign Exchange

Whenever U.S. residents need euros, they must buy them in the foreign exchange market, which could include your local bank, paying for them with dollars. Exhibit 4 depicts a market for foreign exchange—in this case, euros. The horizontal axis shows the quantity of foreign exchange, measured here in billions of euros per day. The vertical axis shows the price per unit of foreign exchange, measured here in dollars per euro. The demand curve *D* for foreign exchange shows the inverse relationship between the dollar price of the euro and the quantity of euros demanded. Assumed constant along the demand curve are the incomes and preferences of U.S. consumers, expected inflation in the United States and in the euro zone, the euro price of goods in the euro zone, and interest rates in the United States and in the euro zone. U.S. residents have many reasons for demanding foreign exchange, but in the aggregate, the lower the dollar price of foreign exchange, other things constant, the greater the quantity of foreign exchange demanded.

A drop in the dollar price of foreign exchange, in this case the euro, means that fewer dollars are needed to purchase each euro, so the dollar prices of euro-zone products (like German cars, Italian shoes, tickets to the Louvre, and euro-zone securities), which list prices in euros, become cheaper. The cheaper it is to buy euros, the lower the dollar price of euro-zone products to U.S. residents, so the greater the quantity of euros demanded by U.S. residents, other things remain constant. For example, a cheap enough

currency depreciation

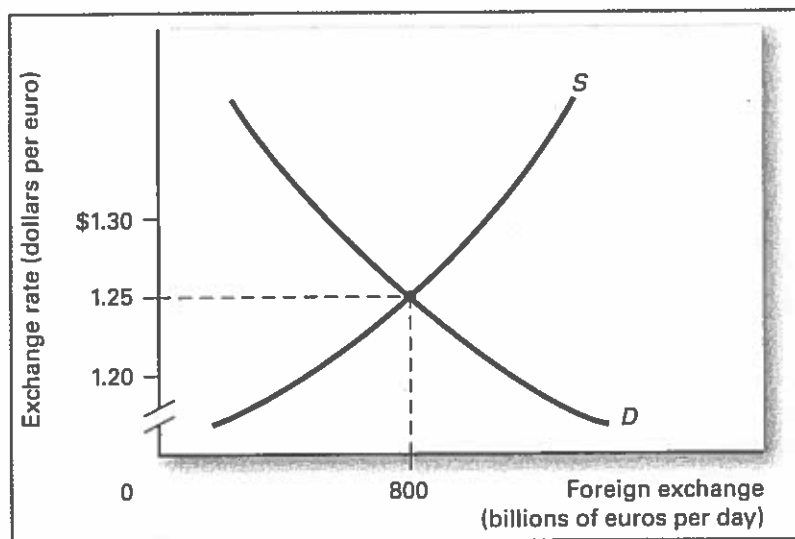
With respect to the dollar, an increase in the number of dollars needed to purchase one unit of foreign exchange in a flexible rate system

currency appreciation

With respect to the dollar, a decrease in the number of dollars needed to purchase one unit of foreign exchange in a flexible rate system

Exhibit 4

The Foreign Exchange Market



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euro might persuade you to tour Rome, climb the Austrian Alps, wander the museums of Paris, or crawl the pubs of Dublin.

“The cheaper it is to buy euros, the lower the dollar price of euro-zone products to U.S. residents, so the greater the quantity of euros demanded by U.S. residents, other things remain constant.”

18-2c The Supply of Foreign Exchange

The supply of foreign exchange is generated by the desire of foreign residents to acquire dollars—that is, to exchange euros for dollars. Euro-zone residents want dollars to buy U.S. goods and services, acquire U.S. assets, make loans in dollars, or send dollars to their U.S. friends and relatives. Euros are supplied in the foreign exchange market to acquire the dollars people want. An increase in the dollar-per-euro exchange rate, other

“An increase in the dollar-per-euro exchange rate, other things constant, makes U.S. products cheaper for foreigners because foreign residents need fewer euros to get the same number of dollars.”

things constant, makes U.S. products cheaper for euro-zone residents because foreign residents need fewer euros to get the same number of dollars. For example, suppose a Dell computer sells for \$600. If the exchange rate is \$1.20 per euro, that computer costs 500 euros; if the exchange rate is \$1.25 per euro, it costs only 480 euros. The number of Dell computers demanded in the euro zone increases as the dollar-per-euro exchange rate increases, other things constant, so more euros will be supplied on the foreign exchange market to buy dollars.

The positive relationship between the dollar-per-euro exchange rate and the quantity of euros supplied on the foreign exchange market is expressed in Exhibit 4 by the upward-sloping supply curve for foreign exchange (again, euros in our example). The supply curve assumes that other things remain constant, including euro-zone incomes and tastes, expectations about inflation in the euro zone and in the United States, and interest rates in the euro zone and in the United States.

18-2d Determining the Exchange Rate

Exhibit 4 brings together the demand and supply for foreign exchange to determine the exchange rate. At a rate of \$1.25 per euro, the quantity of euros demanded equals the quantity supplied—in our example, 800 billion euros per day. Once achieved, this equilibrium rate will remain constant until a change occurs in one of the factors that affect supply or demand. If the exchange rate is allowed to adjust freely, or to float, in response to market forces, the market will clear continually, as the quantities of foreign exchange demanded and supplied are equated.

What if the initial equilibrium is upset by a change in one of the underlying forces that affect demand or supply? For example, suppose higher U.S. incomes increase American demand for all normal goods, including those from the euro zone. This shifts the U.S. demand curve for foreign exchange to the right, as Americans buy



DON FARRALL/GETTY IMAGES

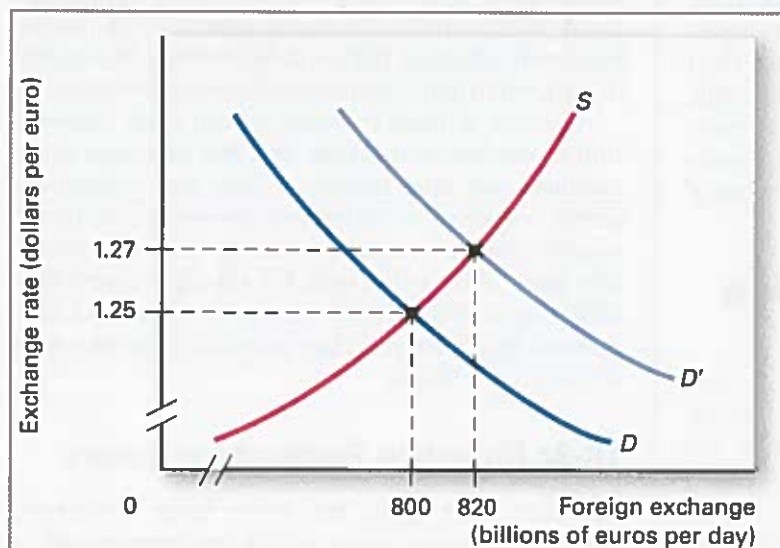
If the exchange rate is allowed to adjust freely, or to float, in response to market forces, the market will clear continually, as the quantities of foreign exchange demanded and supplied are equated.

more Italian marble, Dutch chocolate, German automobiles, Parisian vacations, and euro-zone securities.

This increased demand for euros is shown in Exhibit 5 by a rightward shift of the demand curve for foreign exchange. The demand increase from D to D' leads to an increase in the exchange rate per

Exhibit 5

Effect on the Foreign Exchange Market of an Increased Demand for Euros



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euro from \$1.25 to \$1.27. Thus, the euro increases in value, or appreciates, while the dollar falls in value, or depreciates. An increase in U.S. income should not affect the euro supply curve, though it does increase the *quantity of euros supplied*. The higher exchange value of the euro prompts those in the euro zone to buy more American products and assets, which are now cheaper in terms of the euro.

To Review: Any increase in the demand for foreign exchange or any decrease in its supply, other things constant, increases the number of dollars required to purchase one unit of foreign exchange, which is a depreciation of the dollar. On the other hand, any decrease in the demand for foreign exchange or any increase in its supply, other things constant, reduces the number of dollars required to purchase one unit of foreign exchange, which is an appreciation of the dollar.

18-3 Other Factors Influencing Foreign Exchange Markets

So far, the market for foreign exchange has been presented just like any other market: Demand and supply come together to determine the equilibrium exchange rate, or price of foreign exchange. Simple enough, but the market for foreign exchange is complicated by the types of actors in this market and by the types of regulations and restrictions involved. In this section, we look at how these other factors shape this market.

18-3a Arbitrageurs and Speculators

Exchange rates between two currencies are nearly identical at any given time in markets around the world. For example, the dollar price of a euro is usually the same in New York, Frankfurt, Tokyo, London, Zurich, Hong Kong, Istanbul, and other financial centers. **Arbitrageurs**—dealers who take advantage of any tiny difference in exchange rates across markets by buying low and selling high—ensure this equality. For example, if one euro costs \$1.24 in New York but \$1.25 in Frankfurt, an arbitrageur

arbitrageur
Someone who takes advantage of tiny differences in the exchange rate across markets by simultaneously purchasing a currency in one market and selling it in another market

could buy, say, \$1,000,000 worth of euros in New York and at the same time sell them in Frankfurt for \$1,008,065, thereby earning \$8,065 minus the transaction costs of the trades.

Because an arbitrageur buys and sells simultaneously, little risk is involved. In our example, the arbitrageur increased the demand for euros in New York and increased the supply of euros in Frankfurt. These actions increased the dollar price of euros in New York and decreased it in Frankfurt, thereby squeezing down the difference in exchange rates. Exchange rates may still change because of market forces, but they tend to change in all markets simultaneously.

The demand and supply of foreign exchange arises from many sources—from importers and exporters, investors in foreign assets, central banks, tourists, arbitrageurs, and speculators. Speculators buy or sell foreign exchange in hopes of profiting by trading the currency at a more favorable exchange rate later. By taking risks, speculators aim to profit from market fluctuations—they try to buy low and sell high. In contrast, arbitrageurs take less risk, because they simultaneously buy currency in one market and sell it in another.

Finally, people in countries suffering from economic and political turmoil, such as occurred in Russia, Indonesia, the Philippines, and Zimbabwe, may buy hard currency as a hedge against the depreciation and instability of their own currencies. The dollar has long been accepted as an international medium of exchange. It is also the currency of choice in the world markets for oil and illegal drugs. But the euro eventually may challenge that dominance, in part because the

speculator

Someone who buys or sells foreign exchange in hopes of profiting from fluctuations in the exchange rate over time

purchasing power parity theory

The idea that the exchange rate between two countries will adjust in the long run to equalize the cost of a basket of internationally traded goods

flexible exchange rate

Rate determined in foreign exchange markets by the forces of demand and supply without government intervention

largest euro denomination, the 500-euro note, is worth about six times the largest U.S. denomination, the \$100 note. So it would be six times easier to smuggle euro notes than U.S. notes of equal value. Still, fiscal problems in some euro-zone nations such as Greece and Spain have taken some of the shine off the euro.

18-3b Purchasing Power Parity

As long as trade across borders is unrestricted and as long as exchange rates are allowed to adjust freely, the purchasing power parity (PPP) theory predicts that the

“A given basket of internationally traded goods should sell for about the same around the world.”

exchange rate between two currencies will adjust in the long run to equalize the cost across countries of an internationally traded basket of goods. A given basket of internationally traded goods should therefore sell for about the same around the world (except for differences reflecting transportation costs and the like). Suppose a basket of internationally traded goods that sells for \$10,000 in the United States sells for €8,000 in the euro zone. According to the purchasing power parity theory, the equilibrium exchange rate should be \$1.25 per euro. If this were not the case—if the exchange rate were, say, \$1.20 per euro—then you could exchange \$9,600 for €8,000, with which you buy the basket of commodities in the euro zone. You could then sell that basket of goods in the States for \$10,000, yielding you a profit of \$400 minus any transaction costs. Selling dollars and buying euros will also drive up the dollar price of euros.

The purchasing power parity theory is more of a long-run predictor than a day-to-day indicator of the relationship between changes in the price level and the exchange rate. For example, a country's currency generally appreciates when inflation is lower than that of other countries and depreciates when inflation is higher compared to other countries. Likewise, a country's currency generally appreciates when its real interest rates are higher than in other countries, because foreigners are more willing to buy and hold investments denominated in that high-interest currency. As a case in point, the dollar appreciated during the first half of the 1980s, when real U.S. interest rates were relatively high, and depreciated during 2002 to 2004, when real U.S. interest rates were relatively low.

Because of trade barriers, central bank intervention in exchange markets, and the fact that many products are not traded or are not comparable across countries, the purchasing power parity theory usually does not explain exchange rates at a particular point in time that well. For example, if you went shopping in Switzerland tomorrow, you would soon notice a dollar does not buy as much there as it does in the United States.

18-3c Flexible Exchange Rates

For the most part, we have been discussing flexible exchange rates, which are determined by

demand and supply. Flexible, or *floating*, exchange rates adjust continually to the myriad forces that buffet foreign exchange markets. Consider how the exchange rate is linked to the balance-of-payments accounts. Debit entries in the current or financial accounts increase the demand for foreign exchange, resulting in a depreciation of the dollar. Credit entries in these accounts increase the supply of foreign exchange, resulting in an appreciation of the dollar.

18-3d Fixed Exchange Rates

When exchange rates are flexible, governments usually have little direct role in foreign exchange markets. But if governments try to set exchange rates, active and ongoing central bank intervention is often necessary to establish and maintain these **fixed exchange rates**. Suppose the European Central Bank selects what it thinks is an appropriate rate of exchange between the dollar and the euro. It attempts to *fix*, or to *peg*, the exchange rate within a narrow band around the particular value selected. If the euro threatens to climb above the maximum acceptable exchange rate, monetary authorities must sell euros and buy dollars, thereby keeping the dollar price of the euro down. Conversely, if the euro threatens to drop below the minimum acceptable exchange rate, monetary authorities must sell dollars and buy euros. This increased demand for the euro will keep its value up relative to the dollar. Through such intervention in the foreign exchange market, monetary authorities try to stabilize the exchange rate, keeping it within the specified band.

If monetary officials must keep selling foreign exchange to keep the value of their domestic currency from falling, they risk running out of foreign exchange reserves. Faced with this threat, the government has several options for eliminating the exchange rate disequilibrium. First, the pegged exchange rate can be increased, meaning that foreign currency costs more dollars. This is a **devaluation** of the dollar. (A decrease in the pegged exchange rate is called a **revaluation**.) Second, the government can reduce the domestic demand for foreign exchange directly by imposing restrictions on imports or on financial outflows. Many developing countries do this. Third, the government can adopt policies to slow the domestic economy, increase interest rates, or reduce inflation relative to that of the country's trading partners, thereby indirectly decreasing the demand for foreign exchange and increasing the supply of foreign exchange. Several Asian economies, such as South Korea and Indonesia,

pursued such policies to stabilize their currencies. Finally, the government can allow the disequilibrium to persist and ration the available foreign reserves through some form of foreign exchange control.

This concludes our introduction to the theories of international finance. Let's examine international finance in practice.

18-4 Development of the International Monetary System

From 1879 to 1914, the international monetary system operated under a **gold standard**, whereby the major currencies were convertible into gold at a fixed rate. For example, the U.S. dollar could be redeemed at the U.S. Treasury for one-twentieth of an ounce of gold. The British pound could be redeemed at the British Exchequer, or treasury, for one-fourth of an ounce of gold. Because each British pound could buy five times as much gold as each dollar, one British pound exchanged for \$5.

The gold standard provided a predictable exchange rate, one that did not vary as long as currencies could be redeemed for gold at the official rate. But the money supply in each country was determined in part by the flow of gold among countries, so each country's monetary policy was influenced by the supply of gold. A balance-of-payments deficit resulted in a loss of gold, which theoretically caused a country's money supply to shrink. A balance-of-payments surplus resulted in an influx of gold, which theoretically caused a country's money supply to expand. The supply of money throughout the world also depended on the vagaries of gold discoveries. When gold production did not keep pace with the growth in economic activity, the price level dropped. When gold production exceeded the growth in economic activity, the price level rose. For example, gold discoveries in Alaska and South Africa in the late 1890s expanded the U.S. money supply, leading to inflation.

fixed exchange rate

Rate of exchange between currencies pegged within a narrow range and maintained by the central bank's ongoing purchases and sales of currencies

currency devaluation

An increase in the official pegged price of foreign exchange in terms of the domestic currency

currency revaluation

A reduction in the official pegged price of foreign exchange in terms of the domestic currency

gold standard

An arrangement whereby the currencies of most countries were convertible into gold at a fixed rate

18-4a The Bretton Woods Agreement

During World War I, many countries could no longer convert their currencies into gold, and the gold standard eventually collapsed, disrupting international trade during the 1920s and 1930s. Once an Allied victory in World War II appeared certain, the Allies met in Bretton Woods, New Hampshire, in July 1944 to formulate a new international monetary system. Because the United States had a strong economy and was not ravaged by the war, the dollar was selected as the key reserve currency in the new international monetary system. All exchange rates were fixed in terms of the dollar, and the United States, which held most of the world's gold reserves, stood ready to convert foreign holdings of dollars into gold at a rate of \$35 per ounce. Even though the rate that dollars could be exchanged for gold was fixed by the Bretton Woods agreement, other countries could adjust their exchange rates relative to the U.S. dollar if they found a chronic disequilibrium in their balance of payments—that is, if a country faced a large and persistent deficit or surplus. In short, America's promise to redeem foreign

holdings of U.S. dollars for a fixed amount of gold anchored the international monetary system.

The Bretton Woods agreement also created the International Monetary Fund (IMF) to set rules for maintaining the international monetary system, to standardize financial reporting

International Monetary Fund

An international organization that establishes rules for maintaining the international monetary system and makes loans to countries with temporary balance-of-payments problems

for international trade, and to make loans to countries with temporary balance-of-payments problems. The IMF lends a revolving fund of about \$400 billion to economies in need of reserves. Headquartered in Washington, D.C., the IMF has about 190 member countries and a staff of 2,400 drawn from around the world (half the staff are economists).

18-4b The Demise of the Bretton Woods System

During the latter part of the 1960s, inflation increased in the United States more than in other countries. Because of U.S. inflation, the dollar had become overvalued at the official exchange rate, meaning that the gold value of the dollar exceeded the exchange value of the dollar. In 1971, U.S. merchandise imports exceeded merchandise exports for the first time since World War II. Foreigners exchanged dollars for gold. To stem this gold outflow, the United States stopped exchanging gold for dollars, but this just made the dollar less attractive. In December 1971, the world's 10 richest countries met in Washington and devalued the dollar by 8 percent. They hoped this would put the dollar on firmer footing and would save the "dollar standard." With prices rising at different rates around the world, however, an international monetary system based on fixed exchange rates was doomed.

When the U.S. trade deficit tripled in 1972, it became clear that the dollar was still overvalued. In early 1973, the dollar was devalued another 10 percent, but this did not quiet foreign exchange markets. The dollar, for three decades the anchor of the international monetary system, suddenly looked vulnerable, and speculators began betting that the dollar would fall even more, so they sold dollars. Dollars were exchanged for German marks because the mark appeared to be the most stable currency. Bundesbank, Germany's central bank, tried to defend the dollar's official exchange rate by selling marks and buying dollars. Why didn't Germany want the mark to appreciate? Appreciation would make German goods more expensive abroad and foreign goods cheaper in Germany, thereby reducing German exports and increasing German imports. So the mark's appreciation would reduce German output and employment. But after selling \$10 billion worth of marks to buy dollars, the Bundesbank gave up defending the dollar. As soon as the value of the dollar was allowed to float against the mark, the Bretton Woods system, already on shaky ground, collapsed.



18-4c The Current System: Managed Float

The Bretton Woods system has been replaced by a **managed float system**, which combines features of a freely floating exchange rate with sporadic intervention by central banks as a way of moderating exchange rate fluctuations among the world's major currencies. Most small countries, particularly developing countries, still peg their currencies to one of the major currencies (such as the U.S. dollar) or to a "basket" of major currencies. What's more, in developing countries, private international borrowing and lending are severely restricted; some governments allow residents to purchase foreign exchange only for certain purposes. In some countries, different exchange rates apply to different categories of transactions.

Critics of flexible exchange rates argue that they are inflationary, because they free monetary authorities to pursue expansionary policies; furthermore, flexible exchange rates have often been volatile. This volatility creates uncertainty and risk for importers and exporters, increasing the transaction costs of international trade. Furthermore, exchange rate volatility can lead to wrenching changes in the competitiveness of a country's export sector. These changes cause swings in employment, resulting in louder calls for import restrictions. For example, the

exchange rate between the Japanese yen and the U.S. dollar has been relatively unstable, particularly because of international speculation.

Policy makers are always on the lookout for a system that will perform better than the current managed float system, with its fluctuating currency values. *Their ideal is a system that will foster international trade, lower inflation, and promote a more stable world economy.* International finance ministers have acknowledged that the world must find an international standard and establish greater exchange rate stability.

"An ideal exchange rate system is one that would foster international trade, lower inflation, and promote a more stable world economy."

18-5 Final Word

The United States is very much a part of the world economy, not only as one of the largest exporter nations

but also as the largest importer nation. Although the dollar remains the unit of transaction in many international settlements—OPEC, for example, still prices crude oil in dollars— gyrations of exchange rates have made those involved in international finance wary of putting all their eggs in one basket. The international monetary system is now going through a difficult period as it gropes for a new source of stability four decades after the collapse of the Bretton Woods agreement.

managed float system

An exchange rate system that combines features of freely floating rates with sporadic intervention by central banks

\$315 billion < U.S. merchandise trade deficit with China in 2012

U.S. merchandise trade deficit with the rest of the world except China in 2012 >

\$426.5 billion

\$1,100 < Amount the average U.S. household sent to friends and relatives abroad in 2012

Number of nations in the European Union that used the euro as their common currency in 2013 >

17

\$22.7 trillion < Value of U.S. assets owned by foreigners in 2012

\$21.6 trillion < Value of foreign assets owned by U.S. residents in 2012



one component of the total production cost and may not necessarily be the most important. Employers are interested in the labor cost per unit of output, which depends on both the wage and labor productivity. Wages are high in the United States partly because U.S. labor productivity remains the highest in the world. High productivity can be traced to better education and training and to the abundant computers, machines, and other physical capital that make workers more productive. U.S. workers also benefit greatly from better management and a relatively stable business climate.

But what about the lower wages in many developing countries? Low wages are often linked to workers' lack of education and training, to the meager physical capital available to each worker, and to a business climate that is less stable and hence less attractive for producers. For example, the total value of manufacturing output is about the same in the United States as in China, but Americans produce that output with only about 10 percent of the manufacturing workforce that's employed in China.⁵ What's more, advances in technology are making differences in labor costs across

5. "Manufacturing and Innovation: Back to Making Stuff," *The Economist*, 21 April 2012.

countries less relevant. One example is, as noted earlier, that in the original iPad, manufacturing labor accounted for only \$33 of its \$499 retail price, and the final assembly in China accounted for just \$8 of that \$33.⁶

Once multinational firms build plants and provide technological know-how in developing countries, U.S. workers lose some of their competitive edge, and their relatively high wages could price some U.S. products out of the world market. This has already happened in the consumer electronics and toy industries. China makes 80 percent of the toys sold in the United States. Some U.S. toy sellers, such as the makers of Etch A Sketch, would no longer exist had they not outsourced manufacturing to China.

Domestic producers do not like to compete with foreign producers whose costs are lower, so they often push for trade restrictions. But if restrictions negate any cost advantage a foreign producer might have, the law of comparative advantage becomes inoperative and domestic consumers are denied access to the lower-priced goods.

Over time, as labor productivity in developing countries increases, wage differentials among countries will narrow, much as they narrowed between the northern and southern United States during the last century. As technology and capital spread, U.S. workers, particularly unskilled workers, cannot expect to maintain wage levels that are far above comparable workers in other countries. So far, research and development has kept U.S. producers on the cutting edge of technological developments, but staying ahead in the technological race is a constant battle. As a sign of the times about how competition could squeeze down the wage gap across countries, the Volkswagen factory in Tennessee pays workers only about half of what GM pays in Michigan, yet many thousands of job seekers in 2011 applied for the 2,000 openings there.

17-4e Declining Industries Argument

Where an established domestic industry is in jeopardy of closing because of lower-priced imports, could there be a rationale for temporary import restrictions? After all, domestic producers employ many industry-specific resources—both specialized labor and specialized machines. This human and physical capital is worth less in its best alternative use. If the extinction of the domestic industry

6. "The Third Industrial Revolution," *The Economist*, 21 April 2012.

AP IMAGES/MARTY LEDERHANDLER



This kiosk is the gateway to New York City's garment district, which continues to be severely affected by low-price competition from overseas markets.

Despite the clear gains from free trade, restrictions on international trade date back centuries, and pressure on public officials to impose trade restrictions continues today. Domestic producers (and their resource suppliers) benefit from trade restrictions in their markets because they can charge domestic consumers more. Trade restrictions insulate domestic producers from the rigors of global competition, in the process stifling innovation and leaving industries vulnerable to technological change from abroad. With trade quotas, the winners also include those who have secured the right to import goods at the world prices and sell them at the domestic prices. Consumers, who must pay higher prices for protected goods, suffer from trade restrictions, as do the domestic producers who import resources. Other losers include U.S. exporters, who face higher trade barriers as their foreign counterparts retaliate with their own trade restrictions.

Producers have a laser-like focus on trade legislation, but consumers remain largely oblivious. Consumers purchase thousands of different goods and thus have no special interest in the effects of trade policy on any particular good. Congress tends to support the group that makes the most noise, so trade restrictions often persist, despite the clear and widespread gains from freer trade.

\$18 trillion

< Dollar value of world trade in 2012

17%

< Share of the agricultural industry's political contributions from sugar growers alone, who account for only 1 percent of U.S. farm sales

14%

< Share of U.S. GDP exported in 2012

17%

< U.S. imports in 2012 relative to GDP

4%

< Tariffs as a percentage of the value of imports as a result of the Uruguay Round, down from 40 percent when GATT began in 1947