



2003

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### Recommended Citation

Meiners, Jeremy R. (2003) "United States Sugar Trade," *University Avenue Undergraduate Journal of Economics*: Vol. 8 : Iss. 1 , Article 5.

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## **United States Sugar Trade**

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## **I. Introduction**

The United States policy towards the importation of sugar has been and continues to be one of protection for domestic producers. In 1982, a sharp decrease in the price of sugar brought about the adoption of trade restrictions in the United States that would keep the domestic price of sugar above that of the world market (Hannah 39). The form of trade restriction chosen in 1982 was that of a country specific quota, which in 1990 became a tariff-rate quota. This quota system has dramatically reduced the amount of foreign sugar entering the United States, and, as a consequence, raised the domestic price of sugar within the United States to nearly three times the price of world sugar and lowered the amount of sugar consumed within the United States (SSSOR 41). Currently, the tariff-rate quota is still in effect, and its effects on the United States are prevalent.

The best means to understand the effects of the tariff-rate quota system on production and consumption of sugar is by creating an economic model. By analyzing the most recent figures concerning consumption, importation, production, and tariff-rate quotas, an economic model of the sugar market of the United States can be produced. From this model, the effects of the removal of the tariff-rate quota system can be seen, as well as the effects on domestic consumers and producers. Through this model, an accurate picture of whom the tariff-rate quota affects and what these effects are is shown.

In order to understand the effects of trade restrictions on sugar, the type of sugar to be studied must be selected. Sugar can be divided into three broad categories, raw sugar, refined sugar, and specialty sugar. First, raw sugar is the sugar immediately produced from sugar producing agricultural products. The agricultural products most commonly used in sugar production are sugar beets and sugar cane. Sugar beets are

grown predominately in temperate climates and undergo extensive processing in order to become sugar. Sugar beets tend to take more capital in the production of raw sugar than does the alternative, sugar cane (Hannah 16). Sugar cane, on the other hand, is predominately produced in tropical climates and undergoes a moderate amount of processing in the production of raw sugar (Hannah 16). Sugar cane is the predominate form of sugar exported and imported throughout the world, especially concerning the importation of sugar into the United States. Refined sugar is raw sugar that goes through a process that removes molasses, color, and other impurities to produce a finished sugar that is sold to consumers (Hannah 18). Of importance, refined sugar produced from sugar cane and sugar beets is identical in all respects. Lastly, specialty sugars are forms of refined sugars that are produced for specific consumption uses. Examples of such specialty sugars are cube sugar, icing sugar, and confectioner's sugar (Hannah 19).

The category of sugar that will be used in analyzing the United States production, consumption, and restriction on trade will be raw sugar. Raw sugar is the form of sugar that is imported into the United States from world producers. However, the exportation of refined sugar from the United States does have an effect on the amount of raw sugar imported. Only under this circumstance will refined sugar be included within this analysis.

## II. Current United States Trade Restrictions

Before looking at the current rates of production and consumption within the United States, the types, causes, and effects of current trade restrictions must be shown. The trade restrictions of the United States on sugar come in two forms. First of all, a basic tariff is imposed on almost all of the raw sugar imported into the United States. The current rate for raw sugar from countries with Normal Trade Status is 1.4606 cents per kilogram, which is approximately 64.39 dollars per ton (USITC). For countries without Normal Trade Status, the rate is 4.3817 cents per kilogram, which is approximately 193.20 dollars per ton (USITC). However, countries within free trade areas are not affected by this tariff. The countries included in this category are Mexico, Canada, and Israel, of which Mexico is the only exporter of raw sugar (USITC).

The next and more predominant form of trade restriction on the importation of raw sugar into the United States is that of the tariff-rate quota. The tariff-rate quota, as defined by Steven Husted and Michael Melvin in International Economics, is a “policy that allows a certain quantity of a good into a country at a low tariff rate but applies much higher rates to quantities that exceed the quota” (Husted 563). The effect of a tariff-rate quota is essentially the same as the effect of a regular quota. A certain amount of the imported good is allowed to enter the country at a rate equal to or lower than the domestic price, but, once the quota limit is reached, the price of the imported good becomes much higher than the domestic price for the good. This will cause consumers to purchase the cheaper domestic good, unless the domestic price of the good becomes unusually high. The rate for imports of sugar above the tariff-rate quota level is, at its minimum, 35.74 cents per kilogram, which is approximately 1575.87 dollars per ton.

This raises the price of imported sugar to be way above the United States domestic price of sugar, meaning that no sugar will be imported within the second-tier of the tariff-rate quota. Currently, the allocation of the tariff-rate quota is based on historical trade with exporting countries (Barshefsky). To explain, the amount of sugar that each foreign country can export to the United States is determined on the amount of exports provided from this country within the last five years. The effect of the historical trade technique in determining the amount of exports per country is that certain countries are preferred in the exportation of sugar to the United States. This preference is retained throughout each year by the higher amounts exported in the five years prior.

Despite the trade restrictions placed on most countries, a certain amount of imported sugar is not affected by tariffs or the tariff-rate quota. For the 1999 fiscal year, the North American Free Trade Agreement allotted 26,000 tons of raw or refined sugar to be imported into the United States if Mexico produces a surplus of sugar (SSSOR 55). The allotment for the 2001 fiscal year is 117,000 tons of raw or refined sugar, which is due to the gradual increase of sugar importation by the United States as to coincide with NAFTA (Barshefsky). Also, raw sugar imported into the United States with the intention of re-export as refined sugar is not affected by tariff rates or the tariff-rate quota. The amount of sugar re-exported by the United States during the 1999 fiscal year was 230,000 tons (SSSOR 58). For the 2001 fiscal year, the estimated amount of sugar imported for re-export is 250,000 tons (58). The intention behind this policy is to not harm the established sugar refineries within the United States by the tariff rate and the tariff-rate quota.

During the 1999 fiscal year, the amount of raw sugar imported into the United States was approximately 1,457,000 tons, of which 256,000 tons are not taxed or counted towards the tariff-rate quota due to being exempt from trade restrictions (SSSOR 56). The revenue earned by the government from the base tariff on the importation of sugar during the 1999 fiscal year was approximately 77,332,000 dollars. For the 2001 fiscal year, the amount of raw sugar allotted to enter the United States is approximately 1,359,000 tons, of which 367,000 tons are not taxed or counted towards the tariff-rate quota due to being exempt from trade restrictions (Barshefsky).

The reasoning behind the United States restrictions are rooted in a loan program designed to assist United States agricultural producers. The loan program offers a price to sugar producers that is higher than the world price during the harvest season in order to even out the price of sugar throughout the year, since the price of sugar is less during the harvest season due to the increase of supply. However, the loan program is non-recourse, which means that the loan program forces the government to keep the sugar for which it offered the loan, if the producer does not pay back the loan (Hannah 36). In order to alleviate the enormous governmental surplus of sugar that would be caused if sugar prices became low, the United States created a sugar quota in 1982, when world sugar prices became very low, to increase the domestic price of sugar. Sugar producers now could sell their produce in the domestic market for a higher rate, causing producers to not take a loan from the government for their crop (Hannah 37). The sugar quota remained until 1990, when it was challenged by Australia in the GATT, and was replaced by the tariff-rate quota (Hannah 37). The tariff-rate quota has had the same effects as the tariff



of 1982, concerning the amount of sugar entering the United States from foreign countries and its effect on the United States sugar market.

The most recent concerns and issues raised about the importation of sugar into the United States have dealt with the North American Free Trade Agreement. NAFTA, which began on January 1, 1994, is an agreement between the United States, Canada, and Mexico to remove all trade restrictions between the member countries. Sugar, however, has undergone heated debate concerning the removal of trade barriers. According to the initial NAFTA agreements, the United States will allow Mexico to export 25,000 tons of sugar per year to the United States during the first six years of NAFTA. Mexico, during these first six years, would have to align its tariff regime for sugar to that of the United States. From the seventh to fourteenth year, the United States is to increase the potential amount of Mexican sugar to be imported into the United States to 250,000 tons. On the fifteenth year, all restrictions of trade concerning sugar should be removed by the United States (NAFTA 3). Under the terms of NAFTA, the United States and Mexico will form a customs union concerning the importation of sugar. Both countries will have similar trade restrictions on the importation of sugar, in order to maintain a higher domestic price while freeing trade between the two countries. For the United States, this may lower sugar prices by a small amount, if the United States does not decrease the amount of sugar imported from the rest of the world. For Mexico, the added demand for sugar will increase production of sugar, and, since Mexico usually produces a surplus of sugar, the amount of sugar consumption in Mexico will not change. Overall, the net gain for the United States will be small, while the net gain for Mexico will be slightly larger than that of the United States. Currently, as stated above in the allotment for Mexico for the 2001

fiscal year, the United States is allowing only 117,000 tons of sugar to enter into the United States from Mexico, while the initial agreement was for 250,000 tons. This decision by the United States to not uphold the NAFTA agreement is clearly a violation of the original terms, and the United States should raise the allotment of sugar imports from Mexico to 250,000 tons, if it wishes to abide by NAFTA.

### **III. Current United States Consumption and Production**

Trade restrictions have the effect of lowering consumption and raising production, as compared with free trade status, of the restricted good within the country that possesses the trade restriction. The current rates of consumption and production of raw sugar within the United States, therefore, are affected by the United States restrictions on the importation of raw sugar. The current rate of consumption is lower than the rate of consumption that would exist if the United States had no restrictions on the importation of raw sugar. Likewise, the current production rate is higher than the rate of production that would exist if the United States had no trade restrictions. Under these circumstances, the current market for sugar within the United States is affected by the trade restrictions imposed on the importation of sugar.

The means by which the production and consumption of raw sugar are affected are through the domestic price. For the 1999 fiscal year, the average domestic price for raw sugar was 22.07 cents per pound, which is approximately 441.40 dollars per ton (SSSOR 41). In the world market, the average price of raw sugar was 7.05 cents per pound, which is approximately 141.00 dollars per ton (SSSOR 40). The difference between the domestic and world price of raw sugar was 300.40 dollars per ton, which is caused predominantly by the tariff-rate quota imposed by the United States.

United States consumption has been affected greatly by this high cost for sugar. The amount of sugar consumed in the 1999 fiscal year was 10,500,000 tons (SSSOR 24). However, the demand for sugar has declined due to sugar substitutes, especially High Fructose Corn Syrup (Hannah 39). High Fructose Corn Syrup is a sugar substitute produced predominately from corn. Typically, the price of High Fructose Corn Syrup is

higher than the price of sugar. The price of High Fructose Corn Syrup in the 1999 fiscal year was 12.32 cents per pound (SSSOR 42). In the United States, though, this price is much lower than the domestic price for sugar, causing incentive to consumers to substitute High Fructose Corn Syrup for sugar. High Fructose Corn Syrup, unlike sugar, is a liquid, which makes it an imperfect substitute for sugar. However, the beverage industry of the United States, a large consumer of sugar, easily switched to the use of High Fructose Corn Syrup, causing a dramatic drop in the amount of sugar consumed within the United States (Hannah 110). Of note, the High Fructose Corn Syrup market will more than likely have an effect on Mexico with the adoption of NAFTA, since the price of sugar in Mexico and the United States will be relatively the same and above the world price of sugar.

Production and producers of sugar within the United States have benefited from the trade restrictions on the import of sugar. Initially, the implementation of the tariff-rate quota allowed for the maintenance and increase of domestic production of sugar. Domestic producers were offered high prices for their produce, which encouraged producers to produce more sugar. However, the High Fructose Corn Syrup market has reduced the amount produced by lowering the demand for sugar (Hannah 110). Nonetheless, domestic producers of sugar have greatly benefited from the high domestic price for sugar, and the rate of sugar production has increased since the implementation of the tariff-rate quota. In the 1999 fiscal year, the amount of sugar produced was 8,750,000 tons (SSSOR 24).

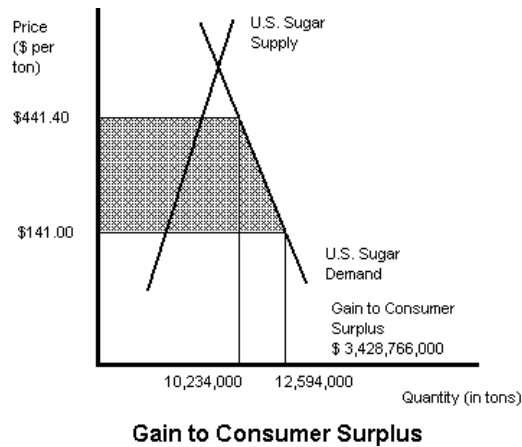
#### **IV. Effects of Trade Restrictions on the United States**

To fully understand the effects of the tariff-rate quota, an estimation of the United States production and consumption must be made, with the United States having no trade restrictions. From this estimation, the amount of consumer surplus, producer surplus, deadweight cost, and net gain can be calculated. However, before such calculations are made, a few parameters must be set. First of all, the United States will be considered a small country in terms of its effect on the world sugar market. Obviously, the United States is a large country, since it is one of the ten largest consumers of sugar (Hannah 76). Nonetheless, since this is only a rough estimate, assuming the United States to be a small country is sufficient. Next, the United States elasticity of demand will be assumed to be  $(-0.20)$  (Carter 288). Also, the United States elasticity of supply will be assumed to be  $(0.28)$  (Carter 289). Both the demand elasticity and supply elasticity seem to be reasonable, due to both showing the relative inelasticity of a commodity. However, the figures for elasticity are from 1988, and the exact elasticity of sugar demand and supply may have changed slightly within the time since these figures were published.

Having presented the assumptions for this model, an examination of the amount of sugar consumption within the United States with no trade restrictions can be made. The current amount of sugar consumption within the United States is 10,234,000 tons. The world price for raw sugar, 141 dollars per ton, and the domestic price for raw sugar, 441.40 dollars per ton, are also important in the formulation of this estimation. The estimated amount of sugar consumption, after calculation using the elasticity of demand, is approximately 12,594,000 tons. (This estimation should be considered a maximum of sugar consumption, due to the actual effects of the United States being a large country).

From this estimation of sugar consumption, the increase in consumer surplus by removing trade tariffs can be calculated. The increased amount of consumer surplus is

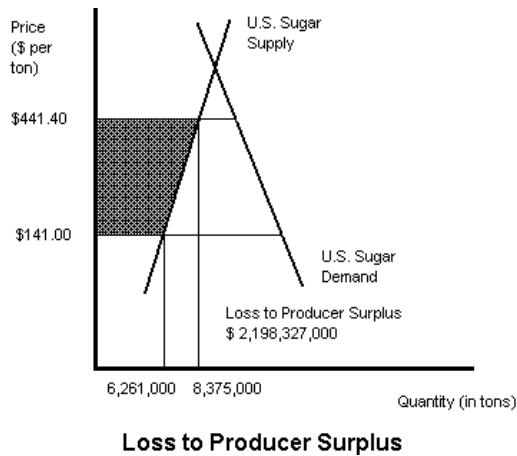
\$3,428,766,000. (This estimation of consumer surplus should also be seen as a maximum). The effects of this increase of consumer surplus would be a higher consumption rate for consumers within the United



States. Not only will the consumption rate of sugar increase within the United States, but real income and purchasing power will also increase, raising the amount of all goods consumed within the country.

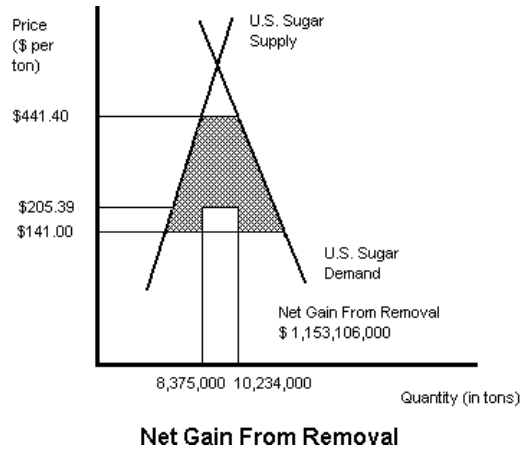
The domestic production of sugar will also be affected by the removal of trade restrictions. For the 1999 fiscal year, the United States produced 8,375,000 tons. As stated above, the world price for raw sugar was 141.00 dollars per ton, and the domestic price of sugar was 441.40 dollars per ton. The estimated domestic sugar production, calculated with the elasticity of supply, with no trade restrictions is approximately 6,261,000 tons. (This should be seen as a minimum amount of domestic sugar production, due to the actual effects of the United States being a large country). The estimated loss to producer surplus caused by the removal of trade restrictions now can be figured. The estimated loss is \$2,198,327,000. (This estimation should be seen as a maximum). The effects of removing trade restrictions would reduce domestic production of sugar by a significant amount and will dramatically decrease the amount of producer

surplus. However, the use of the inputs used in the production of sugar, such as land, labor, chemicals, and equipment, can be diverted into the production of a different good that can compete in the world market. The reduction of production within the domestic market of sugar must not be seen as a loss of production, but, instead, it should be seen as a shift to the production of a different good, which has a comparable advantage to sugar. Nonetheless, the removal of trade restrictions would clearly harm sugar production within the United States by decreasing production by nearly twenty-five percent.



From the estimations of domestic production and domestic consumption, the deadweight cost of having trade restrictions can be figured, and, also, the net gain to the United States of removing trade restrictions can be figured. The deadweight cost is the lost revenue caused by the implication of trade restrictions on a domestic market. In the case of the United States sugar market, the deadweight cost will be the loss of the gains of trade and the majority of the potential tariff revenues, since the tariff-rate quota is in effect. The deadweight loss for the 1999 fiscal year, using the estimated domestic production and consumption figures, is \$1,153,106,000. (This figure should be seen as a maximum, considering that the actual effect of the United States being a large country would make this figure smaller). This deadweight cost is at the expense of the United States as a whole. The net gain to the United States, if these trade restrictions had been

removed, would have been \$1,153,106,000. (This figure should be seen also as a maximum). The added benefit to the United States by removing trade restrictions would have been this net gain, which clearly would be advantageous for the United States.





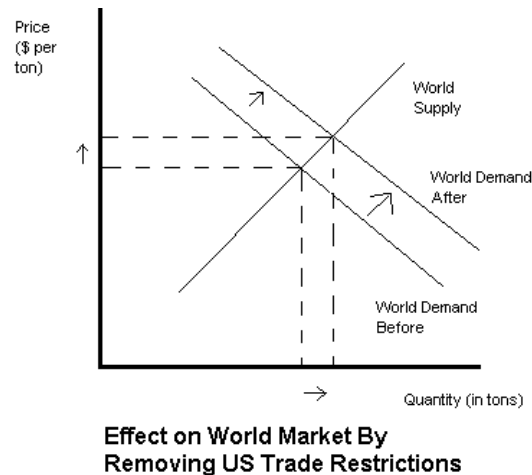
## V. Effects of Trade Restrictions on Foreign Producers

International trade is the trade of goods and services between two countries. As would be expected, if one country imposes trade restrictions on the importation of goods into its own country, the other country will be affected by these restrictions. In the case of the sugar trade, this interaction between the United States and the foreign producer holds true. The tariff-rate quota of the United States effects the consumption and production of foreign countries that produce and export sugar. Further, NAFTA has created a free trade area with the sugar exporting country of Mexico, which will increase Mexican production of sugar and increase Mexican consumption.

In the world sugar market, the United States would be considered a large country (Hannah 76). A large country is a country that can change the world price of a good by emplacing or removing trade restrictions on that good. The means in which a large country affects the world market is

by shifting the demand curve. For the United States, if trade restrictions are removed, the amount of sugar demanded worldwide would shift to the right. This would increase the price, the amount consumed, and the

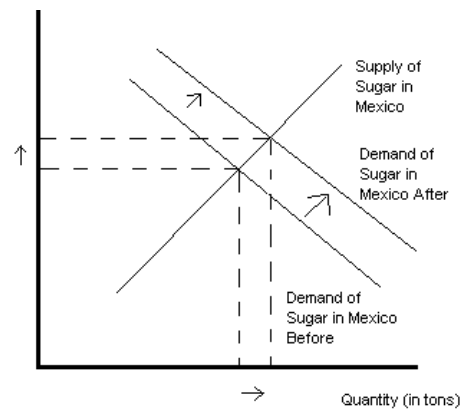
amount produced of world sugar. Therefore, the current effects of the trade restrictions within the United States on the world are a reduction of the world price, a decreased amount of consumed sugar, and a decreased amount of produced sugar. Further, since



free trade raises the amount of consumption to all participants in trade, these restrictions decrease the amount of consumption for the world.

Concerning Mexico and NAFTA, the eventual effects of the removal of trade restrictions by the United States will benefit Mexico. For Mexico, the removal of trade restrictions by the United States will increase demand for sugar within Mexico, shifting the demand curve to the right (SSSOR 10). The production of sugar in Mexico will increase, as an effect of the shift of the demand curve. Also, the price of sugar will also

increase within Mexico, due to the shift of demand. Under this precedence, the demand for High Fructose Corn Syrup in Mexico may increase, if the price of sugar in Mexico rises above the price of High Fructose Corn Syrup. The increased



**Effects of NAFTA on Mexican Sugar Market**

trade of Mexican sugar into the United States and United States goods being traded for the sugar will cause an increase in the gains of trade to both countries. Therefore, the removal of trade restrictions will benefit both the United States and Mexico.

## **VI. Conclusion**

Undoubtedly, the trade restrictions of the United States are affecting the amount of consumption and production of sugar within the United States and the world. Trade restrictions within the United States reduce both the amount of sugar consumed and the consumer surplus. On the other hand, trade restrictions increase the amount of domestic production and producer surplus within the country. However, the trade restrictions cause a large deadweight cost to the United States, which justifies the removal of these trade restrictions.

The removal of trade restrictions, as analyzed through the use of estimating consumption and production of sugar without the effect of trade restrictions, will cause a large increase in the consumer surplus of the United States. It will also cause a significant decrease in the producer surplus. Nonetheless, the net gain from the removal of tariffs will benefit the country as a whole greatly, and it will also benefit the world sugar market by increasing the amount of sugar demanded worldwide. The present goal, therefore, would be to remove all trade restrictions on the importation of sugar, for the benefit of the country, and the world, as a whole.

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