

## CHAPTER 3

# The Political Economy of International Trade Cooperation

The disappointing achievements realized from the Doha Development Round raise serious questions about the WTO's future. The WTO and its predecessor the GATT have been at the center of the international trade system for 70 years. Yet, today, the rise of new issues and the associated emergence of the mega-regionals highlights the willingness of some WTO member governments to pursue their trade policy goals outside the WTO framework. The Trump administration's reliance on aggressive bilateralism and extended review of WTO rules constitutes another challenge to an organization struggling to justify its relevance. Today, perhaps more than at any previous point in time, the centerpiece of the postwar multilateral trade system is under threat. Do the world's governments still need the WTO?

Most analysts would argue, I believe, that the WTO remains an important and perhaps even necessary centrepiece of the global trade system. The claim that governments still need the WTO is typically framed in terms of a somewhat abstract theory of international cooperation. This theory tells us that international cooperation is difficult, even when all states stand to gain from cooperation, because the anarchical international system within which states interact makes it difficult to enforce any agreements that they might make. The challenges associated with enforcing international agreements create opportunities for some states to take advantage of others, and the fear of being exploited by others can make states reluctant to enter cooperative agreements. As a result, cooperation is stymied; states are worse off than they could be. In the specific context of world trade, this logic suggests that countries could gain substantially from cooperation that liberalizes trade. Yet, because

some governments may want to exploit others, by choosing to keep their market closed to imports while exporting to economies that have liberalized, for instance, and all governments want to avoid being exploited in this fashion, governments are unwilling to make agreements that would liberalize trade. Consequently, societies are deprived of the benefits that trade confers.

Societies often solve such cooperation problems by creating common institutions that help them enforce agreements. This is how and why the WTO remains important. The WTO helps states enforce trade agreements and in doing so enables states to capture the mutual benefits that trade provides. The WTO performs this role by providing common rules that provide enforceable standards to which states' trade policies must conform. The WTO helps states collect and disseminate information about the degree to which specific trade policies do in fact conform to these standards. And finally, the WTO enables states to sustain cooperation by helping them adjudicate the disputes that do arise. The WTO remains important, therefore, because it enables societies to cooperate and capture the welfare gains that trade offers.

This chapter develops this logic of international trade cooperation in three essential steps. First, we examine trade theory to gain a firm understanding of why trade offers welfare gains to all countries. This examination is important in its own right, but it also highlights the gains available from international cooperation aimed at liberalizing trade. Second, using a standard model of cooperation, the prisoners' dilemma, we examine why cooperation to capture the welfare gains available from trade is difficult. Third, we examine how the WTO helps governments enforce the agreements they reach.

## **THE ECONOMIC CASE FOR TRADE**

Why should countries trade? The standard answer is that countries should trade because trade makes them better off. Grasping why, exactly, trade makes societies better off, however, can be tricky. As the prominent economist Paul Krugman has argued, even many scholars and journalists who spend their lives writing about the global economy don't fully understand why trade makes societies better off (Krugman 1997, 117–125). Because understanding the rationale for trade is central to understanding the global economy but can be difficult to grasp, we develop the logic of comparative advantage in some detail.

We begin by establishing a few core concepts. The first is the

production possibility frontier (PPF). Countries are endowed with factors of production in finite amounts. Consequently, any decision to use factors to produce one good, necessarily means that these factors are not available to produce other goods. A decision to allocate capital and labor to the production of computers, for example, necessarily requires the country to forgo the production of some number of shirts. These forgone shirts are what economists call opportunity costs, and the production possibility frontier allows us to measure these opportunity costs quite precisely.

Consider an illustrative PPF for the United States. Let's assume that the United States has a fixed stock of labor and capital that it can use in combination to produce two goods—shirts and computers. Suppose that if the United States allocates all its labor and capital to computer production, it could produce 100 million computers (point *A* in Figure 3.1) and if it allocates all labor and capital to shirts, it can produce 300 million shirts (point *B* in Figure 3.1). If we connect *A* and *B* with a line, we have defined a production possibility frontier for the United States. Along it lie all combinations of shirts and computers that the United States can produce using all of its factors of production. As we move from *A* to *B*, capital and labor are reallocated away from computer production to shirt production. The slope of the line, called the marginal rate of transformation, tells us exactly how many shirts the United States forgoes for each computer it produces. In this example, every computer the United States produces costs three shirts. Because an autarkic country cannot consume more than it produces, the PPF also defines the limits of possible consumption.

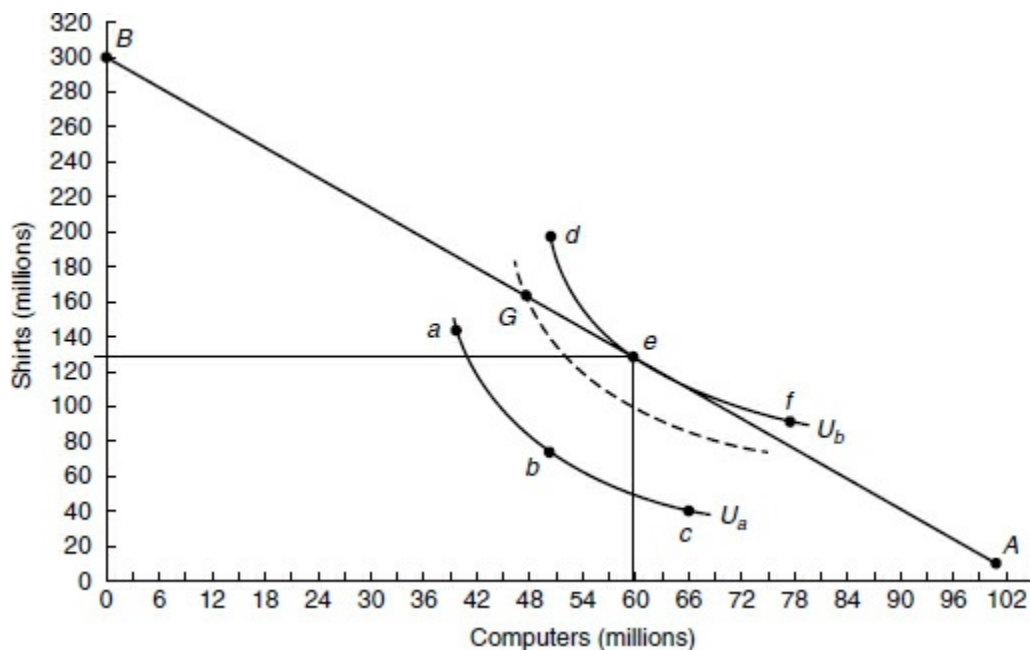


FIGURE 3.1

## U.S. Production Possibility Frontier

We can draw the PPF either as a straight line, as in our example, or as a curved line. Which we select depends upon the assumption we make about the nature of the opportunity costs that the United States faces. A straight PPF embodies the assumption that the United States faces constant opportunity costs. Every additional computer always costs three shirts. If we assume constant opportunity costs, we also implicitly assume that the United States enjoys constant returns to scale in production. This means that whenever the factors employed in shirt production are increased by some factor, we will increase the number of shirts produced by the same factor. Double the amount of labor and capital employed in shirt production and double the number of shirts produced. Alternatively, we could assume that the United States faces *increasing* opportunity costs and connect points *A* and *B* with a curved line that bends out away from the origin. The shift from producing 49,999,999 computers to 50 million computers costs three shirts. Yet, when the United States moves from producing 89,999,999 to 90 million computers, it costs seven shirts. Thus, the opportunity cost of producing each good rises as the United States dedicates a larger share of its factors to the production of a single good. If we assume the United States faces increasing opportunity costs, we are also implicitly assuming that factors yield diminishing marginal returns. This means that the number of additional computers the United States can produce for each additional worker employed in computer production will fall as the number of workers employed in computer production rises. Most contemporary models assume that factors yield diminishing marginal returns. To keep things simple, we will assume constant marginal returns.

Our second core concept, consumption indifference curves, helps us understand the specific combination of computers and shirts American consumers will purchase. Consumers will acquire shirts and computers in the combination that maximizes their collective utility. Economists conceptualize consumer utility with indifference curves. We assume that consumers prefer more to less, and therefore consumer utility increases as we move away from the origin. Some combinations of shirts and computers, such as those at points *a*, *b*, and *c* on [Figure 3.1](#), yield the same amount of utility. If asked to choose between these three, our consumer will say, “I like them all the same.” If we connect every combination of shirts and computers that provides our consumer with the same amount of utility with a curved line such as  $U_a$ , we have drawn an indifference curve. Our consumer enjoys identical utility from every combination of shirts and

computers that falls on  $U_a$ . We can draw a second indifference curve that links the combinations  $d$ ,  $e$ , and  $f$ . Each of these combinations yield more utility than  $a$ ,  $b$ , or  $c$ , and are thus said to lie on a higher indifference curve. But, our consumer is indifferent between  $d$ ,  $e$ , and  $f$ . We can connect these three combinations with a second indifference curve,  $U_b$ . Were we to repeat this exercise for every possible combination of shirts and computers within this two-dimensional space, we would have a complete indifference map.

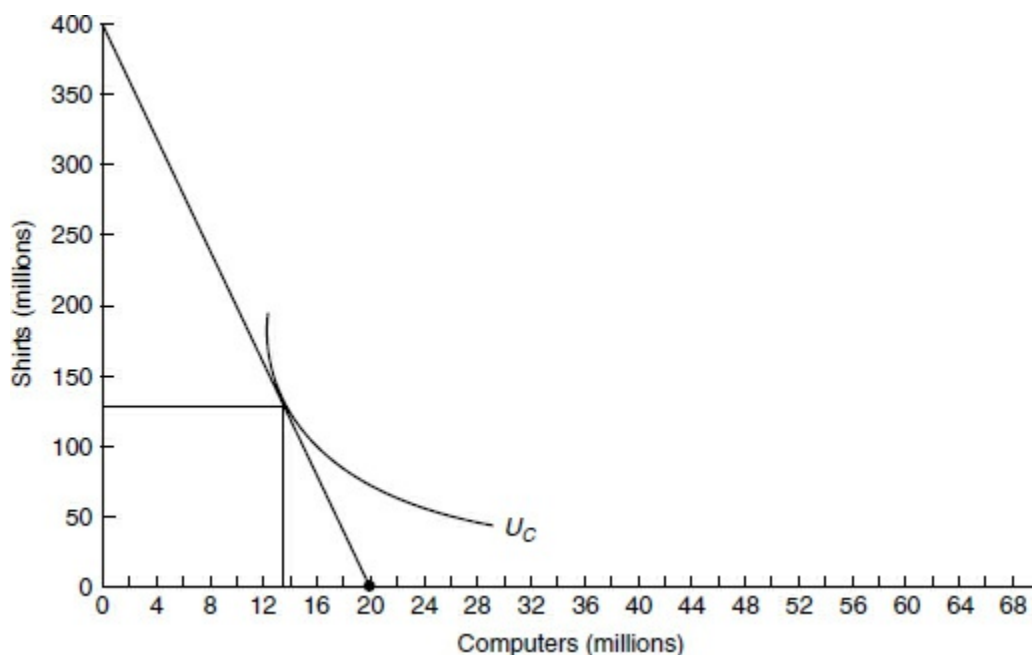
Three additional characteristics of indifference curves are important. First, indifference curves typically slope downwards. This slope, called the marginal rate of substitution, tells us how much of one good the consumer is willing to give up to acquire an additional unit of the second good. Second, indifference curves typically bend in toward the origin. This reflects the assumption of diminishing marginal utility. The first computer provides a large improvement in utility. Each successive computer, however, provides a smaller increase of utility. Consequently, even though the consumer might be willing to give up a large number of shirts to acquire her first computer, she will be willing to give up fewer shirts to acquire her sixth computer. Finally, when we focus on production and consumption for an entire country, we construct community indifference curves rather than individual indifference curves. Community indifference curves aggregate utility for all consumers in that society. In this example, then, our community indifference curves embody the aggregated preferences of all American consumers.

Together, the PPF and indifference curves allow us to define equilibrium production and consumption of shirts and computers in this autarkic American economy. Production and consumption will occur at the point where the marginal rate of transformation (the slope of the PPF) is equal to the marginal rate of substitution (the slope of the indifference curve). That is, production and consumption will occur where the PPF and the indifference curve are tangent. This is point  $e$  on [Figure 3.1](#).

Why must production and consumption occur only at this point? Suppose the United States initially produced and consumed at  $G$ . Society can gain greater utility than at  $G$  (consumers can shift to a higher indifference curve) by consuming fewer shirts and more computers. We would therefore expect consumers to demand fewer shirts and more computers and we would expect production to shift in response, producing more computers and fewer shirts. Beyond  $e$ , consuming additional computers and fewer shirts decreases consumer utility. Consequently, consumers will begin to demand more shirts and fewer computers. Only at

$e$  is it impossible to achieve higher utility from a different combination of shirts and computers. Consumer utility is thus maximized by producing and consuming at  $e$ . Under autarky, therefore, equilibrium production and consumption in the United States equals 60 million computers and 120 million shirts.

To see how trade changes this equilibrium, we must introduce a country for the United States to trade with. We will assume that the only other country in the world is China. We construct China's PPF just as we did for the United States (see [Figure 3.2](#)). Let's suppose that if China dedicates all its labor and capital to computers, it can produce 20 million computers. If it dedicates all its labor and capital to shirt production, it can produce 400 million shirts. Connecting these two points yields China's PPF. Given our assumptions, China's marginal rate of transformation is 20: every computer China produces carries opportunity costs of 20 shirts. We then find the point of tangency between China's consumer indifference curves and the PPF to identify equilibrium production and consumption in an autarkic China. Based on our assumptions, equilibrium production and consumption in autarkic China yields 13 million computers and 140 million shirts under autarky.



**FIGURE 3.2**

China's Production Possibility Frontier

We can now see how trade between the United States and China affects equilibrium production and consumption in both countries (see [Figure 3.3](#)). Trade changes equilibrium production by causing each country to

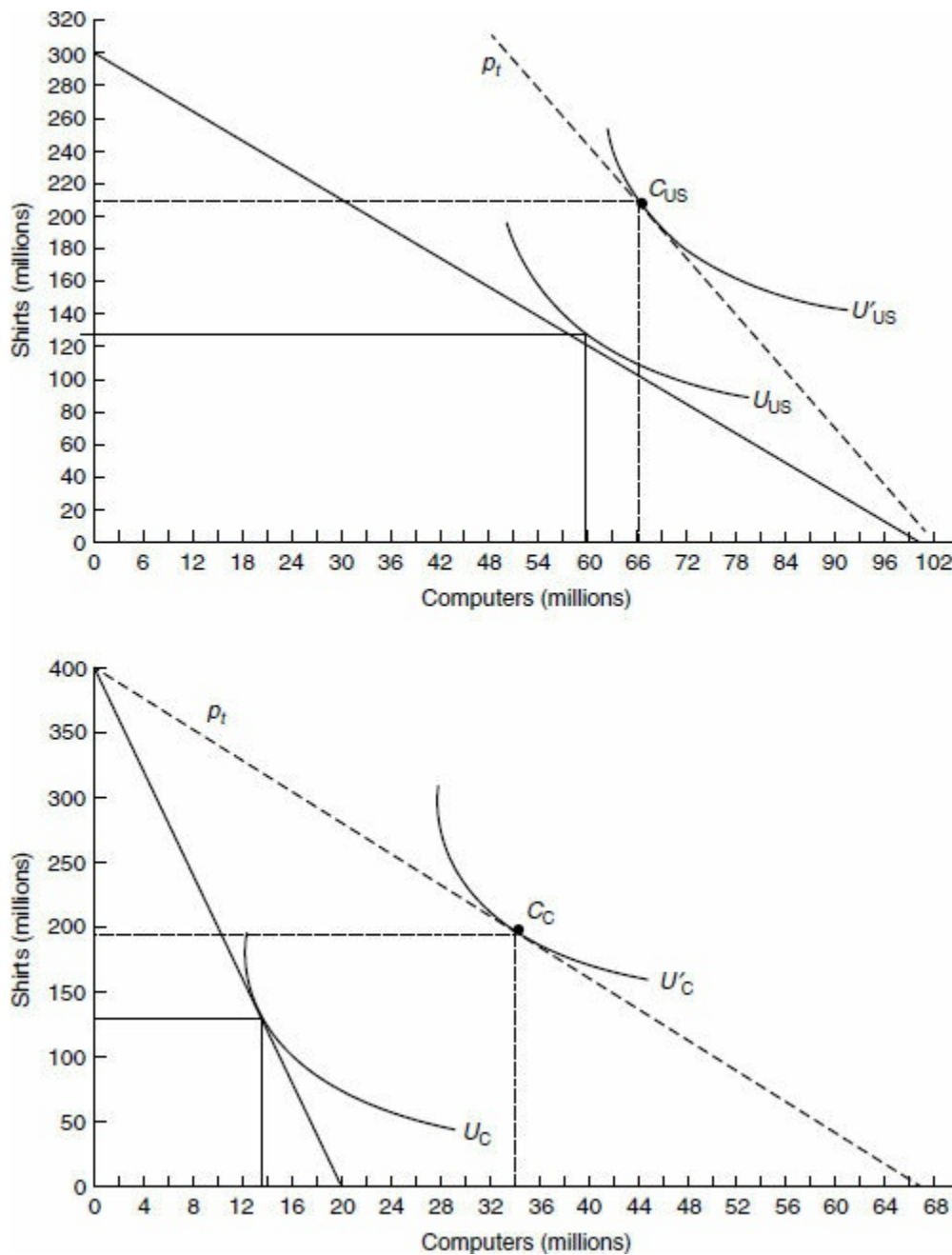
specialize in the production of one good. The United States specializes in computer production and stops producing shirts. China specializes in shirt production and stops producing computers. Specialization arises from the conclusions each draws from a simple price comparison. The United States acquires more shirts per computer when it buys them from China than when it produces them at home. A computer buys 20 shirts in China whereas at home it buys only three shirts. Why should the United States produce shirts at home when it can acquire them for substantially less in China? The United States thus stops producing shirts, produces only computers, and acquires the shirts it wants from China.

Similarly, China acquires more computers per shirt when it buys them from the United States than when it produces them at home. China can acquire a computer from the United States for only three shirts whereas if it produces computers at home each computer costs 20 shirts. Why should China produce computers when it can acquire them much less expensively from the United States? China therefore stops producing computers, specializes in shirts, and acquires the computers it wants through trade with the United States. Trade thus changes equilibrium production in both countries: the United States specializes in computer production and China specializes in shirt production.

To see how trade affects equilibrium consumption in both countries, we need to know the price at which the United States and China will exchange shirts for computers. We know that this price must fall somewhere between three and 20 shirts per computer. We could solve for the exact price that will arise, but we'll simply assume that the two agree to trade at six shirts per computer. This new price is depicted in [Figure 3.3](#) as the dashed line labeled  $p_t$ . Now we must find the combination of shirts and computers that maximizes consumer welfare in each country at this new price. To do so, we find the point of tangency between the new price line and our consumer indifference curves. These points are labeled  $C_{US}$  and  $C_C$ , respectively.

Equilibrium consumption in both countries has thus expanded beyond what was possible under autarky. American consumption expands from 60 million computers and 120 million shirts under autarky to 75 million computers and 150 million shirts. Chinese consumption expands from 13 million computers and 140 million shirts under autarky to 25 million computers and 250 million shirts. At this new equilibrium, both countries consume more shirts and computers than they could under autarky. Consequently, consumers achieve greater utility, which is reflected in the

move to higher indifference curves ( $U'_{US}$  and  $U'_C$ , respectively). This additional consumer utility is the gain from trade. Trade between the United States and China is thus beneficial for both countries.



**FIGURE 3.3**  
Equilibrium with Free Trade and Complete Specialization

This specific example illustrates the broader claim that *every* country gains by specializing in goods it produces relatively well and trading them for the goods it produces relatively less well. This is the principle of comparative advantage. These gains are not dependent upon having an



absolute cost advantage in a particular industry. The United States does not gain because it produces computers more cheaply than China. It gains because it can acquire more shirts per computer in China than it can at home. And these gains exist even if shirts cost more to produce in China than in the United States. Thus, even countries that produce every good at a higher cost than all other countries gain from trade by specializing in the goods they produce best. This is the logic of comparative advantage.

What determines which goods a particular country will produce relatively well and which it will produce relatively less well? The **Hecksher-Ohlin** (or H-O) **model**, (named after the two Swedish economists, Eli Hecksher and Bertil Ohlin who developed it) provides the standard answer. The H-O model argues that comparative advantage arises from differences in **factor endowments**. Factors are the basic tools of production. When firms produce goods, they employ labor and capital in order to transform raw materials into finished goods. Labor obviously refers to workers. Capital encompasses the entire physical plant that is used in production, including the buildings that house factories and the machines on the assembly lines inside these factories.

Countries possess these factors of production in different amounts. Some countries, like the United States, have a lot of capital but relatively little labor. Other countries, such as China, have a lot of labor but relatively little capital. These different factor endowments in turn shape the cost of production. A country's abundant factor will be cheaper to employ than its scarce factor. In the United States and other advanced industrialized countries, capital is relatively cheap and labor is relatively expensive. In developing countries, labor is relatively cheap and capital is relatively expensive.

Because countries have different factor endowments and face different factor prices, countries will hold a comparative advantage in different goods. A country will have a comparative advantage in goods produced using a lot of their abundant factor and a comparative disadvantage in goods produced using a lot of their scarce factor. In the auto industry, for example, payments to labor account for between 25 and 30 percent of the total cost of production. The much larger share of the costs of production arise from capital expenditures, that is, expenditures on the machines, assembly lines, and buildings required to build cars (Dicken 1998). In contrast, in the apparel industry, wages paid to workers account for the largest share of production costs, whereas capital expenditures account for a much smaller share of the costs of production. It follows that countries like the United States and Japan with a lot of capital and little labor will

have a comparative advantage in producing cars and a comparative disadvantage in producing clothing. By the same logic, developing countries with a lot of labor and little capital will have a comparative advantage in producing clothing and a comparative disadvantage in producing cars.

Thus, in our example, the United States has a comparative advantage in computers and not in shirts because the United States is abundantly endowed with physical and human capital and poorly endowed with low-skilled labor. China has a comparative advantage in shirts and not in computers because China is abundantly endowed with labor and poorly endowed with human and physical capital. Comparative advantage tells us, therefore, that all countries gain from trade by specializing in the goods that rely heavily on the factors of production that they hold in abundance and exchanging them for goods that make intensive use of the factors of production that are scarce in their economy.

## TRADE BARGAINING

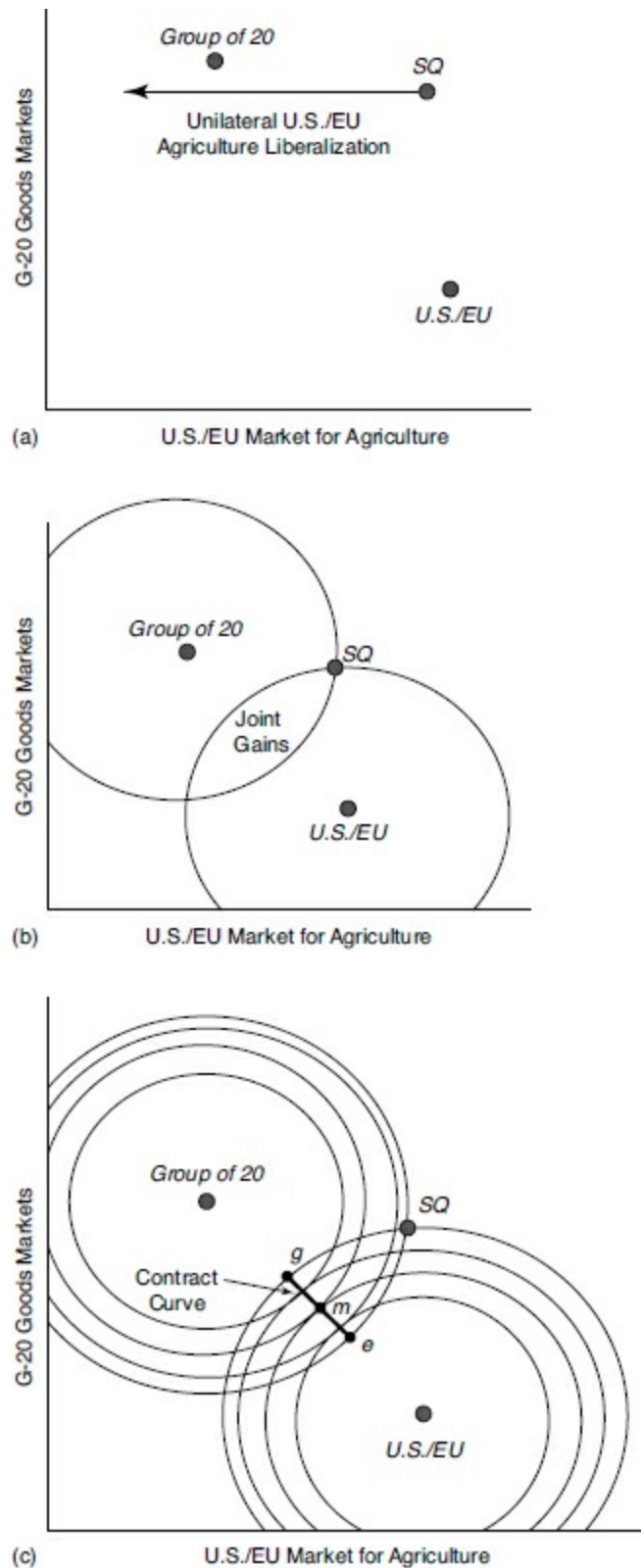
Although trade liberalization raises the standard of living, governments don't often liberalize trade unilaterally. Instead, governments strive to open foreign markets to the exports of competitive domestic industries and continue to protect less competitive industries from imports. As a result, trade liberalization generally occurs through trade **bargaining** in which governments exchange market access commitments.

We can model trade bargaining using basic spatial theory. To keep things concrete, we will model the central bargaining problem in the Doha Round. We begin by defining the bargaining space. The two issues at the center of the Doha Round are the reduction of barriers to trade in agriculture products that governments in the advanced industrialized countries impose and the reduction of barriers to trade in manufactured goods (called Non-agricultural Market Access (NAMA) in the Doha Round) that governments in developing countries impose. We can depict each of these as a policy dimension (see [Figure 3.4a](#)). The horizontal axis depicts all possible levels of agriculture protection in the advanced industrialized countries. Protection of agriculture is zero at the origin and barriers to trade rise as we move out toward the right. The vertical axis captures all possible levels of protection of manufactured goods in developing countries. Again, protection is zero at the origin and increases as we move up from the origin. Each point within the two-dimensional bargaining space represents a combination of trade barriers in

industrialized-country agriculture and developing-country manufactured goods.

We can locate the current levels of protection, the status quo, in this bargaining space. The status quo is characterized by a fairly high level of protection in both sectors. The United States, the EU, and Japan excluded agriculture from multilateral trade negotiations until quite recently. Consequently, trade barriers in this sector remain quite high. Similarly, developing-country governments did not participate much in bargaining rounds prior to the Uruguay Round. As a result, they retain high tariffs on manufactured goods. Hence, the status quo, labeled SQ in [Figure 3.4a](#), falls in the northeast quadrant of the bargaining space.

In our next step we locate government ideal points in the bargaining space. An actor's ideal point is its best possible outcome, in this instance the specific combination of barriers to trade in agriculture and manufactured goods that each actor prefers to all other combinations. Rather than depict ideal points for each of the 164 WTO members, we focus on two coalitions at the center of bargaining, the United States/EU and the Group of 20. We locate these ideal points using a simple rule—governments liberalize comparatively advantaged sectors and protect disadvantaged sectors. The United States/EU is relatively poorly endowed with land and relatively abundantly endowed with capital. The ideal outcome from their perspective is a sharp reduction of tariffs on G-20 goods markets and continued protection of their agriculture sector. Their ideal point therefore lies in the southeast quadrant of the bargaining space. Governments in the Group of 20 are abundantly endowed with land and poorly endowed with capital. The ideal outcome for these governments combines low barriers on agricultural markets in the EU and the United States, with high barriers on their goods markets. The ideal point for the Group of 20 thus lies in the northwest quadrant of the bargaining space.



**FIGURE 3.4**  
Tariff Bargaining in the Doha Round

Notice that given these ideal points and the status quo, neither group can improve its utility relative to the status quo from unilateral liberalization.

Assume that utility for each actor is a linear function of distance; that is, utility decreases as we move away from the ideal points in any direction. Unilateral reduction of protectionist barriers on United States/EU agriculture shifts the outcome from SQ toward the left along a line parallel to the horizontal axis. Every point on this line is further from the United States/EU ideal point than SQ and thus offers less utility than the SQ. Similarly, any unilateral reduction of tariffs on manufactured goods shifts the SQ down along a line parallel to the vertical axis (not drawn). Every point on this line is further from the G-20 ideal point than SQ. Hence, neither group can realize higher utility by engaging in unilateral liberalization.

What neither is willing to do unilaterally, both are willing to do through international bargaining. To see why, we must first identify all outcomes that each group prefers to the status quo. We can see these outcomes by drawing circular indifference curves centered upon each group's ideal point, with a radius equal to the distance between this ideal point and the status quo (see [Figure 3.4b](#)). Each group prefers all outcomes interior to this indifference curve to the status quo. The combinations within the "lens" created by the intersection of the two indifference curves are thus outcomes that the G-20 and the United States/EU both prefer to the status quo. And in the vast majority of these outcomes, each group has liberalized the sector it wishes to protect quite substantially. International bargaining, therefore, enables governments to liberalize domestic sectors that they are unwilling to liberalize unilaterally.

The selection of one outcome from all of those that offer joint gains carries distributional consequences. Some agreements benefit the United States/EU more than the G-20, and some agreements benefit the G-20 more than the United States/EU. We can see this by drawing a series of indifference curves for each group (see [Figure 3.4c](#)). We then connect all the points at which the United States/EU and Group of 20 indifference curves are tangent to one another. The result is a **contract curve**—the set of mutually beneficial agreements that exhaust available joint gains. We assume that governments will select an agreement from that set. Now, each agreement on this contract curve carries a different distribution of the joint gains. If the Group of 20 and the United States/EU select the outcome represented by  $m$ , they divide available joint gains evenly. If they select an outcome between  $m$  and  $e$ , the United States/EU realizes larger gains than the Group of 20. If instead they choose an outcome between  $m$  and  $g$ , the Group of 20 realizes larger gains than the United States/EU. Hence, governments are not just realizing joint gains, they are also deciding how

to distribute these gains between them.

Bargaining power determines which distribution of gains governments ultimately select. Although we often think of power as brute force, bargaining power derives from an array of much subtler characteristics such as patience and outside options. **Patience** refers to the fact that both parties to the negotiation would prefer to settle today rather than tomorrow. Because each side gains from agreement, delaying agreement sacrifices utility for both. But if one government is more patient than another, it can use its willingness to wait to insist on an outcome closer to its ideal point, and thereby capture more of the joint gains for itself. A government may be less patient, and thus willing to concede some of the surplus to other governments in exchange for a quick deal, if it is relatively poor (since economic gains have greater marginal utility for poorer states), or if it has a low tolerance for risking a breakdown in negotiations.

## A Closer Look

### Bargaining Strategy, Bargaining Power, and the Doha Round

Did the Doha Round fail as a result of a strategic miscalculation on the part of the G-20? Consider the G-20's bargaining strategy as they confronted the U.S. and the EU. The best deal for each government is the one that combines maximum concessions from other members in exchange for minimal concessions. Group of Twenty (G20) governments want large reductions in American and European agricultural protection in exchange for minimal liberalization of their manufacturing and service sectors. American and European governments seek the opposite—maximum G20 cuts in manufacturing and services in exchange for minimal cuts in farm tariffs and subsidies. In bargaining, therefore, governments were tussling over the distribution of the available joint gains, and the agreement best for a G20 government is necessarily less good for the United States and the European Union (EU) (though still better for both than no agreement).

Each government's ability to negotiate the best possible deal for itself is complicated by private information. G20 governments did not know how much American and European governments were willing to reduce farm tariffs and subsidies. Nor did they know how much they had to offer in exchange for such liberalization. Each government held these critical pieces of information about its negotiating position

privately, and had no incentive to reveal them to others. If American negotiators told the G20 the maximum cuts in farm tariffs and subsidies the United States would make, then G20 governments would accept nothing less than this maximum. If the United States told the G20 governments the minimal amount of service and NAMA liberalization it expected in return, G20 governments would offer only this minimal amount. Revealing private information about their negotiating positions thus condemns governments to their worst possible deal—minimal gains and maximal concessions.

Negotiating the best deal possible thus requires governments to force each other to reveal information they do not wish to reveal. This is exactly the situation governments faced in Geneva in July 2008. Trade ministers had negotiated for 9 days. By Tuesday, they had reached the point at which each government had to decide whether the resulting package was the best deal it could get. China and India had to decide whether the United States and the EU had made their maximum concessions. Yet, they knew that asking for additional concessions was pointless—they had been asking for 9 days, and asking for more now would simply elicit a quick “No, this is my best offer.” China and India could learn if, in fact, the offer on the table was the best offer only by walking away from the negotiations.

Walking away from the table constituted a strategic gambit. Walking out delivered a “costly signal”: it transformed cheap talk (we want additional concessions) into costly action (we’ll forgo this agreement now to get additional concessions in the future). This costly action, which demonstrated that India and China were patient, could have made American policymakers more likely to believe that additional concessions would be necessary to get a deal. Walking away could have also imposed costs on the United States by denying it an agreement it wanted. By walking out of negotiations, therefore, India and China were trying to gain information about the U.S. bargaining position. If the United States offered additional concessions, India and China would get a better deal and their gamble would have paid off. But even if the United States failed to offer additional concessions, China and India would still gain valuable information that the United States had offered all that it would offer. They could then accept the deal on the table.

This strategic gambit failed, however, because India and its allies neglected to take into full account the outside options available to the U.S. and the EU. A walk-out strategy can work only if one’s

bargaining partner has no opportunity to achieve its objectives by making deals with other partners. In the absence of outside options, the U.S. and EU would be compelled to reach agreement with the G-20 in the WTO. As it turned out, however, the WTO wasn't the only game in town. After 2008, the U.S. began to pursue its trade policy objectives through mega-regional trade agreements with the EU and in Asia and the Pacific. EU policymakers also began pursuing trade agreements outside of the WTO framework. Moreover, as these mega-regional negotiations progressed it became clear that the U.S. and the EU could realize more of their trade policy goals and make fewer major concessions through the mega-regional framework than by continuing to work within the larger WTO. Consequently, American policymakers came to place greater value upon the outside option and less value on the Doha Round. This made it less and less likely that they would offer major concessions to the G-20.

Of course, I don't know whether the G-20's decision to walk out was a strategic gambit or whether it reflected a sincere preference that the deal on the table didn't offer benefits. Yet, it is interesting to consider the possibility that the Doha Round could have concluded quite differently had key players made different strategic calculations.

If governments are equally patient, one government may gain bargaining power if it has an attractive outside option. An **outside option** is a government's next-best alternative to agreement. For example, if the EU can strike a similar bargain with the United States, then it has little need to make large concessions to the Group of 20: it can leverage its potential deal with the United States to extract concessions from the Groups of 20. If the Group of 20 knows this, it will be willing to allow the EU to capture a larger share of the gains than it would if the outside option of a deal with the United States did not exist. Somewhat paradoxically, therefore, giving one side a good reason to *not* reach agreement often enables governments to find common ground. The U.S. strategy of negotiating regional trade agreements, for example, might be an attempt to demonstrate an outside option in order to gain greater power within WTO negotiations.

In short, governments liberalize trade via trade agreements because they are unwilling to liberalize unilaterally. Given their focus on export expansion, trade negotiations enable governments to exchange market access commitments. Although the resulting trade agreements yield

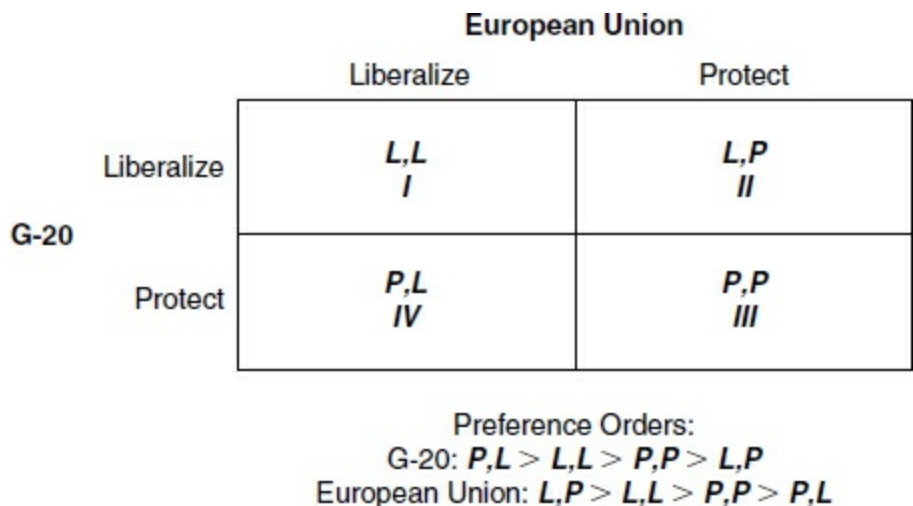


benefits to all parties, they also carry distributional consequences. Some governments will realize smaller gains in market access opportunities in exchange for larger concessions of their own. These distributional consequences reflect differences in bargaining power. Governments that are most willing to wait, that are willing to risk a breakdown of negotiations, and that have outside options are likely to capture a larger share of the available gains from agreement.

## ENFORCING AGREEMENTS

The ability of governments to conclude trade agreements is additionally frustrated by the second intervention of politics: the enforcement problem. The **enforcement problem** refers to the fact that governments cannot be certain that other governments will comply with the trade agreements that they conclude (Conybeare 1984; Keohane 1984; Oye 1986). As a result, governments will be reluctant to enter into trade agreements, even when they recognize that they would benefit from doing so. Even though this might seem counterintuitive, we can use a simple game theory model, called the prisoner's dilemma, to see how the enforcement problem can frustrate the efforts of governments to conclude mutually beneficial trade agreements.

Suppose that the Group of 20 and the EU manage to identify an outcome that each prefer to the status quo. In the absence of a mechanism to enforce the agreement, would they be able to conclude the agreement? The prisoner's dilemma tells us that they will be unable to do so. In the prisoner's dilemma, the Group of 20 and the EU each have two strategy choices: each can open its market to the other's exports, which we will call *liberalize*, or each can use tariffs to keep the other's products out of its domestic market, which we will call *protect*. Two governments with two strategy choices each generates the two-by-two matrix depicted in [Figure 3.5](#).



**FIGURE 3.5**

The Prisoner’s Dilemma and Trade Liberalization

Each cell in this matrix corresponds to a strategy combination, and these strategy combinations produce outcomes. We can describe these outcomes starting in the top left cell and moving clockwise. One word about the notation we use before we proceed. It is conventional to list the strategy choice of the row player (the player who selects its strategy from the rows of the matrix) first and the strategy choice of the column player (the player who selects its strategy from the columns of the matrix) second. Thus, the strategy combination referred to as “*liberalize/protect*” means that the row player, which in this case is Group of 20, has played the strategy *liberalize* and the column player, which is the EU, has played the strategy *protect*.

We can now describe the four outcomes.

- *Liberalize/Liberalize*: Both eliminate tariffs. Group of 20 exports agricultural products to the EU, and the EU exports manufactured goods to Group of 20 countries.
- *Liberalize/Protect*: The Group of 20 eliminates tariffs, but the EU does not. The EU thus exports goods to the Group of 20, but the Group of 20 cannot export farm goods to the EU.
- *Protect/Protect*: Both retain their tariffs. No trade takes place.
- *Protect/Liberalize*: The EU eliminates tariffs, and the Group of 20 does not. The Group of 20 exports farm goods to the EU, but the EU cannot export manufactured goods to the Group of 20.

Now we must determine how each government ranks these four outcomes. How much utility do they realize from each outcome? The Group of 20 ranks them in the following order:

protect/liberalize > liberalize/liberalize > protect/protect > liberalize/protect

where the “greater than” sign means “is preferred to.” It is not hard to justify this ranking.

- The Group of 20 gains the most utility from *protect/liberalize*. Here the Group of 20 exports to the EU and protects its producers from EU competition.
- The Group of 20 gains less utility from *liberalize/liberalize* than from *protect/liberalize*. Here the Group of 20 can export to the EU, but must open its market to EU imports.
- The Group of 20 gains still less utility from *protect/protect* than from *liberalize/liberalize*. Here the Group of 20 protects its domestic market, but cannot export to the EU.
- The Group of 20 gains less utility from *liberalize/protect* than from *protect/protect*. Here the Group of 20 opens its market to the EU but does not get access to the EU market.

In other words, the Group of 20’s most preferred outcome is unreciprocated access to the EU market. Its second-best outcome is reciprocal tariff reductions, which is in turn better than reciprocal protection. The Group of 20’s worst outcome is a unilateral tariff reduction.

The prisoner’s dilemma is a symmetric game. This means that the EU faces the exact same situation as the Group of 20. Consequently, the EU’s payoff order is identical to the Group of 20’s payoff order. The only difference arises from the notation we use. Like the Group of 20, the EU’s most preferred outcome is unreciprocated access to the other’s market, but for the EU this is the outcome *liberalize/protect*. Also like the Group of 20, the EU’s least preferred outcome is granting the other unreciprocated access to its market, which for the EU is the outcome *protect/liberalize*. Thus, the EU’s payoff order is identical to the Group of 20’s payoff order, but the position of the most and least preferred outcomes are reversed:

liberalize/protect > liberalize/liberalize > protect/protect > protect/liberalize

We can now see how the Group of 20 and the EU will play this game and what outcome will result. The Group of 20 and the EU both have a dominant strategy—a single strategy that always returns a higher payoff than all other strategy choices. *Protect* is this dominant strategy. *Protect* dominates *liberalize* as a strategy choice because each government will

always realize higher utility by playing *protect* than by playing *liberalize*.

We can see why *protect* is a dominant strategy by working through the Group of 20's best responses to the EU's strategy choices. Suppose the EU plays the strategy *liberalize*. If the Group of 20 plays *liberalize* in response, the Group of 20 receives its second most preferred outcome (*liberalize/liberalize*). If the Group of 20 plays *protect* in response, the Group of 20 receives its most preferred outcome (*protect/liberalize*). Thus, if the EU plays *liberalize*, the Group of 20's best response—the strategy that returns the highest utility—is *protect*.

Now suppose the EU plays *protect*. If the Group of 20 responds with *liberalize*, it receives its least preferred outcome (*liberalize/protect*). If the Group of 20 responds with *protect*, however, it receives its second least preferred outcome (*protect/protect*). Thus, if the EU plays *protect*, the Group of 20's best response is to play *protect*.

*Protect*, therefore, “dominates” *liberalize* as a strategy choice—that is, *protect* yields more utility for the Group of 20 than *liberalize* regardless of the strategy that the EU plays. Because the prisoner's dilemma is symmetric, *protect* is also the EU's dominant strategy. Because both governments have dominant strategies to play *protect*, the game always yields the same outcome: the Group of 20 and the EU both play *protect* and the game ends at the *protect/protect* outcome. Governments in both groups retain tariffs and no trade occurs.

This outcome has two important characteristics. First, it is **Pareto suboptimal**. Pareto optimality is a way to conceptualize social welfare. An outcome is Pareto optimal when no single actor can be made better off without at the same time making another actor worse off. Pareto suboptimal refers to outcomes in which it is possible for at least one actor to improve its position without any other actor being made worse off. In the prisoner's dilemma the *protect/protect* outcome is Pareto suboptimal because both governments realize higher payoffs at *liberalize/liberalize* than at *protect/protect*. Thus, rational behavior on the part of each individual government, each playing its dominant strategy *protect*, produces a suboptimal collective outcome. The Group of 20 and the EU are both poorer than they would be if they liberalized trade.

Second, the *protect/protect* outcome is a **Nash equilibrium**. A Nash equilibrium is an outcome at which neither player has an incentive to change strategies unilaterally. If the Group of 20 changes its strategy from *protect* to *liberalize*, the outcome shifts to *liberalize/protect*, the Group of 20's least preferred outcome. Thus, the Group of 20 has no incentive to change its strategy unilaterally. If the EU changes its strategy from *protect*

to *liberalize*, the outcome moves to *protect/liberalize*, the EU's least preferred outcome. Thus, the EU has no incentive to change its strategy unilaterally either. Putting these two points together reveals the prisoner's dilemma's central conclusion: even though the Group of 20 and the EU would both gain from reciprocal tariff reductions, neither has an incentive to reduce tariffs. More broadly, the prisoner's dilemma suggests that even when all countries would clearly benefit from trade liberalization, political dynamics trap governments in a protectionist world.

Governments are unable to conclude agreements that make them all better off because each fears getting the "sucker payoff." If the Group of 20 and the EU agree to liberalize trade and then the Group of 20 complies with this agreement but the EU does not, the EU has exploited the Group of 20. The Group of 20 suffers the "costs" of rising imports without getting the "benefit" of increased exports. The gains from trade liberalization could be achieved, of course, if governments could enforce international trade agreements. Governments could agree in advance *to play* strategies if they were confident that cheating would be caught and punished. Moreover, because cheating would be punished, both would comply with the agreement. The international system provides no enforcement mechanism, however. Domestic political systems rely upon the police and the judicial system to enforce laws, but the international system does not have an authoritative and effective judicial system. Instead, the international system is anarchic; that is, it is a political system without an overarching political authority capable of enforcing the rules of the game.

Although the prisoner's dilemma is pessimistic about the prospect for international trade cooperation, cooperation in a prisoner's dilemma is not impossible. Cooperation can emerge if three specific conditions are met. First, cooperation can emerge in an iterated prisoner's dilemma, that is, in a game played repeatedly by the same governments (see Taylor 1976; Axelrod 1984; Keohane 1984; Oye 1986). Iteration changes the nature of the reward structure that governments face. In a one-shot play of the prisoner's dilemma, countries make a one-time choice and receive a one-time payoff. In an iterated game, however, governments make repeated choices and receive a stream of payoffs over time. Assuming that the two other necessary conditions are met, governments will prefer the stream of payments they receive from cooperating over time to the payoff they receive from cheating on an agreement. Iterating the game can therefore make it rational for a government to play the *liberalize* strategy.

Second, governments must use reciprocity strategies to enforce the *liberalize/liberalize* outcome. Although many **reciprocity** strategies exist,

the most well known is called **tit-for-tat** (Axelrod 1984). In tit-for-tat, each government plays the strategy that its partner played in the previous round of the game. Trade liberalization by one government in one round of play is met by trade liberalization from the other government in the next round. Should one government play *protect* in one round (that is, cheat on an existing trade agreement), the other government must play *protect* in the next round of play. Playing such tit-for-tat strategies allows governments to reward each other for cooperation and punish each other for cheating.

Finally, governments must care about the payoffs they will receive in future rounds of the game. If governments fully discount future payoffs, the iterated game essentially reverts back to a single play of the prisoner's dilemma; when it does, the threat of punishment in the next round of play can hardly be expected to promote cooperation in the current round. But if governments care about the future and if they use a reciprocity strategy such as tit-for-tat, then cooperation in an iterated prisoner's dilemma becomes rational: each government can realize a larger stream of payoffs by cooperating than it can realize by defecting.

The WTO provides the first two of these three necessary conditions. It helps iterate the game by creating expectations of repeated interaction. Membership in the WTO has been relatively stable. The number of countries that belong to the WTO has increased over time, and very few countries have left the organization after joining. As a consequence, WTO members know that the governments with which they negotiate today will be the governments with which they negotiate tomorrow, next year, and on into the future. In addition, WTO members interact regularly within the organization. Governments have already concluded eight formal bargaining rounds and are now engaged in the ninth such round. In addition to these formal rounds of negotiations, the WTO draws governments together for annual and semi-annual reviews of national trade policies. By bringing the same set of governments together in a regularized pattern of interaction, the WTO iterates intergovernmental trade interactions.

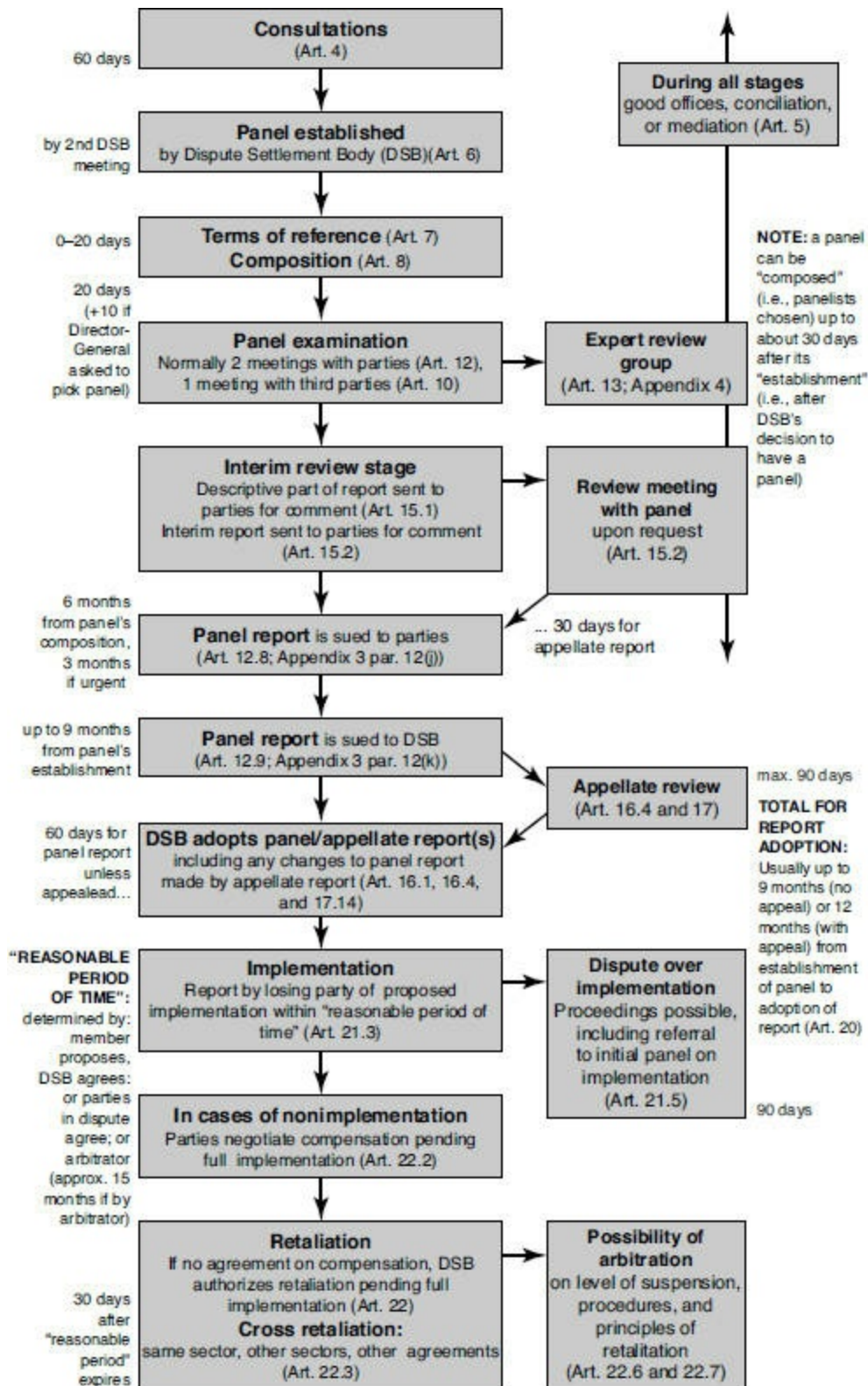
The WTO also provides the information that governments need in order to use reciprocity strategies. In order to use a tit-for-tat strategy effectively, governments must know when their partners are complying with trade agreements and when they are cheating. The WTO makes this easier by collecting and disseminating information on its members' trade policies. Moreover, WTO rules provide clear standards against which governments' trade policies can be evaluated. The WTO's most-favored nation clause,

for example, prohibits discriminatory practices except under a set of well-defined exceptions. To give another example, the WTO's rules governing domestic safeguards define the conditions that must be met in order for governments to temporarily opt out of commitments. These detailed rules increase transparency. Transparency means that it is easier for governments to determine whether a specific trade measure adopted by a particular government is or is not consistent with WTO rules. The high-quality information and the transparency provided by the WTO allow governments to monitor the behavior of other WTO members. This in turn makes it easier for governments to use reciprocity strategies to enforce trade agreements.

The ability of governments to use the WTO to enforce trade agreements is most clearly evident in the WTO's **dispute settlement mechanism**. The dispute settlement mechanism follows a standard procedure that was agreed to by all members of the WTO during the Uruguay Round (see [Figure 3.6](#)). A dispute is initiated when a government brings an alleged violation of WTO rules to the WTO Dispute Settlement Body (DSB, consisting of all WTO members). The DSB initially encourages the governments involved in the dispute to try to resolve the conflict through direct consultations. If such consultations are unsuccessful, the DSB creates a formal panel to investigate the complaint.

This panel is typically composed of three experts in trade law who are selected by the DSB in consultation with the governments involved in the dispute. The panel reviews the evidence in the case, meets with the parties to the dispute and outside experts if necessary, and prepares a final report that it submits to the DSB. The DSB must accept the panel's final report unless all WTO members, including the government that initially brought the complaint, vote against its adoption.

Both governments can appeal the panel's decision. If an appeal is requested, the DSB creates an appellate body composed of three to five people drawn from a list of seven permanent members. The appellate body can uphold, reverse, or modify the panel's findings, conclusions, and recommendations. The appellate report is given to the DSB for approval, and as with the panel report, the DSB can reject the report only with the consent of all member governments. If at the end of this process it is determined that the disputed trade measure is inconsistent with WTO rules, the government must alter its policy to conform to the rule in question or compensate the injured parties. The entire dispute settlement process, from initiation to appellate report, is supposed to take no longer than 15 months.



**FIGURE 3.6**  
The Dispute Settlement Mechanism

An ongoing dispute involving American cotton subsidies illustrates how governments use the dispute-settlement mechanism to enforce compliance



with trade agreements (see Schnepf 2010). The cotton subsidy case began in 2002. The Brazilian government complained to the WTO that subsidies paid by the U.S. government to American cotton farmers provided an advantage in global markets that harmed Brazil's cotton growers and violated WTO rules. The Bush administration defended the measures on the grounds that the subsidies represented a "safety net" that protected American cotton growers from volatile global commodity markets. Because the two governments could not settle the dispute through initial discussions, the WTO established a panel in early 2003.

The panel found that American subsidies violated several WTO rules. In particular, the panel ruled that the American cotton policy constituted an export subsidy and domestic production support that harmed Brazilian cotton growers. Although the United States appealed the ruling, the appellate panel upheld it. As a result, the United States modified its policy in an attempt to bring it in line with its WTO obligations. These changes failed to satisfy the Brazilian government, however. They requested that a WTO compliance panel evaluate whether the American adjustment brought the subsidies' regime in line with WTO rules. The compliance panel sided with Brazil; it found that the U.S. policy change was insufficient, a finding upheld by the appellate panel. As a consequence, the WTO authorized Brazil to retaliate against the United States by imposing tariffs on imports of U.S. goods into Brazil up to as much as \$823 million per year, the amount the American cotton policy cost Brazil.

Brazil's threatened imposition of these retaliatory tariffs induced the U.S. government to negotiate a less costly solution to the dispute. In April 2010 the two governments announced the results of these negotiations. Arguing that cotton subsidies formed part of its larger agricultural policy, the United States agreed to reform its cotton subsidies regime only as part of the 2012 Farm Bill. Second, until the subsidies regime is reformed, the United States agreed to pay Brazil \$147 million per year for capacity-building and technical improvement in Brazilian agribusiness. In exchange, Brazil agreed to not impose retaliatory tariffs against U.S. goods, services, or intellectual property. In other words, Brazil accepted current American policy, even though it violated WTO rules, and the United States agreed to compensate Brazil for doing so.

The dispute finally ended in 2014 as a result of two developments. The most important was that the U.S. government restructured its cotton support in the 2014 Farm Bill. Congress removed price supports and direct income supports for cotton producers. In their place, Congress enacted an insurance program that growers must pay into in order to qualify for

payments. Moreover, the insurance fund compensated farmers when they suffered a loss rather than providing benefits to ensure a given income. These changes brought U.S. policy into conformity with WTO rules. Second, once the 2014 Farm Bill was in place, Brazil offered to negotiate a final agreement that would end the dispute. In this agreement, announced on October 1, 2014, Brazil agreed to drop the cotton dispute and refrain from initiating any new WTO actions in return for U.S. commitment to the terms of the Farm Bill and a one-time payment to the Brazil Cotton Institute of \$300 million.

The cotton case illustrates how governments can use tit-for-tat strategies to enforce trade agreements. An alleged defection by the United States prompted a WTO investigation. This investigation indicated that U.S. policy violated WTO rules, and when the United States failed to bring its policies into line with its obligations, Brazil was allowed to retaliate by withdrawing concessions it had made previously to the Americans. In the language of the iterated prisoner's dilemma, the United States defected and Brazil, playing a tit-for-tat strategy, defected in response. Moreover, Brazilian retaliation came only after the WTO had determined that it was justified and the scale of the retaliation was proportionate to the injury suffered. Although the WTO's dispute resolution mechanism focuses our attention on a legalistic version of tit-for-tat, it also allows us to see in a very detailed way how the WTO can promote trade cooperation by helping governments enforce trade agreements. The cotton dispute is especially interesting as an illustration of how even (arguably) the most powerful WTO member can be made to bring its policies into accord with its WTO obligations.

The WTO thus helps governments gain the assurances they need in order to conclude the trade agreements required to capture the gains from trade. The WTO provides this assurance by allowing governments to monitor the behavior of their trade partners and to enforce the trade agreements they reach. By doing so, the WTO enables societies to capture the welfare gains the trade provides. In the absence of the WTO, or an institution that performed similar functions, it is unlikely that governments would be able to reach the agreements required to liberalize trade. Each society, and thus the world as a whole, would be poorer as a result.

## **CONCLUSION**

The WTO exists, therefore, because it facilitates international cooperation, thereby enabling societies to capture the welfare gains available from

trade. Trade raises social welfare by enabling consumers to enjoy a higher level of utility than if they could consume only goods produced at home. The principle of comparative advantage tells us that these welfare gains do not require a country to have an absolute advantage in anything. As long as a country is better at doing some things than others, it gains by specializing in what it does relatively well and trading for everything else.

Politics, however, makes it difficult for societies to realize these gains from trade. For reasons we examine in greater detail in the next chapter, governments often neglect consumer interests in favor of producer interests. Consequently, governments can capture the gains from trade only by negotiating agreements in which they exchange market access commitments. In such bargaining, governments strive to gain access to foreign markets for their comparatively advantaged industries in exchange for granting access to their markets in their comparatively disadvantaged industries. Consequently, governments employ bargaining power in an attempt to gain maximum access in exchange for minimal concessions. By providing a forum for bargaining, the WTO enables governments to liberalize trade more than they would be willing to do unilaterally.

Yet, concluding trade agreements is also complicated by the enforcement problem. Governments must believe that cooperation on their part will be reciprocated by cooperation from their partners. They must believe that their partners will not try to take advantage of them. And as the prisoner's dilemma highlights, unless such assurances are provided, governments have little incentive to cooperate. The international trade system lacks the equivalent of a state to enforce agreements, and thus governments face a pervasive enforcement problem when they try to cooperate for mutual gain. Consequently, it is difficult for governments to conclude mutually beneficial agreements, and as a result, societies have lower standards of living.

The WTO helps governments solve this enforcement problem. By enabling governments to feel reasonably secure that their partners will comply with the agreements they enter, the WTO provides the assurances necessary to achieve cooperation. Strictly speaking, the WTO is not an international equivalent of a state because the WTO does not have the authority or the capacity to punish governments that fail to comply with trade agreements. Instead, the WTO facilitates international cooperation by providing an infrastructure that allows governments to enforce agreements themselves. By providing a set of mutually agreed rules, by helping governments monitor the extent to which their partners comply with these rules, and by providing a dispute-settlement mechanism that helps

governments resolve those issues of compliance that do arise, the WTO enables governments to enforce effectively the trade agreements that they reach. The WTO thus provides enough assurance that all governments will live up to the agreements that they enter into and that no government will be able to take advantage of the others. By providing this infrastructure, the WTO enables governments to conclude the trade agreements necessary to capture the welfare gains from trade.

## KEY TERMS

Bargaining  
Contract Curve  
Dispute Settlement Mechanism  
Enforcement Problem  
Factor Endowments  
Heckscher-Ohlin Model  
Nash Equilibrium  
Outside Option  
Pareto Suboptimal  
Patience  
Reciprocity  
Tit-For-Tat

## SUGGESTIONS FOR FURTHER READING

For an approach that emphasizes the intuition of the theory of comparative advantage and downplays explicit theory, see Russell D. Roberts, *The Choice: A Fable of Free Trade and Protectionism*, 3rd edition (New York: Pearson, 2006).

For an excellent account of the theoretical debate over free trade, see Douglas A. Irwin, *Free Trade Under Fire*, 3rd edition (Princeton: Princeton University Press, 2015).

For comprehensive treatment of the WTO dispute settlement system, you should refer to The World Trade Organization, *A Handbook on the WTO Dispute Settlement System*, 2nd edition (Cambridge: Cambridge University Press, 2017).

For an evaluation of the dispute settlement mechanism's effectiveness, see Chad P. Bown and Petros C. Mavroidis, 2017. "WTO Dispute Settlement in 2015: Going Strong after Two Decades." *World Trade Review* 16(2): 153–158.