The Mexican Sweeteners Market and Sugar Exports to the United States

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Abstract

This study analyzes the effect of Mexico’s sugar exports on the U.S. sugar industry, which could reach over 250,000 MTRV in 2006 and substantially increase in subsequent years by substituting sugar for HFCS in soft drink products. Mexico’s additional sugar exports would cause a substantial reduction of U.S. sugar price. Because of low prices of sugar, production of beet and cane sugar in the United States is expected to fall. Under these circumstances, social welfare in the United States may increase; however, welfare benefits may go to food processors rather than consumer. By contrast, increases in sugar imports would substantially hurt sugar beet and cane producers.

Key Words: Mexican Sugar, HFCS, NAFTA, U.S. Sugar

Introduction

In September, 2005 the U.S. Department of Agriculture (USDA) decided to give Mexico a “surplus producer” status for the 2006 marketing year and set the Mexican quota at 250,384 metric tons of raw value (MTRV) under the North American Free Trade Agreement (NAFTA) provisions. Following this decision, the Mexican government announced that it had determined to give access to U.S. exports of high fructose corn syrup (HFCS) up to the level of 250,000 metric tons (MT) (Haley, Kelch, and Jerardo). Because of the high degree of substitutability between sugar and HFCS, the two issues are closely linked. In Mexico, HFCS products could replace a significant percentage of the sugar used in the production of soft drinks (Abler, et al.; Haley, 2000). If this occurs, Mexico would have more sugar available to export to the United States. If substitution
and increased sugar exports occur, they will create a challenge for U.S. sugar producers as additional sugar from Mexico could substantially reduce sugar prices in the United States. Moreover, Mexican exports are expected to additionally increase after 2008 when unlimited duty-free access is granted to Mexican sugar under NAFTA. Consequently, there is uncertainty about the volume of sugar that Mexico will be able to export after 2008 (Haley, Kelch, and Jerardo; Abler, et al.; Haley, 2000).

For fiscal year (FY) 2006, the USDA projects Mexican sugar exports to the United States to be 462,000 MTRV, which includes 250,384 MTRV of duty-free access under NAFTA, 208,655 MTRV of high-tier tariff sugar, and 2,954 MTRV under the refined sugar tariff rate quota (TRQ) specifically allocated to Mexico (Haley, Kelch, and Jerardo). However, the magnitude of trade and its implications for the U.S. sugar industry have not been well documented.

The objective of this study is to analyze the effect of potential increases in U.S. sugar imports from Mexico on U.S. sugar prices and the consequences for producers and consumers. The analysis uses the Global Sugar Policy Simulation Model developed by Benirschka, Koo, and Lou (Koo).

Previous research has evaluated the potential for Mexican sugar exports to the United States. Haley (2000) analyzed this situation under conditions of low and high HFCS use by the soft drink and food processing industries in Mexico. Haley concluded that Mexican sugar exports could increase to almost 1 million MTRV for the low-use scenario, and over 2 million MTRV under the high-use scenario. However, Haley argued that because of uncertainty about the efficiency of the Mexican sugar industry, sugar exports to the United States are likely to range between 124,000 and 904,000 MTRV.
Abler et al. studied the viability of alternative U.S. sugar programs under increased levels of sugar imports. They found that under the condition of a limited displacement of sugar in the Mexican soft drinks industry, imports to the United States from Mexico would average 218,000 short tons (ST) and the New York (NY) spot price for raw sugar would decrease to 20 cents per pound. With a substantial replacement of sugar by HFCS in the production of soft drinks in Mexico, U.S. sugar imports would average 1.4 million ST and the NY spot raw sugar price would decline to 18.73 cents per pound.

Haley (2004), evaluated the effect of a Free Trade Area of the Americas (FTAA) on the U.S. sugar industry. He concluded that sugar price reductions would depend on whether increased sugar imports are controlled under a TRQ or an unlimited access system; however, in both cases, imported sugar is expected to replace U.S. production.

The remainder of this paper describes the sugar industry in Mexico, including the disputes related to trade of sugar and HFCS products between Mexico and the United States. The simulation model and the sugar import scenarios are then described. Following, the empirical results and their applications are discussed, and finally, the paper concludes with a summary of our findings.

**The Mexico’s Sugar Industry and Export Potential under NAFTA**

Mexico produces sugar from sugar cane, which is one of the largest cultivated crops in the country. Several factors make the sugar industry in Mexico very important, including its cash export value, the number of people involved in the activity, and the importance of sugar on Mexican’s diet. However, despite the importance of the crop,
cane production is still constrained by reduced levels of technological investments (Comité de La Agroindustria Azucarera (COAAZUCAR)).

The Mexican government has historically regulated the sugar industry by implementing controls on production, price, distribution, and imports. As a result, wholesale prices of refined sugar in Mexico are higher than those in the United States, which encourages production (Knapp). For example, during the 2004-2005 harvest, the wholesale and retail prices of refined sugar in Mexico averaged 0.28 and 0.42 U.S. dollars per pound, respectively (COAAZUCAR).

Inefficiency in the government programs has caused severe problems for the performance of the Mexican sugar industry, especially in mill operations. In 2001, 27 mills, which represented about 55 percent of the total production, were expropriated by the government due to financial problems (Mitchell; Sano). These mills, however, are being restructured, and there are plans to merged them with private investors in 2005 or 2006. This restructuring could increase Mexico’s sugar production (Farm Foundation).

**Demand and Supply**

Currently, Mexico consumes most of its produced sugar through the soft drink industry, which heavily relies on Mexican sugar production. Surplus sugar is mainly exported to the United States under NAFTA. In general, total sugar production has followed a steadily increasing trend. Higher levels of production, which can be attributed to increases in planted area, yields, and better extraction rates (Haley, Jerardo, and Kelch), reached 6.1 million MT in 2004/2005 (USDA, 2005a).

Annual per capita sweetener consumption in Mexico is currently around 49 kilograms, and total domestic sugar consumption was about 5.4 million MT in 2004/2005.
During the 1980s, sugar imports were reported, but they were very irregular and after a record peak in 1991 of 1.6 million MT, imports declined and have averaged 142,000 MT during the last 5 years (USDA, 2005a). For FY 2005/2006, the USDA estimates Mexican sugar production and total consumption at 6.0 and 5.5 million MTRV, respectively.

Trade

Before NAFTA was implemented, Mexico was a sporadic importer, and the implementation of the agreement in 1994 was expected to improve the Mexican sugar industry. However, the treaty failed to grant free access to Mexican sugar in the way that it was expected. The original NAFTA negotiations provided duty-free access of raw Mexican sugar in the United States at a minimum level of 7,258 MT during the first six years. Additional quantities could be exported if Mexico became a surplus producer (defined as domestic sugar production minus consumption) over a period of two years, with a maximum of 25,000 MT. Beginning in 2001, if Mexico met the surplus producer condition, the limit of the duty-free access was 250,000 MT, increasing 10 percent per year until unlimited free access in 2008 (USDA, 2005b). However, the closing negotiations of the treaty produced different versions of the agreement, mainly related to the method of determining Mexico’s status as a surplus producer (Kornis). The United States claimed that Mexico should be considered a net-surplus producer only if its sugar production exceeds consumption of both sugar and HFCS (current consumption of HFCS in Mexico is about 300,000 MT (Haley, Jerardo, and Kelch). However, Mexican authorities argued that Mexico was entitled to export all of its sugar surplus to the United States since 2001 (USDA, 2005b).
Total Mexican sugar exports to the United States (including duty-free access and over-quota exports) were larger immediately after NAFTA was implemented (United Nations), reflecting substantial investments on the Mexican sugar industry prior to NAFTA implementation (Sano). However, Mexico attained the surplus status only during 1996-1999, as a result total exports to the United States declined since 2000.

Also, under NAFTA, the United States was given access to the Mexican HFCS market. Since the 1990s, the U.S. corn industry began exporting significant amounts of HFCS to Mexico, and its exports peaked at 269,842 MT in 1997 (USDA, 2005b). Table 1 shows the quantities of sweetener products demanded, by industry, in Mexico in 1998. The production of soft-drinks demands the highest level of all categories of sweeteners. Also, large quantities of sweeteners are required for the production of candy, dairy, and bakery products. Since recent statistics for the demand of these products were not available, using production indexes, the demand figures in 2004 for the soft-drinks industry are expected to be about 21 percent higher than the 1998 levels (Mexico Instituto Nacional de Estadística Geografía e Informática, 2005).

In 1998, Mexican authorities imposed antidumping duties on HFCS imports from the United States. A World Trade Organization (WTO) panel ruled against this action. However, the duties were replaced in 2002 by a 20 percent tax on products used to produce soft drinks and an additional 20 percent tax on the services related to the distribution of syrups was imposed (U.S. Office of Trade Representatives (USTR), 2005). As a result, U.S. exports of HFCS have declined substantially, and averaged 98,125 MT during 2000-2005. Also, Mexican production of HFCS increased and reached 350,000 metric tons in 2001 (Farm Foundation). By early 2006, an appellate
body from the WTO ruled that Mexico’s tax on U.S. HFCS is discriminatory and breaks WTO rules. From this decision, the United States expects to restart the bilateral trade of sweeteners with Mexico (USTR 2006).

Last year announcements allowing imports of 250,000 metric tons of Mexican sugar into the United States and imports of 250,384 metric tons of HFCS into Mexico could substantially affect sugar producers in the United States. Under this situation, sugar exports from Mexico are expected to increase because of increased use of HFCS, which could reach 500,000 MT (Haley, Kelch, and Jerardo). Moreover, with tariffs falling to zero in 2008, Mexican exports of sugar could reach 481,000 MTRV and 494,000 MTRV during 2007 and 2008, respectively. Thereafter, annual exports are expected to be about 229,000 MTRV (Haley, Kelch, and Jerardo).

The Sugar Policy Simulation Model and Scenarios

The sugar econometric simulation model determines production, consumption, carry over stocks, imports, exports, and equilibrium price of sugar for each country. The model has 17 countries and regions: Australia, Brazil, Cuba, the EU-25, South Africa, and Thailand as major exporters; and Algeria, Canada, China, Indonesia, Egypt, India, Japan, Mexico, the former Soviet Union, the United States, and a Rest of the World region as major importers. Each country has three equations; area harvested, domestic consumption, and carry-out stocks. The behavioral equations are specified below.

Sugar supply or production \( qp \) is estimated as the product of the area harvested and the yield per hectare. The area harvested \( a \) is expressed as a function of expected prices of sugar \( p \) and alternative crops \( p' \), policy parameters \( g \), and a lagged dependent variable \( a' \) which is included to capture dynamics related to producers’
decisions in producing sugar beet or cane. The $i$ subscript indexes cane sugar or beet sugar.

\[ a_{i,t} = f(a_{i,t-1}, p_{t-1}, p^c_{t-1}, g_t) \]  

(1)

The model calculates total consumption of sugar ($q_{d,t}$) as the product of per capita consumption and population. Per capita consumption ($f_{d,t}$) depends on the price of sugar ($p_t$), per capita disposable income ($c_{y,t}$), and a time trend variable ($t$) to measure changes in tastes and preferences of consumers:

\[ f_{d,t} = g(p_t, c_{y,t}, t). \]  

(2)

Carry-out stocks equations ($q_{s,t}$) are calculated as function of domestic production ($q_{p,t}$), price ($p_t$), and carry-in stocks ($q_{s,t-1}$). These stocks protect against unexpected reductions in production, and therefore depend on the level of domestic production and the opportunity cost of storing sugar (Koo):

\[ q_{s,t} = h(q_{s,t-1}, q_{p,t}, p_t). \]  

(3)

The sum of domestic production ($q_{p,t}$) and carry-in stocks ($q_{s,t-1}$) represents domestic supply, and the sum of domestic consumption ($q_{d,t}$) and carry-out stocks ($q_{s,t}$) is total demand. Net exports ($q_{x,t}$) are then the difference between total domestic supply and total demand, and a market equilibrium condition is expressed as:

\[ \sum_{n=1}^{N} q_{x,t}^n = 0, \quad n = 1,2,\ldots,17. \]  

(4)

From this equilibrium condition, the equilibrium world price of sugar is expressed in domestic price for each country using official exchange rates and historical relationship between the world and domestic prices.
The Base and Alternative Scenarios

A base and three alternative scenarios are developed to evaluate the impact of increased sugar imports from Mexico on the U.S. sugar industry and world price. The base and alternative models are presented as follows.

Under the base scenario, average climate conditions and historical rates of technological change are assumed. Current agricultural policies are continued in all countries. Finally, the expected sugar imports from the Central American Free Trade Agreement (CAFTA), totaling 107,000 MT per year (USDA, 2005e), and zero imports from Mexico are included.

The sugar import scenarios were determined based on current projections from the USDA and two levels of HFCS substitution for sugar in the Mexican soft drink industry.

Scenario 2 represents the TRQ set by the USDA for Mexican sugar during the 2006 marketing year (Haley, Kelch, and Jerardo). It is assumed that under this scenario the United States imports 250,000 ST of sugar from Mexico, while sugar policies in other countries remain constant.

Scenario 3 represents low level of sugar substitution. It is assumed that under this scenario, the United States imports 500,000 ST of sugar from Mexico, while sugar policies in other countries remain constant.

Scenario 4 represents a high level of sugar substitution. It is assumed that under this scenario the United States imports 1.0 million ST of sugar from Mexico, while sugar policies in other countries remain constant.
Empirical Results

Table 2 presents the results of the alternative scenarios for production, consumption, and price in the United States, and the Caribbean price, which is a reference to the world price. During 2004, U.S. sugar production was 4.4 and 4.1 million ST from beet sugar and cane sugar, respectively. Total consumption was 9.9 million ST, and net imports accounted for 1.4 million ST. Prices in 2004 were 40 and 27 dollars per ST of sugar beets and sugar cane, respectively, and the wholesale and retail sugar prices were 26.15 and 42.40 cents per pound, respectively. The Caribbean price was 8.40 cents per pound in 2004. When the base scenario is compared to 2004 levels, the model projects an increase in sugar production to 4.8 and 4.4 million ST for beet sugar and cane sugar, respectively, representing an increase of 9.5 percent for beet sugar and 7.5 percent for cane sugar from the 2004 values. Total sugar consumption is expected to increase by 6.9 percent, while net imports are expected to decrease by 4.1 percent. This latter result is mainly because sugar from Mexico is not available for exports to the United States. The volume of consumption is projected to be 10.6 million ST, and total imports 1.4 million ST. Increased sugar consumption is expected as a result of increased demand (population growth). Sugar beets and sugar cane prices are expected to increase by 4.9 and 8.4 percent, to 41.98 and 29.28 dollars per ST, respectively. However, the wholesale and retail sugar prices in the United States are expected to remain unchanged. Despite increased prices of sugar beets and sugar cane, the increased efficiency of U.S. sugar processing plants during the last few years may explain the low variability in wholesale sugar prices. The Caribbean sugar price in the base scenario is expected to be 8.6 cents per pound, which is 1.8 percent higher than the price in 2004.
Impact of U.S. Sugar Imports of 250,000 ST

Under this scenario, the United States imports 250,000 ST of sugar from Mexico under NAFTA, while sugar policies in other countries remain unchanged. When compared to the base scenario, the model projects a reduction in the U.S. production of beet sugar by 1.7 percent, and cane sugar by 1.4 percent, to 4.7 and 4.4 million ST, respectively. This result is mainly because Mexican sugar replaces some of the domestic production. It is expected that total consumption increases to 10.7 million ST, a 1.3 percent increase from the base scenario. Net imports are expected to increase to 1.6 million ST, and because additional sugar is available in the market, this scenario is expected to decrease sugar beet and sugar cane prices to 40.14 and 27.55 dollars per ST, respectively. These values are 4.4 and 5.9 percent lower than the prices from the base scenario. The wholesale price is expected to decrease by 5.6 percent, to 24.73 cents per pound. Also, the retail sugar price is expected to decrease by 4.7 percent, to 40.48 cents per pound. The Caribbean price is projected to remain unchanged at 8.55 cents per pound.

Impact of U.S. Sugar Imports of 500,000 ST

In this scenario, Mexico is able to export 500,000 ST of sugar to the United States, assuming that other producing countries maintain their sugar policies. In this scenario, U.S. sugar production is expected to decrease by 3.3 and 2.6 percent for beet sugar and cane sugar, respectively. Production levels are projected at 4.6 million ST for beet sugar and 4.3 million ST for cane sugar. Total consumption would be 10.8 million ST, 2 percent higher than the base scenario. Net imports are expected to be 1.9 million ST. As a result of this level of imports, domestic prices are expected to decrease by 7.8
percent for sugar beets and 10.6 percent for sugar cane, to 38.69 dollars per ST and 26.18 dollars per ST, respectively. The wholesale and retail prices are expected to decrease to 23.58 and 38.91 cents per pound, respectively. These prices correspond to a 10.0 percent decline for the wholesale price and a 8.4 percent for the retail price. The Caribbean sugar price is expected to be 8.55 cents per pound, unchanged from the base.

*Impact of U.S. Sugar Imports of 1 Million ST*

In scenario 3, the United States imports 1.0 million ST of sugar from Mexico under NAFTA and sugar policies in other countries remain constant. Under this level of imports, sugar beet production is reduced by 7 percent and sugar cane production decreases by 5.4 percent, to 4.4 and 4.2 million ST, respectively. As sugar production is replaced by sugar imports from Mexico, domestic consumption is expected to increase by 3.8 percent, to 11.0 million ST. Net imports are projected to be 2.4 million ST. Increased imports of sugar are expected to reduce sugar beet and sugar cane prices by 15.7 and 21.1 percent, respectively. Prices are expected to be 35.40 dollars per ST for sugar beets and 23.09 dollars for sugar cane. The wholesale sugar price is projected at 20.95 cents per pound, 20 percent lower than the base scenario, and the retail sugar price is expected to be 35.35 cents per pound, a 16.8 percent decrease. The Caribbean price is expected to remain constant at 8.55 cents per pound.

*Welfare Effects*

In order to evaluate the welfare effects, changes in consumer and producer surpluses were estimated for the three Mexican sugar import scenarios. Because of differences in the price elasticity of supply between sugar beet and sugar cane growers (Koo), producer surpluses for sugar beet and cane are presented separately (table 3).
Previous results showed a reduction in U.S. prices for sugar beets, sugar cane, and wholesale and retail sugar prices under the three alternative sugar import scenarios. Therefore, it is expected that consumer surplus should increase as the quantity of sugar imported from Mexico rises, while the opposite occurs for the producer surplus. When compared to the base scenario, the value of consumer surplus increases by 40.7 million dollars, 68.6 million dollars, and 136.7 million dollars when sugar imports from Mexico are 250,000 ST, 500,000 ST, and 1.0 million ST, respectively. In contrast, the value of producer surplus decreases by 16.4 million dollars when sugar imports from Mexico are 250,000 ST, by 29.0 million dollars for sugar imports of 500,000 ST, and by 56.7 million dollars when sugar imports are 1.0 million ST. The total welfare change from the three scenarios is positive, suggesting that social welfare in the United States may increase; however, increased consumer surplus would not be reflected in benefits to consumer households. Most sugar in the United States is used to produce processed food, including candy, chocolate, and other sweetened commodities. Prices of these products are not sensitive to reductions in the price of sugar, mainly because the value of sugar included in these processed foods is relatively small compared to the value of the food item. Therefore, considering the characteristics in sugar consumption and the impact of increased sugar imports from Mexico under NAFTA, producers’ welfare would be seriously affected, while most of the positive benefits would go to the food processing industry, rather than households in the United States.

It is important to mention that the magnitude of welfare changes presented in table 3 may vary as other factors are included to determine total welfare. For instance, as a consequence of reduced sugar prices, production of sugar substitute crops is expected to
increase. Consequently, prices of these crops would decrease, causing further welfare changes for producers and consumers. In our results, the simulation model projects very small reductions in area harvested of sugar beets and sugar cane, which correspond to less than 1 percent of the harvested area of any potential substitute crops for sugar beets (wheat, corn, and soybeans) and sugar cane (cotton). Therefore this effect is expected to be marginal in our welfare results (Koo).

Another possible source of variation in the U.S. welfare is a result of the fact that additional sugar at a lower price in the United States could displace some HFCS in the sweetener market or could promote the use of sugar for other industrial uses, such as ethanol production, causing losses to corn producers (Abler et al.). However, some of this loss may be compensated by increased Mexican imports of HFCS or corn from the United States, as the soft drink industry in Mexico demands more HFCS to replace sugar.

It is important to mention that the magnitude of the impact on U.S. sugar prices from free trade of sugar can be ameliorated by policies that regulate the level of domestic sugar supply, such as loan rates and production allotments. If these policy strategies are adjusted in response to increased imports of sugar, domestic price reductions in the United States may not be substantial.

**Summary and Conclusion**

In 2006 Mexico could export over 250,000 MTRV of sugar to the United States, and its exports could increase substantially more from 2008 by substituting sugar for HFCS in soft drink products. This situation has caused uncertainty and divided opinion about the volume of sugar that Mexico can export beginning in 2008. There is substantial concern about the magnitude of potential trade and its implications for the
United States. This study analyzed the effect of a potential increase in sugar imports from Mexico on the U.S. sugar price and its consequences for producers and consumers. The analysis was conducted using a global sugar policy simulation model, and included the comparison of a base scenario with three alternatives of U.S. sugar imports from Mexico at the levels of 250,000 ST (scenario 2), 500,000 ST (scenario 3), and 1.0 million ST (scenario 4).

For the base scenario, it was assumed that current agricultural policies would continue in all countries. When projections for the year 2013 are compared to levels that occurred during 2004, the model predicts an increase in the production of beet sugar and cane sugar by 9.5 and 7.5 percent, respectively. Net sugar imports would decrease by 4 percent, and consumption is expected to increase by 6.9 percent. Producer prices are projected to increase by 4.9 percent for sugar beets and 8.4 percent for sugar cane. The U.S. wholesale and retail sugar prices are expected to remain unchanged.

Additional sugar imports from Mexico would cause a substantial reduction in sugar prices in the United States. Due to low prices, acreage and total production of beet and cane sugar in the United States are expected to fall. However, changes in the domestic price of sugar have limited impacts on sugar production.

If shipments of Mexican sugar to the United States are 250,000 ST, the decline in production would be less than 2 percent. Price would be 40.14 dollars per ST for sugar beets and 27.55 dollars per ST for sugar cane. These decreases correspond to 4.4 percent and 5.9 percent for sugar beets and sugar cane, respectively. The wholesale price would be reduced by 5.6 percent, to 24.73 cents per pound, and the retail price would decrease to 40.48 cents per pound, a 4.7 percent decrease.
If the United States imports 500,000 ST of sugar from Mexico, beet and cane sugar production would decline by 3.3 and 2.6 percent, respectively. Price reduction would be 7.8 percent for sugar beets and 10.6 percent for sugar cane, lowering prices to 38.69 and 26.18 dollars per ST. Results indicate that wholesale sugar price decreases to 23.58 cents per pound, a 10 percent change, and that there is a reduction in retail sugar prices of 8.38 percent, down to 38.91 cents per pound.

If imports of Mexican sugar are 1.0 million ST, it is expected that production would decline 7 percent for beet sugar and 5.4 percent for cane sugar. Sugar beet and sugar cane prices would decrease by 15.7 and 21.1 percent, respectively. Prices would be 35.40 dollars per ST for sugar beets and 23.09 dollars for sugar cane. Similarly, wholesale and retail sugar prices are expected to decrease to 20.95 and 35.35 cents per pound, or a decline by 20 percent and 16.8 percent, respectively.

Finally, it is expected that the Caribbean sugar price, which is used as a world price, would not be affected by any of the three import scenarios, reflecting that Mexican sugar exports to the United States is a very small part of the total volume of sugar traded in the world market.

U.S. consumer and producer surplus changes were estimated for the three scenarios. The total welfare change in the three cases is positive; under these circumstances, social welfare in the United States may increase. However, most of the increases in social welfare may go to food processors rather than consumer households. On the other hand, increases in sugar imports would hurt sugar beet and cane producers substantially.
Under the low-use alternative, the levels were 25 percent sugar substitution by HFCS in the soft drink industry and 20 percent substitution in the food processing industry. For the high-use alternative, the levels were 75 percent HFCS substitution and 30 percent substitution for the soft drink and the food processing industries, respectively.

Under the low sugar substitution scenario it is assumed a 20 percent substitution by HFCS in the soft drink industry.

Under the high sugar substitution scenario it is assumed a 60 percent substitution by HFCS in the soft drink industry.
References


Table 1. Industry demand of sweetener products in Mexico in 1998 (metric tons)*

<table>
<thead>
<tr>
<th>Industry Type</th>
<th>Raw Sugar</th>
<th>Refined Sugar</th>
<th>Fructose</th>
<th>Glucose</th>
<th>Panela</th>
<th>Saccharin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy products</td>
<td>231,801.90</td>
<td>2,369.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit and Vegetables (Processed)</td>
<td>46,997.50</td>
<td></td>
<td>6,975.70</td>
<td></td>
<td>6,333.8</td>
<td>316.00</td>
</tr>
<tr>
<td>Bakery Products</td>
<td>131,068.60</td>
<td>93,622.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candy Industry</td>
<td>206,546.80</td>
<td>38,859.00</td>
<td></td>
<td>106,514.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soluble Coffee</td>
<td>20,685.10</td>
<td>5,788.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yeasts</td>
<td>6,619.80</td>
<td></td>
<td>1,639.70</td>
<td></td>
<td></td>
<td>14,674.00</td>
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<tr>
<td>Mayonnaise and other Condiments</td>
<td>3,989.90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Desserts</td>
<td>2,549.20</td>
<td>21,068.80</td>
<td></td>
<td></td>
<td></td>
<td>334.80</td>
</tr>
<tr>
<td>Breakfast Cereals and Chips</td>
<td>2,766.10</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Other Products Human Consumption</td>
<td>3,684.70</td>
<td>4,348.70</td>
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<td></td>
<td></td>
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<tr>
<td>Alcoholic Beverages</td>
<td>14,868.10</td>
<td>1,518.10</td>
<td>7,607.80</td>
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<td>800.20</td>
<td>4,964.30</td>
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<td>Soft Drinks</td>
<td>283,080.00</td>
<td>523,579.60</td>
<td>311,095.9</td>
<td></td>
<td></td>
<td>126,099.0</td>
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<tr>
<td>Total</td>
<td>954,657.60</td>
<td>691,154.20</td>
<td>327,319.10</td>
<td>135,444.9</td>
<td>5,280.3</td>
<td>126,099.0</td>
</tr>
</tbody>
</table>

Table 2. Sugar price, production, consumption, and net imports under the base and alternative U.S. sugar imports from Mexico

<table>
<thead>
<tr>
<th>Category</th>
<th>Units</th>
<th>Actual 2004</th>
<th>2013 Projections of U.S. Sugar Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Base Scenario</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Scenario</td>
</tr>
<tr>
<td>Beet Sugar Production</td>
<td>1,000 ST</td>
<td>4,358.00</td>
<td>4,772.00</td>
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<tr>
<td>Cane Sugar Production</td>
<td>1,000 ST</td>
<td>4,120.00</td>
<td>4,431.00</td>
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<tr>
<td>Total Consumption</td>
<td>1,000 ST</td>
<td>9,905.00</td>
<td>10,584.00</td>
</tr>
<tr>
<td>Net Imports</td>
<td>1,000 ST</td>
<td>1,429.00</td>
<td>1,370.00</td>
</tr>
<tr>
<td>Sugar Beets Price</td>
<td>Dollars/ST</td>
<td>40.00</td>
<td>41.98</td>
</tr>
<tr>
<td>Sugar Cane Price</td>
<td>Dollars/ST</td>
<td>27.00</td>
<td>29.28</td>
</tr>
<tr>
<td>Wholesale Sugar Price</td>
<td>Cents per Lb</td>
<td>26.15</td>
<td>26.20</td>
</tr>
<tr>
<td>Retail Sugar Price</td>
<td>Cents per Lb</td>
<td>42.40</td>
<td>42.47</td>
</tr>
<tr>
<td>World Price</td>
<td>U.S. Cents per Lb</td>
<td>8.40</td>
<td>8.55</td>
</tr>
</tbody>
</table>

a ST stands for short tons.
Table 3. Changes in consumer and producer surplus under alternative U.S. sugar imports from Mexico

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Consumer Surplus</th>
<th>Producer Surplus</th>
<th>Beet Producer</th>
<th>Cane Producer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>250,000 ST</td>
<td>40,704.00</td>
<td>-16,364.00</td>
<td>-8,728.00</td>
<td>-7,636.00</td>
<td>24,340.00</td>
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<tr>
<td>500,000 ST</td>
<td>68,628.00</td>
<td>-29,026.00</td>
<td>-15,449.00</td>
<td>-13,576.00</td>
<td>39,602.00</td>
</tr>
<tr>
<td>1.0 Million ST</td>
<td>13,6702.00</td>
<td>-56,702.00</td>
<td>-30,158.00</td>
<td>-26,544.00</td>
<td>80,000.00</td>
</tr>
<tr>
<td>1,000 of Dollars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>