

The Theory of Tariffs and Quotas

Learning Objectives

After studying this chapter, students will be able to:

- 6.1 Use supply and demand analysis to explain and illustrate the effects of tariffs on prices, output, imports, exports, and consumer and producer surplus.**
- 6.2 Use tariff data on inputs and outputs to compare effective and nominal rates of protection.**
- 6.3 Compare and contrast quotas and tariffs.**
- 6.4 Explain how some forms of protection are difficult to observe.**

INTRODUCTION: TARIFFS AND QUOTAS

LO 6.1 Use supply and demand analysis to explain and illustrate the effects of tariffs on prices, output, imports, exports, and consumer and producer surplus.

Chapters 6 and 7 are an introduction to the theory and policy of tariffs and quotas. In the economics literature, this analysis is called commercial policy. Chapter 6 is an introduction to tariff theory, and Chapter 7 focuses on an empirical estimate of the direct costs of protectionism and the arguments used by proponents of restricted trade. The inefficiency and expense of tariffs and quotas as a means to protect industries and jobs will be apparent after measuring their direct costs.

Analysis of a Tariff

Barriers to trade come in all shapes and sizes. Some are obvious or **transparent**, whereas others are hidden or **nontransparent**. Quotas directly limit the quantity of imports, while tariffs indirectly limit imports by taxing them. Tariffs and quotas cause consumers to switch to relatively cheaper domestic goods or to drop out of the market altogether. They also encourage domestic producers to increase their output because demand switches from foreign to domestic goods.

In the analysis that follows, we will look only at the effects of tariffs and quotas on the industry in which they are imposed. For example, the economy-wide effect of a tariff in, say, the steel industry will not be analyzed. In the language of economics, the analysis in Chapter 6 is known as *partial equilibrium analysis* because it considers the effects of tariffs and quotas on only a part of the economy—the market in which

the trade barrier is erected. Before we turn to tariff analysis, however, we must introduce two important concepts: consumer and producer surplus.

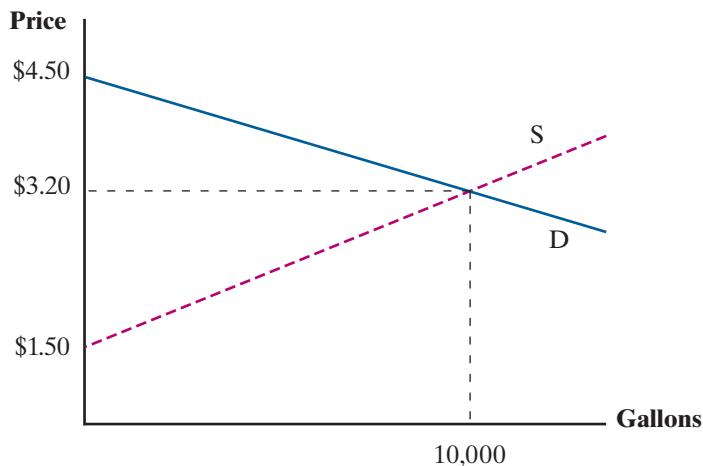
Consumer and Producer Surplus

What is the maximum price you would be willing to pay for a gallon of milk? The answer is likely to be different for each consumer, depending on income, how much he or she likes milk, whether he or she has kids who need it, whether he or she can tolerate lactose or not, and a number of other factors, many of which are subjective. The subjective value that consumers place on milk is contained in the market demand curve for milk, which describes the total quantity of a good that consumers are willing and able to buy at each and every price. As the market price falls, a greater quantity is purchased because more consumers will feel that the lower price is equal to or below the value they place on the milk.

Suppose, for example, that you are willing to pay \$3.50 for a gallon of milk, but the price is only \$3.20. In essence, each gallon of milk provides \$0.30 of value that is “free” in the sense that it is over and above what you must pay. This excess value, called **consumer surplus**, is the value received by consumers that is in excess of the price they pay. It occurs because everyone values each good differently, yet for most goods there is only one price. Consumer surplus can be measured if the demand curve is known. Since the demand curve is a summary of the value that each consumer places on a particular good, the area between the demand curve and the price line is a measurement of consumer surplus.

Figure 6.1 shows hypothetical market demand and supply curves for milk. At the market equilibrium price of \$3.20 per gallon, 10,000 gallons will be supplied and demanded. Many people value milk at a higher price, however, and the value

FIGURE 6.1 Consumer and Producer Surplus



Consumer surplus is the area below the demand curve and above the price line. Producer surplus is the area above the supply curve and below the price line.

they receive in consuming milk is greater than \$3.20. In Figure 6.1, consumer surplus is the area below the demand curve and above the price line of \$3.20. The size or value of consumer surplus is the area of the triangle given by the formula $(\frac{1}{2}) \times (\text{height}) \times (\text{width})$, or $(\frac{1}{2}) \times (\$1.30) \times (10,000)$, which is equal to \$6,500. This equals the difference between the subjective value of the milk consumed and the total amount that consumers spent for it.

Consumer surplus is a real savings to consumers. If firms had a way to determine the maximum price that each consumer was willing to pay, then theoretically they could charge every individual a different price and thus reduce consumer surplus to zero. Luckily for those of us not in the milk business, firms usually cannot get this information without going through a long and costly interview procedure. As a result, it is usually impractical (and, in some cases, illegal) for firms to charge different customers different prices. Nevertheless, some firms such as car dealers manage to charge different prices for the same goods. The easiest strategy for most firms is simply to charge everyone the same price, so consumer surplus is a real savings for most consumers in most markets.

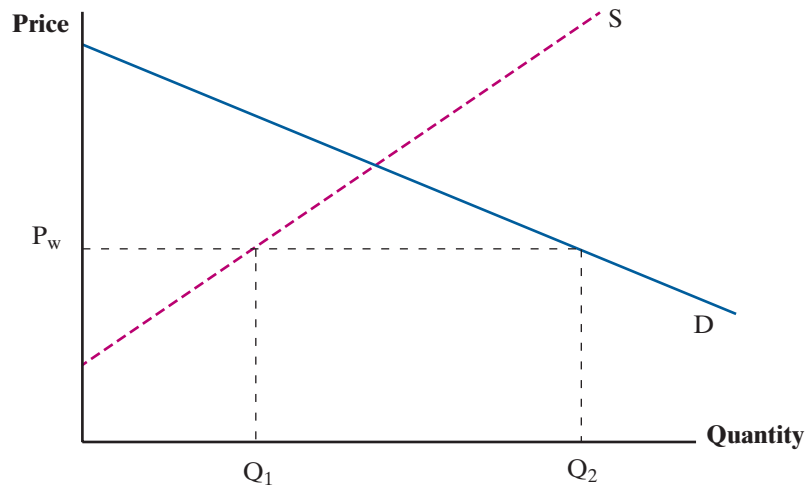
On the production side, the analogous concept is called **producer surplus**. In our hypothetical milk example, if you owned a dairy farm and were willing and able to produce milk at \$3.00 per gallon, you would receive producer surplus of \$0.20 per gallon if you sold milk at \$3.20. Recall that the supply curve for a market is the sum of supply curves for the firms in the market and that it reflects the minimum price firms will accept to produce a given amount. In Figure 6.1, some firms are willing to produce at \$2.00 per gallon, and at every price above \$1.50 at least some firms will have output to sell. Every firm that is willing to sell for less than the equilibrium price of \$3.20 earns revenue that is above the minimum it needs. This excess or surplus revenue is a firm's producer surplus.

As in the case of consumer surplus, we can measure producer surplus. Measurement in this case depends on knowing the parameters of the supply curve (where it crosses the price axis and its slope) because producer surplus is the area above the supply curve and below the price line. In our example, it is equal in value to the triangle given by the formula $(\frac{1}{2}) \times (\$1.70) \times (10,000)$, which equals \$8,500. This is the revenue received by producers that is in excess of the minimum amount of revenue that would be required to get them to produce 10,000 gallons of milk.

Prices, Output, and Consumption

We will use the concepts of producer and consumer surplus when we discuss the income distribution effects of tariffs and quotas. Before we analyze those effects, however, we must begin with a description of the effects of tariffs on prices, domestic output, and domestic consumption.

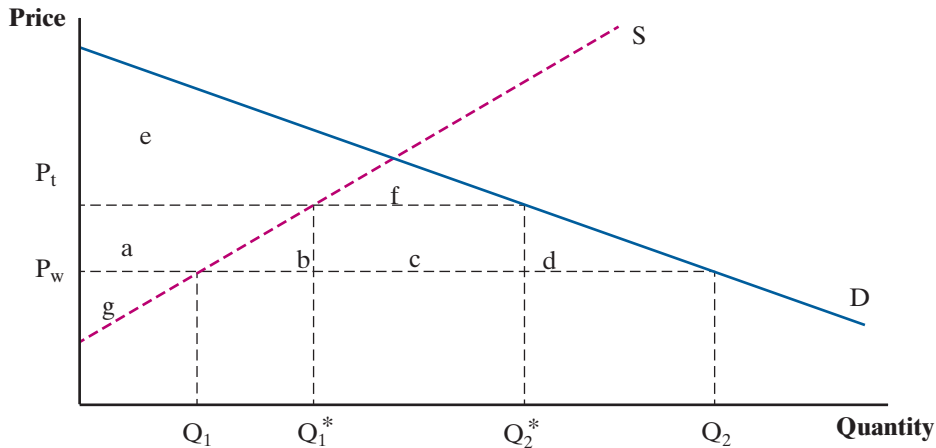
Figure 6.2 shows the domestic or national supply and demand for an imported good. We are assuming that there is one price for the good, which we will call the world price, or P_w , and that foreign producers are willing to supply us with all of

FIGURE 6.2 Domestic Supply and Demand for an Imported Good

The difference between domestic demand and domestic supply, $Q_2 - Q_1$, is the quantity of imports at price P_w .

the units of the good that we want at that price. This is equivalent to assuming that foreign supply is perfectly elastic or that the United States does not consume a large enough quantity to affect the price. We will drop this assumption when we discuss the case of a large country. Note that the world price is below the domestic equilibrium price. This means that domestic producers are not able to satisfy all domestic demand at the market price of P_w and that consumers depend on foreign producers for some of their consumption. Specifically, at price P_w , consumers demand Q_2 , but domestic producers supply only Q_1 . The difference, $Q_2 - Q_1$, or line segment Q_1Q_2 , is made up by imports.

Now suppose that the government imposes a tariff of amount “ t .” Importers will still be able to buy the good from foreign producers for amount P_w , but they will have to pay the import tax of “ t ,” which they tack onto the price to domestic consumers. In other words, the price to consumers rises to $P_w + t = P_t$, as shown in Figure 6.3. The price increase in the domestic market has effects on domestic consumption, domestic production, and imports. First, the price increase squeezes some people out of the market, and domestic consumption falls from Q_2 to Q_2^* . Next, on the production side, the higher price encourages domestic production to increase from Q_1 to Q_1^* . The increase in domestic production occurs because domestic firms are able to charge a slightly higher price ($P_w + t$) to cover their increasing costs while remaining competitive with foreign firms. Finally, imports decrease from Q_1Q_2 to $Q_1^*Q_2^*$. To summarize, tariffs cause the domestic price to rise by the amount of the tariff, domestic consumption falls, domestic production rises, and imports fall.

FIGURE 6.3 The Effects of a Tariff

Tariffs cause an increase in domestic prices and domestic production and a fall in domestic consumption. They increase producer surplus and government revenue but decrease consumer surplus.

Resource Allocation and Income Distribution

Tariffs have more subtle effects than just a rise in prices and a fall in imports. The increase in domestic production requires additional resources of land, labor, and capital to be reallocated from their prior uses into the industry receiving protection under the tariff. Also, when the price changes, consumer and producer surplus do too.

First, let's consider the effect on consumer surplus. Figure 6.3 shows both the pre- and post-tariff price and output levels. Remember that consumer surplus is the entire area above the price line and below the demand curve. When consumers pay price P_w , it is areas $a + b + c + d + e + f$. After the tariff is imposed and the price rises to P_t , consumer surplus shrinks to $e + f$. The difference, area $a + b + c + d$, represents a loss to consumers.

Unlike consumer surplus, producer surplus grows. Pre-tariff producer surplus is area g , and post-tariff is $g + a$. The difference, area a , is the additional revenue that is above the minimum necessary to encourage domestic firms to increase their output from Q_1 to Q_1^* . On net, producers are better off, and consumers are worse off, but what about the nation as a whole?

If we consider the whole loss to consumers, areas $a + b + c + d$, we see that it can be subdivided into several different areas. Part of the loss, area a , is a transfer from consumer surplus to producer surplus. Although the loss makes consumers worse off, it makes producers better off by the same amount. Therefore, the nation as a whole is neither better nor worse off

unless it can be established that giving the resources to producers somehow benefits or harms national welfare. This part of the lost consumer surplus is an income distribution effect of the tariff, since it rearranges national income by transferring resources from one group (consumers) to another group (producers).

Another income distribution effect of the tariff is represented by area c. Note that the height of this area is equal to the tariff, and the width is the amount of imports after the tariff is imposed. Therefore, this part of lost consumer surplus is equal to $(\text{tariff}) \times (\text{imports})$, which is the amount of revenue collected by the government when it enacts the tariff. In this case, the income distribution effect is a transfer from consumers to the government. Again, it is assumed that there is no net effect on national welfare since the loss by consumers is exactly matched by the gain of government. As long as this transfer does not change national welfare, there is no net effect.

The two remaining areas of lost consumer surplus are b and d. Both represent net national losses, and both involve a misallocation of resources. Consider area d first. Along the demand curve between Q_2^* and Q_2 , there are consumers that value the good above the cost of purchasing it at the world price. As a result of the tariff, however, they have been squeezed out of the market and are not willing or able to pay price P_t . The fact that consumers value the good above the cost of obtaining it in the world market but cannot purchase it is a net loss to the nation. Economists refer to the destruction of value that is not compensated by a gain somewhere else as a **deadweight loss**. Area d is this type of loss.

The final area to consider is b. Along the domestic supply curve between Q_1 and Q_1^* , output is increased at existing plants. Given that the supply curve slopes upward, firms can only increase their output if the price is allowed to rise. In other words, in order to obtain the additional output, domestic producers must be able to charge a higher price that will cover their rising costs for each additional unit. At the pre-tariff price of P_w , the total cost of imports $Q_1Q_1^*$ would have been the price times the quantity, or $(P_w) \times (Q_1Q_1^*)$. The cost of producing the same goods at home is equal to the cost of the imports plus area b. In other words, the triangle b is the additional cost to the nation when it tries to make the extra output $Q_1Q_1^*$ at home instead of buying it in the world market at price P_w . Area b is a resource misallocation and a net loss to the nation because the same goods ($Q_1Q_1^*$) could have been acquired without giving up this amount. Area b is another deadweight loss, sometimes referred to as an **efficiency loss** because it occurs on the production side.

We can summarize the net effect of the tariff on the nation's welfare by subtracting the gains of producers and government from the losses of consumers: $(a + b + c + d - a - c) = b + d$. The two triangular areas are losses for which there are no compensating gains; therefore, they represent real losses to the nation as a whole. Table 6.1 summarizes the effects of tariffs that we have noted.

TABLE 6.1 Economic Effects of the Tariff in Figure 6.3

Variable	Free Trade	Post-Tariff
Price to consumers	P_w	P_t
Domestic consumption	Q_2	Q_2^*
Domestic production	Q_1	Q_1^*
Imports	Q_1Q_2	$Q_1^*Q_2^*$
Consumer surplus	$a + b + c + d + e + f$	$e + f$
Producer surplus	g	$g + a$
Government revenue	0	c
Deadweight consumption loss	0	d
Deadweight production (efficiency) loss	0	B

Tariffs reallocate income from consumers to producers and government. They also create deadweight losses, one on the consumption side and one on the production side.

CASE STUDY

A Comparison of Tariff Rates

The Doha Development Agenda of the World Trade Organization (WTO) is focused on the trade problems of developing countries. One impetus for the start of the Doha negotiations, and a factor behind the emphasis on economic development issues, is the complaint by many developing countries that they did not derive sufficient benefits from the Uruguay Round of trade negotiations that concluded in 1993. At issue for many developing countries are the levels of tariffs and other industrial country barriers that block access to agriculture, clothing, and textile markets. These product lines tend to be areas where developing countries have comparative advantage, particularly in cases where climate is a factor or where production uses abundant labor but requires little capital.

For their part, many industrial countries, the World Bank, and the WTO have argued that a major part of the problem faced by developing countries is the relatively high level of protection among developing countries themselves. High tariffs limit these countries' ability to sell into each other's markets—and consequently their ability to follow their comparative advantage.

Figure 6.4 shows trends and levels of tariff rates in three groups of countries that are arranged according to their income levels. In 2010 U.S. dollars, low-income countries have per capita income levels below \$1,005, middle income ranges from \$1,005 to \$12,275, and high income is anything above the middle group.

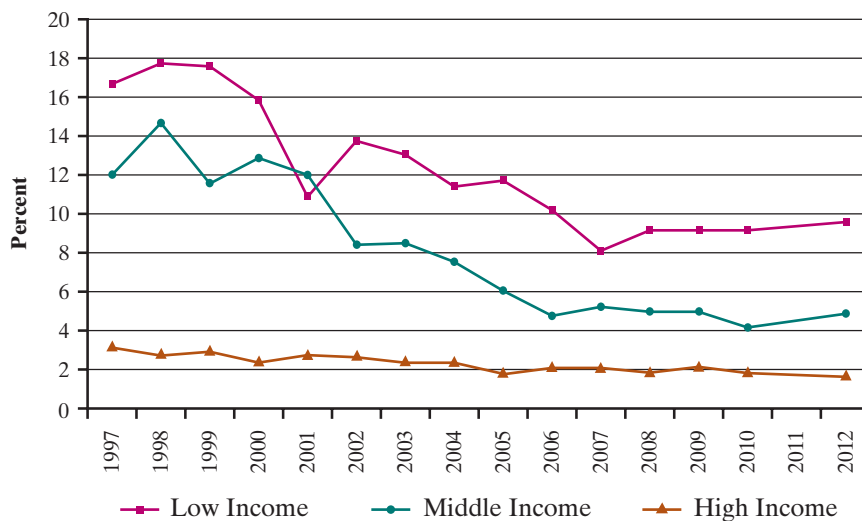
Although the numbers in Figure 6.4 should be treated with caution since the year-to-year data in each group varies in the number of countries included,

(continued)

two patterns are visible in Figure 6.4 and are widely accepted as qualitatively accurate. First, the higher a country's income, the lower its tariffs are likely to be. There are exceptions, of course, and one can point to low- and middle-income countries with low tariffs (Albania and El Salvador) and high-income countries with relatively high tariffs (Bermuda and Bahrain), but in general, low income implies relatively higher tariffs, and high income implies the opposite. Second, tariffs have come down over time. In each of the three groups mentioned, the average tariff fell by about 50 percent between 1986 and 2003.

Why, then, if trade is beneficial for growth, do low-income countries tend to have higher tariff rates? Although the complete answer varies by country circumstances, one of the most important reasons is that tariffs are a relatively easy tax to administer and often form an important part of government revenue. Taxes on income, sales, and property require more complex accounting systems and formal markets through which a large share of economic activity passes. In countries with large informal markets, where sales of goods and services are not recorded, it is difficult to apply many kinds of taxes. In addition, taxes on income and property run into powerful interest groups that have the power to prevent the creation or payment of taxes. Consequently, tariff revenue is an important source of operating revenue for governments in many developing countries.

FIGURE 6.4 Average Tariff Rates, 1997–2012



Tariff rates tend to be higher in countries with lower incomes, and nearly all countries have seen a decline in their rates over a long period of time.

Source: Data from World Bank, World Development Indicators, © James Gerber.

Other Potential Costs

These effects of tariffs are the ones that are most predictable and quantifiable. In Chapter 7 there are some actual estimates of the production and income distribution effects of tariffs and quotas for a number of industries in the United States, Europe, and Japan. These are not the only effects of tariffs, however, and several other costs should be noted, including the costs of retaliation by other countries, the potential harm to innovation and productivity, and increased rent seeking by firms that lobby for protection. Each of these effects broadens our focus to a consideration of more than the directly affected industry.

Retaliation Retaliation can add to the net loss of a tariff by hurting the export markets of other industries. For example, in 1995, the United States imposed a tariff on European (mainly Italian) pasta because of some trade practices that the United States felt discriminated against its pasta manufacturers. In return, the European Community retaliated by imposing tariffs on U.S. manufacturers of vegetable oils—corn, soybean, safflower, and other cooking oils. The cost of the U.S.-imposed tariff not only affected U.S. consumers of Italian pasta, who were forced to pay higher prices, but also affected workers and owners of capital in the U.S. vegetable oil industry. In essence, in addition to the deadweight losses brought on by the tariff, the vegetable oil industry lost export markets. A further problem is that retaliation can quickly escalate. For example, in the 1930s, many depressed nations reduced imports through tariffs. The result was that they gained jobs in industries that competed with imports but lost jobs in industries that produced exports. In the end, no jobs were gained, trade declined, and everyone had a lower standard of living.

Innovation and Productivity A costly effect of tariffs is that they isolate domestic firms from foreign competition and reduce the incentive to introduce new products or upgrade the quality and features of existing ones. Imports are often a major point of access to new technologies and new products. Furthermore, when tariffs are applied to intermediate goods instead of final goods, it raises the cost of imported inputs and reduces the productivity and competitiveness of domestic firms that use the tariffed input. For example, U.S. tariffs on steel and aluminum that were imposed in 2018 raised the cost of production of goods that use those metals. This included a wide range of goods, from automobiles to beer kegs to construction. As a consequence, steel- and aluminum-using industries lobbied for protection, and tariff levels began to rise on several additional industries.

Rent Seeking Hypothetically, tariffs could stimulate product improvement if domestic producers know that the tariffs are temporary and if they believe they will be removed. The problem is that firms with tariff protection can hire lobbyists and work to keep the protection in place. Economists use the term *rent seeking* to describe this type of behavior. Rent seeking is any activity that uses resources to try to capture more income without actually producing a good or service. If it is easier to lobby a government for protection than it is to become more competitive, then firms will use rent seeking tactics. If, on the contrary, lobbying is not likely to

succeed in gaining protection, then firms are less likely to engage in that particular form of rent seeking. For this reason, political systems that do not easily provide protective tariffs are much more likely to avoid one source of wasted resources.

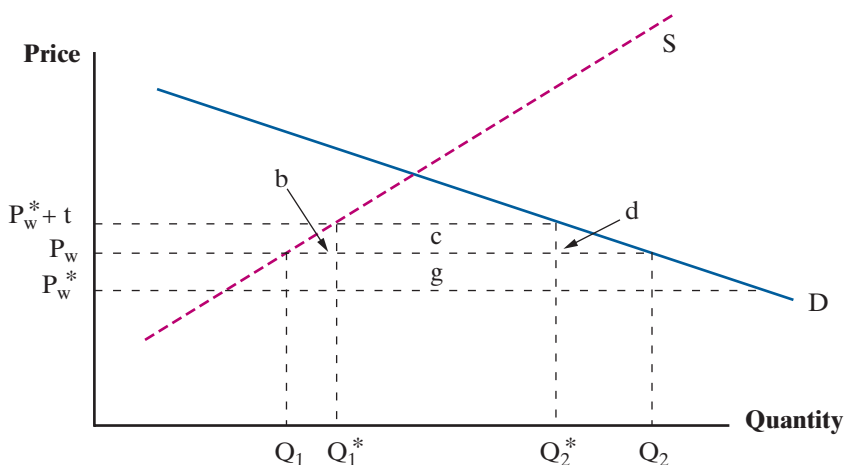
The Large Country Case

Economists distinguish between large and small countries when it comes to tariff analysis. As a practical matter there may not be much difference between the two, but in theory it is possible for large countries to actually improve their national welfare with a tariff as long as their trading partners do not retaliate. In economic terms, a large country is one that imports enough of a particular product so that if it imposes a tariff, the exporting country will reduce its price in order to keep some of the market it might otherwise lose.

An example of the **large country case** tariff is shown in Figure 6.5. Suppose that the United States, a large country, imposes a tariff of size t on its imports of oil. The fall in U.S. demand brought on by the tariff causes P_w , the world price, to fall to P_w^* , offsetting some or all of the deadweight loss from the tariff.

Looking more closely at Figure 6.5, we can compare the large and small country cases. The situation before the tariff is the same as the one shown in Figure 6.3. The main difference between the two cases stems from the fact that foreign suppliers cut the price to P_w^* after the tariff is levied. Consequently, less additional domestic production occurs, and fewer consumers are squeezed out of the market. In other words, areas b and d in Figure 6.5 are smaller than they would be in the small country case where there is no price drop. A smaller deadweight loss is not the only effect, however. In Figure 6.5, area g represents tariff revenue, which together with area c is the total tariff revenue collected. Compared to the

FIGURE 6.5 Tariffs in the Large Country Case



A tariff in a large country reduces demand so much that foreign producers cut their prices.

pre-tariff situation, however, area g is a net gain to the importing nation. Pre-tariff, area g was part of the money paid for imports. After the tariff, and due to the price decline, it is part of the revenue collected by the government and, hence, stays within the nation.

As long as $g > b + d$, a large country can improve its welfare by imposing a tariff. This outcome, however, assumes that there are no retaliation, rent seeking, or harmful effects on innovation.

EFFECTIVE VERSUS NOMINAL RATES OF PROTECTION

LO 6.2 Use tariff data on inputs and outputs to compare effective and nominal rates of protection.

One of the ironies of tariff protection is that often it is not what it seems. In fact, the amount of protection given to any one product depends not only on the tariff rate but also on whether there are tariffs on the inputs used to produce it. For example, U.S. tariffs on steel and aluminum raised the cost of producing cars and trucks and undermined the tariff protection they received. In order to see this effect more clearly, consider a hypothetical example of a tariff on laptop computers. If American-made laptops have foreign parts in them, then the amount of protection they receive from a U.S. tariff also depends on whether there are tariffs on their imported inputs. It is conceivable that the protection given by a tariff on laptops could be completely undone by tariffs on inputs used to make laptops.

Economists distinguish between the **effective rate of protection** and the **nominal rate of protection**. The nominal rate is what we have discussed so far in this chapter—the rate that is levied on a given product. The effective rate of protection takes into account the nominal rate and any tariffs on intermediate inputs. Consequently, it gives a clearer picture of the overall amount of protection that

TABLE 6.2 Nominal and Effective Rates of Protection

Variable	No Tariff	A 20% Tariff on the Final Product	A 20% Tariff Plus a 50% Tariff on Imported Inputs
Price of a laptop computer	\$1,000	\$1,200	\$1,200
Value of foreign inputs	\$600	\$600	\$900
Domestic value added	\$400	\$600	\$300
Effective rate of protection	0	50%	−25%

Effective rates of protection are higher than nominal rates if intermediate inputs are imported tariff free. If intermediate inputs are subject to tariffs, it reduces the effective rate of protection and can even turn it negative.

any given product receives. The effective rate of protection is related to the concept of value added. Value added is the price of a good minus the costs of the intermediate goods used to produce it. Value added measures the contributions of capital and labor at a given stage of production. The effective rate of protection is defined as follows:

$$(VA^* - VA)/VA$$

where VA is the amount of domestic value added under free trade, and VA^* is the amount of domestic value added after taking into account all tariffs, both on final goods and intermediate inputs.

Consider the example shown in Table 6.2. Suppose that laptop computers sell for \$1,000 and foreign producers are willing to sell to the United States all it wants at that price. In order to make a laptop, American manufacturers must import \$600 worth of parts, so that a domestic laptop actually has \$400 of value added in the United States ($\$1,000 - \$600 = \$400$). If the United States imposes a 20 percent tariff, then the price rises to \$1,200. Value added in the United States is now \$600 ($\$1,200 - \600), and the effective rate of protection is 50 percent ($(\$600 - \$400)/\$400$). That is, a 20 percent tariff provides 50 percent protection! This happens because a large share of the value of the final product is produced elsewhere, so all of the domestic protection falls on the share produced in the United States.

Now consider what happens if the United States decides also to protect domestic component manufacturers and levies a large tariff on intermediate inputs. If the tariff on foreign parts is 50 percent, then the cost of intermediate inputs rises from \$600 to \$900. With a 20 percent tariff on the value of the final product, the price of imports stays at \$1,200, which is the price American laptop makers must meet. Value added with the tariff on intermediate inputs is \$300 ($\$1,200 - \900) and the effective rate of protection is now -25 percent ($(\$300 - \$400)/\$400$). That is, even with a 20 percent tariff on foreign laptops, American laptop makers receive *negative* protection. The tariff on the final product is more than offset by the tariffs on the intermediate products, so that the overall situation leaves producers more exposed to foreign competition than if there were no tariffs levied at all.

Negative rates of effective protection are not uncommon. Part of the reason stems from the fact that tariffs are enacted in a piecemeal fashion over long periods and are not constructed in a planned and coherent way. Pressures from domestic lobbyists, considerations of strategic interests, and numerous other forces go into the shaping of national tariff systems. Consequently, it is not surprising to find contradictory tariff policies where newer tariffs undo the effects of older ones.

This discussion should add a note of caution to attempts to determine exactly which industries are protected. Clearly, the notion of effective rates of protection is more relevant than nominal rates. With tariff rates, what you see may not always be what you get.

CASE STUDY

The Uruguay and Doha Rounds

The Uruguay Round concluded in 1993 after seven years of negotiations. It took three years longer than planned and included one complete breakdown in the talks. The agreement was ratified by most of its 123 participating countries in 1994 and implemented in 1995.

Table 6.3 summarizes the four main outcomes of the negotiations. Trade barriers were reduced through several mechanisms, including tariff reductions, clarification of the rules on subsidies, a number of new areas of agreement, and institutional reforms within the framework of the existing General Agreement on Tariffs and Trade (GATT). Most notably, the Uruguay Round created the WTO as a body to oversee the implementation and further refinement of the various agreements.

One of the main effects on world trade patterns of the Uruguay Round was the negotiation of a separate Agreement on Textiles and Clothing (ATC). Until 1994, textiles and clothing had a separate international agreement, called the *Multi-Fiber Arrangement*, which was a system of quotas and tariffs. Under the ATC, textiles and clothing were integrated into the WTO system, with a complete phase-out of all quotas.

Other notable accomplishments of the Uruguay Round include an extension of rules governing services trade, the General Agreement on Trade in Services (GATS); an agreement on intellectual property enforcement, called Trade-Related Aspects of Intellectual Property Rights (TRIPS); and an

TABLE 6.3 The Uruguay Round

Category	Results
Tariffs	<ul style="list-style-type: none"> ■ Most industrial product tariffs cut by 40 percent ■ Conversion of some agricultural quotas to tariffs
Subsidies	<ul style="list-style-type: none"> ■ Subsidies defined ■ Classifies prohibited and actionable subsidies
New agreements	<ul style="list-style-type: none"> ■ Agreement on Textiles and Clothing (ATC) ■ Trade-Related Aspects of Intellectual Property Rights (TRIPS) ■ Trade-Related Investment Measures (TRIMs) ■ General Agreement on Trade in Services (GATS)
Institutional	<ul style="list-style-type: none"> ■ Creates the World Trade Organization (WTO) ■ Refines the dispute settlement process ■ Implements periodic trade policy reviews

The Uruguay Round included far more than tariff cuts.

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agreement on investment, the Trade-Related Investment Measures (TRIMs) (see the Case Study in Chapter 5 for a discussion of the TRIPS and TRIMS agreements). The Uruguay Round also created the WTO to administer all of the agreements (ATC, GATS, TRIPS, TRIMs, GATT) and initiated a more efficient dispute settlement process. In addition, the WTO conducts periodic reviews of individual country trade policies, which it publishes online.

The Doha Round was launched in 2001 in Doha, Qatar. Although the goal was to reach an agreement by the end of 2005, the talks collapsed in July 2006. They were later restarted and collapsed again, and as of 2016, there is no further progress. Most countries have abandoned the effort to conclude the talks. Not surprisingly, the biggest areas of disagreement were trade barriers and subsidies in agriculture and market access for services. In addition, high-income countries pushed middle-income ones to further reduce their barriers to imports of manufactured goods.

Doha is the first set of trade talks to fail since the signing of the GATT agreement in 1947. Its failure has caused some observers to question the future relevance of the WTO, but as a dispute settlement body it is invaluable. In retrospect, it is not a surprise that it failed to achieve the original goals. Many quotas have been converted to tariff equivalents, and tariffs have fallen, more or less constantly since the signing of the GATT agreement in 1947. As a consequence, issues of deep integration and issues affecting sensitive production sectors such as agriculture have come to the forefront of negotiations. Many of these issues are too contentious for easy resolution, especially in the context of a negotiation by all 162 members. Countries continue to negotiate outside the WTO, but now the focus is often on investor protections, patent issues, and services, and the negotiations are bilateral or plurilateral rather than multilateral through the WTO. These new issues reflect the fact of already low tariffs for many items, and the goal of multinational companies to protect their investments in production centers across the globe. There may not be another WTO negotiation to match the previous rounds, but there are continuing commitments and ongoing negotiations between groups of countries.

ANALYSIS OF QUOTAS

LO 6.3 Compare and contrast quotas and tariffs.

The economic analysis of quotas is nearly identical to that of tariffs. Quotas are quantitative restrictions that specify a limit on the quantity of imports rather than a tax. The net result is much the same: tariffs and quotas lead to a reduction in imports, a fall in total domestic consumption, and an increase in domestic production. The main difference between quotas and tariffs is that quotas that are not followed up with additional policy actions do not generate tariff revenue for the government. The lost tariff revenue can end up in the hands of foreign producers as they raise their prices to match demand to supply. Hence, the net loss from quotas can exceed that from tariffs.

In terms of Figure 6.3, consumers still lose area $a + b + c + d$, but the government does not collect area c as a tax. (We will examine what happens to area c , but try to reason it out for yourself first.)

Types of Quotas

The most transparent type of quota is an outright limitation on the quantity of imports. Limitations are sometimes specified in terms of the quantity of a product coming from a particular country, and at other times there is an overall limit set without regard to which country supplies the product. For example, in the apparel sector, until 2005, the United States set quotas for imports of each type of garment (men's suits, boys' shirts, socks, and so on). The quota for each good was further divided by country; so, for example, Hong Kong and Haiti had different limits on each type of apparel that they could export to the United States.

Another type of quota is an import licensing requirement. The United States uses this form infrequently, but many other nations have relied on these quotas for the bulk of their protection. For example, until 1989, they were the main form of protection in Mexico. As the name implies, import licensing requirements force importers to obtain government licenses for their imports. By regulating the number of licenses granted and the quantity permitted under each license, import licenses are essentially the same as quotas. They are less transparent than quotas because governments usually do not publish information on the total allowable quantity of imports and foreign firms are left in the dark about the specific limits to their exports.

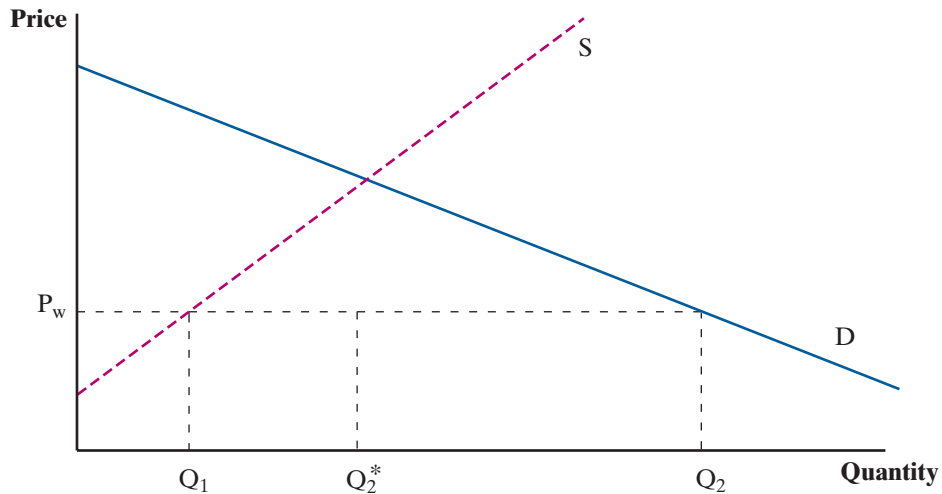
A third form of quota, and the one that has been common in U.S. commercial policy, is the **voluntary export restraint (VER)**, also known as the *voluntary restraint agreement* (VRA). Under a VER, the exporting country “voluntarily” agrees to limit its exports for some period. The agreement usually occurs after a series of negotiations in which the exporter may be threatened with much more severe restrictions if they do not agree to limit exports in a specific market. Given that there is usually more than a hint of coercion, it may be a misnomer to call these restrictions “voluntary.”

VERs were popular forms of protection in the 1970s and 1980s, but new limits on their use were implemented under the Uruguay Round agreement. In 2005, however, both the United States and the European Union (EU) negotiated export restraints in textiles and apparel with China.

The Effect on the Profits of Foreign Producers

The main difference between tariffs and quotas is that there is no government revenue from quotas. In place of tariff revenue, there are greater profits for foreign producers, called **quota rents**.

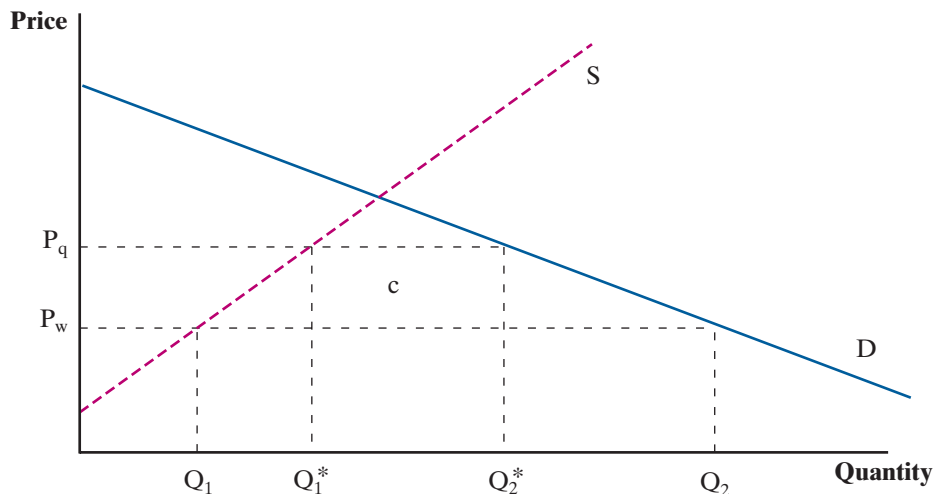
In Figure 6.6, the world price is set at P_w , domestic production is Q_1 , and imports are Q_1Q_2 . Suppose that the government decides to set a quota on imports of quantity $Q_1Q_2^*$. At price P_w , demand exceeds supply, which is equal to Q_1 domestic plus $Q_1Q_2^*$ imports. Consequently, the price rises until supply equals demand when the gap between the domestic supply curve and the

FIGURE 6.6 Analysis of a Quota: 1

A quota restricts imports to line segment $Q_1Q_2^*$ and creates excess demand equal to $Q_2^*Q_2$.

domestic demand curve is equal to $Q_1Q_2^*$. This is illustrated in Figure 6.7, where domestic supply is shown as having grown to Q_1^* , and the domestic price is P_q , which is above P_w . $Q_1^*Q_2^*$ is equal to $Q_1Q_2^*$ in Figure 6.6.

Figure 6.7 looks the same as Figure 6.3, which shows a tariff in a small country case, because they have nearly identical effects on production, consumption, and prices paid by consumers. Indeed, for any given quota there is some tariff

FIGURE 6.7 Analysis of a Quota: 2

The quota generates extra revenue for foreign producers in area c.

that will accomplish the identical import restriction. One difference stands out, however. In the tariff case, the government earned revenue from imports—area c in Figures 6.3 and 6.7. In the quota case, no revenue is earned unless the government auctions the quota. Instead, area c represents the extra profits of foreign producers due to the higher prices.

A second important difference between tariffs and quotas relates to their effect on producer surplus over time, as demand for the good increases. If a quota remains fixed, an increase in consumer demand also increases the price paid by consumers and the quantity of producer surplus garnered by domestic firms. In contrast, an increase in consumer demand for an item that has an import tariff increases the quantity of imports and leaves the price intact. This assumes that the country is relatively small and the increase in its demand does not alter the world (pre-tariff) price. Given this difference, it is not surprising that domestic firms prefer quotas over tariffs as a form of protection for their industry.

Two circumstances can mitigate or limit the ability of foreign suppliers to earn extra profits. First, if there is a large number of foreign suppliers, then competitive conditions may prevent them from raising their prices. Second, a clever government can extract the extra profits from foreign producers and domestic importers through the implementation of an auction for import licenses.

Suppose that the country imposing the quota decides to auction off the right to import. How much would a domestic importer be willing to pay? In Figures 6.6 and 6.7, foreign suppliers are willing to sell the amount of the quota ($Q_1Q_2^*$ in Figure 6.6, or $Q_1^*Q_2^*$ in Figure 6.7) at price P_w . A domestic importer, recognizing that he or she can sell the good at price P_q , should be willing to pay an amount equal to something slightly less than the difference P_q minus P_w . In other words, he or she pays P_w for the good that sells for P_q . If he or she pays anything less than $P_q - P_w$ for the right to sell in the market with the quota, he or she makes a profit. In equilibrium, an auction market should lead to bids for the right to sell that are more or less equal to the projected price increase. With an auction market, then, the government can potentially collect the same revenue with a quota that it would with a tariff. Of course, administrative costs of a quota may be higher, since the government must implement its auction market.

HIDDEN FORMS OF PROTECTION

LO 6.4 Explain how some forms of protection are difficult to observe.

While outright quantitative restrictions, import licensing requirements, and VERs are all forms of quotas, there are numerous other forms of protection that function the same as quotas. Any kind of trade barrier that reduces imports without imposing a tax functions more or less like a quota. Therefore, economists divide the different forms of protection into two main categories: tariffs and **nontariff barriers (NTBs)**. Nontariff barriers can be subdivided into quotas and **nontariff measures**. Nontariff measures are often nontransparent, or hidden, in that they are not presented as trade barriers or forms of protection even though they serve that purpose.

Nontariff measures cover a wide variety of formats and economic activities. In many cases, it is difficult to decide if they are directly intended as trade-related measures or if they exist for some other purpose but have impacts on trade flows. They include excessively complicated customs procedures, environmental and consumer health and safety precautions, technical standards, government procurement rules, limits imposed by state trading companies, and others. In general, nontariff measures include any regulatory or policy rule other than tariffs and quotas that limits imports. Often, it is difficult for nonspecialists to determine whether a nontariff measure is imposed in order to protect an industry or out of some other concern. For example, the United States and the EU have a long-running disagreement over the EU's prohibition of imports of beef and pork from livestock that is fed growth hormones. The EU claims that this is to protect the health of its consumers, while the United States argues that there is no scientific evidence to support the ban. The WTO agrees with the United States, but the EU insists that the meat has long-run health effects. Does the EU continue to ban imports in order to protect its beef and pork producers, or is it simply exercising a reasonable level of caution?

While there is no consensus about the dollar value of economic losses due to nontariff measures, there is a consensus among economists that the world economy would be better off if they were reduced. Research indicates that benefits would accrue through the lowering of prices for many goods, increases in export and import volumes, increases in production levels, and overall economic welfare. In this respect, they are not much different from tariffs or quotas. They are generally much more difficult to eliminate, however, as they are embedded more deeply in national economic policies.

CASE STUDY

Intellectual Property Rights and Trade

Intellectual property is usually divided into copyrights and related rights for literary and artistic work and industrial property rights for trademarks, patents, industrial designs, geographical indications, and the layout of integrated circuits. Books, music, movies, logos, pharmaceuticals, car parts, designer clothing, software, computer chips, and much, much more are all subject to intellectual property rights protection and, unfortunately, to counterfeiting and piracy. The rules for respecting **intellectual property rights** as they relate to trade were negotiated during the Uruguay Round (1986–1994) and culminated in the TRIPS agreement.

The growth of world trade over the last half of the twentieth century led to a greater awareness of the importance of intellectual property. Over time, more traded goods and services incorporated specialized knowledge and

unique ideas. Pharmaceuticals, telecommunications equipment, and other high-technology products are valuable because of the innovation and research they incorporate, while software, movies, music, and other artistic expressions are valued for their creativity. The protection given to creators and innovators varied greatly until standardization began with the signing of the TRIPS agreement.

The lack of intellectual property protection is viewed as a nontariff measure since the failure or inability to protect intellectual property restricts trade flows. Exporters are reluctant to sell products into a market if they know that their ideas or brands will be stolen and copied by local producers. Hence, there were strong pressures by high-income countries to reach an agreement on enforcement of protections for intellectual property. Since the implementation of the Uruguay Round in 1995, there have been thirty-four intellectual property disputes brought to the WTO, most having to do with patents, and a large share of those related to pharmaceuticals.

It is probably impossible to prevent copyright infringements that happen through informal networks of families and friends. For example, friends copying each other's music or sharing software cannot be easily stopped when it is done outside a formal market. By contrast, the market for counterfeit and pirated goods in many countries is relatively visible. Car parts, electronics, pharmaceuticals, and other counterfeit and pirated goods pass through established market places where, in theory, they can be stopped. Many of these markets are controlled by international criminal syndicates and everyone would benefit from their suppression. Estimates of the size of counterfeited and pirated products sold in international markets was several hundred billion dollars in 2005, and there is no reason to believe it has not grown since then.

A key question for trade economists is whether the TRIPS agreement provides the right strategy for controlling these illegal markets. The fundamental economic rationale for the TRIPS agreement is that it protects innovation and gives a financial incentive to firms and individuals for their efforts. Some economists do not see the lengthening of patent rights and spending large sums on enforcement efforts as the best strategy. Critics have argued that it imposes significant costs on middle-income countries such as China, Mexico, and others because they must devote scarce resources to the enforcement of rules that protect businesses in high-income countries. Empirically, it is not well established that the benefits of innovation outweigh the costs associated with limiting access for those low- and middle-income countries that cannot pay.

Pharmaceuticals are a case in point. Access to drugs that combat HIV and AIDS is critical. If patent enforcement under the TRIPS agreement prevents the production of inexpensive copies, then it is harmful to world prosperity. Although a number of exceptions were written into the agreement to allow

(continued)

access to life-saving medicines and other critical technologies, it is difficult for many developing countries to take advantage of the exceptions because they lack the technical know-how to make generic versions of expensive and sophisticated drugs. In addition, the United States and other governments put pressure on developing countries' governments to respect patent rights, even in cases where the rules permit a developing country to break a patent. In the end, many countries simply lack the resources to fully implement the TRIPS agreement. Nevertheless, it remains an area of active interest and has become a key focus of U.S. trade policy.

Summary

- Tariffs increase domestic production and employment at the cost of greater inefficiency and higher prices. Production and distribution effects are measured by estimating the changes in producer surplus and consumer surplus.
- In addition to short-run welfare and efficiency effects, tariffs have long-run costs of increased rent seeking, slower innovation, and the loss of export markets through the retaliation of trading partners.
- In theory, a large country can improve its welfare with tariffs. In general, welfare-improving tariffs tend to be small, and they improve welfare only if there is no retaliation by supplying nations and no external costs such as increased rent seeking.
- Economists distinguish between nominal and effective rates of protection. The effective rate is the difference in domestic value added with and without tariffs, expressed in percentage terms.
- Quotas have similar effects as tariffs, although the overall national losses are greater due to the transfer of quota rents to foreign producers. Auction markets, in which governments auction the right to import an item under a quota, can reduce the amount of quota rents and, in the limit, provide the same revenue as an equivalent tariff.
- Administratively, quotas take many forms. They can be well-specified quantitative restrictions on imports, negotiated limits on a trading partner's exports, or requirements to obtain a license to import.
- Nontariff measures include a wide variety of regulations and policies that effectively reduce the volume of international trade. They often act as hidden forms of protection and are commonly embedded deeply in a country's rules and institutions. Together with quotas, they make up nontariff barriers to trade.