Chapter 4

U.S. Sugar in the FTAA

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The consequences of a Free Trade Area of the Americas (FTAA) for the supply, distribution, and pricing of U.S. sugar are not yet known. Several scenarios of increased market access to the U.S. sugar market under the FTAA are possible, each with different effects on domestic sugar producers, consumers, and U.S. sugar policy.

Using the U.S. Department of Agriculture (USDA) sugar projections baseline model to analyze the effects of several market access options, this chapter looks first at the cost structures of Western Hemisphere sugar-producing sectors. The ability of Western Hemisphere sugar-producing countries to supply the U.S. market is discussed, with the assumption that FTAA outcomes will be consistent with current U.S. international commitments affecting sugar. The overall analysis is being done in the context of domestic sugar policy, with consideration of how some policy instruments may be used to adjust to increased sugar access from the hemisphere.

Costs of Sugar Production

One way of analyzing the competitiveness of sugar-producing countries in the Western Hemisphere is to compare and rank average costs of their production. LMC International periodically publishes estimates of world sugar and sweetener costs of production.[1] The data go back to 1979/1980 and *The 2000 Report* extends the data through 1998/99. Field, factory, and administrative costs are examined for 41 countries that produce sugar from sugar beets and for 63 countries that produce sugar from sugarcane. All sugar-producing countries in the Western Hemisphere are included. Although there are many limitations in the use of production cost estimates, these data can form the basis for comparing competitiveness in production across regions and countries.[2]

Table 4-1 shows four groupings of Western Hemisphere sugar-producing countries ranked according to average costs of producing raw cane sugar during 1994/95-1998/99. (Figure 4-1 shows the same information as a cumulative cost curve for the individual countries.) The lowest cost producers are in Center/South Brazil, Colombia, El Salvador, and Guatemala. Together, these countries' sugar production averaged about 14.8 million metric tons (mt) or about 48 percent of total hemispheric production. The average cost was estimated at a very low 7.7 cents a pound. The second grouping includes Bolivia, North/East Brazil, Costa Rica, Ecuador, Mexico, Nicaragua, and Florida in the United States. Production costs averaged 12.34 cents a pound, and average production averaged slightly less than 10.0 million mt. Together, the first and second cost groupings constitute more than 80 percent of cane sugar production in the Western Hemisphere, giving the cumulative cost curve a long portion below or close to the weighted-average hemispheric cost (100 in fig. 4-1).

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[2] See "U.S. and World Sugar and HFCS Production Costs, 1994/95-1998/99," in Sugar and Sweetener Situation and Outlook, USDA-ERS, SSS-232, September 2001, http://www.ers.usda.gov/publications/so/view.asp?f=specialty/sss-bb/.

Table 4-1—Costs of producing raw cane sugar, select categories of Western Hemisphere producers, 1994/95-1998/99

Category	Low	High	Average
		Cents/pound[1]	
Low cost[2]	6.72	11.69	7.70
Low-to-medium cost[3]	10.58	17.40	12.34
Medium-to-high cost[4]	14.25	21.83	16.54
High cost[5]	17.74	40.21	23.56

[1]Measured in current U.S. cents per pound, ex-mill, factory basis.
[2]Low-cost group is comprised of Center/South Brazil, Colombia, El Salvador, and Guatemala.
[3]Low-to-medium cost group is comprised of Bolivia, North/East Brazil, Costa Rica, Ecuador, Mexico (Gulf and Pacific Coasts), Nicaragua, and Florida.
[4]Medium-to-high cost group is comprised of Argentina, Belize, Guyana, Honduras, Panama, Paraguay, Peru, Louisiana, Texas.
[5]High Cost group is comprised of Barbados, Dominican Republic, Jamaica, St. Kitts, Trinidad, Hawaii, Uruguay, and Venezuela.
Source: LMC International, 2000.

Figure 4-1
Cumulative cane sugar costs in the Western Hemisphere, relative to weighted-average costs, 1994/95-1998/99

Production Costs (LMC International)
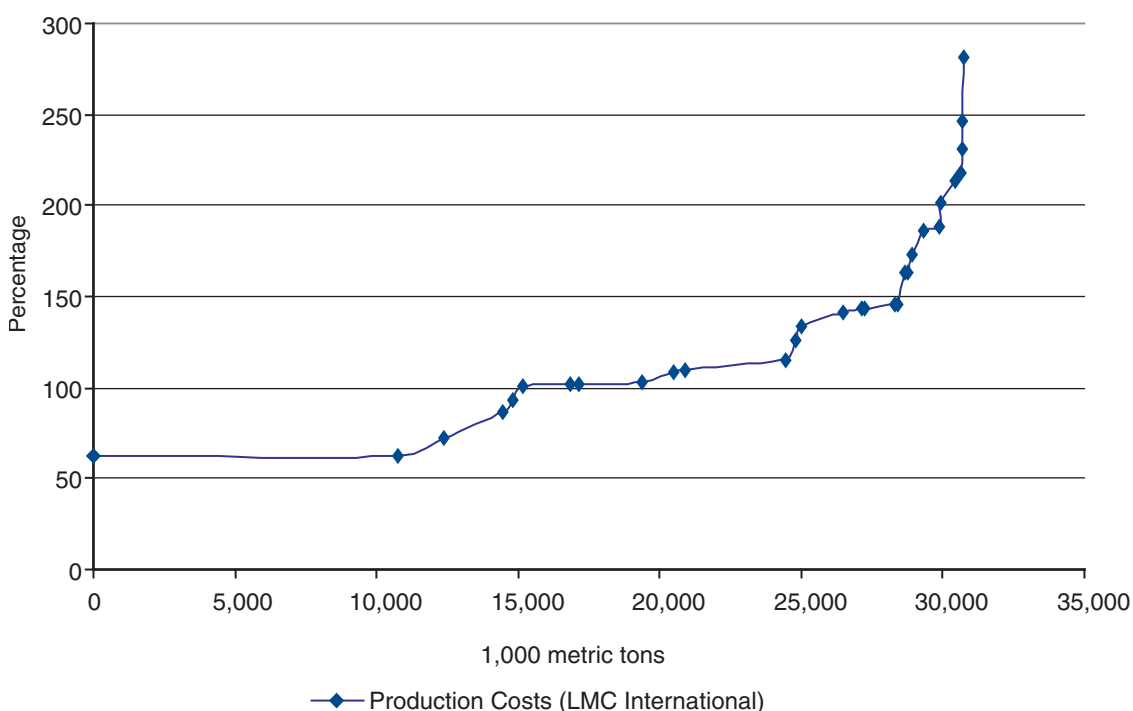
The third grouping includes Argentina, Belize, Guyana, Honduras, Panama, Paraguay, Peru, and Louisiana and Texas in the United States. Production costs averaged 16.54 cents a pound. The fourth group takes into account the highest cost areas, which includes Hawaii in the United States. The third and fourth groupings' production averaged 4.1 and 1.9 million mt, respectively. These third and fourth groupings represent the more nearly vertical shaping of the cost curve for cumulative production above 25 million mt (fig. 4-1).

These data show U.S. cane sugar-producing areas in Louisiana, Texas, and Hawaii in the higher cost categories. This means that at least 80 percent of cane sugar production in the hemisphere occurs at lower cost than in these areas.

The United States is the only significant producer of beet sugar in the Western Hemisphere. Although LMC International ranks the United States as one of the world's lowest cost producers of beet sugar, its costs in aggregate are still high relative to other Western Hemisphere cane sugar producers. Table 4-2 shows a low to high range of U.S. production costs, white sugar basis, for cane and beet sugar. The ranges are essentially overlapping in the United States, but the Western beet sugar producing areas generally have higher average costs than do those in the East.

Figure 4-2 shows U.S. cane and beet sugar-producing regions' disaggregated field and factory costs as percentages of hemispheric averages. Only Florida has a cost element (factory costs) lower than the average. Field and factory costs in U.S. cane areas other than Florida are any-where from 37 percent to 90 percent higher than the corresponding hemispheric average. The Eastern U.S. beet sugar costs are about 16 percent higher than in Florida. The Western U.S. beet sugar costs are intermediate between Texas and Hawaii.

Table 4-2—Range of costs of producing raw cane sugar, and refined beet sugar in the United States, 1994/95-1998/99

Category	Low	High
	Cents/pound[1]	
Cane sugar, white value equivalent	14.91	27.88
Beet sugar, Eastern U.S.	15.27	25.13
Beet sugar, Western U.S.	19.25	34.06

[1]Measured in current U.S. cents per pound, ex-mill, factory basis.
Source: LMC International, 2000.

Figure 4-2
U.S. sugar costs as percentage of Western Hemisphere average, 1994/95-1998/99
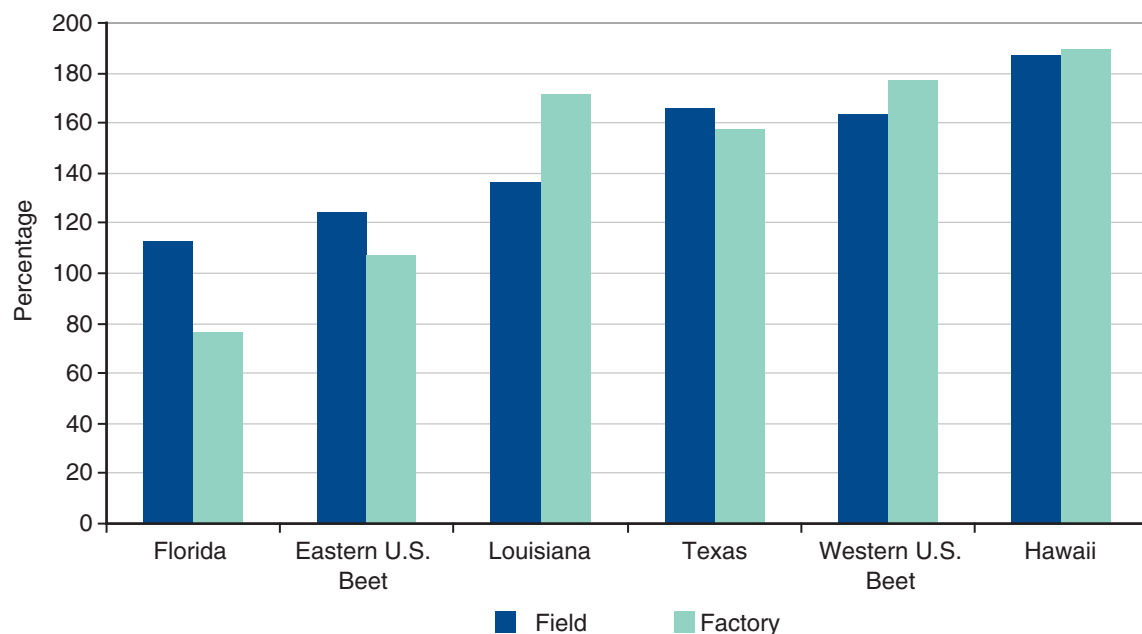
Costs: raw basis
Source: LMC International, 2000.

Net Surplus Production

Many factors influence the direction and magnitude of trade flows. Although cost considerations are important for assessing competitiveness, they are not sufficient for predicting trade flows. Factor endowments, marketing infrastructure, investment capital, industrial organization, consumer preferences, government policies, and other elements are important. These elements, however, are not analyzed here in depth because this report's focus emphasizes the implications of increased access of Western Hemisphere sugar on U.S. sugar supply, use, and prices.

Consideration of hemispheric costs shows the United States to be a relatively high-cost sugar producer, although there are U.S. producing regions where costs are competitive with cost-efficient hemispheric producers. Equally important for analysis is consideration of existing trade patterns and the likelihood that sugar produced in the Western Hemisphere could be shipped into the U.S. market. A simple way to approach this issue is to examine the net surplus production status of individual countries. Although there are alternative ways to define net producer status, the one chosen in this chapter is the difference of average production less average consumption for 1995/96-1999/2000. The averaging approach reduces the effects of extraordinary events and stock-level changes.

Table 4-3 shows net surplus production data for all countries, with totals reported for the geographical groupings of North America, the Caribbean, Central America, and South America. The hemisphere as a whole is a large net surplus producer of sugar—more than 8.4 million mt. Net surplus production is positive in all areas except North America where the U.S. and Canadian deficits outweigh Mexico's positive balance by more than 2.0 million mt. The ratio of net surplus production to production is sizeable in the three surplus areas: 57.1 percent in Central America, 36.2 percent in South America, and 32.9 percent in the Caribbean. Most countries in those areas are very experienced in the international market.

The South American and Central American countries tend to have lower costs of production coupled with relatively large net production surpluses. A combination of low production costs and large net surpluses would indicate a high capability of directing more exports to the U.S. market, although marketing costs would have to be considered as well. The Caribbean area, on the other hand, is fairly high cost. Most of their exports go to the European Union and the United States under preferential arrangements that guarantee them prices much higher than world levels, thereby covering, to a greater extent than otherwise, their high costs of production. It is only in this area where additional trade directed to the U.S. market might seem questionable.

U.S. Sugar Policy

In 1998 at the San Jose Ministerial meeting, the United States and other Western Hemisphere countries agreed that any FTAA agreement will be consistent with the rules and disciplines of the World Trade Organization (WTO) and that the FTAA will have to coexist with subregional agreements, such as the North American Free Trade Agreement (NAFTA). In addition, it seems reasonable that the U.S. Government is likely to continue its price support for U.S.-produced sugar.

U.S. sugar policy contains three elements: (1) WTO obligations, especially minimum access on imports of raw and refined sugar; (2) NAFTA obligations governing imports of sugar from Mexico; and (3) the U.S. sugar program. Descriptions of these elements follow.

Table 4-3—Average sugar production and consumption, 1995/95-1999/2000

Region/Country	Production	Domestic consumption	Net surplus production of sugar
North America			
Canada	128	1,230	(1,102)
Mexico	4,989	4,300	689
United States	7,260	8,913	(1,653)
Total	12,377	14,443	(2,066)
Caribbean			
Barbados	58	17	42
Dominican Republic	514	305	210
Haiti	10	84	(74)
Jamaica	215	125	89
St. Kitts and Nevis	21	4	17
Trinidad and Tobago	103	84	19
Total	922	619	303
Central America			
Belize	113	14	99
Costa Rica	361	205	156
El Salvador	418	219	200
Guatemala	1,560	438	1,121
Honduras	250	224	26
Nicaragua	349	181	168
Panama	168	99	69
Total	3,219	1,380	1,839
South America			
Argentina	1,644	1,421	223
Bolivia	295	228	67
Brazil	16,490	8,720	7,770
Chile	495	691	(196)
Colombia	2,155	1,333	821
Ecuador	356	390	(34)
Guyana	271	32	239
Paraguay	125	115	11
Peru	617	896	(279)
Surinam	1	14	(13)
Uruguay	20	110	(90)
Venezuela	580	752	(172)
Total	23,049	14,702	8,347
Grand Total	39,567	31,144	8,423

Source: USDA

U.S. Sugar Imports and the World Trade Organization

As part of the Uruguay Round Agreement on Agriculture (URAA), the United States agreed to import a minimum quantity of 1.256 million short tons, raw value (STRV) of raw and refined sugar each marketing year (October/September). Included in this amount is a commitment to import at least 24,251 STRV of refined sugar. The URAA made these commitments binding under the WTO.

The raw cane sugar tariff-rate quota (TRQ) is allocated to 40 quota-holding countries based on a representative period (1975-1981) when trade was relatively unrestricted. A duty of 0.625 cent a pound, raw value, is applied to in-quota imports.[3] Most countries have the low duty waived under the General System of Preferences or the Caribbean Basin Initiative. Between 95 and 98 percent of the raw cane sugar TRQ fills each year, and the refined sugar TRQ is filled almost as soon as it opens.

The high-tier sugar tariff applies to sugar imports above the level of the sugar TRQ. The Uruguay Round specified base rates for raw cane sugar of 18.08 cents a pound and for refined sugar of 19.08 cents a pound. Starting in 1995, the rates were to be cut by 0.45 cent a pound each year for raw sugar and 0.48 cent a pound for refined sugar. The yearly reductions were to take place until 2000, when the raw sugar high-tier tariff was to be 15.36 cents a pound and the refined sugar high-tier tariff rate was to be 16.21 cents a pound.

North American Free Trade Agreement

The North American Free Trade Agreement (NAFTA) contained provisions on trade in sugar. Those provisions were modified by a side letter in November 1993, before NAFTA went into effect on January 1, 1994.

According to the NAFTA side letter, Mexican sugar low-tier tariff exports to the United States are restricted by Mexico's net surplus production of sugar. The "net surplus" is defined as Mexico's production of sugar less its consumption of sugar and high-fructose corn syrup. From FY 2001 through FY 2007, Mexico is to have duty-free access to the U.S. market for the amount of its surplus as measured by the formula, up to a maximum of 250,000 metric tons, raw value (MTRV). Beginning in FY 2008, Mexico is to have duty-free access with no quantitative limit.

NAFTA specifies a declining high-tier tariff schedule for raw and refined sugar over the transition period to duty-free sugar trade in 2008. For 2003, the raw sugar tariff was 7.56 cents a pound, and the refined sugar tariff was 8.01 cents a pound. The raw sugar tariff is scheduled to drop about 1.5 cents each year, and the refined sugar tariff about 1.6 cents a year. Both rates will then reach zero in FY 2008.

Sugar Loan Program, Allotments, and Payment-in-Kind Acreage Diversion

The primary policy tools available to the U.S. Department of Agriculture to assist sugarcane and sugar beet producers are contained in the Farm Security and Rural Investment Act of 2002 (the 2002 Farm Act). The U.S. sugar program provides for USDA to make loans available to processors of domestically grown sugarcane at a rate of 18 cents per pound and to processors of domestically grown sugarbeets at the rate of 22.9 cents per pound for refined sugar. Loans are taken for a maximum term of 9 months and must be liquidated along with interest charges by the end of the fiscal year in which the loan was made. The loans are nonrecourse. This means that when the loan matures, USDA must accept sugar pledged as collateral as payment in full in lieu of cash repayment of the loan, at the discretion of the processor.

The 2002 Farm Act requires USDA, to the maximum extent possible, to operate the U.S. sugar loan program at no cost to the Federal Government. USDA must operate the program in a man-

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[3] In the Harmonized Trade System, chapter 17 specifies the low-tier tariff at 1.46066 cents per kilogram less 0.0206686 cent per kilogram for each degree of polarization under 100 degrees.

ner that will avoid the forfeiture of sugar to Commodity Credit Corporation (CCC). To discourage forfeiture of nonrecourse loans, the sugar price at the time of loan repayment must be high enough to cover the loan principal plus interest expenses and other costs.

The 2002 Farm Act gives USDA the authority to accept bids from sugarcane and sugar beet processors to obtain raw cane sugar or refined beet sugar in CCC inventory in exchange for the reduction of the production of raw cane sugar or refined beet sugar. This is one way to control expected excess (or price depressing) supplies of sugar.

To facilitate operation of the sugar program at no cost to the Federal Government, the 2002 Farm Act requires USDA to establish flexible marketing allotments for sugar. The overall quantity of sugar to be allotted for a crop year is determined by subtracting the sum of 1.532 million STRV and carry in stocks of sugar (including CCC inventory) from the USDA's estimate of sugar consumption and reasonable carryover stocks at the end of the crop year. USDA is required to adjust allotment quantities to avoid the forfeiture of sugar to CCC.

USDA's authority to operate sugar marketing allotments is suspended if USDA estimates that sugar imported for human consumption, not including the reexport programs, will exceed 1.532 million STRV such that the overall allotment quantity would have to be reduced. The marketing allotments would remain suspended until such time that imports have been restricted, eliminated, or otherwise reduced to or below the 1.532 million STRV level.

Sugar Imports: Current Situation and Future Possibilities

The United States allocates the raw sugar TRQ to 40 countries based on historical trade shares from 1975-1981. Table 4-4 shows allocations made for FY 2001. Twenty-three of the 40 countries are situated in the Western Hemisphere. Excluding Mexico's NAFTA share, imports from Western Hemisphere countries total 715,541 mt, or about 64 percent of the raw sugar TRQ excluding NAFTA. Including the NAFTA share for FY 2001, the total becomes 821,329 mt, or about 9 percent of sugar for U.S. domestic food and beverage use.

Table 4-4 shows that the Caribbean area (excluding Cuba) is very much dependent on the U.S. market. It was allocated an amount that was about 46 percent of total exports estimated for the 2001 marketing year. Central American countries are less dependent on the U.S. market. They were allocated an amount equaling about 8.5 percent of their total exports. Although South American countries in aggregate received an allocation more than 38 percent higher than either of the other areas, their allocation amounted to only about 3.4 percent of total exports and 1.4 percent of their total production for 2001.

Various Future Outcomes: Analytical Framework

There is no sure way to predict an outcome of FTAA negotiations for increased imports of sugar into the United States. There may be no increased access. On the other hand, any increase would have to be consistent with U.S. WTO and NAFTA commitments. In the context of U.S. sugar price support policies, increased imports could induce large sugar forfeitures to the CCC.

Two types of increased sugar access are possible. In the first, the United States modifies its TRQ import regime by increasing sugar quota allocations made to hemispheric sugar exporters. The allocation amounts may be either moderate or large. Maintenance of the TRQ structure would still provide support to U.S. prices higher than world levels, and preferential imports would provide hemispheric exporters higher (or certainly no lower) returns than the world market. In the

Table 4-4 — U.S. sugar imports under raw sugar tariff-rate quota, by country, fiscal year 2001

Region/country	TRQ allocation	TRQ allocation as percentage of production	TRQ allocation as percentage of exports
	Metric tons, raw value	————————-Percent————————	
North America			
Mexico	7,258		
Mexico (NAFTA)	105,788		
Total	113,046	2.30	26.41
Caribbean			
Barbados	7,372	14.74	14.74
Dominican Republic	185,346	40.21	100.19
Haiti	7,258	72.58	NA
Jamaica	11,584	5.39	6.44
St.Kitts and Nevis	7,258	36.29	40.32
Trinidad-Tobago	7,372	6.70	12.29
Total	226,190	26.12	45.88
Central America			
Belize	11,584	9.65	11.58
Costa Rica	15,797	4.27	9.87
El Salvador	27,381	6.35	13.97
Guatemala	50,549	3.10	4.25
Honduras	10,531	3.45	14.04
Nicaragua	22,115	6.08	11.40
Panama	30,540	18.51	46.98
Total	168,497	4.97	8.51
South America			
Argentina	45,283	2.94	25.16
Bolivia	8,425	2.96	16.85
Brazil	152,700	0.90	1.98
Colombia	25,274	1.07	2.57
Ecuador	11,584	2.31	19.31
Guyana	12,637	4.21	4.72
Paraguay	7,258	6.05	36.29
Peru	43,177	5.68	107.94
Uruguay	7,258	72.58	NA
Total	313,596	1.37	3.37
Other			
Australia	87,408	2.09	2.79
Congo	7,258	NA	NA
Cote D'Ivoire	7,258	4.10	11.17
Fiji	9,478	2.11	2.06
Gabon	7,258	NA	NA
India	8,425	0.04	1.69
Madagascar	7,258	NA	NA
Malawi	10,531	4.58	35.10
Mauritius	12,637	2.11	2.20
Mozambique	13,690	NA	NA
Papua New Guinea	7,258	16.13	145.16
Philippines	142,169	8.62	161.56
South Africa	24,221	0.84	1.53
Swaziland	16,850	3.19	6.71
Taiwan	12,637	4.21	84.25
Thailand	14,743	0.28	0.41
Zimbabwe	12,637	2.35	6.38
Total	401,716	NA	NA
Rounding	-62		
Total excluding NAFTA	1,117,195		
Total with NAFTA allocation	1,222,983		

Source: USDA.

second type of access, the United States permits hemispheric duty-free sugar imports with no upward quantitative limit. The second case resembles Mexico's sugar access to the United States under NAFTA in 2008.

The U.S. sugar baseline projections model is used for analyzing the effect of increased sugar imports from hemispheric exporters (see appendix). The model's advantage is that it incorporates substantial policy, production, processing, and consumption detail of the U.S. and Mexican sugar and high-fructose corn syrup sectors.[4] The model has been updated to be consistent with estimates and projections published in the April 2002 *World Agricultural Demand and Supply Estimates* report.

Four modeling scenarios are analyzed. In the first two scenarios, the United States retains its TRQ import regime but differs in the amounts of increased access. In the first, hemispheric quota access is doubled (excepting Mexico's raw sugar TRQ allocation of 7,258 MTRV) to 708,283 MTRV (780,740 STRV). This double-access scenario is intended as the case of a moderate increase. The second scenario, on the other hand, is a case of a large increase. It specifies an increase of 2.0 million MTRV (2.205 million STRV). Allocations to countries outside the Western Hemisphere would be equal to levels in FY 2001. Although NAFTA provisions would continue to hold, increased imports of sugar from FTAA countries into the United States are likely to affect the level of imports from Mexico.

The first two scenarios occur in the context of the U.S. sugar loan program. Because sugar imports for human consumption exceed 1.532 million STRV, marketing allotments are assumed to be suspended. Because the loan program provides for nonrecourse loans, processors are assumed to forfeit sugar placed under loan if U.S. sugar prices in the model are not projected to be above the minimum level to avoid forfeiture. For a loan rate of 18 cents a pound, the minimum price to avoid forfeiture is calculated to be 20.17 cents a pound. (The additional amount above 18 cents accounts for interest charges and expenses borne by the processor if the loan were to be paid off in cash. If the market price were below the minimum, then the processor would be ahead financially by forfeiting the sugar to the CCC instead of paying off the loan with cash.)

The 2002 Farm Act gives the USDA authority to exchange publicly owned sugar for reduced production of sugar crops. This enables the USDA to reduce sugar loan program costs by eliminating storage costs and reducing unneeded excess sugar production that could increase the likelihood of loan forfeitures. In the first two scenarios, it is assumed that the USDA exchanges sugar it owns for reduced production of sugarcane and sugar beets. Because these scenarios involve increases in U.S. sugar supply through granting greater market access to hemispheric producers, the likelihood of loan forfeitures at increased levels is greatly enhanced at a loan rate of 18 cents a pound. This implies that U.S. producer adjustments consist of increasingly larger transfers of publicly owned sugar for reduced plantings, with market prices stabilized at or above the minimum price to avoid forfeiture. While this represents one type of adjustment process, there could be pressure to reduce the loan rate to allow the market to adjust to the larger supply potential resulting from increased market access. The idea is that U.S. producers might be expected to bear a larger share of the burden of the FTAA through price-induced production reductions rather than the USDA through its sugar-exchange activities.

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[4] See "Conceptual Overview of the U.S. Sugar Baseline" in Sugar and Sweetener Situation and Outlook. SSS-227, January 2000, www.ers.usda.gov/briefing/sugar/sugarpdf/baseline.pdf; and USDA Agricultural Baseline Projections to 2011, Staff Report WAOB-2002-1, www.ers.usda.gov/publications/waob021/waob20021.pdf.

In terms of the modeling activity, the first two scenarios are run with the loan rate first at 18 cents a pound and then at levels low enough to eliminate forfeitures to the CCC for both scenarios. In the case of the double-access scenario, the loan rate has to be reduced to 15 cents a pound in order to eliminate forfeitures. For the 2-million-MTRV scenario, the loan rate has to be reduced to 13 cents a pound to eliminate forfeitures.[5]

The third and fourth scenarios represent extremes where there is duty-free access to hemispheric producers with no quantitative limits. The U.S. sugar loan rate program is assumed abandoned, and the U.S. raw sugar price drops close to world levels, separated from it by an assumed marketing margin of 2 cents a pound. The third scenario assumes no change in world prices after the U.S. liberalization. The fourth scenario assumes that world prices increase by 2 cents a pound (a 22-percent increase) due to increased U.S. import demand. Although the FTAA negotiations are scheduled for completion by the beginning of 2005, it is assumed for modeling that increased sugar access is not in full force until 2009. This delay is imposed to eliminate confounding effects from U.S. adjustments to NAFTA sugar provisions. Although the high-tier NAFTA tariff on imports of Mexican sugar are decreasing prior to 2008, it is not until 2008 that the high-tier NAFTA tariff reaches zero and domestic Mexican sugar prices are formally bound to U.S. prices.[6]

TRQ Outcomes With An 18-cent Loan Rate

The sugar base assumes that the loan rate remains at 18 cents a pound throughout the course of the projections period. Modeling results for the model's base (table 4-5) indicate that the 18-cent loan rate level implies that the CCC sugar stockholding is likely to be a major factor through 2010, when a price equilibrium above the minimum price to avoid forfeiture is finally achieved. The effect of increasing hemispheric market access is to keep prices at the minimum level (20.17 cents a pound) through loan forfeitures that channel excess production to the CCC. Even in the moderate double-access scenario, CCC stocks in 2012 are projected at 79 percent of the additional market access (615,000 STRV). In the 2-million-MTRV scenario, CCC stocks in 2012 are projected at 1.95 million STRV, or 88 percent of the increased import access amount.

In these scenarios, U.S. sugar production decreases relative to the base primarily because of reduced planting due to USDA's Payment-in-Kind Diversion Program. Imports from Mexico are not much affected because U.S. sugar prices are about the same as in the base scenario.

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[5] Although not modeled, there are other ways to provide support to sugar producers other than through price support. Even longstanding price support programs can be switched over to income support systems as was recently done to the peanut support program.

[6] Although it may be the case that prior to 2008 U.S. and Mexican prices are linked but separated by the NAFTA high-tier tariff, it is not certain when Mexican policymakers will permit this linkage to happen. Currently, the Mexican government owns about 50 percent of current sugar production capacity. For an undetermined time period, the Mexican government is expected to restrict how much sugar can be sold domestically and how much must enter into export channels. The baseline assumes that the Mexican government's goal is to create a marketing environment that will facilitate a re-privatization of the mills that the government owns and to help insure future returns to the entire sector until 2008 when the transition to NAFTA is complete. In other words, baseline modeling specifies that Mexican sugar prices are exogenous to modeling scenarios until 2008. It is because the NAFTA adjustments cannot be unambiguously handled until 2008 that the analysis of the FTAA starts in 2009, 1 year after the completion of NAFTA transition process.

Table 4-5—FTAA scenario results from increased sugar import access

Item	Units	Loan rate	Scenario	2008	2009	2010	2011	2012
Additional Import Access (FTAA)	1,000 STRV	18 cents/lb	Base	0	0	0	0	0
	1,000 STRV	18 cents/lb	Double-Access	0	781	781	781	781
	1,000 STRV	18 cents/lb	Two-Million MT	0	2,205	2,205	2,205	2,205
	1,000 STRV	15 cents/lb	Base	0	0	0	0	0
	1,000 STRV	15 cents/lb	Double-Access	0	781	781	781	781
	1,000 STRV	15 cents/lb	Two-Million MT	0	2,205	2,205	2,205	2,205
	1,000 STRV	13 cents/lb	Two-Million MT	0	2,205	2,205	2,205	2,205
	1,000 STRV	NA	Unrestricted	0	2,205	8,028	9,027	8,867
	1,000 STRV	NA	2 cent world price increase	0	1,250	5,685	5,977	6,029
CCC-owned sugar stocks	1,000 STRV	18 cents/lb	Base	326	237	107	0	0
	1,000 STRV	18 cents/lb	Double-Access	326	1,018	839	712	615
	1,000 STRV	18 cents/lb	Two-Million MT	326	2,441	2,175	2,051	1,950
	1,000 STRV	15 cents/lb	Base	326	0	0	0	0
	1,000 STRV	15 cents/lb	Double-Access	326	374	0	0	0
	1,000 STRV	15 cents/lb	Two-Million MT	326	1,798	1,145	1,012	886
	1,000 STRV	13 cents/lb	Two-Million MT	326	1,369	0	0	0
	1,000 STRV	NA	Unrestricted	326	0	0	0	0
	1,000 STRV	NA	2 cent world price increase	326	0	0	0	0
Raw Sugar Price (NY -No.14)	Cents/pound	18 cents/lb	Base	20.17	20.17	20.17	20.27	20.71
	Cents/pound	18 cents/lb	Double-Access	20.17	20.17	20.18	20.18	20.18
	Cents/pound	18 cents/lb	Two-Million MT	20.17	20.17	20.20	20.20	20.20
	Cents/pound	15 cents/lb	Base	20.17	19.07	20.18	20.79	21.14
	Cents/pound	15 cents/lb	Double-Access	20.17	17.17	18.00	19.16	20.46
	Cents/pound	15 cents/lb	Two-Million MT	20.17	17.17	17.14	17.13	17.14
	Cents/pound	13 cents/lb	Two-Million MT	20.17	15.17	19.72	23.04	22.93
	Cents/pound	NA	Unrestricted	20.17	11.24	11.08	11.08	11.08
	Cents/pound	NA	2 cent world price increase	20.17	13.24	13.07	13.07	13.07
U.S. Cane Production	1,000 STRV	18 cents/lb	Base	4,099	4,099	4,137	4,195	4,246
	1,000 STRV	18 cents/lb	Double-Access	4,099	4,099	3,781	3,861	3,919
	1,000 STRV	18 cents/lb	Two-Million MT	4,099	4,099	3,131	3,252	3,308
	1,000 STRV	15 cents/lb	Base	4,099	4,099	4,133	4,154	4,174
	1,000 STRV	15 cents/lb	Double-Access	4,099	4,099	3,546	3,718	3,743
	1,000 STRV	15 cents/lb	Two-Million MT	4,099	4,099	2,896	3,162	3,211
	1,000 STRV	13 cents/lb	Two-Million MT	4,099	4,099	2,029	2,706	2,760
	1,000 STRV	NA	Unrestricted	4,099	4,099	262	228	229
	1,000 STRV	NA	2 cent world price increase	4,099	4,099	1,198	1,083	1,084
U.S. Beet Production	1,000 STRV	18 cents/lb	Base	4,477	4,499	4,579	4,688	4,785
	1,000 STRV	18 cents/lb	Double-Access	4,477	4,499	4,105	4,241	4,349
	1,000 STRV	18 cents/lb	Two-Million MT	4,477	4,499	3,239	3,425	3,528
	1,000 STRV	15 cents/lb	Base	4,477	4,499	4,661	4,706	4,747
	1,000 STRV	15 cents/lb	Double-Access	4,477	4,499	4,213	4,475	4,520
	1,000 STRV	15 cents/lb	Two-Million MT	4,477	4,499	3,348	3,755	3,855
	1,000 STRV	13 cents/lb	Two-Million MT	4,477	4,499	2,569	3,475	3,537
	1,000 STRV	NA	Unrestricted	4,477	4,499	528	531	535
	1,000 STRV	NA	2 cent world price increase	4,477	4,499	2,382	2,397	2,414
U.S. Sugar Production	1,000 STRV	18 cents/lb	Base	8,576	8,598	8,717	8,883	9,031
	1,000 STRV	18 cents/lb	Double-Access	8,576	8,598	7,885	8,102	8,268
	1,000 STRV	18 cents/lb	Two-Million MT	8,576	8,598	6,370	6,677	6,837
	1,000 STRV	15 cents/lb	Base	8,576	8,598	8,795	8,861	8,922
	1,000 STRV	15 cents/lb	Double-Access	8,576	8,598	7,759	8,193	8,263
	1,000 STRV	15 cents/lb	Two-Million MT	8,576	8,598	6,244	6,917	7,067
	1,000 STRV	13 cents/lb	Two-Million MT	8,576	8,598	4,598	6,181	6,297
	1,000 STRV	NA	Unrestricted	8,576	8,598	790	760	764
	1,000 STRV	NA	2 cent world price increase	8,576	8,598	3,580	3,480	3,498
Total U.S. Imports for Consumption	1,000 STRV	18 cents/lb	Base	2,017	2,056	2,032	2,002	2,020
	1,000 STRV	18 cents/lb	Double-Access	2,017	2,837	2,812	2,785	2,784
	1,000 STRV	18 cents/lb	Two-Million MT	2,017	4,261	4,236	4,213	4,212
	1,000 STRV	15 cents/lb	Base	2,017	2,056	1,846	2,019	2,146
	1,000 STRV	15 cents/lb	Double-Access	2,017	2,837	2,573	2,573	2,597
	1,000 STRV	15 cents/lb	Two-Million MT	2,017	4,261	3,997	3,972	3,964
	1,000 STRV	13 cents/lb	Two-Million MT	2,017	4,261	3,937	4,105	4,867
	1,000 STRV	NA	Unrestricted	2,017	4,261	9,622	10,552	10,378
	1,000 STRV	NA	2 cent world price increase	2,017	3,307	7,353	7,592	7,630

NA = not applicable
Source: Economic Research Service.

TRQ Outcomes With Lowered Loan Rates

The TRQ scenarios are run again with lowered loan rate levels. The objective is to determine a loan rate level that is consistent with no sugar forfeitures to the CCC by the end of the projections period. Table 4-5 shows modeling results, including sourcing of U.S. sugar and CCC inventory levels for the various scenario versions for 2012.

For the double-access scenario, lowering the loan rate to 15 cents a pound yields zero forfeitures to the CCC for all years 2010 through 2012. For the 2-million-MTRV scenario, lowering the loan rate to 13 cents a pound allows CCC holdings to reach zero by 2010, with holdings as high as 1.369 million STRV in the first year of the FTAA. (This result comes about because the modeling specification implies that domestic production reacts to sugar prices lagged at least 1 year; that is, production responds to the 2009 price decrease in the 2010 crop year.)

These market-adjusting scenarios (double access with a 15-cent loan rate, and a 2-million-MTRV increase with the 13-cent loan rate) show a similar dynamic pattern: increased imports lower sugar prices; U.S. production decreases the succeeding year; sugar prices then rise, but U.S. production does not increase because abandoned mills and processing facilities are assumed permanently closed. Price dynamics serve to move U.S. sugar supply from domestic to imported sourcing, but because the imports are capped under a TRQ system, prices recover eventually and sustain U.S. producers and processors who survived the intervening price downturn.

In the first scenario (double access), FTAA imports cause the U.S. raw sugar price to decrease 10 percent in the first year (17.17 cents a pound) relative to the 15-cent loan rate base. The raw price recovers in the second year by 0.83 cent and is 20 to 21 cents a pound by 2012. U.S. sugar production is reduced 8.5 percent (768,000 STRV) relative to the 18-cent loan rate base in 2012. Sugar imports from Mexico are lowered by 203,000 STRV, or 24.9 percent relative to the base in 2012. (Lower prices in Mexico increase Mexican beverage end user demand for sugar relative to HFCS.) Imports as a source of U.S. sugar consumption increase from 18.3 percent to 23.9 percent in the base.

In the second scenario (2-million-MTRV access), U.S. production in 2012 is reduced by 30.3 percent (2.73 million STRV) relative to the base. FTAA imports cause the U.S. raw sugar price to decrease 24.8 percent in the first year (to 15.17 cents a pound) relative to the base. The large price reduction serves to eliminate sugar-processing capacity and lay the groundwork for price recovery. This price recovery begins in 2010 (19.72 cents a pound), and prices are in the 23-cent range by 2011. Imports from Mexico in 2012 are actually up by 642,000 STRV relative to the base because of the high U.S. price. Imports as a share of U.S. sugar consumption are projected at 43.6 percent.

Unrestricted FTAA Access

The third scenario (unrestricted) opens the U.S. sugar market to all Western Hemisphere producers at zero tariff. Because the net surplus producer status of the hemisphere is extremely large, and because the largest, lowest-cost producers have low transport costs relative to non-hemispheric competitors, it is assumed that this scenario is equivalent to unrestricted free trade in sugar for the United States. The implication is that the level of U.S. sugar prices will be closer to world price levels, and that changes in U.S. prices will be highly correlated with changes in corresponding world prices. The price dynamic associated with the first two scenarios (TRQ allows a sugar price recovery after the exit of some U.S. production) is no longer present. U.S. producers and processors will have to have low costs to survive.

The baseline model assumes that future world raw sugar prices will be in the 9-cent-a-pound range after 2008. The U.S. loan rate equals 18 cents a pound through 2008, and the loan rate program is assumed abandoned in 2009. Taking into account various price margins, a U.S. raw sugar price is about 11 cents a pound starting in 2009. Table 4-5 shows various results.

Implications for U.S. sugar production are severe: cane sugar production is projected at only 229,000 STRV by 2012, and beet sugar production is projected at 535,000 STRV. These declines are of such great magnitude (95-percent reduction for cane sugar and 89-percent for beet sugar) that one cannot be assured that any U.S. sugar production would remain, save the production of niche sugars.

The fourth scenario is similar to the third, but world prices are assumed to rise to 11 cents a pound because of increased world excess sugar demand caused by the U.S. action. The U.S. price is about 13 cents a pound. The higher 2-cent price compared with the third scenario has significant effects for U.S. production. Production is decreased by 61.3 percent rather than being mostly eliminated. Beet sugar decreases 49.6 percent to 2.414 million STRV, and cane sugar production decreases by 74.5 percent to 1.084 million STRV. Most of the remaining production is located in the low-cost Eastern beet-producing areas and in Florida cane growing areas. Most sugar consumed in the United States would be coming from imports—7.63 million STRV, or 68.6 percent.

Although these latter results do not imply the complete abandonment of sugar production in the United States, the challenge is very real. With open access, the U.S. sugar sector is subject to world price movements. An assumed long-term equilibrium world sugar price at 9 cents a pound may be too high. Also, the world sugar market is at times volatile, and low prices below most producing countries' costs of production are commonplace. Whether the U.S. sugar sector could survive this environment without assistance would likely be a serious concern.

Modeling results do not indicate large shifts away from high-fructose corn syrup (HFCS) to sugar as sugar prices decline. Costs of producing HFCS in the United States are only slightly higher than costs of producing sugar in Center/South Brazil, the lowest cost sugar producer in the hemisphere. HFCS may be substituted for refined sugar, whose price generally incorporates the additional costs of refining raw sugar, about 3 cents a pound. Even though results imply that U.S. HFCS producers can lower prices to meet the competition from lower priced sugar, the results are still dependent on low-to-moderate prices of U.S. produced corn and world raw sugar prices equal to or higher than 9 cents a pound. Either lower raw sugar prices or greater U.S. corn prices could cause some significant shifting away from HFCS.

Conclusion

Analysis shows the United States to be a relatively high-cost sugar producer, although U.S. producing regions (Florida and Eastern sugar beet-producing areas) have costs that are competitive with cost-efficient hemispheric producers. The hemisphere as a whole is a large net surplus producer of sugar and could meet all U.S. sugar needs. The effect of an FTAA would depend on whether increased access were capped under a TRQ system or unlimited. Under a TRQ system, increased imports could cause sugar forfeitures to the CCC. Keeping the current loan program and controlling U.S. Government budget exposure might require a lowering of the loan rate, especially for higher levels of FTAA sugar access.

Analysis of the FTAA shows that under a TRQ system, U.S. sugar prices recover to pre-access levels but imports permanently replace some U.S. production. In effect, harm to surviving U.S. sugar producers is temporary and is felt only during the transition to increased sugar imports resulting from the FTAA. In the case of unlimited FTAA access, surviving U.S. producers must absorb world price movements and face constant competition with the hemisphere's most cost-efficient exporters. Sugar imports would likely constitute over 70 percent or more of all sugar consumed in the United States. Although results do not indicate consumption shifts away from HFCS, these results are dependent on raw sugar prices at or higher than 9 cents a pound.

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