

Impact of Potential Bilateral Free Trade Agreements on Projected Raw Sugar Prices and the Economic Viability of the Louisiana Sugar Industry

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Executive Summary

The United States is currently involved in several international trade negotiations with countries desiring to establish some type of free trade agreement (FTA) with this country. Several of the countries involved in these negotiations are major sugar producers and major sugar exporters. This report presents an analysis of the projected potential levels of U.S. sugar prices received by domestic growers under various levels of additional sugar importation and what the impacts would likely be on the Louisiana sugar industry.

Sugarcane production in Louisiana is important to the U.S. sugar industry as well as to the agricultural economy of Louisiana. In 2001, sugarcane was grown on 493,773 acres by 773 producers in 24 Louisiana parishes. The total value of the 2001 Louisiana sugarcane crop was valued at \$619,700,125, far exceeding the total values of other major row crops produced in the state (cotton \$292,234,433; rice \$216,154,845; soybeans \$101,929,344).

Financial institutions in South Louisiana have an important relationship to the Louisiana sugar industry, providing investment and operating capital to both sugarcane growers and processors. Data collected from a sample of lending institutions with operations in South Louisiana indicated that the current volume of loans to sugarcane growers and mills in the state totaled \$112.7 million and \$198.3 million, respectively. Together, these financial institutions had a total of over \$300 million in current outstanding loans to the Louisiana sugar industry, with debt service dependent on stable, supported domestic sugar prices.

The Louisiana sugarcane industry is also an important and vital part in the U.S. sugar industry. In 2003, Louisiana is projected to harvest 49 percent of U.S. sugarcane acreage, accounting for an estimated 41 percent of total U.S. sugarcane production. Over the 1995/96 to 2002/03 crop years, Louisiana sugar production has represented approximately 30 to 40 percent of total U.S. cane sugar production and 15 to 20 percent of total U.S. beet and cane sugar production.

The oversupply situation of 1999 illustrated the price sensitive nature of the U.S. sugar market. Even with domestic marketing allotments in place, the magnitude of potentially higher sugar imports, possible from current trade negotiations, could have significant consequences for the U.S. sugar industry, including sugarcane production in Louisiana.

This study utilized an international trade model to evaluate the impact on U.S. sugar prices as a result of increased sugar imports due to potential future free trade agreements being enacted. With a base U.S. raw sugar price of 22.92 cents per pound, a 1 million metric ton increase in imports resulted in a raw sugar price decrease to 16.57 cents per pound, a decline of 27.71 percent. A 3.0 million metric ton increase in U.S. sugar imports was estimated to cause U.S. raw sugar prices to decrease to 8.41 cents per pound, a decline of 63.32 percent. These prices are well below the 19 to 20 cent market prices needed for Louisiana sugarcane growers to cover total costs. These additional import levels pale in comparison to the 27.7 million metric ton sugar export volumes of countries currently negotiating free trade agreements with the United States.

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Introduction

The United States sugar industry is comprised of sugar beet growers producing refined beet sugar and sugarcane growers producing raw sugar which is later refined into white sugar. Regions of the country producing sugar beets range from Minnesota westward to California. Sugarcane is produced in four states: Florida, Hawaii, Louisiana, and Texas. Florida and Louisiana together comprise over 90 percent of total U.S. sugarcane acreage and production. The domestic price of sugar received by growers, both sugar beets and sugarcane, is supported by a federal farm program, the centerpiece of which is an import quota on the quantity of foreign sugar which can be imported into the domestic U.S. sugar market. This sugar import quota level, called the tariff-rate quota, is adjusted annually, within current World Trade Organization (WTO) established minimum levels, to insure a balance between the supply and use of sugar in the domestic market, thereby supporting and stabilizing the price received by sugar growers.

The United States is currently involved in several international trade negotiations with countries desiring to establish some type of free trade agreement (FTA) with the United States. Several of the countries involved in these negotiations are major sugar producers and major sugar exporters. If sugar is included in these potential free trade agreements, there exists the possibility that a substantial increase in U.S. sugar imports, as a result of these agreements being implemented, could cause substantial oversupply situations in the U.S. sugar market and significantly depress prices received by domestic growers. This report presents an analysis of the projected potential levels of U.S. sugar prices received by domestic growers under various levels of additional sugar importation and what the impacts would likely be on the Louisiana sugar industry.

Importance of the Sugar Industry to Louisiana

Sugarcane production in Louisiana is important to the U.S. sugar industry as well as to the agricultural economy of Louisiana. In 2001, sugarcane was grown on 493,773 acres by 773 producers in 24 Louisiana parishes (LSU Agricultural Center, 2001). An estimated 454,271 acres were harvested for sugar, with a total production of 1,554,965 tons of sugar. Sugar produced per harvested acre was 6,845 pounds, and sugar produced per total acre (including acres used for seed) was 6,298 pounds. The gross farm value of \$377,865,930 for sugar and molasses for the 2001 crop year was 61 percent of the total value of the sugar and molasses produced, with the remaining 39% going to processing and marketing. Major parishes in which sugarcane is produced in Louisiana include Avoyelles, Evangeline, Point Coupee, Rapides, St.

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Landry, West Baton Rouge, Acadia, Calcasieu, Jeff Davis, Vermilion, Assumption, Iberia, Iberville, Lafayette, St. Martin, St. Mary, Ascension, Lafourche, St. Charles, St. James, St. John, and Terrebonne. In 2001, Iberia Parish was the leading sugarcane producing-parish in the state with 1,710,000 net tons of sugarcane (Louisiana Agricultural Statistics Service). Other parishes in the top five producing-parishes included St. Mary Parish (1,130,000 tons), Assumption Parish (1,020,000 tons), Iberville Parish (1,020,000 tons), and St. Martin Parish (940,000 tons).

The gross value of agricultural commodities produced in Louisiana in 2001 is presented in Table 1. Estimates of the gross farm income, value added, and total value are shown for the three primary classes of agricultural commodities produced in the state. In terms of total commodity value (farm production plus value added), sugarcane production ranked third, behind forestry and poultry production. The total value of the 2001 Louisiana sugarcane crop was valued at \$619,700,125, far exceeding the total values of other major row crops produced in the state (cotton \$292,234,433; rice \$216,154,845; soybeans \$101,929,344).

Financial institutions in South Louisiana have an important relationship to the Louisiana sugar industry, providing investment and operating capital to both sugarcane growers and processors. Data collected from a sample of lending institutions in South Louisiana reveal the magnitude of the local sugarcane industry in their financial portfolios. Seventeen financial institutions, including independent banks and the farm credit system, were surveyed to obtain information on the magnitude of agricultural financial loans to Louisiana sugarcane growers and mills. For the financial institutions surveyed, the current volume of loans to sugarcane growers in the state totaled \$112.7 million. These loans were primarily for farm operating expenses on approximately 300,000 acres of sugarcane, well over half of the state's total acreage. Current volume of financial loans to the states' sugar mills totaled approximately \$198.3 million. Together, these financial institutions had a total of over \$300 million in current outstanding loans to the Louisiana sugar industry, an industry dependent on stable sugar prices supported through the current tariff-rate quota sugar import program.

The Louisiana sugarcane industry is also an important and vital part in the U.S. sugar industry. Florida, Hawaii, Louisiana and Texas are the only states producing sugarcane in the United States. Over the past few years, Louisiana has had the highest sugarcane acreage of any state (Table 2). In 2002, Louisiana harvested 495,000 acres of sugarcane for sugar and seed, compared to 461,000 acres in Florida, 22,700 acres in Hawaii, and 44,500 acres in Texas. In 2003, Louisiana will harvest an estimated 490,000 acres of sugarcane, compared to 441,000 in Florida. Louisiana and Florida, together, account for approximately 93 percent of total U.S. sugarcane acreage and 90 percent of total sugarcane production. In 2003, Louisiana is projected to harvest 49 percent of U.S. sugarcane acreage, accounting for an estimated 41 percent of total U.S. sugarcane production.

Sugar in the United States is produced from both sugar beets and sugarcane. Over the past several years, the beet and cane sectors of the U.S. sugar industry have accounted for very similar shares of the total industry-wide production. Since 1995/96, the Louisiana sugar industry has produced more than one million short tons of raw sugar annually (Table 3). Over the 1995/96 to 2002/03 crop years, Louisiana sugar production has represented approximately 30 to 40 percent of total U.S. cane sugar production and 15 to 20 percent of total U.S. beet and cane sugar production.

Table 1 – Gross Value of Agricultural Commodities Produced in Louisiana, 2001

Commodity	Gross Farm Income	Value Added	Total Value
Animal Commodities:			
Cattle & Calves	283,013,109	31,131,442	314,144,551
Milk	97,446,516	53,595,584	151,042,100
Horses	174,358,125	19,179,394	193,537,519
Poultry	493,866,430	474,111,773	967,978,203
Rabbits	1,083,151	102,899	1,186,050
Exotic Fowl	15,050	--	15,050
Quail/Pheasants	26,5770	--	26,570
Sheep & Goats	2,167,731	195,095	2,362,826
Swine	7,005,872	1,751,468	8,757,340
Exotic Animals	570,400	--	570,400
Sub total	\$1,059,552,954	\$580,067,655	\$1,639,620,609
Fisheries & Wildlife:			
Aquaculture	124,007,532	81,254,896	206,262,428
Freshwater Fisheries	9,891,034	8,407,379	18,298,413
Marine Fisheries	297,129,812	282,273,321	579,403,133
Fur Animals	346,130	78,917	425,047
Alligators	5,351,280	2,675,640	8,026,920
Hunting Lease Ent.	38,527,750	1,926,387	40,454,137
Honey	2,049,680	--	2,049,680
Sub total	\$478,303,218	\$376,616,540	\$854,919,758
Plant Commodities:			
Cotton	265,667,666	26,566,767	292,234,433
Feed Grain Crops	135,657,559	20,348,634	156,006,193
Forestry	905,014,509	2,371,138,014	3,276,152,523
Fruit Crops	18,266,379	2,146,299	20,412,678
Greenhouse Vegetables	2,035,257	223,878	2,259,135
Hay, Sold	33,288,400	3,661,724	36,950,124
Home Gardens	110,488,200	--	110,488,200
Nursery Crops	104,284,341	53,185,014	157,469,355
Other Oil Seeds	32,644	--	32,644
Peanuts	1,001,315	100,131	1,101,446
Pecans	8,580,757	2,059,382	10,640,139
Rice	166,272,958	49,881,887	216,154,845
Sod Production	15,658,605	11,743,954	27,402,559
Soybeans	92,663,040	9,266,304	101,929,344
Sugarcane	377,865,930	241,834,195	619,700,125
Sweet Potatoes	62,542,061	40,456,610	102,998,671
Vegetables	41,331,448	61,997,172	103,328,620
Wheat	22,680,088	2,494,810	25,174,898
Sub total	\$2,363,331,157	\$2,897,104,775	\$5,260,435,932
Total Value	\$3,901,187,329	\$3,853,788,970	\$7,754,976,299

Source: Louisiana Summary: Agriculture and Natural Resources, 2001, LSU Agricultural Center, Baton Rouge, LA.

	Area Harvested		Yield		Production	
	2002	2003 ¹	2002	2003 ¹	2002	2003 ¹
	<i>1,000 acres</i>		<i>Tons per acre</i>		<i>1,000 tons</i>	
Florida	461.0	441.0	38.3	40.0	17,653	17,640
Hawaii	22.7	22.0	95.1	95.0	2,159	2,090
Louisiana	495.0	490.0	28.3	30.0	14,009	14,700
Texas	44.5	43.0	38.9	38.0	1,732	1,634
U.S.	1,023.2	996.0	34.7	36.2	35,553	36,064

¹ September 1, 2003 forecast
Source: *Crop Production*, National Agricultural Statistics Service, USDA, September 2003

Crop Year	U.S. Sugar Production			Louisiana	Louisiana Production As Percent of:	
	Beet Sugar Production	Cane Sugar Production	Total Sugar Production	Cane Sugar Production	U.S. Cane Sugar Production	U.S. Beet and Cane Sugar Production
	----- <i>1,000 short tons, raw value</i> -----				----- <i>Percent</i> -----	
1995/96	3,916	3,454	7,370	1,057	30.6	14.3
1996/97	4,013	3,191	7,204	1,055	33.1	14.6
1997/98	4,389	3,632	8,021	1,262	34.7	15.7
1998/99	4,423	3,951	8,374	1,327	33.6	15.8
1999/00	4,956	4,076	9,032	1,683	41.3	18.6
2000/01	4,680	4,089	8,769	1,585	38.8	18.1
2001/02	3,914	3,992	7,906	1,587	39.7	20.0
2002/03	4,450	3,950	8,400	1,360	34.4	16.2

Source: *Sugar and Sweetener Situation and Outlook Yearbook*, Economic Research Service, USDA, June 2003

Overview of Current U.S. Sugar Market

Sugar production in the United States is supported by farm programs administered by the federal government. The basic aim and purpose of these federal commodity programs is to support the farm price received by producers of these commodities. Over the past several years, the federal government has also sought to administer these price support programs in such a way as to minimize or prevent the possibility of the federal government taking ownership of large stocks of program commodities. Government ownership of commodity stocks in large volumes increases government program costs and has a depressing effect on commodity market prices.

Although sugar is a program commodity, like rice, cotton, corn, or wheat, the price support provisions and mechanisms for sugar are very different. For other program crops, support price levels are determined and government payments make up the difference between the price support level and the market price. For sugar, market prices received by growers are supported by an import quota program. Market prices for raw sugar produced from sugarcane and refined sugar produced from sugar beets is supported by restricting the quantity of sugar available in the domestic market. Since the U.S. is a net sugar importer, the sugar price support program is essentially an import quota program. Each year, the federal government controls the quantity of sugar available in the domestic U.S. sugar market by restricting the amount of sugar foreign countries can import into the U.S. By restricting the quantities of sugar imports in such a way as to balance sugar supply and demand, sugar prices are supported at economically viable and stable levels for sugar growers and processors. Support of raw sugar prices above the base loan rate of 18 cents per pound prevents forfeiture of sugar stocks to the federal government. Large government held stocks of sugar tend to put downward pressure on sugar market prices. Research has shown that increased market access to the domestic sugar market from U.S. sugar trade liberalization would imply changes in the U.S. sugar program. If the present loan rate program were to be retained, the loan rate (the basic government minimum price support for sugar) would have to be reduced substantially in order to prevent large forfeitures to the U.S. Department of Agriculture (Haley, 2001).

In recent years, several free trade agreements have been negotiated between countries in an effort to promote or expand free trade in many goods, including agricultural commodities. The most significant recent trade agreement impacting the U.S. sugar industry was the North American Free Trade Agreement (NAFTA) which expanded trade between Canada, Mexico, and the United States. As a major producer of sugar, the potential for expanded Mexican exports of sugar into the United States has been an area of concern for the U.S. sugar industry. Although there are stipulations in the NAFTA agreement which outline the conditions under which increased Mexican sugar exports can enter the U.S., the stability of the U.S. sugar market is vulnerable to significant increases in supply volumes.

Sharp increases in domestic sugar supply, from either increased imports or through increased domestic production, can have a significant effect on the U.S. sugar market price. An example of the impact of increased domestic sugar supply on market price occurred in 1999. The supply and use of sugar in the U.S. from 1996/97 through projections for 2003/04 is shown in Table 4. As domestic production of both beet and cane sugar increased from the mid-1990s, this increased domestic supply was offset by reductions in the tariff-rate quota imports of sugar allowed in the U.S. From 1996/97 to 1998/99, domestic sugar production increased from 7.205 million short tons to 8.375 million short tons. Over this same period, tariff-rate quota imports of foreign sugar was reduced from 2.277 million short tons to 1.256 million short tons. Total supply remained essentially unchanged at approximately 11.5 million short tons. Raw sugar prices in

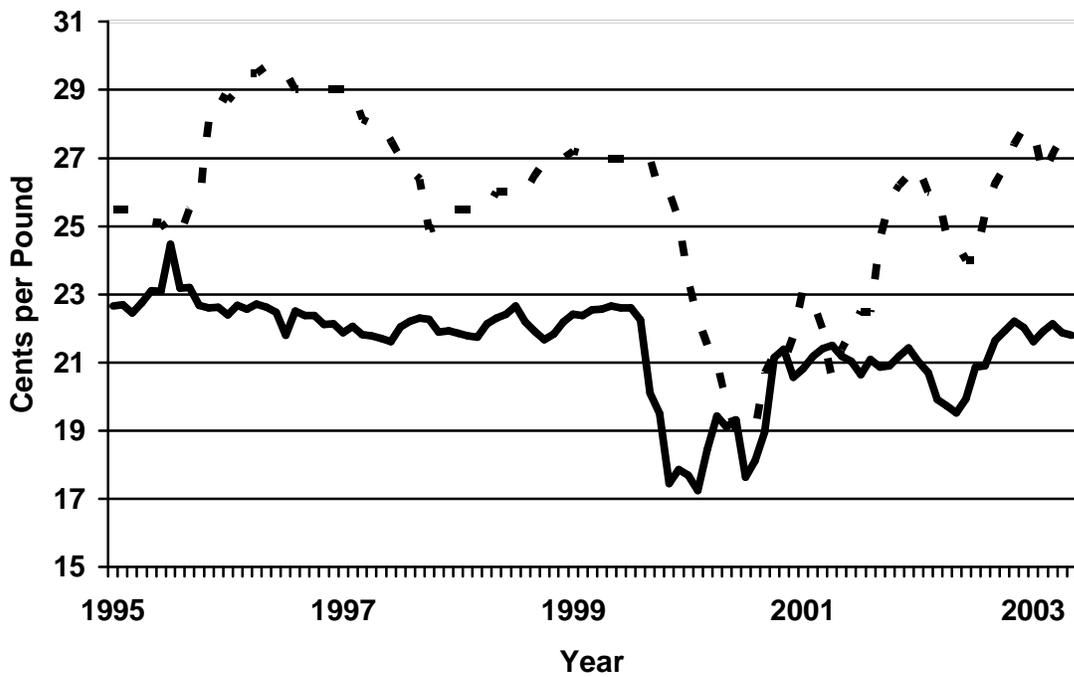
Table 4. U.S. sugar: supply and use, by fiscal year 1996/97 – 2003/04 /1

Items	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03 Estimate May 2003	2003/04 Projection May 2003
1,000 short tons, raw value								
Beginning stocks 2/	1,492	1,488	1,679	1,639	2,216	2,180	1,281	1,601
Total production 3/,4/	7,205	8,020	8,375	9,032	8,769	7,906	8,400	8,595
Beet sugar	4,013	4,389	4,423	4,956	4,680	3,914	4,450	4,450
Cane sugar	3,191	3,631	3,952	4,076	4,089	3,992	3,950	4,145
Florida	1,679	1,924	2,132	1,966	2,057	1,980	2,125	2,100
Louisiana	1,054	1,262	1,327	1,683	1,585	1,587	1,360	1,600
Texas	91	80	106	105	206	174	185	165
Hawaii	340	350	384	318	241	251	280	280
Puerto Rico 8/	27	16	3	4	0	0	0	0
Total imports	2,774	2,163	1,824	1,636	1,591	1,527	1,665	1,610
Tariff-rate quota imports 5/	2,277	1,729	1,256	1,124	1,277	1,150	1,265	1,225
Other Program Imports	493	349	386	388	238	296	340	325
Non-program imports	4	85	182	124	86	81	60	60
Statistical adjustments 3/	0	0	0	0	0	0	0	0
Total Supply	11,471	11,671	11,878	12,317	12,576	11,613	11,346	11,806
Total exports 3/	211	179	230	124	141	137	155	150
Quota-exempt for reexport	211	179	230	124	141	137	155	150
Other exports	0	0	0	0	0	0	0	0
CCC disposal, for export	0	0	0	0	0	0	0	0
Statistical difference 6/	0	0	0	0	0	0	0	0
Miscellaneous	30	-2	-58	-144	125	109	-200	0
CCC disposal, for domestic non-food use	0	0	0	0	0	0	0	0
Refining loss adjustment	0	0	0	0	0	0	0	0
Statistical adjustment 7/	30	-2	-58	-144	115	109	-200	0
Total deliveries	9,742	9,815	10,066	10,111	10,130	10,085	9,790	10,050
Transfer to sugar-cont. products for exports under reexport program	154	123	169	86	98	156	160	170
Transfer to polyhydric alcohol, feed	21	20	25	32	34	33	30	30
Deliveries for domestic food and beverage use	9,564	9,672	9,872	9,993	9,998	9,897	9,600	9,850
Total Use	9,983	9,992	10,238	10,090	10,396	10,332	9,745	10,200
Ending stocks 3/	1,488	1,679	1,639	2,216	2,180	1,281	1,601	1,606
Privately owned	1,488	1,679	1,639	1,919	1,395	1,070	--	--
CCC	0	0	0	297	784	212	--	--
Stocks-to-use ratio	14.94	16.80	16.01	21.97	21.36	12.40	16.43	15.75

NOTE: Numbers may not add due to rounding.

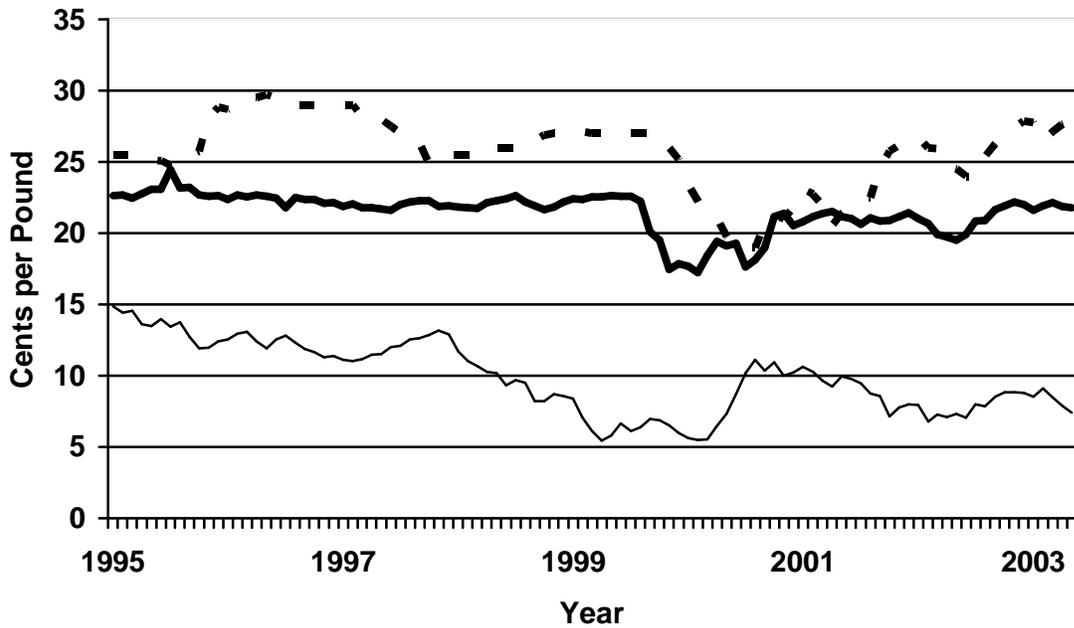
1/ Fiscal year beginning October 1. 2/ Stocks in hands of primary distributors and CCC. 3/ Historical data are from FSA (formerly ASCS), Sweetener Market Data, and NASS, Sugar Market Statistics prior to 1992. 4/ Projections for 2002/03 are based on analysis by Interagency Commodity Estimates Committee for sugar. 5/ Actual arrivals under the tariff-rate quota (TRQ) with late entries, early entries, and (TRQ) overfills assigned to the fiscal year in which they actually arrived. The 2002/03 available TRQ assumes shortfall of 30,000 tons. 6/ Receipts compiled by NASS and FSA Customs data. 7/ Calculated as a residual. Largely consists of invisible stocks change. 8/ Population data obtained from the Bureau of Economic Analysis. Population data include Puerto Rico. Sugar consumption includes all sugar deliveries. Refined basis is raw value divided by 1.07.

Source: *Sugar and Sweetener Outlook Yearbook*, U. S. Department of Agriculture, Economic Research Service, SSS-2003, June 2003.



— U.S. Raw Sugar Price - - U.S. Refined Beet Sugar Price

Figure 1 – U.S. Raw and Refined Beet Sugar Prices, 1995-2003



— U.S. Raw Sugar Price - - U.S. Refined Beet Sugar Price
 — World Raw Sugar Price

Figure 2 – U.S. and World Sugar Prices, 1995-2003

the U.S. remained fairly stable over this period, fluctuating narrowly in the 21-22 cent per pound range (Figure 1).

In 1999, the supply of sugar in the domestic U.S. market increased, due primarily to a rise in domestic production. Total beet and cane sugar production for that year increased to 9.032 million short tons, representing only a 7.8 percent increase in production over the previous year. However, tariff-rate quota levels, which had been reduced down near the GATT minimum levels, could not be reduced any further in an attempt to offset this increase in production. Total sugar supply in the U.S. market increased to 12.317 million short tons and ending stocks increased by 35 percent to 2.216 million short tons. The impact on the domestic raw cane sugar price and the wholesale refined beet price was immediate. In July 1999, raw cane sugar prices were 22.61 cents per pound, dropping to 17.45 cents per pound in November, a price decline of 22.8 percent. Wholesale refined beet prices stood at 27 cents per pound in August of 1999 and had dropped to 19 cents per pound by the following June, a price reduction of 29.6 percent.

The oversupply situation of 1999 illustrates the price sensitive nature of the U.S. sugar market. Over supply, from either domestic production or increased imports, can significantly reduce market prices to sugar growers. In the 2002 farm bill, marketing allotments were reinstated which serve to restrict or limit domestic sugar production, thereby preventing excess production. However, ongoing international trade negotiations could result in significant increases in the amount of foreign sugar being exported into the U.S. Even with domestic marketing allotments in place, the magnitude of potentially higher sugar imports could have significant consequences for the U.S. sugar industry, including sugarcane production in Louisiana.

Figure 2 shows the relationship between the U.S. raw sugar price, the U.S. refined beet sugar price, and the world raw sugar price from 1995 through 2003. Refined beet sugar prices have fluctuated around an approximate 25 cent per pound average. Raw cane sugar prices have generally remained in the 21 to 22 cent per pound range, except for the decline in 1999. World raw sugar prices have generally declined over the period, from about 15 cents per pound in 1995 to less than 10 cents per pound today. One of the direct results of a potential expansion of sugar imports into the domestic U.S. market, resulting from implementation of potential free trade agreements, would be a decline in the average domestic sugar market price level. The magnitude of such price declines would depend upon the levels of increased imports allowed into the country. In 2003, estimated breakeven raw sugar prices for sugarcane growers in Louisiana was 20.7 cents per pound for harvest of sugarcane through second stubble and 19.8 cents per pound for harvest of sugarcane through third stubble (Breux and Salassi, 2003). These estimates represent the market price of raw sugar required for a sugarcane grower in Louisiana to be able to cover all production costs at average yields. Reduction of raw sugar market prices below these breakeven price levels, resulting from potential free trade agreements involving expanded importation of sugar into the domestic market, would force many sugarcane growers, and possibly some raw sugar mills in the state, out of business, as income from sugar production would not be sufficient to cover total production and processing costs.

Potential Bilateral Free Trade Agreements

The United States is currently involved in free trade negotiations with several countries, many of which are major sugar exporters. Potential free trade agreements which could have a

significant impact on the U.S. sugar market include: (1) the Central American Free Trade Agreement (CAFTA), (2) the Free Trade Area of the Americas (FTAA), (3) the South African Customs Union (SACU), (4) Australia, and (5) Thailand (Phillips, 2003). Sugar production, exports, and the U.S. tariff-rate quota (TRQ) allocation for the countries involved in these free trade agreement negotiations is presented in Table 5. Production and export estimates are 2001/02 to 2003/04 averages and the shares of U.S. import quota are based on the 2002/03 TRQ allocation. Countries included in the Free Trade Area of the Americas (FTAA) trade negotiations had a combined total sugar production of 38.31 million metric tons and exports of 17.368 million metric tons. Under the 2002/03 TRQ allocation, only 715,499 metric tons of this total export volume was permitted to be imported into the United States. Although this import level represented 64.0 percent of the total U.S. TRQ import volume, it only accounted for approximately 4.1 percent of the total export volume from these FTAA countries. Sugar production for all countries involved in the specified free trade negotiations was 52.562 million metric tons with total sugar exports of 27.277 million metric tons. The U.S. TRQ import volume for these countries in 2002/03 was 858,715 metric tons, representing 76.9 percent of the total U.S. sugar TRQ import level. However, this import volume only accounted for about 3.1 percent of the total sugar exports from these countries. With these levels of sugar exports, free trade agreements between the U.S. and all or some of these countries offers the potential for significantly larger volumes of foreign sugar being imported into the U.S., flooding the domestic market with excess sugar and resulting in a significant decrease in grower market prices for raw cane sugar and refined beet sugar.

Analysis of Increased Sugar Imports from FTAs

The primary purpose of this report is to analyze the impact of these potential free trade agreements on the economic survivability of the Louisiana sugar industry. More specifically, the analysis presented here will forecast the likely impact of these free trade agreements on the U.S. raw sugar price, the price received by Louisiana sugarcane growers and processors after adjustments for transportation and other factors. This study was carried out using a partial-equilibrium simplified world trade model known as *Modele Internationale Simplifie de Simulation* (MISS), which simulates, in a comparative static framework, the effects of various policy actions.

The empirical framework for the MISS model is provided by Mahe, Tavera, and Trochet. It is a multiproduct, multiregional, nonspatial, partial-equilibrium, world trade model, which simulates, in a comparative static framework, the effects of alternative policy actions related to international trade in agricultural commodities. Mahe, Tavera, and Trochet used the MISS model for an analysis of the interaction between European Union and United States policies. The model consisted of seven commodities and four regions: the European Union, the United States, a market-based Rest of the World (ROW), and a centrally planned ROW. Kennedy, von Witzke, and Roe utilized the MISS model to study policy decisions made during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) negotiations. This model consisted of seven commodities and three sectors: the European Union, the United States, and the ROW. Kennedy and Hughes used the model to analyze welfare effects of agricultural trading blocs by simulating a North American customs union. Petrolia and Kennedy used the model to analyze increases in the United States tariff-rate sugar quota for increased exports from Cuba and Mexico.

The MISS model was utilized in this study to evaluate the impact on U.S. sugar prices as a result of increased sugar imports due to potential future free trade agreements being enacted. Potential increases in U.S. sugar imports were incorporated into the model through the

Table 5 - Potential U.S. Free Trade Agreement (FTA) Countries/Regions: Sugar Production and Exports, 2001/02 – 2003/04 Average, and Share of U.S. Raw Sugar Import Quota, 2002/03

<u>Country</u>	<u>Production</u>	<u>Exports</u> -Metric Tons-	<u>U.S. TRQ Allocation</u>
<u>North America</u>			
Mexico	5,135,000	182,000	7,258
Canada	5,0000	14,000	---
<u>Caribbean¹</u>			
Barbados	47,000	41,000	7,371
Dominican Republic	465,000	185,000	185,335
Haiti	10,000	0	7,258
Jamaica	175,000	138,000	11,583
St. Kitts & Nevis	24,000	18,000	7,258
Trinidad & Tobago	102,000	68,000	7,371
<u>Central America</u>			
Costa Rica	385,000	155,000	15,796
El Salvador	476,000	255,000	27,379
Guatemala	1,821,000	1,327,000	50,546
Honduras	332,000	78,000	10,530
Nicaragua	361,000	179,000	22,114
CAFTA TOTAL	3,375,000	1,994,000	126,365
Belize	120,000	102,000	11,583
Panama	165,000	55,000	30,538
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North America Total ²	9,668,000	2,797,000	401,920
<u>South America</u>			
Argentina	1,633,000	206,000	45,281
Bolivia	368,000	116,000	8,424
Brazil	22,187,000	12,750,000	152,691
Colombia	2,458,000	1,103,000	25,273
Ecuador	492,000	52,000	11,583
Guyana	294,000	261,000	12,636
Paraguay	110,000	21,000	7,258
Peru	960,000	41,000	43,175
Uruguay	140,000	21,000	7,258
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South America Total	28,642,000	14,571,000	313,579
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FTAA TOTAL²	38,310,000	17,368,000	715,499
% OF U.S. TRQ			64.0%
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South Africa	2,709,000	1,395,000	24,221
Swaziland	542,000	516,000	16,850
SACU Total	3,251,000	1,911,000	4,1071
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Australia	4,971,000	3,913,000	87,402
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Thailand	6,030,000	4,085,000	14,743
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FTA Total	52,562,000	27,277,000	858,715
% of U.S. TRQ			76.9%

¹ Excludes Cuba. ² Excludes United States. Data Source: USDA/FAS, May 2003

expansion of the TRQ import level. Several alternative additional U.S. sugar import quantities were simulated, ranging up to an additional 3.0 million metric tons of sugar. The impact of these additional sugar imports on world and U.S. refined and raw sugar prices were estimated. The results of these simulations are presented in Tables 6 and 7.

Table 6 presents estimates of world refined and U.S. wholesale refined sugar prices for alternative levels of increased U.S. imports of foreign sugar. As expected, the expansion of the U.S. TRQ import levels resulted in a modest rise in world sugar prices. With a 500,000 metric ton increase in U.S. sugar imports, estimated world refined sugar prices increase slightly to 9.86 cents per pound, a less than one percent change from the base price. With a 3.0 million metric ton increase in U.S. sugar imports, estimated world refined sugar prices increase to 10.11 cents per pound, an approximate 2.97 percent increase from the base price. However, these additional sugar imports resulted in a substantial decline in the U.S. wholesale refined beet sugar price. With a base price of 26.97 cents per pound, a 500,000 metric ton increase in U.S. sugar imports was estimated to cause the U.S. wholesale refined price to drop by 14.88 percent to 22.96 cents per pound. A 3.0 million metric ton increase in sugar imports was estimated to cause the wholesale refined price to drop to 9.89 cents per pound, a 63.32 percent decline.

Estimated impacts of increased U.S. sugar imports levels on world and U.S. raw sugar prices are presented in Table 7. The same alternative levels of additional U.S. sugar imports are listed, up to 3.0 million metric tons. World raw prices were estimated as 78.5 percent of the world refined price and U.S. raw sugar prices were estimated as 85.0 percent of the U.S. wholesale refined beet prices, based on the 1998-2002 average price ratios between these prices (*Sugar and Sweetener Yearbook*, USDA). Over the range of additional sugar imports simulated, world raw prices rose modestly from a base price of 7.70 cents per pound to 7.93 cents per pound. However, U.S. raw sugar prices were estimated to decline substantially. With a base U.S. raw sugar price of 22.92 cents per pound, a 1 million metric ton increase in imports resulted in a raw sugar price decrease to 16.57 cents per pound, a decline of 27.71 percent. A 3.0 million metric ton increase in U.S. sugar imports was estimated to cause U.S. raw sugar prices to decrease to 8.41 cents per pound, a decline of 63.32 percent.

A comparison of the potential sugar export volumes of the countries currently involved in free trade negotiations with the U.S., presented in Table 5, and the additional import volumes simulated and their price effects, shown in Tables 6 and 7, indicate that the inclusion of sugar in some or all of these free trade agreements could have substantial adverse impacts on the U.S. domestic sugar industry, particularly for growers. The oversupply episode of 1999 is a good example of the price instability which can result when domestic sugar supply and domestic use are not in balance. In fact, the primary purpose of the recently imposed domestic sugar marketing allotments, in the 2002 farm bill, is to keep domestic production and supply in balance with domestic demand for sugar as a means to stabilize and support sugar prices received by sugar beet and sugarcane growers. Large increases in sugar imports into the U.S. sugar market would drive the wholesale refined beet price and the raw sugar price, the prices received by growers, down to levels below production costs.

Obviously, a long term trend in U.S. agriculture has been for inefficient, high cost growers to cease production. Some of this land is kept in production by more efficient growers, while the remainder of this land is left idle or is used for some nonagricultural purpose. This trend is true for sugarcane growers in Louisiana and other states, as it is for virtually every agricultural commodity produced in this country. However, significant increases in U.S. sugar imports, given the current structure of the industry and domestic market, would likely drive the domestic raw sugar price down below breakeven levels for a large percentage of current

Table 6 – Estimated World Refined and U.S. Wholesale Refined Beet Sugar Prices at Alternative Levels of Additional U.S. Sugar Imports

Additional U.S. Sugar Imports (metric tons)	Estimated World Refined Sugar Price		Percent Change (%)	Estimated U.S. Wholesale Refined Sugar Price		Percent Change (%)
	(\$ / MT)	(¢ / lb)		(\$ / MT)	(¢ / lb)	
0	216.21	9.81	--	594.58	26.97	--
25,000	216.27	9.81	0.03	589.82	26.75	-0.80
50,000	216.32	9.81	0.05	585.12	26.55	-1.59
75,000	216.38	9.81	0.08	580.43	26.33	-2.38
100,000	216.43	9.82	0.10	575.73	26.11	-3.17
150,000	216.53	9.82	0.15	566.81	25.71	-4.67
200,000	216.64	9.83	0.20	557.71	25.30	-6.20
300,000	216.88	9.84	0.31	539.94	24.49	-9.19
400,000	217.10	9.85	0.41	522.87	23.72	-12.06
500,000	217.31	9.86	0.51	506.10	22.96	-14.88
750,000	217.87	9.89	0.77	466.68	21.17	-21.51
1,000,000	218.42	9.91	1.02	429.82	19.50	-27.71
1,500,000	219.53	9.96	1.54	364.50	16.53	-38.70
2,000,000	220.67	10.01	2.06	307.74	13.96	-48.24
3,000,000	222.94	10.11	2.97	218.07	9.89	-63.32

Table 7 – Estimated World Raw and U.S. Raw Sugar Prices at Alternative Levels of Additional U.S. Sugar Imports

Additional U.S. Sugar Imports (metric tons)	Estimated World Raw Sugar Price ¹		Percent Change (%)	Estimated U.S. Raw Sugar Price ²		Percent Change (%)
	(\$ / MT)	(¢ / lb)		(\$ / MT)	(¢ / lb)	
0	169.72	7.70	--	505.39	22.92	--
25,000	169.77	7.70	0.03	501.35	22.74	-0.80
50,000	169.81	7.70	0.05	497.35	22.56	-1.59
75,000	169.86	7.70	0.08	493.37	22.38	-2.38
100,000	169.90	7.71	0.10	489.37	22.20	-3.17
150,000	169.98	7.71	0.15	481.79	21.85	-4.67
200,000	170.06	7.71	0.20	474.05	21.50	-6.20
300,000	170.25	7.72	0.31	458.95	20.82	-9.19
400,000	170.42	7.73	0.41	444.44	20.16	-12.06
500,000	170.59	7.74	0.51	430.19	19.51	-14.88
750,000	171.03	7.76	0.77	396.68	17.99	-21.51
1,000,000	171.46	7.78	1.02	365.35	16.57	-27.71
1,500,000	172.33	7.82	1.54	309.83	14.05	-38.70
2,000,000	173.23	7.86	2.06	261.58	11.87	-48.24
3,000,000	174.77	7.93	2.97	185.36	8.41	-63.32

¹ World raw sugar prices estimated at 78.5 % of world refined prices (1998-2002 average).

² U.S. raw sugar prices estimated at 85.0% of U.S. wholesale refined prices (1998-2002 average).

Source: *Sugar and Sweetener Situation and Outlook Yearbook*, USDA, June 2003.

sugarcane producers. Even if the potential free trade agreements are phased in over a period of 10-12 years, the analysis presented here would suggest that the vast majority of growers would not be able to increase efficiency fast enough to offset the substantial decrease in sugar prices. As a result, it would be expected that many growers would go out of business as returns from sugar production would not cover total production costs.

Specifically for Louisiana, such potential decreases in raw sugar prices would impact a large majority of sugarcane growers in the state. For the 2003 crop year, the estimated total production cost of sugarcane in Louisiana at average yields is approximately 19.8 cents per pound of raw sugar produced for a tenant grower paying a one-fifth share for land and harvesting sugarcane out through a third stubble (Breux and Salassi). This total production cost estimate includes all costs associated with the production of sugarcane including variable costs (fuel, labor, repairs, fertilizer, chemicals, application costs), fixed costs (depreciation and interest on equipment), and overhead costs (all other costs associated with the farm operation). Breakeven prices to cover total production costs for growers in the state with sugar yields that are 20 percent higher than average yields is estimated at roughly 16.9 cents per pound. Obviously, raw sugar prices below these price levels would impact a large majority of the growers in the state. In addition, such low prices would also directly affect the financial position of the various raw sugar mills in the state. The long term trend in Louisiana has been that of fewer and larger raw sugar mills. Mills have been expanding capacity to spread out higher fixed costs over more sugarcane tonnage, thereby lowering cost per pound of sugar produced. However, the larger, more efficient mills which exist in the state today are not immune from the financial impacts of low raw sugar prices. Significant decreases in raw sugar prices would more than offset any efficiency gains achieved over the past several years and would severely jeopardize the long term economic viability of these firms should raw sugar prices remain depressed over an extended period of time.

Summary and Conclusions

The United States is currently involved in several international trade negotiations with countries desiring to establish some type of free trade agreement (FTA) with this country. Several of the countries involved in these negotiations are major sugar producers and major sugar exporters. This report presents an analysis of the projected potential levels of U.S. sugar prices received by domestic growers under various levels of additional sugar importation and what the impacts would likely be on the Louisiana sugar industry.

This study utilized the MISS international trade model to evaluate the impact on U.S. sugar prices as a result of increased sugar imports due to potential future free trade agreements being enacted. Additional domestic sugar import levels ranging up to 3.0 million metric tons were simulated. With a base U.S. raw sugar price of 22.92 cents per pound, a 1 million metric ton increase in imports resulted in a raw sugar price decrease to 16.57 cents per pound, a decline of 27.71 percent. A 3.0 million metric ton increase in U.S. sugar imports was estimated to cause U.S. raw sugar prices to decrease to 8.41 cents per pound, a decline of 63.32 percent. These prices are well below the 19 to 20 cent market prices needed for Louisiana sugarcane growers to cover total costs. These additional import levels pale in comparison to the 27.7 million metric ton sugar export volumes of countries currently negotiating free trade agreements with the United States.

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