Auctioning Tariff Quotas for U.S. Sugar Imports

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Abstract: Auctioning the right to import sugar to the United States has been suggested as an alternative to the current system, which gives imports rights to exporting countries based on their shares of U.S. imports during 1975-81. This article explains the origins and operation of the U.S. sugar tariff quota. The pattern of imports under the U.S. quota exempt, sugar import program provides evidence of how the supplier shares of U.S. sugar imports would change were an auction allocation system employed.

Keywords: sugar imports, quota, tariff quota, tariff-rate quota, auction.

Introduction

Since 1990, the United States has employed a tariff-rate quota to regulate the volume of sugar imports. The right to export sugar to the United States is granted to selected countries, thereby dictating the sourcing of U.S. sugar imports as well as their total volume. The distribution of market shares under the current U.S. sugar import regime differs from the distribution that would occur if a tariff were employed to yield the current volume of imports (the tariff-equivalent of a quota). Some countries that export sugar to the United States do so only because of the export rights they have been granted. Exports from these countries displace exports by lower cost exporters and result in an inefficient allocation of resources among sugar exporters.

Some economists have advocated auctioning export rights as a fairer and more efficient system than the current allocation, which is based on historical trade shares. Some policy advisors have advocated auctioning export rights as a means of raising revenue to finance the environmental restructuring of the Florida sugar industry. This paper examines how supplier market shares would likely change if the current country-specific system of allocating export rights were replaced by an auction. The first section provides some policy history and explains how tariff-rate quotas operate. The second discusses different methods of allocating tariff-rate quota rights, and the third shows the supplier market shares that would likely emerge were tariff-rate quota rights allocated by auction.

Some Policy History

The United States first employed a quota to regulate the domestic sugar supply in 1934 under the Jones-Costigan Act. The Department of Agriculture was responsible for calculating annual domestic needs. The U.S. total was then divided among U.S. beet sugar, U.S. cane sugar, and cane sugar from U.S. dependencies (Hawaii, Puerto Rico, Virgin Islands, Philippines) and Cuba. Less than 1 percent of the total was allocated to other sugar suppliers and was subject to additional duties. The group shares were based on market shares during 1925-33. The operation of the program changed several times between 1934 and 1975. Notably, Philippine independence, Hawaiian statehood, and the Cuban Revolution altered the status of the various suppliers (see Ballinger, 1971).

Because of record high world sugar prices, the United States removed the quota in 1974 and allowed essentially free trade in raw sugar. A small specific tariff remained. As world sugar prices returned to their long-run trading range, the United States attempted to regulate imports by increasing its sugar import fee. But as world prices continued to fall, the import fee mechanism proved ineffective. Finally, in May 1982, the United States re-imposed a quota. Since then, a global quota has regulated import volume. Country-specific quotas were allocated among sugar exporters in proportion to their average market share of U.S. raw sugar imports during 1975-81, exclusive of the highest and lowest years (see Suarez, 1997).

Since 1982, the objective of U.S. sugar import policy has been to adjust the global quota so that domestic producer prices for beet and raw cane sugar remain above the normative minimum prices established in U.S. farm legislation. Country-specific quota shares have been reassigned in line with diplomatic considerations. For example, the Republic of South Africa and Nicaragua have each lost and then regained quota or tariff quota rights. The Haitian quota has been suspended since 1992.

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The use of high fructose corn syrup as a substitute for cane and beet sugar by U.S. food processors increased dramatically during the 1980s, reducing domestic demand for refined sugar. The burden of adjusting to lower domestic demand for refined sugar was shifted from domestic producers to foreign quota holders by reducing the global quota. Country quotas decline in direct proportion with the global quota, but the absolute size of a country's quota is prohibited from falling below one shipload of sugar, defined as 7,258 short tons. Several countries are at the shipload minimum. Therefore, small shares of the global quota increase as the global quota declines, in turn reducing the shares of larger shareholders. The reallocation necessitated by the minimum boatload constraint explains most of the difference between the 1982 and 1997 shares in table B-1.

In May 1989, in response to a formal complaint by Australia, a panel of the General Agreement on Tariffs and Trade (GATT) found the administration of the U.S. sugar program to be in violation of Article IX of the GATT. The United States was requested to "either terminate these restrictions or bring them into conformity with the General Agreement." On October 1, 1990, the United States initiated a "tariff-rate quota" (TRQ) or "tariff quota" for sugar. Tariff quotas are considered GATT-consistent, and 'supplier-tariff quotas' - those granting rights to foreign suppliers - are specifically allowed in GATT Article XIII. As table B-1 shows, however, the transformation of quotas into tariff quotas is more cosmetic than substantive.

Tariff-Rate Quotas

A tariff-rate quota is literally what it says: A quota for a volume of imports at a (favorable) tariff, as opposed to a quota for a volume of imports. The tariff-rate quota granted to Taiwan in 1996/97, for example, gave Taiwan the right to export 24,345 tons of raw sugar to the United States at a tariff rate of 0.625 cent per lb. This appears to differ little from the earlier "absolute" quota. The distinction is this: under a quota it is legally impossible to ship more than, in this case, 24,345 tons. Under the tariff-rate quota, however, Taiwan can ship more than 24,345 tons but the tariff rises to 16.72 cents per lb. on shipments beyond the quota. This higher tariff is called the 'over-quota tariff.' In principle, the tariff-rate quota regime allows potential access to the U.S. market. For example, Surinam is a major sugar exporter to the European Union (EU) but has never had a U.S. sugar quota. If Surinam wished to export sugar to the United States it could do so, but it would be subject to the over-quota tariff on every unit. As with the traditional quota, countries that benefit from favorable discrimination under GSP (General System of Preferences) and CBI (Caribbean Basin Initiative) are exempt from the 0.625 cent per lb. duty for shipments within quota, but not from the over-quota tariff.

Table B-1--U.S. import market shares for raw sugar

Largest suppliers	1982 (quota)	1997 (tariff quota)
	Percent	
Dominican Rep.	17.6	17.0
Brazil	14.5	14.0
Philippines	13.5	13.0
Australia	8.3	8.0
Guatemala	4.8	4.6
Argentina	4.3	4.2
Peru	4.1	4.0
El Salvador	2.9	2.5
Colombia	2.6	2.3
South Africa	2.1	2.2
Sub-total	74.7	72.5

Source: U.S. Customs Bureau.

The Sugar Tariff Quota and The Uruguay Round

Under the Uruguay Round of the GATT the United States obligates itself to import no less than 1.23 million short tons (2,000 lb.) of raw cane sugar annually under tariff-rate quota. It may expand the tariff-rate quota beyond 1.23 million short tons. In fiscal 1997, for example, imports of 2.1 million short tons were allowed. The Uruguay Round tariff schedule sets the U.S. over-quota tariff for raw sugar at 17.17 cents per lb. for fiscal 1996 and gradually reduces it to 15.36 cents per lb. in fiscal 2000. In addition to the tariff-rate quota for raw sugar, which is the focus of this analysis, there is also a tariff-rate quota for refined sugar. It is set at not less than 24,250 short tons annually. The present in-quota tariff for refined sugar is 1.66 cents per lb. and the present over-quota tariff is 17.65 cents per lb.

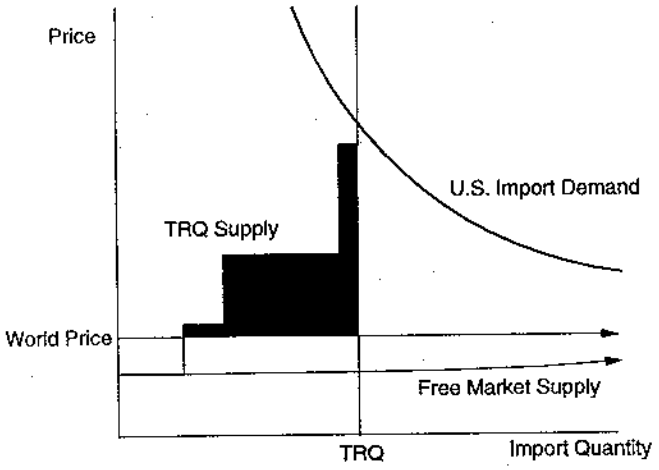
Mechanisms of Tariff Quota Allocation

Supplier-Tariff Quotas

The U.S. sugar tariff-rate quota, because it is granted to specific suppliers and may only be filled with the supplier's own sugar production, qualifies as a supplier tariff-rate quota. Figure B-1 contrasts two excess supply or export supply curves. The lower, smoothly curved supply function represents the global aggregation of the willingness to export raw sugar. This is simply the horizonal aggregation of the marginal cost curves of potential sugar exporting firms. The arrow indicates that the curve continues far beyond the right margin.

The upward stepped function to the left represents the effective supply schedule induced by (nontransferable) supplier tariff-rate quotas. Each step represents a different sugar exporting country. The simplifying assumption employed here is that each country granted tariff-rate quota rights has a single marginal cost for all its sugar exports. For the amounts allowed under tariff-rate quota, this is not an unreasonable assumption.

Figure B-1
Supplier Tariff-Rate Quota



Source: Economic Research Service, USDA.

The tariff-rate quota supply function has a steeper slope than the global supply curve because lower cost suppliers cannot export all they would be willing to export. Moreover, because tariff-rate quota rights have also been granted to some relatively high-cost sugar producers (those corresponding to the steps lying above the line marked "world" price), the possession of tariff-rate quota rights induces these countries (or firms within them) to produce at a marginal cost greater than the 'world' price.

Changing how the global quota is allocated among suppliers will not increase the volume of U.S. sugar imports, and it is therefore unlikely to have any significant effect on the world price. The shaded area above the world price line and below the tariff-rate quota supply schedule represents a misallocation of productive resources. Recall that the supply function represents the marginal cost of producing and exporting sugar, so the shaded area below the curve represents payments to productive factors, such as wages, land rent, and interest. The shaded area above the world price may be considered wasteful because the market value of the product (raw sugar) does not cover the cost of production for these producers.

The difference between the world price and the domestic price may be regarded as the amount of rent granted to tariff-rate quota holders, at least for those suppliers with a cost of production no greater than the world price. Higher cost producers receive less rent than competitive producers, consequently a more general definition of tariff-rate quota rent is:

Rent for supplier [I]=U.S. domestic price raw sugar price at port of entry
less tariff (if applicable)
less transport cost from 'I' to U.S.
less the greater of
marginal cost for [I] f.o.b.
or world price (f.o.b. at I)

The expression above is if the value exporter 'I' would be willing to pay for tariff-rate quota rights if they were for sale. Exporters with costs of production below the world price would never pay more than the adjusted U.S. domestic price less world price because they can always dispose of their output at the world price. Exporters with costs of production above the world price will only be willing to pay the adjusted U.S. domestic price less their marginal cost because any larger payment results in a loss.

Auctions as Markets for Rationed Goods

Bidding on tariff-rate quota rights will result in winning bids equal to their rent value, the difference between the U.S. domestic price and the prevailing world price less transport and duty. As explained above, high-cost exporters (with costs above the prevailing world price) will not rationally bid more than the difference between the U.S. domestic price and their marginal cost. Consequently, an auction induces exporters to separate themselves into two groups, those with marginal costs less than or equal to the world price (who will likely place winning bids) and those with marginal costs greater than the world price (who will not rationally bid as much as lower cost producers). Because only efficient producers purchase tariff-rate quota rights, the allocative inefficiencies among exporters induced by supplier tariff-rate quotas are removed. Moreover, the U.S. government captures the full value of the tariff-rate quota rights in the form of auction revenue. This entails a redistribution of income from former tariff-rate quota holders to the U.S. Government.

The revenue raised by a TRQ auction will equal the difference between the domestic and world price times the amount of tariff-rate quota auctioned: the rectangle in figure B-1. If any former tariff-rate quota holders had marginal costs above the world price, the rent distributed by granting tariff-rate quotas must be less than auction revenue. That is, the area of the rectangle is greater than the rectangle less the shaded, stepped region. If, after achieving an efficient allocation of tariff-rate quota rights, the U.S. Government wished to use the auction revenue to 'compensate' those governments formerly granted tariff-rate quota rights by lump sum payments, it could make these payments and have money left over (the shaded stepped area). The fact that the winner can compensate the losers and have money left over means that this policy reform would make the United States better off and no exporting countries worse off.

Who Benefits from a Tariff Quota Auction?

If an auction were to be adopted, the question becomes one of which sugar-exporting countries would be most likely to supply raw sugar to the United States. The problem is approached by examining the pattern of quota-exempt imports of raw sugar by U.S. sugar refiners.

The Quota-Exempt Import Program

The U.S. Government allows domestic sugar refiners to import raw sugar above the tariff-rate quota as long as the refined sugar is a) re-exported in refined form; b) re-exported in sugar- containing products; or c) used for the production of polyhydric alcohol (7 CFR 1530). The program allows domestic refineries to use processing capacity beyond that allowed under tariff-rate quota. The restrictions on refined sugar marketing ensure that quota-exempt imports do not directly influence the domestic sugar market, although there may be cost savings that result from greater capacity use.

The refined re-export program accounts for the majority of quota-exempt imports. We focus on its operation, noting only that the sugar-containing products and polyhydric alcohol programs operate in an analogous fashion. The program allows individual refineries to apply to the Secretary of Agriculture for a license to import up to 50,000 metric tons of raw sugar. Such sugar must be re-exported or transferred to a manufacturer (of sugar-containing products for export) within 90 days of import. The sugar importer must be bonded. The bond can be drawn against by the U.S. Government if the importer violates the terms of the program. That is, if quota exempt sugar is not re-exported or transferred within the 90 day period, then:

> *....payment will be made to the United States of America under the bond of a monetary amount equal to the difference between the Number 11 contract price and the Number 14 contract price, per pound of raw sugar, in effect on the last market day before the date of entry of the sugar or the last market day before the end of the period during which export was required, whichever difference is greater, times the quantity of refined sugar, converted to raw value, that should have been, but was not, exported in timely compliance with the requirements of this subpart. In the event no Number 11 contract price or Number 14 contract price is reported by the New York Coffee, Sugar and Cocoa Exchange, for the relevant market day, the Licensing Authority may estimate such price as he or she deems appropriate.* 7CFR1530.103 (g)

Note that the Code of Federal Regulations employs the same method to approximate the monetary value of the quota rents as that suggested in the previous section of this paper. (The Number 11 contract is for raw sugar f.o.b. at export source; the Number 14 contract is for raw sugar c.i.f at U.S. ports of entry.) Refiners who violate the program guidelines must also absorb the freight differential between the two contracts.

Because there are no quota rents to be captured, refiners importing under any of the quota-exempt programs have a pure market-based incentive to choose the least-cost source of supply for raw cane sugar. Consequently, the pattern of quota-exempt imports approximates that which would occur in the absence of any import restriction. The import volume remains the same whether or not an auction system is used, but the exporting countries and their shares would certainly be different.

Table B-1 shows the distribution of quota-exempt sugar imports by country of origin and by port of entry for 1993-95. The distribution of trade represents the solution to a transportation (or allocation) problem, the objective of which is to minimize the cost of transporting sugar from export sources to import destinations. Over 98 percent of the trade enters Atlantic or Gulf ports. The countries supplying the quota-exempt trade have two distinguishing characteristics: 1) they are efficient enough to export at the world price (around 11 cents per lb. or $240 per metric ton during this period) and 2) they are relatively close to U.S. ports of entry, giving them a transportation advantage over more distant, but equally efficient exporters such as Australia, Swaziland, or Southern Brazil.

Table B-2 shows the average shares of the quota exempt trade for 1993-95 (column 1). These shares may be compared with the shares granted under the tariff quota. Tariff-quota shares are based on the market shares of U.S. sugar imports during 1975-81 (column 2). The shares of the tariff quota in fiscal 1997 are essentially the same (column 3).

The accompanying pie charts, figure B-2, illustrate the contrasting distributions of tariff quota and quota-exempt imports. Guatemala (39 percent), Colombia (20 percent), and other countries in Central America plus the Dominican Republic (39 percent) account for 98.4 percent of the quota-exempt trade (top pie). The remaining 1.6 percent share of 'other countries' amounts to 70 percent of imports under the TRQ, while Guatemala's and Colombia's shares fall to 2.3 percent and 4.6 percent, respectively. Of the other major quota-exempt suppliers, the Dominican Republic, with the largest single share of the tariff-rate quota (17 percent), accounts for most of the 23.9 percent (middle pie). The bottom pie focuses on the major shareholders of the tariff-rate quota trade which are not major quota-exempt suppliers. Brazil (14 percent), the Philippines (13.1 percent), and Australia (8 percent) are the largest shareholders of this group.

The distribution of trade of tariff-rate quota imports is significantly different from the distribution of quota-exempt imports. Our argument is that the tariff-rate quota distribution corresponds to the distribution that would be expected were there no restrictions on U.S. sugar imports. A possible counter-argument is whether the quota-exempt exporters would be able to supply the tariff-rate quota market in addition to the quota-exempt trade. Table B-3 shows the total exports of the major quota-exempt suppliers and their tariff-rate quota exports. In 1997, the total tariff-rate quota was set at 2.1 million tons. Quota-exempt imports averaged around 400,000 tons between 1993 and 1996, yielding total imports

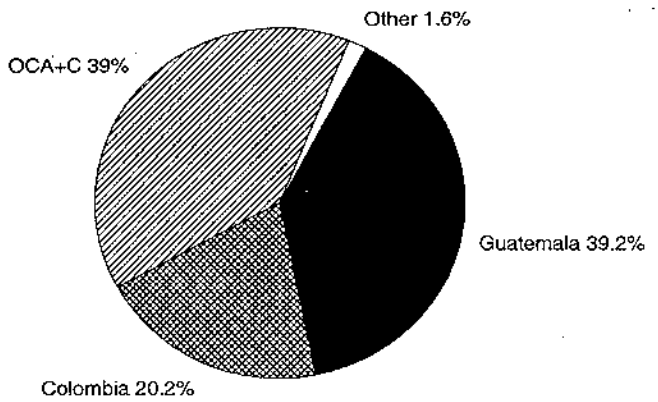
Table B-2--Market Shares of U.S. Sugar Imports

		Quota exempt (avg) 1993-95	Free Imports (avg) 1975-81	Tariff-Quota FY 1997
Guatemala		39.2	4.8	4.6
Colombia		20.2	2.4	2.3
Costa Rica		11.4	1.5	1.4
Honduras		11.0	1.0	1.0
Dominican Rep.		9.2	17.6	17.0
El Salvador		5.8	2.6	2.5
Nicaragua		1.7	2.1	2.0
Other		1.6	68.0	69.2
Guatemala		39.2	4.8	4.6
Colombia		20.2	2.4	2.3
OCA+C		39.0	24.8	23.9
Other		1.6	68.0	69.2
Quota exempt				30.8
Brazil				14.0
Philippines				13.0
Australia				8.0
Argentina				4.2
Peru				4.0
Panama				2.8
Other				23.1
	St. Christopher-Nevis			2.2
	Swaziland			1.5
	Thailand			1.4
	Mozambique			1.3
	Mexico			1.2
	Taiwan			1.2
	Zimbabwe			1.2
	Mauritius			1.2
	Guyana			1.2
	Ecuador			1.1
	Jamaica			1.1
	Belize			1.1
	Malawi			1.0
	Fiji			0.9
	Bolivia			0.8
	India			0.8
	Trinidad-Tobago			0.7
	Barbados			0.5
Minimum	Congo			0.3
boatload	Haiti			0.3
nations	Madagascar			0.3
7,258 tons	Uruguay			0.3
	South Africa			0.3
	Gabon			0.3
	Paraguay			0.3
	Papua New Guinea			0.3
	Cote d'Ivoire			0.3

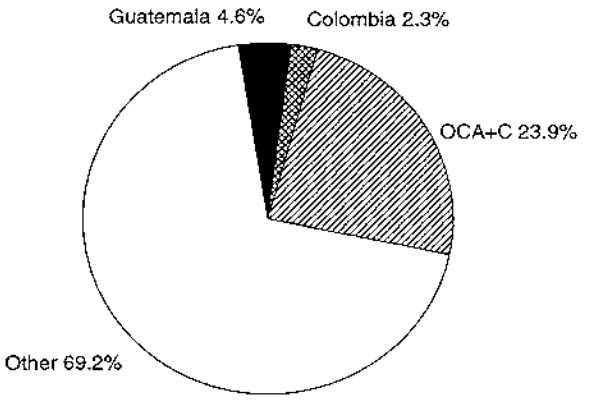
Source: U.S. Customs Bureau.

of 2.5 million. The 2.5 million also happens to be the total exports of the seven major quota-exempt suppliers. At least in 1997, these seven suppliers could have supplied all U.S. raw sugar imports. For years when the tariff-rate quota is higher, other suppliers would have to be drawn upon, but the bulk of the trade would still be supplied by Central America, Colombia, and the Dominican Republic.

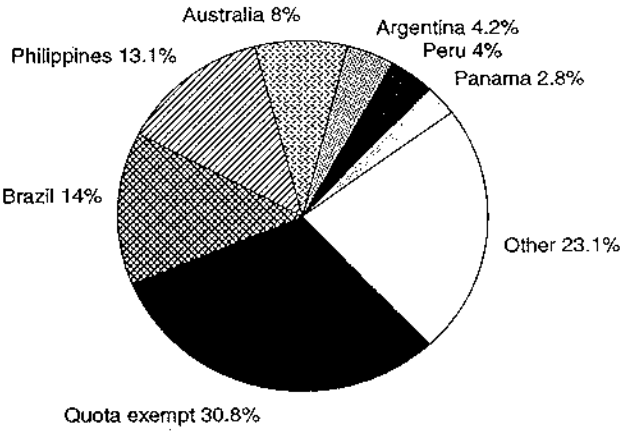
Figure B-2
Market Shares of U.S. Sugar Imports



Quota-Exempt Suppliers



Tariff-Quota Suppliers



Tariff-Quota Suppliers

Source: U.S. Customs Bureau.

Table B-3--Sugar exports by major quota-exempt suppliers, 1997

	Total	U.S. tariff-rate quota
	1,000 tons	
Guatemala	1,012	97
Colombia	585	173
Costa Rica	159	30
Honduras	52	20
Dominican R.	347	357
El Salvador	177	53
Nicaragua	183	43
Total	2,515	773

Source: U.S. Customs Bureau.

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