GLOBAL EDITION

# ECONOMICS

8th Edition

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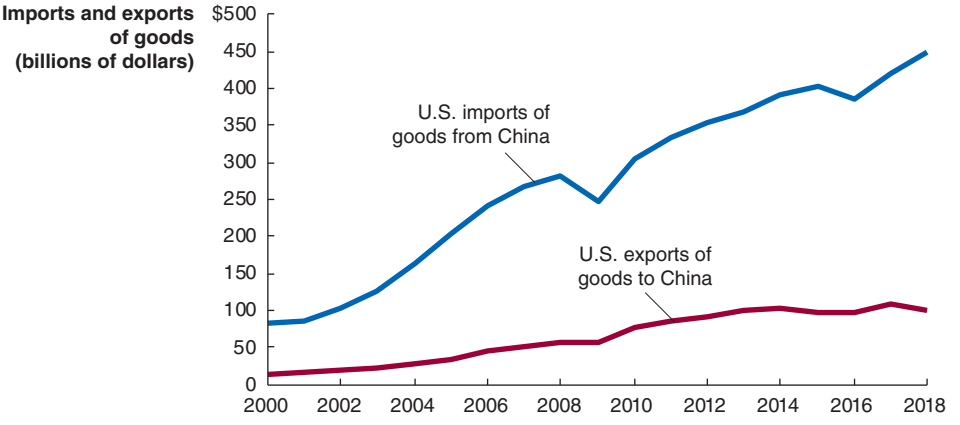
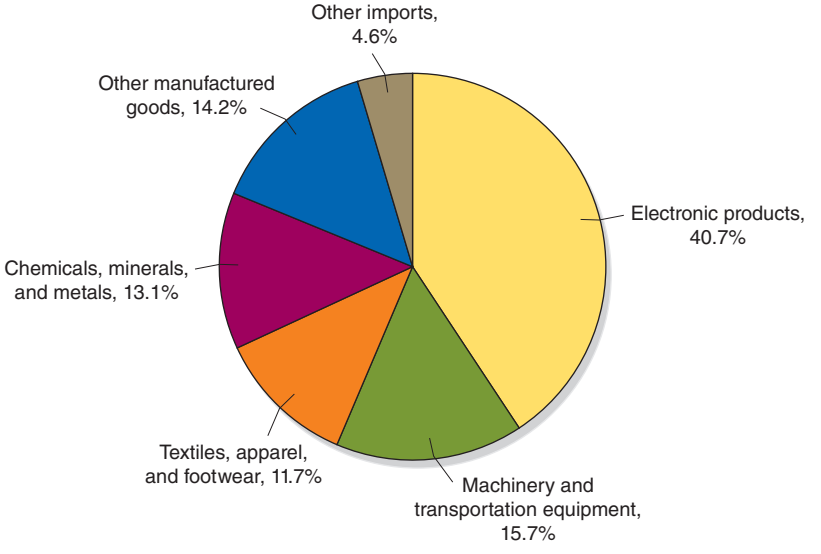
# Economics

China was a centrally planned economy that rejected free markets and had very little trade with the United States. Beginning in the 1970s, when Deng Xiaoping succeeded Mao as leader of China, the government adopted market-based reforms of the economy and began exporting significant quantities of goods to the United States and other countries. This trend accelerated after China became a member of the World Trade Organization (WTO) in 2001, which gave it greater access to world markets.

The following figure shows the growth since 2000 in U.S. imports from China and U.S. exports to China. While U.S. exports of goods to China were more than seven times higher in 2018 than in 2000, the dollar increase in U.S. imports of goods from China was much larger. As a result, the gap between U.S. imports of goods from China and exports to China (the U.S. trade deficit with China) swelled from less than $70 billion in 2000 to nearly $350 billion in 2018. Some economists and policymakers have labeled the surge in Chinese imports beginning in 2001 the *China shock*.




The following figure shows the distribution of U.S. imports of goods from China by broad product categories. Many of the products the United States currently imports from China were at one time manufactured in the United States. Chinese firms were able to win a large share of these markets typically by offering goods at lower prices than U.S. firms (or firms in other foreign countries that were also competing in the U.S. market). These lower prices have benefited U.S. consumers. Lower-income consumers in particular have benefitted from the low prices of textile products, such as clothing, sheets, and towels. Smartphones and other consumer electronics products would have much higher prices if they were assembled in the United States rather than in China and other foreign countries. (Although, as we saw in the *Apply the Concept* in Chapter 2, U.S. firms have been able to produce some components of iPads and other consumer electronics.)



Because consumers pay lower prices for goods imported from China, they have more of their income available to spend on other goods and services produced in the United States. A family that buys low-price Chinese-made clothes at Walmart can more easily afford to dine out at the local Red Lobster restaurant or to buy fresh fruits and vegetables grown at local farms. In this sense, the losses suffered by U.S. firms (and their workers) that have been forced out of business by Chinese competitors have resulted in gains to other U.S. firms (and their workers).

But David Autor of the Massachusetts Institute of Technology and other economists studying the effects of the China shock on the U.S. economy point out that the firms most hurt by Chinese imports have been concentrated in certain states, particularly in the Midwest and Southeast. As noted in the chapter opener, some cities in these areas have been devastated as local manufacturing plants have closed and workers have had difficulty finding other jobs. As the following figure shows, the fraction of U.S. workers employed in manufacturing began declining long before the China shock began. In 1946, after the end of World War II, 32 percent of U.S. workers were employed in manufacturing. At the start of the surge in imports from China in 2001, only about 12 percent were engaged in manufacturing. (Manufacturing employment was about 9 percent of total employment in 2018.)


Autor, David Dorn of the University of Zurich, and Gordon Hanson of the University of California, San Diego estimate that between 1999 and 2011, the China shock resulted in the loss of 2.4 million jobs and may have accounted for 25 percent of the decline in manufacturing jobs during those years. Although *total* employment in the United States increased by 2.7 million over the same period, the job losses due to the China shock happened relatively quickly and were heavily concentrated in manufacturing industries. The fraction of the population employed declined in areas most exposed to Chinese imports and recovered only slowly, which indicates that workers who lost their jobs struggled to find new ones.

In 2019, a key component of the Trump administration's trade policy addressed what the president called China's "theft of intellectual property" from U.S. firms. According to an article in the *Wall Street Journal*, "Foreign companies report they are routinely compelled to transfer technology to Chinese companies to do business there, in violation of Beijing's commitments" under the WTO. Robert Lighthizer, the Trump administration's trade representative, has suggested that the United States join with Canada, Japan, South Korea, Australia, and the members of the European Union to insist that China obey WTO rules that forbid forcing foreign companies to share technology with domestic companies. If China declined to stop this practice, either it would be forced out of the WTO or other countries would leave the WTO and form a new trade group.

Many economists share President Trump's view that forced technology transfer from U.S. firms to Chinese firms is a violation of the WTO, but they generally are skeptical that it is good economic policy to increase tariffs and renegotiate trade agreements with countries other than China in order to protect U.S. firms and workers. Some policymakers and economists argue that protecting U.S. firms raises the prices U.S. consumers pay

and the costs to U.S. firms that buy inputs from foreign firms—a problem that we saw Whirlpool encountering in the chapter opener.

The WTO was founded in 1994 as an organization to promote trade among market economies. Although China has opened up its economy to trade and become more market oriented, the Chinese Communist party maintains a political dictatorship and requires Chinese firms to abide by its policies—including forced technology transfers. In 2019, it was unclear how the world trading system would cope with China's reluctance to follow WTO rules and with the Trump administration's aggressive use of tariffs.

**Your Turn:** Test your understanding by doing related problems 3.12 and 3.13 at the end of this chapter.

## Where Does Comparative Advantage Come From?

Among the main sources of comparative advantage are the following:

- **Climate and natural resources.** This source of comparative advantage is the most obvious. Because of geology, Saudi Arabia, Russia, and the United States have a comparative advantage in the production of oil. Because of climate and soil conditions, Costa Rica has a comparative advantage in the production of bananas, Ghana has a comparative advantage in the production of cocoa beans, and the United States has a comparative advantage in the production of wheat.
- **Relative abundance of labor and capital.** Some countries, such as the United States, have many highly skilled workers and a great deal of machinery. Other countries, such as China, have many unskilled workers and smaller amounts of machinery. As a result, the United States has a comparative advantage in the production of goods that require highly skilled workers or highly sophisticated machinery, such as aircraft and computer software. China has a comparative advantage in the production of goods, such as furniture, clothing, and children's toys, that require unskilled workers and less sophisticated machinery. In fact, many economists believe that the surge in Chinese imports to the United States and other countries following China's admittance to the World Trade Organization (WTO) was fueled by the low cost of producing manufactured goods using low-wage, unskilled workers. These workers had become available to manufacturing firms after economic reforms allowed large numbers of workers to leave unproductive collective farms and state-owned companies for higher-paid factory work.
- **Technology.** Broadly defined, *technology* is the processes firms use to turn inputs into goods and services. At any given time, firms in different countries do not all have access to the same technologies. In part, this difference is a result of past investments countries have made in higher education or in supporting research and development. Some countries are strong in *product technologies,* which involve the ability to develop new products. For example, firms in the United States have pioneered the development of products such as radios, televisions, digital computers, airliners, medical equipment, and many prescription drugs. Other countries are strong in *process technologies,* which involve the ability to improve the processes used to make existing products. For example, Japanese-based firms, such as Toyota and Honda, have succeeded by greatly improving the processes involved in designing and manufacturing automobiles.
- **External economies.** It is difficult to explain the location of some industries on the basis of climate, natural resources, the relative abundance of labor and capital, or technology. For example, why does southern California have a comparative advantage in making movies or Switzerland in making watches or New York in providing financial services? The answer is that once an industry becomes established in an area, firms located in that area gain advantages over firms located elsewhere. The advantages include the availability of skilled workers, the opportunity to interact with other firms in the same industry, and proximity to suppliers. These advantages result in lower costs to firms located in the area. Because these lower costs result from increases in the size of the industry in an area, economists refer to them as **external economies**.

**External economies** Reductions in a firm's costs that result from an increase in the size of an industry.

## 9.4 Government Policies That Restrict International Trade

LEARNING OBJECTIVE: Analyze the economic effects of government policies that restrict international trade.

**Free trade** Trade between countries that is without government restrictions.

**Free trade**, or trade between countries without government restrictions, makes consumers better off. We can expand on this idea using the concepts of consumer surplus and producer surplus (see Chapter 4, Section 4.1). Figure 9.4 shows the market in the United States for the biofuel ethanol, which can be used as a substitute for gasoline. The figure shows the situation of autarky, where the United States does not trade with other countries. The equilibrium price of ethanol is $2.00 per gallon, and the equilibrium quantity is 6.0 billion gallons per year. The blue area represents consumer surplus, and the red area represents producer surplus.

Now suppose that the United States begins importing ethanol from Brazil and other countries that produce ethanol for $1.00 per gallon. Because the world market for ethanol is large, we will assume that the United States can buy as much ethanol as it wants without causing the *world price* of $1.00 per gallon to rise. Therefore, once imports of ethanol are allowed into the United States, U.S. firms will not be able to sell ethanol at prices higher than the world price of $1.00, and the U.S. price will become equal to the world price.

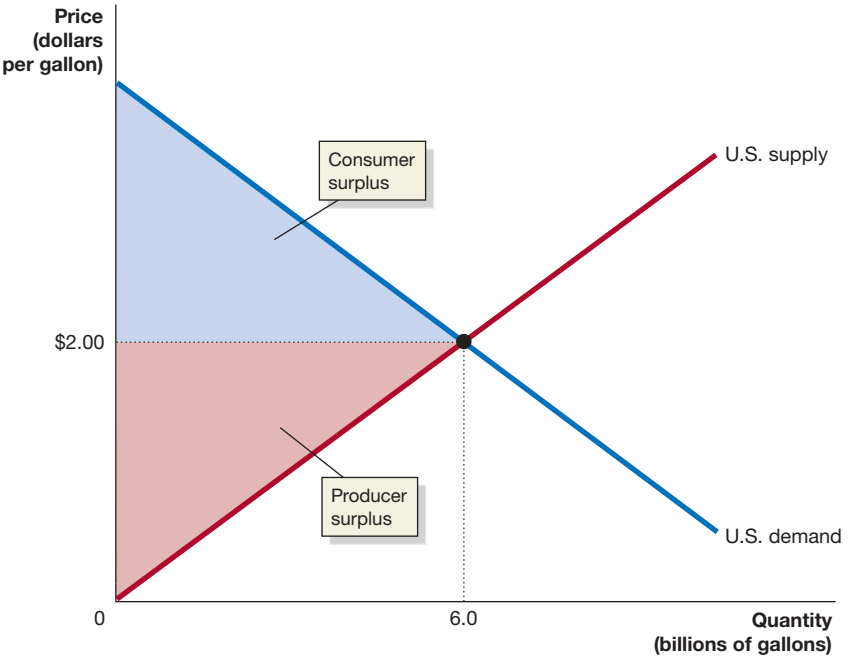
Figure 9.5 shows the result of allowing imports of ethanol into the United States. With the price lowered from $2.00 to $1.00, U.S. consumers increase their purchases from 6.0 billion gallons to 9.0 billion gallons. Equilibrium moves from point *F* to point *G*. In the new equilibrium, U.S. producers have reduced the quantity of ethanol they supply from 6.0 billion gallons to 3.0 billion gallons. Imports will equal 6.0 billion gallons, which is the difference between U.S. consumption and U.S. production.

Under autarky, consumer surplus would be area *A* in Figure 9.5. With imports, the reduction in price increases consumer surplus, so it is now equal to the sum of areas *A*, *B*, *C*, and *D*. Although the lower price increases consumer surplus, it reduces producer surplus. Under autarky, producer surplus was equal to the sum of areas *B* and *E*. With imports, it is equal to only area *E*. Recall that economic surplus equals the sum of consumer surplus and producer surplus. Moving from autarky to allowing imports increases economic surplus in the United States by an amount equal to the sum of areas *C* and *D*.

Figure 9.4

**The U.S. Market for Ethanol under Autarky**

This figure shows the market for ethanol in the United States, assuming autarky, where the United States does not trade with other countries. The equilibrium price of ethanol is $2.00 per gallon, and the equilibrium quantity is 6.0 billion gallons per year. The blue area represents consumer surplus, and the red area represents producer surplus.



| | Under Autarky | With Imports |
|---|---|---|
| Consumer Surplus | *A* | *A* + *B* + *C* + *D* |
| Producer Surplus | *B* + *E* | *E* |
| Economic Surplus | *A* + *B* + *E* | *A* + *B* + *C* + *D* + *E* |

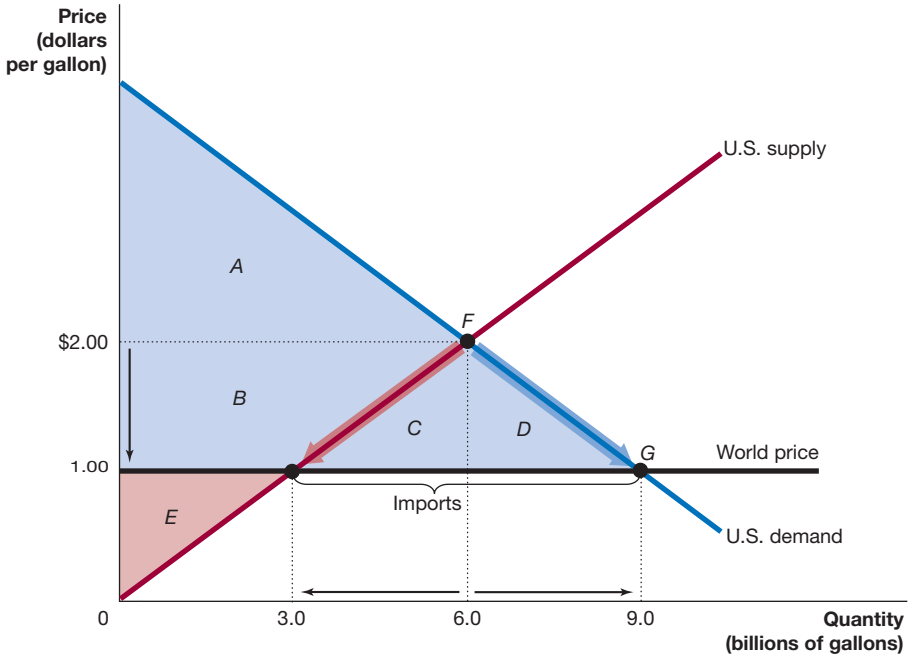



Figure 9.5

**The Effect of Imports on the U.S. Ethanol Market**

When imports are allowed into the United States, the price of ethanol falls from $2.00 to $1.00. U.S. consumers increase their purchases from 6.0 billion gallons to 9.0 billion gallons. Equilibrium moves from point *F* to point *G*. U.S. producers reduce the quantity of ethanol they supply from 6.0 billion gallons to 3.0 billion gallons. Imports equal 6.0 billion gallons, which is the difference between U.S. consumption and U.S. production. Consumer surplus equals the sum of areas *A*, *B*, *C*, and *D*. Producer surplus equals the area *E*.

We can conclude that international trade helps consumers but hurts firms that are less efficient than foreign competitors. As a result, these firms and their workers are often strong supporters of government policies that restrict trade. These policies usually take one of two forms: (1) *tariffs* or (2) *quotas* and *voluntary export restraints*.

## Tariffs

The most common interferences with trade are *tariffs*, which are taxes imposed by a government on goods imported into the country. Like any other tax, a tariff increases the cost of selling a good. Figure 9.6 shows the effect of a tariff of $0.50 per gallon on ethanol imports into the United States. The $0.50 tariff raises the price of ethanol in the United States from the world price of $1.00 per gallon to $1.50 per gallon. At this higher price, U.S. ethanol producers increase the quantity they supply from 3.0 billion gallons to 4.5 billion gallons. U.S. consumers, though, cut back their purchases of ethanol from 9.0 billion gallons to 7.5 billion gallons. Imports decline from 6.0 billion gallons (9.0 billion − 3.0 billion) to 3.0 billion gallons (7.5 billion − 4.5 billion). Equilibrium moves from point *G* to point *H*.

By raising the price of ethanol from $1.00 to $1.50, the tariff reduces consumer surplus by the sum of areas *A*, *T*, *C*, and *D*. Area *A* is the increase in producer surplus from the higher price. The government collects tariff revenue equal to the tariff of $0.50 per gallon multiplied by the 3.0 billion gallons imported. Area *T* represents the government's tariff revenue. Areas *C* and *D* represent losses to U.S. consumers that are not captured by anyone. These areas are deadweight loss and represent the decline in economic efficiency resulting from the ethanol tariff. Area *C* shows the effect of U.S. consumers being forced to buy from U.S. producers that are less efficient, and therefore manufacturing ethanol at a higher cost, than foreign producers. Area *D* shows the effect of U.S. consumers buying less ethanol than they would have bought at the world price. As a result of the tariff, economic surplus has been reduced by the sum of areas *C* and *D*.

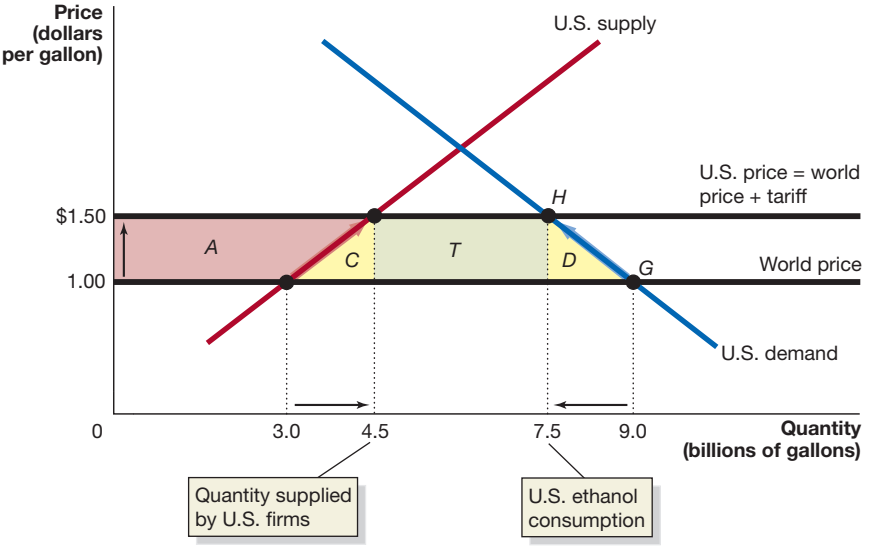
We can conclude that the tariff succeeds in helping U.S. ethanol producers but hurts U.S. consumers and the efficiency of the U.S. economy.

Figure 9.6

**The Effects of a Tariff on Ethanol**

Without a tariff, U.S. producers will sell 3.0 billion gallons of ethanol, U.S. consumers will purchase 9.0 billion gallons, and imports will be 6.0 billion gallons. The U.S. price will equal the world price of $1.00 per gallon. The $0.50-per-gallon tariff raises the price of ethanol in the United States to $1.50 per gallon, and U.S. producers increase the quantity they supply to 4.5 billion gallons. U.S. consumers reduce their purchases to 7.5 billion gallons. Equilibrium moves from point *G* to point *H*. The ethanol tariff causes a loss of consumer surplus equal to the area $A + C + T + D$. The area *A* is the increase in producer surplus due to the higher price. The area *T* is the government's tariff revenue. The areas *C* and *D* represent deadweight loss.

| Loss of Consumer Surplus | = | Increase in Producer Surplus | + | Government Tariff Revenue | + | Deadweight Loss |
|---|---|---|---|---|---|---|
| $A + C + T + D$ | | $A$ | | $T$ | | $C + D$ |




**Quota** A numerical limit that a government imposes on the quantity of a good that can be imported into the country.

**Voluntary export restraint (VER)** A restriction on the quantity of a good that can be imported by one country from another country.

## Quotas and Voluntary Export Restraints

A **quota** is a numerical limit on the quantity of a good that can be imported, and it has an effect similar to that of a tariff. A quota is imposed by the government of the importing country. A **voluntary export restraint (VER)** (and the similar voluntary restraint agreement (VRA) is a restriction negotiated between two countries that places a numerical limit on the quantity of a good that can be imported by one country from the other country. In the 1980s, the United States and Japan negotiated a VER that limited the quantity of automobiles the United States would import from Japan. The Japanese government agreed to the VER primarily because it was afraid that if it did not, the United States would impose a tariff or quota on imports of Japanese automobiles. The United States negotiated similar agreements with European countries covering imports of steel and with European and Asian countries covering imports of textiles. In the 1980s, about 30 percent of all U.S. imports were covered by these agreements. Quotas and VERs have similar economic effects.

The main purpose of most tariffs and quotas is to reduce the foreign competition that domestic firms face. For many years, Congress has imposed a quota on sugar imports to protect U.S. sugar producers. Figure 9.7 shows the actual statistics for the U.S. sugar market in 2018. The effect of a quota is very similar to the effect of a tariff. By limiting imports, a quota forces the domestic price of a good above the world price. In this case, the sugar quota limits sugar imports to 6.4 billion pounds per year (shown by the bracket in Figure 9.7), forcing the U.S. price of sugar up to $0.25 per pound, or $0.13 higher than the world price of $0.12 per pound. The U.S. price is above the world price because the quota keeps foreign sugar producers from selling the additional sugar in the United States that would drive the U.S. price down to the world price. At a price of $0.25 per pound, U.S. producers increase the quantity of sugar they supply from the 7.3 billion pounds they would supply at the world price to 18.2 billion pounds, and U.S. consumers cut back their purchases of sugar from the 27.4 billion pounds they would purchase at the world price to the 24.6 billion pounds they are willing to purchase at the higher U.S. price. If there were no import quota, equilibrium would be at the world price (point *E*), but with the quota, equilibrium is at the U.S. price (point *F*).

## Measuring the Economic Effect of the Sugar Quota

We can use the concepts of consumer surplus, producer surplus, and deadweight loss to measure the economic impact of the sugar quota. Without a sugar quota, the world price of $0.12 per pound would also be the U.S. price. In Figure 9.7, without a sugar quota,