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# An Introduction to Non-Tariff Barriers to Trade

**R**ESTRICTIONS on international trade, primarily in the form of non-tariff barriers, have multiplied rapidly in the 1980s.<sup>1</sup> The Japanese, for example, began restricting automobile exports to the United States in 1981. One year later, the U.S. government, as part of its ongoing intervention in the sugar market, imposed quotas on sugar imports.

The increasing use of protectionist trade policies raises national as well as international issues. As many observers have noted, international trade restrictions generally have costly national consequences.<sup>2</sup> The net benefits received by protected domestic producers (that is, benefits reduced by lobbying costs) tend to be outweighed by the losses associated with excessive production and restricted consumption of the protected goods. Protectionist trade policies also cause foreign adjustments in pro-

duction and consumption that risks retaliation by the affected country.

As a type of protectionist policy, non-tariff barriers produce the general consequences identified above; however, there are numerous reasons, besides their proliferation, to focus attention solely on non-tariff barriers.<sup>3</sup> Non-tariff barriers encompass a wide range of specific measures, many of whose effects are not easily measured. For example, the effects of a government procurement process that is biased toward domestic producers are difficult to quantify. In addition, many non-tariff barriers discriminate among a country's trading partners.

This discrimination violates the most-favored-nation principle, a cornerstone of the General Agreement on Tariffs and Trade (GATT), the multinational agreement governing international trade. Not only does the most-favored-nation

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<sup>1</sup>See Page (1987) for a general discussion indicating that the proliferation of trade restrictions in recent years has taken the form of non-tariff, as opposed to tariff, barriers. A recent Congressional Budget Office study (1987) notes that the average tariff rate for most developed countries is less than 5 percent. There is no evidence of rising tariff rates or coverage. For example, U.S. tariff revenue as a percentage of total imports has changed very little between 1975 (3.9%) and 1986 (3.6%). See the *Statistical*

*Abstract of the United States* (various editions) for the figures for other years.

<sup>2</sup>For example, see Coughlin et al. (1988).

<sup>3</sup>See chapter 1 in Laird and Yeats (forthcoming) for a discussion of the policy issues raised by non-tariff barriers.

principle require that a country treat its trading partners identically, but it also requires that trade barrier reductions negotiated on a bilateral basis be extended to all GATT members. By substituting bilateral, discriminatory agreements for multilateral approaches to trade negotiations and dispute settlement, countries raise doubts about the long-run viability of GATT.

This paper provides an introduction to non-tariff barriers. We begin by identifying numerous non-tariff barriers and document their proliferation. We then use supply and demand analysis to identify the general effects of two frequently used non-tariff barriers: quotas and voluntary export restraints. Next, we consider why non-tariff barriers are used instead of tariffs. A brief history of GATT's attempts to counteract the expansion of non-tariff barriers completes the body of the paper.

## **NON-TARIFF BARRIERS: TYPES AND USE**

A tariff is a tax imposed on foreign goods as they enter a country; non-tariff barriers, on the other hand, are non-tax measures imposed by governments to favor domestic over foreign suppliers. Non-tariff barriers encompass a wide range of measures. Some have relatively unimportant trade effects. For example, packaging and labeling requirements can impede trade, but usually only marginally. Other non-tariff measures such as quotas, voluntary export restraints, trade restraints under the Multifiber Arrangement, non-automatic import authorizations and variable import levies have much more significant effects.<sup>4</sup> These "hard-core" non-tariff measures are designed to reduce imports and, thereby, benefit domestic producers. The discussion below focuses on these hard-core barriers.

### ***Quotas***

A quota is simply a maximum limitation, specified in either value or physical units, on imports of a product for a given period. It is enforced through licenses issued to either importers or exporters and may be applied to imports from specific countries or from all foreign

countries generally. Two examples illustrate these different characteristics. The United States imposes a general quota on dried milk imports; licenses are granted to certain U.S. trading companies, who are allowed to import a maximum quantity of dried milk based on their previous imports. In a different situation U.S. sugar imports are limited by a quota that specifies the shares of individual countries; the right to sell sugar to the United States is given directly to the governments of these countries.

### ***Voluntary Export Restraints and the Multifiber Arrangement***

Voluntary export restraints, which are nearly identical to quotas, are agreements between an exporting and an importing country limiting the maximum amount of exports in either value or quantity terms to be sold within a given period. Characterizing these restraints as "voluntary" is somewhat misleading because they are frequently designed to prevent official protective measures by the importing country. In the 1980s, for example, exports by the Japanese automobile industry to the United States and the United Kingdom have been limited "voluntarily" to prevent the governments of these countries from directly limiting imports of Japanese autos.

An example of a voluntary export restraint on a much broader scale is the Multifiber Arrangement. Originally signed in 1974 as a temporary exception to GATT and renewed three times since, the Multifiber Arrangement allows for special rules to govern trade in textiles and apparel. Under this agreement, quotas are set on most imports of textiles and apparel by developed countries from developing countries, while imports of textiles and apparel from other developed countries except Japan are not subject to any restrictions. Multilateral voluntary export restraint agreements are frequently called "orderly marketing agreements."

### ***Non-Automatic Import Authorizations***

Non-automatic import authorizations are non-tariff barriers in which the approval to import is not granted freely or automatically. There

<sup>4</sup>This subset of non-tariff barriers is taken from Laird and Yeats (forthcoming). This subset excludes a number of non-tariff barriers that can also have sizeable effects. Among these are government procurement policies, delays

at customs, health and sanitary regulations, technical standards, minimum import price regulations, tariff quotas and monitoring measures. See appendix 4 in Laird and Yeats for a glossary of terms associated with non-tariff barriers.

are two general categories of non-automatic licensing.

Discretionary licensing, often called liberal licensing, occurs when an importer's government must approve a specific import; however, precise conditions to ensure approval are not specified. Frequently, this form of licensing is used to administer quantitative limits. Under the current restraints on U.S. imports of steel, a domestic user can request authorization to exceed the maximum import limitation if the specific product is unavailable domestically at a reasonable cost. Exactly how availability and cost considerations affect the probability of an approval are left to the discretion of the authorities.

The second category of non-automatic import licensing requires the importer to meet specific conditions, such as minimum export performance, the use of the imported good for a specific purpose or required purchases of domestic products. In an export-import linkage scheme, a firm's value of imported components is limited to a maximum percentage of the value of its exports. This measure is intended to improve a country's trade balance and protect domestic producers of components.<sup>5</sup> Export-import linkage requirements are numerous. For example, in Yugoslavia during the early 1980s, authorized importers of automobiles were required to export goods totaling at least 30 percent of the value of each imported automobile.<sup>6</sup>

### *Variable Import Levies*

Variable import levies are special charges set to equalize the import price of a product with a

domestic target price. The levies are variable so that as the world price of a product falls (rises), the levy rises (falls).<sup>7</sup> The result is that price changes in the world market will not affect directly the domestic price. These measures are an integral aspect of the European Community's Common Agricultural Policy. For example, in March 1987, the European Community's price for wheat was \$8.53 per bushel, while the world price was \$1.95 per bushel. Prospective importers were faced with a levy of \$6.58 per bushel.<sup>8</sup>

### *The Use and Expansion of Non-Tariff Barriers*

In a current study, Laird and Yeats (forthcoming) measure the share of a country's imports subject to hard-core non-tariff barriers. Because countries frequently impose non-tariff barriers on the imports of a specific good from a specific country, but not on imports of the same good from another country, they disaggregated each country's imports by both product and country of origin to permit calculation of the total value of a country's imports subject to non-tariff barriers. Each country's "coverage ratio" is simply the value of imports subject to non-tariff barriers divided by the total value of imports.<sup>9</sup>

Table 1 shows the trade coverage ratio for 10 European Community and six other industrial countries for 1981 and 1986. In computing this ratio, the 1981 and 1986 non-tariff measures are applied to a constant 1981 trade base. Thus, the figures identify changes in the use, but not the intensity, of specific non-tariff measures, while holding constant the effects of trade changes.

<sup>5</sup>See Herander and Thomas (1986) for a theoretical demonstration that an export-import linkage scheme might not improve a country's trade balance.

<sup>6</sup>For details on the policies of Yugoslavia as well as numerous other countries, see "Survey of Automotive Trade Restrictions Maintained by Selected Nations" (1982).

<sup>7</sup>Variable import levies, which are actually variable tariffs, are considered non-tariff barriers in this study for two reasons. First, the international trade literature generally characterizes variable import levies as non-tariff barriers. See Nogués et al. (1986) for another list of non-tariff barriers that includes variable import levies. Second, Laird and Yeats (forthcoming) provide the most up-to-date data on non-tariff barriers and we have no way to remove variable import levies from their data.

<sup>8</sup>The numerical example is from Coughlin and Carraro (1988).

<sup>9</sup>One weakness of the coverage ratio as a measure of protectionism is that more-restrictive non-tariff barriers tend to

receive a lower weight in the construction of the coverage ratio than less-restrictive ones. For example, a non-tariff barrier that eliminated all imports of a good from a country would have a smaller impact on the coverage ratio than a less-restrictive measure. Assume that one country's imports are valued at \$100, \$15 of which comes from country A, and there are no non-tariff barriers. In this case, the coverage ratio is zero. Suppose that a non-tariff barrier is now imposed on imports of goods from country A. In the first case, assume that imports from country A decline from \$15 to \$10; alternatively, suppose that imports decline from \$15 to zero. The non-tariff barrier in the second case is more restrictive; however, the change in the coverage ratio does not reflect this fact. The coverage ratio becomes 10.5 percent ( $\$10/\$95$ ) in the first case and zero percent ( $\$0/\$85$ ) in the second. Thus, the "intensity" of the protection provided by non-tariff barriers is not measured accurately by this coverage ratio. An alternative measure focusing on the share of trade "affected" by non-tariff barriers, which also highlights the proliferation of non-tariff barriers, can be found in Laird and Yeats (1989).

**Table 1**  
**Non-tariff Trade Coverage Ratios for OECD Countries**

Importer <sup>1</sup>	Trade Coverage Ratio <sup>2</sup>		
	1981	1986	Difference
Belgium-Luxembourg	12.6%	14.3%	1.7%
Denmark	6.7	7.9	1.2
Germany, Fed. Rep.	11.8	15.4	3.6
France	15.7	18.6	2.9
Greece	16.2	20.1	3.9
Great Britain	11.2	12.8	1.6
Ireland	8.2	9.7	1.5
Italy	17.2	18.2	1.0
Netherlands	19.9	21.4	1.5
EC (10) <sup>3</sup>	13.4	15.8	2.4
Switzerland	19.5	19.6	0.1
Finland	7.9	8.0	0.1
Japan	24.4	24.3	-0.1
Norway	15.2	14.2	-1.0
New Zealand	46.4	32.4	-14.0
United States	11.4	17.3	5.9
All above	15.1	17.7	2.6

NOTE: Non-tariff measures include variable import levies, quotas, non-automatic import authorizations including restrictive import licensing requirements, quantitative "voluntary" export restraints and trade restraints under the Multifiber Arrangement.

<sup>1</sup>The following Organization for Economic Cooperation and Development (OECD) countries — Australia, Canada and Sweden — were excluded from the computations because of problems in compiling their non-tariff measures.

<sup>2</sup>The share of total imports (by value) subject to hard-core non-tariff measures. In computing this index, 1981 and 1986 non-tariff measures are applied to a constant 1981 trade base. Petroleum products have been excluded from the calculations.

<sup>3</sup>European Community intra-trade is excluded.

SOURCE: Laird and Yeats (forthcoming).

A number of facts emerge. First, the coverage ratio varies substantially across countries. In 1981, the coverage ratio ranged from 6.7 percent in Denmark to 46.4 percent in New Zealand and, in 1986, from 7.9 percent in Denmark to 32.4 percent in New Zealand. Second, for most countries, the coverage ratio has increased. This caused the coverage ratio using the world trade figures of all 16 countries to increase from 15.1 percent in 1981 to 17.7 percent in

1986. Third, the United States had the largest percentage-point increase, as its coverage ratio increased from 11.4 percent in 1981 to 17.3 percent in 1986. The 5.9 percentage-point increase was more than double the increase for all countries.

Laird and Yeats provide evidence that exports from developing countries to industrial countries are affected to a larger extent than trade among industrial countries. For example, the 1981 trade coverage ratio was 18.8 percent for developing country exports to industrial countries and 14.3 percent for intra-industrial country trade. A similar pattern prevailed in 1986 with a coverage ratio of 20.6 percent for developing country exports to industrial countries and 17.5 percent for intra-industrial country trade.<sup>10</sup>

Table 2 contains coverage ratio data on a product basis. As a result of the Multifiber Arrangement, trade in textiles and clothing is subject to non-tariff barriers. For example, slightly more than one-third of European Community and U.S. imports of textiles are affected, while approximately two-thirds of European Community and three-quarters of U.S. imports of clothing are affected. Since these goods are among the most important manufactured exports from developing countries, coverage ratios for imports from developing countries relative to industrial countries tend to be higher.

Table 2 also identifies some other manufactured goods affected substantially by non-tariff barriers, especially iron and steel and transport equipment. More than three-quarters of U.S. imports of iron and steel and more than 40 percent of transport equipment are affected. The corresponding figures for the European Community are 46.2 percent and 23.6 percent.

While trade in manufactured goods is affected substantially by non-tariff barriers, trade in agricultural goods is affected to an even greater extent. The coverage ratios for agricultural goods shown in table 3 are substantially above those for manufactured goods shown in table 2. The agricultural coverage ratios frequently exceed 70 percent; see, for example, the U.S. ratios for sugar and honey (91.9 percent), dairy products (87.8 percent) and oil seeds and nuts (74 percent). Even higher agricultural coverage

<sup>10</sup>While this differential may reflect discrimination directed at developing countries, another interpretation is that the differential is product-based. Chow and Kellman (1988), for

example, show that the relatively higher tariff rates faced by developing countries can be explained by product characteristics.

Table 2

### Coverage Ratios of Selected Non-tariff Measures on Selected Manufactured Goods: 1986

SITC	Description	EC (10) <sup>1</sup>	Switzerland	Finland	Japan	Norway	New Zealand	United States
61	Leather products	7.7%	30.8 %	0.0%	47.0 %	0.0%	59.9%	0.0%
62	Rubber products	9.1	0.0	0.0	13.6	0.7	53.9	0.0
63	Wood and cork	1.0	1.9	0.0	0.0	0.0	53.0	0.0
64	Paper and articles	5.9	0.0	0.0	0.0	0.0	48.6	0.0
65	Textiles	34.7	0.0	1.6	55.5	6.1	27.4	34.5
66	Cement, clay and glass	2.9	0.0	0.0	24.1	0.0	54.5	0.1
67	Iron and steel	46.2	1.0	0.0	0.0	0.0	64.1	76.3
68	Non-ferrous metals	0.8	1.9	3.5	0.4	0.0	8.7	0.0
69	Metal manufactures, n.e.s.	2.1	5.6	0.0	1.0	0.0	35.3	11.0
71	Non-electric machinery	3.1	4.7	0.0	4.4	0.0	35.9	0.0
72	Electric machinery	11.1	0.0	0.0	0.3	0.0	64.0	1.4
73	Transport equipment	23.6	84.7	0.0	17.3	0.0	22.1	41.1
81	Plumbing & lighting fixtures	0.0	0.0	0.0	0.0	0.0	68.2	0.0
82	Furniture	0.3	0.0	0.0	0.0	0.1	0.0	1.1
83	Travel goods	0.9	53.0	0.0	0.0	0.0	100.0	18.9
84	Clothing	65.7	18.6	12.1	11.3	86.5	52.2	76.4
85	Footwear	11.3	74.6	0.0	6.9	0.3	82.9	0.1
86	Instruments	3.8	0.0	0.0	14.1	0.0	5.3	0.0

NOTE: See table 1 for the list of hard-core non-tariff measures. The coverage ratio is, for each given product and country, the imports subject to a hard-core non-tariff measure divided by total imports.

<sup>1</sup>European Community intra-trade is excluded.

SOURCE: Laird and Yeats (forthcoming).

Table 3

### Coverage Ratios of Non-tariff Measures on Selected Agricultural Goods: 1986

SITC	Description	EC (10) <sup>1</sup>	Switzerland	Finland	Japan	Norway	New Zealand	United States
00	Live animals	60.2%	100.0%	95.3%	1.2%	98.0%	0.0%	0.0%
01	Meat	77.8	97.8	89.3	65.7	99.7	14.4	0.0
02	Dairy products	99.7	45.5	100.0	73.2	82.1	12.7	87.8
03	Fish and seafood	4.6	58.3	9.7	100.0	80.4	3.6	0.0
04	Cereals and preparations	96.9	87.8	83.4	32.5	100.0	5.1	0.0
05	Fruits and vegetables	36.0	44.8	51.6	18.3	100.0	39.2	0.9
06	Sugar and honey	85.8	0.0	89.1	84.6	100.0	0.9	91.9
07	Coffee and cocoa	17.5	0.0	0.0	0.0	100.0	0.9	2.3
08	Animal feeds	11.9	30.9	5.3	13.7	92.7	16.9	0.3
09	Food preparations	10.2	13.4	0.0	17.3	100.0	73.7	0.4
11	Beverages	24.9	76.4	88.0	70.7	100.0	5.6	0.0
12	Tobacco	0.0	0.0	0.0	84.3	0.0	5.1	0.0
21	Hides and skins	0.0	99.1	0.0	18.1	0.0	0.0	3.2
22	Oil seeds and nuts	24.8	56.0	100.0	4.3	100.0	0.0	74.0
23	Rubber	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Wood and cork	0.6	39.6	0.0	0.0	0.0	2.4	0.0
25	Pulp and paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Silk, wool, cotton, etc.	9.0	24.8	0.0	1.2	4.6	16.4	2.1
29	Crude animal & vegetable matter	19.0	78.0	5.3	51.8	69.1	11.2	11.0

NOTE: See table 1 for the list of hard-core non-tariff measures. The coverage ratio is, for each given product and country, the imports subject to a hard-core non-tariff measure divided by total imports.

<sup>1</sup>European Community intra-trade is excluded.

SOURCE: Laird and Yeats (forthcoming).

**Table 4**  
**The Use of Selected Non-tariff Measures**

Importer	Share of Imports Facing NTMs, 1981 <sup>1</sup>					Change in the Share of Imports Facing NTMs, 1981-86 <sup>2</sup>				
	QUOT	VER	MFA	NAIA	VIL	QUOT	VER	MFA	NAIA	VIL
Belgium-Luxembourg	0.3%	5.1%	1.2%	5.7%	5.2%	1.1%	2.2%	0.0%	0.0%	0.0%
Denmark	0.3	2.6	2.3	1.1	1.4	0.1	1.2	-0.1	0.0	0.0
Germany, Fed. Rep.	0.5	3.0	4.9	3.0	2.0	0.4	2.0	-0.6	0.0	0.0
France	5.8	1.2	1.8	7.1	2.2	1.6	1.8	0.0	0.0	0.0
Greece	8.2	4.8	1.2	3.9	3.8	0.4	4.4	0.0	0.0	0.0
Great Britain	2.2	2.0	2.9	5.1	4.4	-0.9	2.3	0.0	0.0	0.0
Ireland	0.1	4.6	1.3	2.2	2.2	0.1	1.5	0.0	0.0	0.0
Italy	7.5	0.8	1.8	7.0	6.6	0.6	1.2	-0.1	0.0	0.0
Netherlands	0.4	2.0	3.0	14.0	6.3	2.5	3.6	-0.2	0.0	0.0
EC (10) <sup>3</sup>	2.6	2.3	3.0	5.6	3.7	0.5	2.1	-0.2	0.0	0.0
Switzerland	2.5	0.0	0.4	2.8	0.5	0.0	0.0	0.0	0.0	0.0
Finland	0.9	0.0	0.2	6.7	1.8	0.0	0.0	0.1	0.0	0.0
Japan	14.2	0.0	0.0	7.7	1.8	0.1	0.0	0.0	0.0	0.0
Norway	5.2	0.0	0.0	2.2	0.0	-0.5	0.0	0.0	1.1	0.0
New Zealand	25.3	0.0	0.0	25.6	0.0	1.6	0.0	0.0	-8.8	0.0
United States	0.5	6.9	3.2	0.0	0.0	1.5	4.4	0.0	0.0	1.4
All above	4.0	3.1	2.3	4.2	2.0	0.7	2.2	-0.1	-0.1	0.4

<sup>1</sup>Petroleum products have been excluded from the calculations. The abbreviations for the non-tariff measures are as follows: QUOT—quotas; VER—voluntary export restraints; MFA—restrictions under the Multifiber Arrangement; NAIA—non-automatic import authorizations; and VIL—variable import levies.

<sup>2</sup>The change is the 1986 share less the 1981 share.

<sup>3</sup>European Community intra-trade is excluded.

SOURCE: Laird and Yeats (forthcoming).

ratios are found for the European Community and Japan.

Another dimension of the use of non-tariff barriers concerns differences in the use of specific barriers across countries. Table 4 shows the share of imports (by country) that faced different non-tariff measures in 1981 and how this share changed by 1986. A number of facts emerge. In 1981, non-automatic import authorizations and quotas affected the largest share of imports when all 16 countries are considered; by 1986, this was no longer the case. Voluntary export restraints, whose use in the United States, Greece, the Netherlands and Great Britain rose substantially, affected the largest share of imports (5.3 percent) by 1986. Meanwhile, the share of imports affected by quotas rose from 4 percent in 1981 to 4.7 percent by 1986.

Comparisons of the specific measures across countries indicate that voluntary export restraints were used more extensively by the United States than by other countries. By 1986,

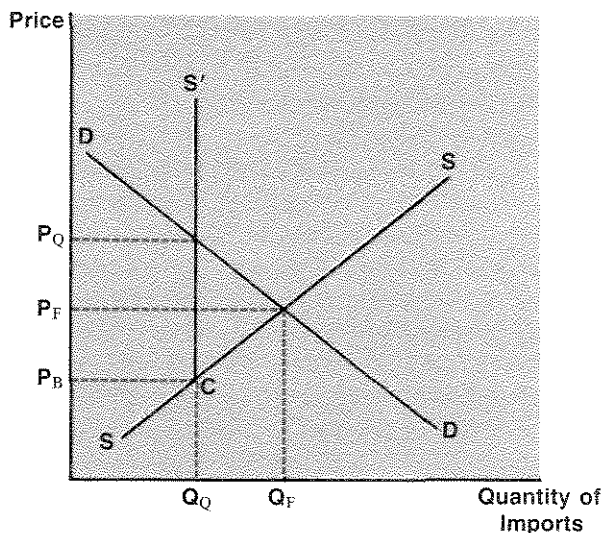
11.3 percent of U.S. imports were affected by voluntary export restraints; Greece, with 9.2 percent, had the next-highest share of its imports affected by these restraints.

### SUPPLY AND DEMAND ANALYSIS USING QUOTAS AND VOLUNTARY EXPORT RESTRAINTS

Although the quantitative effects of non-tariff barriers are not always easily identified and measured, a theoretical identification of their major effects can be derived using supply and demand analysis. We begin by examining the effects of a quota, then discuss how a voluntary export restraint can be analyzed similarly.

In figure 1, DD represents the U.S. import demand curve for some good produced by U.S. and foreign producers. The foreign supply curve (that is, the supply curve for imports into the United States) for the good is SS. With free trade, the United States will import  $Q_F$  units of the good and pay a price per unit of  $P_F$ .

Figure 1  
The Price and Quantity Effects of a Quota and a Voluntary Export Restraint



Now, suppose that an import quota of  $Q_Q$  is imposed by the United States. This restriction causes the import supply curve to become vertical at the restricted quantity. Thus, the import supply curve is the kinked curve  $SCS'$ . The restriction reduces the quantity of imports from  $Q_F$  to  $Q_Q$ , the domestic price to rise from  $P_F$  to  $P_Q$  and the foreign price to decline from  $P_F$  to  $P_B$ .<sup>11</sup> The higher domestic price reduces total U.S. consumption of the good, but increases U.S. production; thus, U.S. producers of the good benefit at the expense of U.S. consumers in general. The difference between what domestic and foreign consumers pay,  $P_B P_Q$ , is a premium per unit of imports that can be appropriated by exporters, importers or government. The method used to allocate import licenses determines the distribution of these premiums among the potential claimants.

A voluntary export restraint has the same general effects as an equivalent quota. A volun-

tary export restraint reduces the quantity of imports, which, in turn, causes the domestic price to rise and the foreign price to fall as shown in figure 1. Again, the higher domestic price benefits U.S. producers of this good at the expense of U.S. consumers. Finally, the difference between what domestic and foreign consumers pay,  $P_B P_Q$ , is a premium per unit of imports that can be captured by exporters, importers or government.

While the supply and demand analysis isolates the major effects of two frequently used non-tariff barriers, it conveys virtually no information about either the magnitude of the costs and benefits of non-tariff barriers or their dynamic consequences.<sup>12</sup> Various case studies, however, have provided estimates of these costs and benefits. A review of this literature can be found in Laird and Yeats. Two case studies are provided in the shaded inserts on pages 37 and 38 as examples of such analyses. The first example examines the impact of the U.S. quota on sugar imports; the second examines the effect of the U.S.-Japanese agreement to limit Japanese automobile exports to the United States.

As a protectionist policy, non-tariff barriers are a method for redistributing wealth from consumers in general to selected firms and workers. This redistribution is abetted by consumer ignorance and the costs of mobilizing an effective force to counteract protectionist demands. As Coughlin et al. (1988) have demonstrated recently, the benefits received by selected groups of firms and workers are far outweighed by the costs borne by the rest of the population.

## WHY USE NON-TARIFF BARRIERS INSTEAD OF TARIFFS?

Since non-tariff barriers have been used increasingly in recent years, an obvious question is why non-tariff barriers rather than tariff bar-

<sup>11</sup>Figure 1 can also be used to illustrate a variable import levy. While a quota limits the quantity of imports, a variable import levy is used to fix the price. Assuming a target (domestic) price of  $P_Q$ , when world prices fall below this price, the levy will be altered automatically to maintain the price of  $P_Q$ . Thus, no matter how far world prices decline, the quantity of imports will not rise above  $Q_Q$ . Consequently, a variable import levy and a quota have the same effect, even though they are implemented differently.

<sup>12</sup>Theoretical research on the impact of non-tariff barriers has explored various issues that we do not mention in the

text, two of which are mentioned below. Since many markets for internationally traded goods are imperfectly competitive, a standard topic in introductory international trade texts is to identify the effect of an import quota in the presence of monopoly. See Krugman and Obstfeld (1988) for an elementary discussion. Since voluntary export restraints discriminate among trading partners, the effects of this differential treatment have been explored. See Jones (1984) for such an analysis.

## A Voluntary Export Restraint in Practice: The U.S.-Japanese Automobile Agreement

One well-known example of a voluntary export restraint is the Japanese restraint on automobile exports to the United States. In early 1981, the Japanese imposed restraints to preempt more restrictive measures advocated by many, especially labor groups, within the United States.<sup>1</sup> These protectionist pressures increased during the late 1970s and early 1980s as automobile sales by U.S. producers declined and foreign producers captured larger shares of the U.S. market.

Collins and Dunaway (1987), as well as many others, estimated the effects of the restraints. These authors examined the restraints from 1981 to 1984. The examination revealed that the expected results did materialize.

With the restraints, the prices paid by U.S. consumers for Japanese automobiles rose. This reduced the competitive pressures on U.S. producers and non-Japanese exporters to the United States with the effect of increasing prices for these automobiles, but not as much as the rise in Japanese prices. The higher automobile prices reduced U.S. purchases, but the effects on U.S. and non-Japanese producers were mitigated by the relatively larger rise in the prices of Japanese automobiles and the resulting shift away from Japanese automobiles.

The restraints also induced quality changes as Japanese producers shifted their mix of exports toward larger and more luxurious models that generated more profits per unit. In addition, more "optional" equipment was installed in each unit. Consequently, the average transaction price of Japanese automobiles increased because of the pure price effect as well as the quality effects associated with the restraints.

In fact, the factors underlying the price change affect the prices of all automobiles

sold in the United States and complicate the estimation. For all new cars sold in 1984, Collins and Dunaway (1987) estimated an average increase of \$1,649 (17 percent), which consisted of a pure price effect of \$617 per car and a quality effect of \$1,032 per car. The higher price led to a reduction in 1984 purchases of approximately 1.5 million.

As suggested above, the export restraints had differential effects. For example, the price increase for domestically produced automobiles of \$1,185 (12 percent) was less than the increase for imports from Japan of \$1,700 (22.5 percent). This relative price change allowed the U.S. producers to increase their market share by 6.75 percentage points, enough to leave domestically produced unit sales unchanged despite a decline of unit sales in the United States. Thus, the U.S. reduction in 1984 purchases of 1.5 million was borne by foreign producers. These production changes were estimated to generate increased U.S. automotive employment in a range from 40,000 to 75,000 jobs.

The higher automobile prices represent one facet of the losses for consumers. The pure price effect caused U.S. consumers to suffer a loss of consumers' surplus of \$6.6 billion in 1984. In addition, U.S. consumers were worse off to the extent that quotas limited their range of automotive choices. Purchases of increased quality resulting from the quota totaled \$10.75 billion in 1984. The welfare loss associated with these quality expenditures was not estimated, but it is clear that this loss is possibly greater than the loss associated with the pure price effect.

The losses of U.S. consumers are primarily transfers from consumers to domestic and foreign producers. Estimates of the benefits for domestic and foreign producers hinge on

<sup>1</sup>Feenstra (1985) provides numerous details concerning legislation designed to restrict imports. In early 1981, Sens. Danforth and Bentsen introduced a bill to restrict automobile imports from Japan to 1.6 million units annually during 1981-83, which is very close to the volun-

tary export restraint of 1.66 million. Other proposed legislation was more restrictive in providing for smaller import quotas and in specifying the minimum content of American parts and labor for automobiles sold in the United States.



the assumption about the distribution of the pure price effects. If the export restraints led to equivalent pure price effects on domestic and imported cars, then U.S. producers gained \$5 billion in 1984 and foreign producers gained \$1.5 billion. Of the foreign producers' gain, Japanese producers received \$1 billion. On the other hand, if the export restraints led to equivalent quality effects, then U.S.

producers gained \$1.25 billion in 1984 and foreign producers gained \$5.5 billion. Of the foreign producers' gain, Japanese producers received \$5.25 billion. If accurate, this figure provides an obvious reason why the Japanese government continued the restraints beyond early 1985 when the Reagan administration decided not to request an extension of the agreement.<sup>2</sup>

<sup>2</sup>In early 1985, the Reagan administration decided that the domestic automobile industry had adjusted to foreign competition and announced they would not ask for an extension. Nevertheless, in early 1985, the Japanese government extended the restraints through early 1987 at a level 24 percent above the previous

level and in 1987 extended the restraints for another year without a further increase in the ceiling. The unilateral decision to extend the restraints is a clear indication that the Japanese, especially automobile producers, were benefiting from the restraints.

riers have become so popular.<sup>13</sup> A review by Deardorff (1987) concludes that there currently is no definitive answer to this question; however, numerous reasons have been suggested.

### *The Impact of GATT: An Institutional Constraint on the Use of Tariffs*

GATT is an institution whose original mission was to restrict the use of tariffs. Given this constraint, policymakers willing to respond to protectionist demands were forced to use non-tariff devices. Thus, in this case, non-tariff barriers are simply a substitute for tariffs. In fact, research by Ray (1981) indicates that non-tariff barriers have been used to reverse the effects of multilateral tariff reductions negotiated under GATT.<sup>14</sup>

### *Certainty of Domestic Benefits*

Deardorff (1987) suggests that non-tariff barriers are preferred to tariffs because policymakers and demanders of protection believe that the effects of tariffs are less certain. This perception could be due to various reasons, some real and some illusory. For example, it may be much easier to see that a quota of 1 million limits automobile imports to 1 million than to demonstrate conclusively that a tariff of, say, \$300 per car would result in imports of only 1 million automobiles.

In part, doubts that tariffs will have the desired effect is based on the possibility of actions that could be taken to offset the effects of higher tariffs. For example, the imposition of a tariff may induce the exporting country to subsidize the exporting firms in an attempt to reduce the tariff's effectiveness. The effects of quotas, on the other hand, are not altered by such subsidies.<sup>15</sup>

<sup>13</sup>Dating from Bhagwati's seminal discussion in 1965, comparisons of the theoretical effects of tariffs and non-tariff barriers have been a frequent topic in the international trade literature. Under various circumstances, a tariff and a specific non-tariff barrier, say, a quota, can cause different final prices and production despite reducing trade by equal amounts. These circumstances produce what is termed nonequivalence. Tariffs and quotas are equivalent when markets are perfectly competitive. In this case, there is no reason to prefer one to the other.

Bhagwati (1965, 1968) has demonstrated that the equivalence of tariffs and quotas breaks down in imperfectly competitive markets. Numerous situations can be characterized as imperfectly competitive. To date, however, the literature has provided no compelling reasons for preferring non-tariff over tariff barriers. For a recent example from this literature, see Krishna (1985).

<sup>14</sup>A question remains, however, as to why the framers of GATT chose to focus primarily on tariffs rather than non-tariff barriers.

<sup>15</sup>Deardorff's (1987) review provides another perspective on the role of uncertainty. The optimality of trade policy tools has been explored extensively using trade models with uncertainty. These models, which rely on risk aversion (that is, an individual requires a higher expected return as compensation for an increase in risk) and uncertainty originating outside a country, conclude that quotas are preferred to tariffs. The country is insulated from the uncertainty stemming from randomness in world prices or import supply curves by a quota that stabilizes the price and quantity of imports. One problem with this explanation, however, is that the quota is instituted before the uncertain state of the world is known, while in the real world protection is generally provided after a change in the world market.

## A Non-Tariff Barrier in Practice: The U.S. Sugar Import Quota

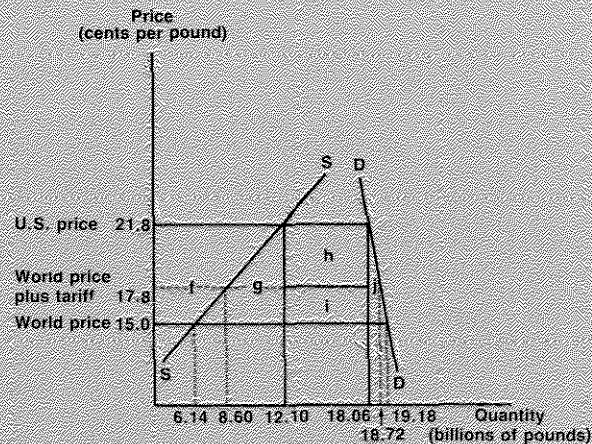
Since 1982, the United States has imposed quotas on sugar imports to support a domestic price guarantee by the federal government that exceeds world market levels.<sup>1</sup> The high price has stimulated U.S. sugar production and shifts in demand toward other sweeteners, which has necessitated large reductions in sugar import quotas in recent years.

Tarr and Morkre (1984) estimated the costs of the sugar import quota for fiscal year 1983 (October 1982-September 1983). Actually, the quota is combined with a tariff, so tariff revenues as well as quota revenues arise. The quota revenues are captured by 24 foreign countries who have the right to sell sugar in the United States.

Figure 2 illustrates some of the effects of the U.S. trade restrictions in 1983. The lines SS and DD are the U.S. supply and demand curves for sugar. The world price was 15 cents per pound, and U.S. purchases were assumed to have no effect on this price. With free trade, U.S. production, consumption and imports would have been 6.14 billion pounds, 19.18 billion pounds and 13.04 billion pounds. To raise the internal (U.S.) price to 21.8 cents per pound, a tariff of 2.8 cents per pound and a quota of 5.96 billion pounds were used. The value of the quota is 4.0 cents per pound, because 2.8 cents per pound of the 6.8 cents per pound differential between the U.S. price and the world price is due to the tariff.

The welfare effects of the trade restrictions are indicated by the areas f, g, h, i and j. The price-increasing effects of the trade restrictions cause consumers to suffer a loss of consumer surplus equal to \$1.266 billion, the sum of areas f, g, h, i and j.<sup>2</sup> Producers gain, in the form of producer surplus, area f whose value is \$616 million. The U.S. government also gains \$167 million in tariff reve-

Figure 2  
The Effects of Trade Restrictions on the U.S. Sugar Market



Source: Krugman and Obstfeld (1988).

ue, which is represented by area i. Consequently, the net effect for the United States is a loss of \$483 million, which is the sum of areas g, j and h. Area g is the loss due to inefficient production and area j is the loss due to inefficient consumption. Area h, which is equal to \$238 million, is the value of the import licenses received by foreign suppliers. In other words, the quota entails a transfer from U.S. consumers to foreign producers of \$238 million.

The preceding analysis, while effectively highlighting the winners and losers from the U.S. sugar program, is not the entire story. These estimates pertain to one year only. Since the U.S. sugar policy is ongoing, the losses are ongoing as well. In addition, important dynamic interrelationships between policy changes and production and trade changes exist.

<sup>1</sup>Maskus (1987) concluded that U.S. sugar production and trade have been directed by government policies almost continuously for 200 years.

<sup>2</sup>Tarr and Morkre's (1984) estimate of the consumer cost of the U.S. sugar program is consistent with other

studies. Maskus (1987) surveyed studies of the costs borne by U.S. consumers and found estimates ranging from \$1 billion to \$2.7 billion.

Maskus (1987) has identified a number of the dynamic consequences of the U.S. sugar program, many stemming from the fact that sugar has several close substitutes. Corn sweeteners, non-caloric sweeteners, honey and specialty sugars are all close substitutes. Higher sugar prices have induced the production of alternative sweeteners that compete with and, consequently, threaten U.S. sugar producers.

The fact that sugar is used in different goods has set in motion a number of adjustments. Examples abound of the distortions induced by the artificially high U.S. sugar price. For example, the large price differential between U.S. and foreign sugar provides a cost advantage to foreign, especially Canadian, food-processing firms. The sugar policy can be viewed as a tax on U.S. refiners and processors that was not levied on foreign firms.

Trade flows responded to these price changes as a rapid expansion in imports of sugar-containing goods ensued. In fact, the differential between U.S. and world sugar prices became so large at one time that sugar-containing goods were imported solely for their sugar content. For example, during 1985, world sugar prices declined so sharply that, in June 1985, the U.S. sugar price was 776 percent of the world price. This difference induced some firms in the United States to import Canadian pancake mix, which was not subject to the quota, and process it to extract the sugar.

The induced changes in production and trade have forced a number of additional U.S. actions to maintain the sugar prices. For fiscal year 1985, the U.S. sugar import quota was reduced 17 percent. This was followed by reductions of 27.6 percent in 1986 and 45.7 percent in 1987. Trade restrictions on sugar substitutes also have resulted. Two of these are: 1) an emergency ban on imports of certain syrups and blended sugars in bulk in June 1983; and 2) emergency quotas on a broad range of sugar-containing articles in both bulk and retail forms in January 1985.

The increasingly restrictive import barriers have produced tensions with numerous exporters of sugar, most of whom are developing countries. To conform with the General Agreement on Tariffs and Trade, the import quotas must be applied in a non-discriminatory fashion. The United States applied this provision by basing its quota allocation on imports during the relatively free-market period of 1975-81. Attempts to maintain constant shares for most countries, however, ran into practical problems. Countries experiencing rapid growth in sugar exports to the United States between 1975 and 1981 were subjected to substantial cuts between the end of the free-market period and the beginning of the quotas. For example, sugar exports from Honduras were reduced from 93,500 tons in 1981 to 28,000 tons in 1983.

The effect of this cut was mitigated somewhat in 1983 when the United States transferred 52 percent of Nicaragua's quota to Honduras, an action that simultaneously punished the Sandinista regime and rewarded a neighboring state thought to be in danger from the Nicaraguan-supported rebellion. This action violated GATT rules and generated much criticism of the United States. Such a quota system increases the likelihood that trade policy is used for noneconomic reasons.

The lessons from the U.S. sugar program are straightforward. First, significant costs have been imposed on U.S. consumers. Second, the resulting distortions in economic incentives have harmed U.S. producers dependent on sugar. Third, economic responses to the legislation have revealed a number of loopholes that have necessitated additional restrictions and distortions so that U.S. sugar producers could continue to benefit. Fourth, U.S. attempts to ensure fairness have necessitated substantial resources to ascertain production and trade behavior. Finally, the program has been used for political purposes to reward and punish foreign countries.

## *Benefits to Other Parties*

The supply and demand analysis of quotas and voluntary export restraints highlights the difference per unit of import between what domestic and foreign consumers pay. This price differential reflects the extent of the gains that are available for some group to appropriate. With tariffs, the price differential is captured by the domestic government in the form of tariff revenue. With non-tariff barriers, the domestic government is not a direct beneficiary unless it sells the rights to import to the highest bidders. Otherwise, domestic importers, foreign exporters and foreign governments capture these gains. The potential distribution of these benefits can influence the domestic government's choice between tariff and non-tariff barriers.

With voluntary export restraints, the price differential identified above is typically captured by the exporting firms from the foreign country. This result may reduce the likelihood that the foreign country will retaliate against such restrictions. Given certain demand conditions in both the U.S. and foreign markets, voluntary export restraints can entail a substantial redistribution from consumers in the importing country to selected producers in the exporting country. For example, Collyns and Dunaway (1987) estimate that the U.S.-Japanese voluntary export restraint on automobiles yielded increased benefits to selected Japanese auto producers ranging from \$1 billion to \$5.25 billion in 1984.

Hillman and Ursprung (1988) extend the preceding idea using a simple model of trade policy formulation in which a democratic government is choosing between a tariff and a

voluntary export restraint.<sup>16</sup> A simplification in this model, whose importance is discussed below, is that rival political candidates place no value on tariff revenue. Assume a voluntary export restraint and a tariff generate identical domestic producer benefits. Politicians will support the voluntary export restraint over the tariff because the voluntary export restraint generates benefits for foreign producers that, in turn, can be appropriated partially by the politicians in the form of campaign contributions. On the other hand, the tariff revenue is assumed to have no value for politicians. Candidates for elective office are viewed as announcing trade policy positions to maximize campaign contributions from domestic and foreign producer interests.

In addition to increasing the probability that protectionism will take the form of voluntary export restraints rather than tariffs, the argument reveals a way that political candidates can personally capture revenues that, with tariffs, would have accrued to the domestic government. Nonetheless, the assumption about the perceived value of tariff revenue to politicians and the fact that consumer interests are ignored in the analysis suggests one should be cautious in generalizing this result.

The possible benefits to domestic politicians of using non-tariff rather than tariff barriers are not restricted to campaign contributions. For example, a tariff is an explicit tax on consumers while a quota is an implicit tax on them. Policy-makers might find it easier to support quotas and other non-tariff barriers because they will not be directly associated with a tax increase that consumers, as voters, might resist.<sup>17</sup>

<sup>16</sup>Husted (1986) also connects foreign lobbying to the domestic economy. He finds that the dollar value of foreign lobbying in the United States is small relative to other traded service flows and that the returns to foreign lobbying generate large returns. For example, Husted calculated that the expenditure in the United States of \$1.4 million on foreign lobbying by the world automobile industry came primarily from Japan. Given the estimates by Collyns and Dunaway (1987) and others indicating Japanese automobile rents exceeded \$1 billion in 1984, U.S. politicians do not appear to be capturing much of these rents.

<sup>17</sup>A neglected issue in the preceding comparison of non-tariff barriers with tariffs is the distribution of these restrictions across industries. While Ray (1981) found that non-tariff barriers and tariffs are biased toward industries in which the United States has a comparative disadvantage,

he also found some major differences. Tariffs are biased toward low-skill rather than capital-intensive industries and are unrelated to product heterogeneity and the geographical dispersion of domestic production facilities. On the other hand, non-tariff barriers are biased toward capital-intensive industries producing fairly homogeneous products. Production in these industries tends to be distributed across regions consistent with the distribution of population.

## GATT AND NON-TARIFF BARRIERS

The history of multilateral trade negotiations dealing with non-tariff barriers is brief.<sup>18</sup> Multilateral trade negotiations are conducted under the auspices of the General Agreement on Tariffs and Trade, which was created shortly after World War II. GATT, a term that encompasses the multilateral agreement governing international trade, the bodies administering the agreement, and all associated trade-related activities, has focused on the reduction of tariff rather than non-tariff barriers. To date, seven rounds of GATT negotiations have been completed, with the first six concerned almost exclusively with tariffs.<sup>19</sup>

### *The Tokyo Round*

The Tokyo Round, the most recently completed round lasting from 1973 to 1979, was a comprehensive effort to reduce trade obstacles stemming from tariffs and non-tariff measures. New or reinforced agreements, called "codes," were reached on the following non-tariff measures: 1) subsidies and countervailing duties; 2) government procurement; 3) technical standards; 4) import licensing procedures; 5) customs valuation; and 6) anti-dumping.<sup>20</sup>

The code on subsidies and countervailing duties prohibits direct export subsidies, except under certain situations in agriculture. This code is noteworthy in extending GATT's prohibition of export subsidies to trade in raw materials. Because nearly all governments subsidize domestic producers to some extent, the code established criteria to distinguish between a domestic and an export subsidy. Domestic subsidies that treat domestic and export activities identically are generally allowed. Countervailing duties, which are tariffs to offset a subsidy received by a foreign exporter, are prohibited

unless the subsidized goods are shown to be causing (or threatening) "material" injury to a domestic producer. This code also allows a country to seek redress for cases in which another country's subsidized exports displace its exports in third-country markets.

The code on government procurement states that, for qualifying nonmilitary purchases, governments (including government-controlled entities) must treat foreign and domestic producers alike. In addition to resolving disputes, the code establishes procedures for opening and awarding bids.

The code on technical standards attempts to ensure that technical regulations and product standards such as labeling, safety, pollution and quality requirements do not create unnecessary obstacles to trade. The code does not specify standards; however, it establishes rules for setting standards and resolving disputes.

The code on import licensing procedures, similar to the code on technical standards, is not spelled out in detail. Generally speaking, governments stated their commitment to simplify the procedures that importers must follow to obtain licenses. Reducing delays in licensing and paperwork are two areas of special interest.

The code on customs valuation established a uniform system of rules to determine the customs value for imported goods. This code uses transaction prices to determine value and is designed to preclude the use of arbitrary values that increase the protective effect of a tariff rate.

Finally, the anti-dumping code prescribes rules for anti-dumping investigations, the imposition of anti-dumping duties and settling disputes. The standards for determining injury are clarified. This code obligates developed countries to treat developing countries preferentially.

<sup>18</sup>For a brief history of multilateral trade negotiations, as well as details on the current negotiations, see *The GATT Negotiations and U.S. Trade Policy*, a 1987 study by the Congressional Budget Office. For additional details on the current multilateral negotiations, see Anjaria (1986) and the 1987 report by the United States International Trade Commission, *Operation of the Trade Agreements Program*.

<sup>19</sup>The sixth round, known as the Kennedy Round, marked the first time for a GATT agreement on non-tariff barriers. Agreements were reached on an anti-dumping code and the elimination the U.S. system of American Selling

Prices, which applied a tariff rate for certain imports to an artificially high dutiable value. The dutiable value was set equal to the price of a competing good produced domestically instead of to the import's actual invoice price. This system was applied to a small portion of total imports, primarily benzenoid chemicals and rubber footwear. Both agreements were blocked by Congress, but were accepted in the next round of negotiations.

<sup>20</sup>Non-tariff barriers were also reduced in civil aircraft and selected agricultural goods, primarily meat and cheese.

## The Uruguay Round

The Tokyo Round codes have relied on good-faith compliance, which has tended to undermine their effectiveness. Streamlining and resolving disputes is a priority during the current round of multilateral negotiations, the Uruguay Round. The Tokyo Round codes will be reviewed and possibly modified during the Uruguay Round. In particular, broadening the government procurement code to include service contracts will be discussed. Concerning the technical standards code, agreements dealing with the mutual acceptance of test data generated by other parties and the openness of the activities of standards bodies will be sought. A major issue in the anti-dumping code is how to handle input dumping (that is, export sales of products that contain inputs purchased at dumped prices).

The Uruguay Round, begun in September 1986, has and will discuss a number of non-tariff barrier issues, many of which extend beyond the codes of the Tokyo Round. Trade issues involving agriculture and services (banking, construction, insurance and transportation) are of paramount importance. The United States has proposed the elimination of all trade- and production-distorting agricultural policies. While the major agricultural nations have agreed to the principle of liberalizing agriculture, the sweeping nature of the U.S. proposal has been resisted by some nations, especially the European Community. With respect to services, the primary goal is to establish principles for extending GATT coverage to this trade.

A recent study by the Congressional Budget Office (1987) predicts that the performance of the Uruguay Round will be judged largely on its handling of non-tariff barrier issues. GATT has not effectively combatted rising non-tariff barriers for many reasons. Two reasons are that the effects of non-tariff barriers are less transparent than the effects of tariffs and, in many cases, non-tariff barriers are designed to satisfy a domestic rather than an international objective. A major obstacle is determining at what point a national economic policy, whose international effects are somewhat uncertain, becomes an internationally unacceptable non-tariff barrier. These national economic policies have frequently resulted from the lobbying efforts of strong domestic constituencies such as agricultural interests. Thus, major trade policy

reform will be met with much resistance from these groups.

## CONCLUSION

Non-tariff barriers have effects similar to those of tariffs: they increase domestic prices and impede trade to protect selected producers at the expense of domestic consumers. As shown in the case studies of sugar and automobiles, they also have other effects, generally adverse.

Despite the adverse national consequences, the use of non-tariff barriers has increased sharply in recent years. The chances for a reversal of this trend appear to be small. The variety of non-tariff measures, the difficulties of identifying and measuring their effects and the benefits received by specific groups combine to make a significant reduction of non-tariff barriers in the ongoing Uruguay Round negotiations unlikely.

The original mission of GATT, which has been largely achieved, was to reduce tariffs. The question, however, of why policymakers have preferred to use non-tariff barriers rather than tariffs in recent years remains. The more certain protective effects of non-tariff barriers is one plausible explanation. A second explanation, which focuses on the distribution of the benefits, is that the benefits of non-tariff barriers can be captured by foreign producers and domestic politicians. Such an allocation of benefits increases the probability that the political process generates larger amounts of non-tariff barriers relative to tariffs. A final explanation is that their adverse effects are generally less obvious to consumers than the effects of tariffs.

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