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The U.S. sugar program versus bilateral and multilateral trade liberalization*

by

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Abstract

This paper explores the tensions that exist between maintaining the U.S. sugar program and liberalizing the U.S. sugar market in bilateral, regional, and multilateral agreements such as the North American Free Trade Agreement, the Free Trade Area of the Americas, the United States-Central American Free Trade Agreement, the United States-Australia Free Trade Agreement, and the Doha Development Agenda. The paper focuses on the effects on the U.S. sugar program of moving to a common market with Mexico and of providing additional access to sugar-producing nations under an FTAA, CAFTA, AFTA, and the DDA. The discussion serves to provide a clear example of the predicament in which the United States finds itself between maintaining protection on import sensitive commodities all-the-while negotiating for removal of protection on export oriented commodities. The Global Trade Analysis Project (GTAP) model is employed to assess the effects of trade liberalization on the U.S. economy under varying liberalization scenarios for sugar. The simulation results suggest that free sugar imports from some countries would be beneficial to the U.S. economy as a whole. Under free sugar imports, the prices of sugar crops and refined sugar would decline. If farm prices were insulated from free imports by price supports, the welfare gains to the U.S. economy would increase in some cases. The results suggest, however, that the wider the coverage of free imports, the more difficult it would be to sustain price supports.

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The U.S. sugar program versus bilateral and multilateral trade liberalization

Marinos E. Tsigas and Devry S. Boughner

Introduction

The U.S. sugar program fared extremely well in the newly passed farm bill. The loan rates for raw and refined sugar were maintained at the 1996 farm bill (i.e., the FAIR Act) levels–18 cents and 22.9 cents per pound, respectively; marketing assessments were eliminated, retroactively to October 1, 2001; forfeiture penalties of one cent per pound were eliminated; Commodity Credit Corporation (CCC) interest rates on price support loans were reduced; the no-net-cost to the U.S. government feature was reestablished, after having been eliminated in the FAIR Act; domestic marketing allotments were re-instituted when imports are at or below 1.532 million short tons (1.36 million metric tons); and the Payment-in-Kind (PIK) program for sugar beets was included as a U.S. supply-limiting option in addition to marketing allotments.

The sugar program provisions in the 2002 farm bill will make it easier for the U.S. Department of Agriculture (USDA) to manage the domestic supply of sugar so that the United States can continue to meet its current international obligations on sugar. The United States allows access to the U.S. sugar market to Mexico under the NAFTA and to 41 members of the World Trade Organization (WTO), including Mexico under the Uruguay Round Agreement on Agriculture (URAA). Access is granted via the use of tariff rate quotas (TRQs).[1] In the two years preceding the passage of the 2002 farm bill, the United States was having a difficult time balancing the U.S. loan-rate-purchase program with its market access commitments.

In the past, the import protection (i.e., the TRQ) maintained the domestic price above the loan rate. If the market price threatened to fall below the loan rate, the USDA was able to reduce the level of the TRQ to guard against forfeitures. From 1996 to 2000, the USDA incrementally reduced the level of the TRQ on sugar (raw plus refined) from approximately 2.2 million metric tons to 1.25 million metric tons, successfully preventing forfeitures of domestically produced sugar. However, once the USDA hit the URAA market access commitment level of 1.25 million metric tons, its ability to preclude forfeitures was constrained. In addition, owing to the no-net cost provision restriction in the 1996 FAIR Act, USDA was further restricted to reducing the level of access below 1.36 million metric tons (raw and refined), if non-recourse loans to producers were to remain available.

The USDA was unable to work within the parameters of the international commitments on market access and the domestic policy requirements, and in 2001, the domestic and trade policies collided. The loan rate was encouraging a certain level of production while the TRQ was granting a fixed level of access. The domestic policy and the international policies were at odds, which led to large forfeitures of excess sugar to the CCC. The forfeitures were viewed by many as unacceptable. The U.S. sugar industry viewed the forfeitures as a sign that the U.S. Government negotiated overly ambitious trade agreements, while the users of sugar viewed the forfeitures as a sign that the domestic policy needed reform to accommodate the United States' international commitments.

[1] TRQs are two-tiered tariff rate import quotas that allow for access within the import quota at a low tariff (i.e., the in-quota tariff) and access beyond the import quota at a higher (generally prohibitive) tariff (i.e., the over-quota tariff).

The new sugar program provided for in the 2002 farm bill has restored the balance between the U.S. domestic and trade policies for sugar, providing for supply management features (e.g., marketing allotments) within the U.S. market to maintain U.S. prices above loan rate levels and to avoid forfeitures. While the new program affords the USDA flexibility in maintaining support for U.S. sugar producers while meeting its current international obligations on sugar, the United States may find itself hard pressed to reach agreements in future trade negotiations without placing sugar on the bargaining table. Some countries such as Brazil and other efficient sugar producing and exporting nations may refuse to discuss opening their markets to U.S. exports without the United States opening its market for sugar (and other protected commodities such as dairy). To further complicate matters, backlash may result in the U.S. Congress if the U.S. negotiators attempt to further open the U.S. sugar market to imports. Thus, if the United States is asked to liberalize its market for sugar by increasing the TRQs and lowering over-quota tariffs, tensions, both economic and political, between the U.S. domestic and trade policies for sugar may surface.

This paper explores the tensions that exist between maintaining the U.S. sugar program and liberalizing the U.S. sugar market in regional and multilateral agreements such as the NAFTA, the Free Trade Area of the Americas (FTAA), the United States-Central American Free Trade Agreement (CAFTA), the United States-Australia Free Trade Agreement (AFTA), and the WTO's Doha Development Agenda (DDA). The paper focuses on the effects on the U.S. sugar program of moving to a common market with Mexico in 2008 under NAFTA and of providing additional access to sugar-producing nations under an FTAA, CAFTA, AFTA, and the DDA. The discussion serves to provide a clear example of the predicament in which the United States finds itself between maintaining protection on import sensitive commodities all-the-while negotiating for removal of protection on export oriented commodities. The Global Trade Analysis Project (GTAP) model is employed to show the effects of trade liberalization under varying regional and multilateral liberalization scenarios for sugar, including free trade.

The potential gains to consumers and losses to producers from trade liberalization show what is at stake for all sides involved, and thus help to explain the existing dilemma U.S. policy-makers face between maintaining protection and opening markets. Current U.S. obligations with respect to sugar are reviewed, potential future obligations are discussed, and then trade liberalization scenarios are conducted.

Review of United States' Current International Obligations

North American Free Trade Agreement

The United States granted Mexico its own TRQs for sugar, under which the country may ship either raw or refined sugar, as part of the U.S. schedule of concessions under the NAFTA. The level of the TRQs and the exact provisions under which Mexico is allocated access to the U.S. sugar market are points of contention, which have contributed to a long-standing dispute between Mexico and the United States. The United States has stood by a "side letter" to the NAFTA, which is also contained in the U.S. NAFTA implementation legislation, while Mexico has stood by the actual NAFTA provisions. Both the side letter and the NAFTA call for a Mexico to ship its net surplus production to the United States, but the calculation for net surplus differs in the two documents. Under the provisions of the NAFTA, net surplus is production of sugar minus consumption of sugar; in the side letter, net surplus is production of sugar minus consumption of sugar and consumption of high fructose corn syrup. Mexico has contended that in accordance with the NAFTA, it should be able to ship all of its net surplus production to the United States, while the United States has contended that the side letter limits Mexico's access to 250,000 metric

tons.

Regardless of the current level of access under the annual TRQ, NAFTA calls for the market between the United States and Mexico will be merged into one "common market," which infers that the two sectors have common external tariffs and common internal policies. The NAFTA calls for staged reductions by the United States in the over-quota tariffs applied to Mexico for sugar, with complete elimination of all tariffs between the United States and Mexico on sugar on January 1, 2008.

The staged reductions in U.S. over-quota tariffs applied to Mexican sugar are listed as ad valorem equivalents in the table to follow. As the tariffs fall, the exports of over-quota sugar become eminent.2

Sugar: Over-quota tariffs applied to U.S. imports of sugar from Mexico, ad valorem equivalent, 2001-2008

	Over-quota tariff
Year	Percent
2001	113
2002	99
2003	85
2004	71
2005	56
2006	42
2007	28
2008	0

Source: Harmonized Tariff Schedule of the United States, 2002; USDA, ERS, Sugar and Sweetener Outlook, May 2001.

Uruguay Round Agreement on Agriculture

During the Uruguay Round, the United States scheduled TRQs for raw and refined sugar with the WTO. Each year the USDA calculates the level of the TRQs for raw and refined sugar, taking into account the minimum access commitment made by the United States, and then the U.S. Trade Representative (USTR) announces the country specific allocations. Country allocations of the raw sugar TRQ are prorated based on historical export shares to the United States during the 1975-81 period, a period when the U.S. import quota was allocated on a first-come, first-served basis (FCFS). There has been no other time in recent history when the United States has not had an import quota in place for sugar, and so the base period represents the closest the United States has come to free trade in sugar. The Dominican Republic, Brazil, the Philippines, and Australia hold the largest allocations of the U.S. sugar TRQ. The refined sugar TRQ is allocated to Mexico and Canada, and the remainder is allocated on a FCFS basis.

Generally the United States has allocated more than its minimum access commitment, but since 1996, the allocation has fallen on a yearly basis to the WTO minimum of 1.25 million metric tons. The combined level of access under the TRQ has fallen from 2.2 million metric tons in 1996 to 1.25 million

2 The over-quota tariff (ad valorem equivalent) applied to U.S. imports of sugar from Canada is about 143 percent.

metric tons in 2001.3 The reduction in access is a strong indication that the USDA was using the TRQ as a supply control mechanism to boost the domestic price above the loan rate. Because the mechanism could not be reduced any further, the TRQ no longer worked in harmony with the domestic policy, but rather, began to conflict with it instead.

United States' Potential Future Obligations

Additional increases in imports resulting from bilateral, regional, and multilateral negotiations would likely place further pressure on the U.S. market price, which could leave the CCC with high levels of domestically produced sugar stocks. Thus, future trade negotiations are hindered by the fear of bringing instability to the U.S. sugar program.

The United States has much to gain from trade liberalization with other countries in terms of increased exports of agricultural products. Many export-oriented sectors such as the pork, rice, wheat, and soybean sectors have an interest in opening markets abroad, and in order to gain access to additional markets, the United States must provide meaningful access to its market.

In terms of access to the U.S. market for agriculture, the United States does not have much to offer relative to the offerings of other countries, except for increases in market access for a handful of import sensitive commodities (e.g., dairy, sugar, and orange juice). Overall, tariffs for agricultural products in the United States average about 12 percent. However, offering concessions on import sensitive commodities such as sugar may be nearly impossible, as many members of Congress are adamantly opposed to liberalizing the U.S. sugar market because of domestic pressure from producer groups. Nevertheless, the United States is forging ahead with negotiating regional and bilateral FTAs as well as negotiating in the multilateral arena. The United States will not only have to negotiate with other countries, but it will have to negotiate with import-sensitive domestic industries, such as the sugar industry, in its own backyard.

There are other possible upcoming FTAs such as Chile and Singapore, but the FTAs discussed to follow are those that have the most potential to challenge the U.S. sugar program in terms of substantial increases in the level of sugar imports.

United States-Central America Free Trade Agreement

Belize, El Salvador, Nicaragua, Costa Rica, Guatemala, Honduras, and Panama are all current holders of the U.S. raw sugar TRQ. Combined, these seven countries hold approximately 9 percent of the U.S. raw sugar TRQ. Essentially, all seven countries fill their quota each year. In 2001, Central America's production of sugar totaled 3.4 million metric tons, or about 44 percent of total U.S. production. Guatemala, El Salvador, and Costa Rica are the largest producers, producing 72 percent of the region's total production in 2001. As a region, Central America exported 6 percent of total world exports in 2001.

Therefore, it is evident that sugar is going to prove to be an important discussion point for the CAFTA. These countries have amazing production and export potential. Excluding sugar is going to be difficult when sugar is one of the main cash crops in these countries. Increased access through

3 The 2001 over-quota MFN tariffs applied to U.S. imports of sugar, which includes special safeguards, is about 195 percent.

preferential tariffs and/or TRQs will certainly top the list of requests by these countries. As the CAFTA is designed as a precursor to the FTAA, countries such as Brazil will be monitoring the negotiations closely. Possible options for increased access are similar to those for the FTAA (see discussion below).

Free Trade Area of the Americas

The United States hopes to have completed the FTAA by January 1, 2005. Achieving an agreement in the Americas may be nearly impossible if the United States does not offer some concessions on sugar in the FTAA negotiations. The preference of the U.S. sugar industry is to exclude sugar from the FTAA and handle liberalization of the market in the multilateral context (i.e., in the WTO). Of the 34 countries involved in the FTAA, over 20 currently export sugar to the United States under the URAA TRQ. The United States may be pressed by FTAA countries to offer additional access for sugar, especially given that Mexico, an FTAA country, has preferential access under the NAFTA, and in 2008, in accordance with the NAFTA, will have unlimited duty-free access to the U.S. market for raw and refined sugar. Brazil, a major player in FTAA negotiations, has been rather vocal in stating its hesitancy to get involved in a negotiation without the United States offering a commitment to open its sugar market. Brazil is the largest, most efficient producer of sugar in the world and exports 25 percent of total world exports. Under a free trade scenario, Brazil has the potential to supply the entire U.S. market.

As a result of the FTAA negotiations, several possible liberalization scenarios emerge. All scenarios must be GATT-compliant so that the United States does not violate its commitments to other member countries in the WTO.

If the United States offered to provide totally open access to the U.S. market for sugar to the FTAA countries, this action would essentially render the URAA TRQ irrelevant. The result would be free trade in sugar with the United States, since some of the most efficient producers are found among the FTAA countries.

The United States could offer increased access via an FTAA TRQ (much like the NAFTA TRQ) based on most efficient suppliers. That is, the United States could maintain the URAA TRQ and create a new TRQ for the FTAA, much like with NAFTA. There are variations here because Mexico is an FTAA country. Does Mexico maintain its own TRQ? Does the NAFTA TRQ turn into a Mexico/FTAA TRQ? These are questions that must be resolved and that one can only surmise as to what will happen in the context of a negotiation. The Mexico angle absolutely complicates the entire idea of a negotiation on sugar in the context of an FTAA. The United States may find itself in a position of having to explain why it is offering one FTAA member (i.e., Mexico) free access while not offering other members the same opportunity.

The United States could agree to a given level of access (i.e., a fixed amount) and then prorate the shares based on historical trade from FTAA countries using the base period 1975-81 (period used in the URAA negotiations). The URAA TRQ would remain intact, but this would be an additional TRQ.

The United States could offer preferential over-quota access to FTAA countries, but again, the domestic industry would likely protest. Mexico and Jordan are the only two countries with preferential over-quota access to the U.S. sugar market.

United States-Australia FTA

There has been talk of the United States engaging in an FTA with Australia. Australia is the

eighth largest producer of sugar in the world, capturing nearly 4 percent of the world's production quantity. Australia produces mostly raw sugar, and places third in world exports of sugar, trailing only Brazil and the EU, respectively. Australia holds over 10 percent of the world export market share. Rapid growth in demand for sugar in Asia has led Australia to focus its marketing efforts on these economies in recent years.[4] Australia is the fourth largest exporter of sugar to the United States and has been one of the most vocal opponents to the U.S. sugar program and its set of TRQs. In the context of an FTA, Australia is sure to request additional access to the U.S. market. Free trade with Australia in sugar would likely tip the scale in favor of imports. Again, the United States has much to gain in access to the Australian market in terms of increased export earnings for agricultural products.

Doha Development Agenda (World Trade Organization negotiations)

Countries are calling for increased access to markets via increased TRQ levels and lower tariffs. Presumably the members of the WTO will work from the already established bases from the URAA.

The United States announced on July 25, 2002 its proposal for reforming the rules of global agricultural trade. Under the U.S. market access proposal, tariffs would be reduced using the Swiss formula that would result in no tariff over 25 percent. This would result in the over-quota MFN tariff applied to U.S. imports of sugar, which includes special safeguards, being reduced from 195 percent to 22.2 percent. Regarding quota levels, the U.S. proposal would increase quotas by 20 percent, which would increase the sugar quota from 1.25 million metric tons to 1.5 million metric tons.

The U.S. sugar industry has continually called for sugar to be handled in the multilateral framework. In addition, the industry has maintained that it supports liberalization if it is indeed that, liberalization, and not "unilateral disarmament." The industry has openly called for the removal of export subsidies such as those in the EU, cuts in high levels of domestic support such as in the EU and Japan, and disciplines on state trading enterprises, for example. Bilateral and regional free trade initiatives do not touch domestic support and export subsidies, but rather solely market access. Although, the common market with Mexico in 2008 implies that domestic support measures will be addressed, so there may be room in regional and bilateral discussions for domestic support measures.

Cuba

Cuba cannot be ignored in this discussion. While the United States has excluded Cuba from FTAA negotiations and while the United States has denied Cuba access to the U.S. sugar market since July 1960, Cuba is one of the largest producers and exporters of sugar in the world. At some point in the future, the United States will be required to include Cuba in the sugar equation. Adding Cuba to the mix could complicate matters. What is the United States obligated to offer? A recent paper by Boughner and Coleman explores this issue in depth.[5] In the paper, quantities are not discussed, but rather methods of allocation. Three GATT-complaint methods would increase overall access to the U.S. market and three would leave access at the WTO minimum while shuffling access between exporters.

While Cuba is not currently on the list of upcoming FTAs, the country's potential access should not be discounted.

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[4] USDA, FAS, GAIN Report #AS9017, April 12, 1999.

5 See Boughner, D.S. and J.R. Coleman, "Normalizing Trade Relations with Cuba: GATT-compliant options for allocating the U.S. Sugar Tariff Rate Quota," *Estey Journal of International Law and Trade Policy*, 2002.

Liberalization scenarios

Three liberalization scenarios have been selected to show the effects of negotiated FTAs on the U.S. sugar market. Without detailing interim negotiated solutions, we have elected to take the market to the extreme: free trade. The three scenarios are:

1. Free Trade with Mexico, 2008;
2. Free Trade with FTAA countries, 2005; and
3. Free Trade with Australia, 2004.

Model specification

The model used to quantify the effects of liberalizing sugar imports in the United States is the applied general equilibrium (AGE) Global Trade Analysis Project (GTAP) model.[6] The base year in the GTAP data is 1997; a revised equilibrium has been constructed by replacing the GTAP trade policy data for U.S. sugar imports to reflect the U.S. sugar prices, tariffs, and TRQ levels in 2001. The liberalization scenarios are conducted from the 2001 levels.

The AGE approach is based on assumptions that are common in the literature: perfect competition, constant returns to scale, and full employment of resources. The analysis is of a comparative static nature with medium term economic adjustments. Each regional economy consists of several economic agents. First, a household maximizes utility to determine demands for commodities and savings. Second, cost minimizing sectors employ primary factor services and intermediate inputs to produce commodities. Regional household income consists of returns to primary factors, and net taxes. Interregional economic linkages are based on the assumption that demanders treat commodity imports from different sources as imperfect substitutes.

Product groups

We focus on impacts on sugar in the United States; other regions include Canada, Mexico, Brazil, Australia, Thailand, the European Union and three aggregate regions representing Central America and the Caribbean, the rest of South America, and a rest-of-the world. There are three primary agricultural sectors (sugar cane and sugar beats, other crops, and livestock production) and three processed foods sectors (sugar, molasses, and all other processed food products). The rest of the economy is represented with two sectors (services and other manufacturing).

As the GTAP model aggregates all products produced directly from sugar beet and sugarcane into one product group, sugar, the original GTAP product group was modified and divided into two groups: sugar (i.e., refined sugar) and molasses and other products.7 Refined sugar is the product to which the TRQ is applied. Molasses (and all other products) is the residual.

TRQ instruments

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[6] Hertel, T. W., editor, Global Trade Analysis: Modeling and Applications, Cambridge University Press, 1997, and Betina Dimaranan and McDougall, *et. al.*, Global Trade, Assistance, and Protection: The GTAP 5 DataBase, Center for Global Trade Analysis, Purdue University, 2002.

7 Production and trade data for refined sugar for 1996/97 were obtained from Table 1 in "Sugar and Sweetener: Situation and Outlook Yearbook," SSS-231, USDA, ERS, May 2001.

Import tariffs are usually modeled as exogenous, *ad valorem* wedges between world and domestic market prices. A reduction in the import tariff leads to an increase in imports and to a decline in the domestic market price. In a TRQ system, however, the gap between world and domestic prices is a function of three policy instruments: the in-quota tariff, the over-quota tariff, and the quota level. A change in only one of these policy instruments might not lead to a change in domestic market prices and imports.

The import quota is the policy instrument determining the domestic price for sugar. When the tariff equivalent of the import quota[8] is greater than the in-quota tariff and less than the over-quota tariff, the tariff equivalent is the effective instrument.[9] The in-quota tariff is redundant and the over-quota tariff is prohibitive and discourages imports beyond the import quota. Thus the tariff equivalent of the import quota is the effective instrument. We have assumed that tariff revenues quota rents accrue to the household of the importing country.

Simulating the absence of a TRQ system, however, does not require explicit modeling of the three TRQ instruments. It is only necessary to model the price gap by means of an *ad valorem* equivalent. In this work, however, it is necessary to recognize that as the United States liberalizes sugar imports from a certain country, Argentina for example, the price gaps for sugar imports from all other countries would decline. The AGE model is solved using the GEMPACK software system.10

The U.S. in-quota tariff for sugar is equal to zero, although imports from Brazil, Argentina, and other countries are charged a small in-quota tariff, it is assumed that the in-quota tariff is equal to zero for the simulation.[11]

The effective over-quota tariff is equal to the tariff plus the special safeguard rate, for all countries except Mexico and Canada. Mexico and Canada are exempt from special safeguard tariffs on sugar, in accordance with the NAFTA. The model accounts for differential over-quota rates. In 2001, the effective over-quota tariff was equal approximately 195 percent ad valorem equivalent (AVE), which was 143 percent AVE for the over-quota tariff and 52 percent AVE for the special safeguard tariff. The over-quota tariff applied to Canada was 143 percent AVE. As mentioned earlier, Mexico faces its own preferential over-quota rates, and in 2001, Mexico's over-quota tariff was 112 percent AVE.

Fill rates

In the simulation, the fill rates are assumed to be 100 percent. In actuality, the fill rates are closer to 98 percent. However, because the model assumes that the in-quota tariff is the effective instrument when fill rates fall below 100 percent, the assumption was necessary to force the import quota to determine the domestic price of sugar, which is the actually the situation. The assumption will not affect the overall level of imports because it is assumed that the level of imports under the TRQ is the actual level of the TRQ.

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[8] The tariff equivalent is equal to $(P_d-P_w)/P_w*100$, where P_d is the domestic wholesale price for refined beet sugar and P_w is the world price for refined sugar.

[9] See Boughner, D.S., H. de Gorter and I.M. Sheldon, "The Economics of tariff rate quotas in agriculture," *Agricultural and Resource Economics Review*, 2000.

10 Harrison, W.J. and Pearson, K.R. (1994). "An Introduction to GEMPACK, Release 5.1," GEMPACK Document No. GPD-1, Second Edition, Monash University, April, 1994.

[11] The assumption only slightly affects the distribution of in-quota tariff revenues and import quota rents.

Domestic policy

We also attempt to account for the fixed loan rate for refined sugar, which is set at 22.9 cents per pound. The goal is to allow the actual market price for sugar to fluctuate in the model so that imports always face the actual market price, while domestically produced sugar only faces the market price when the market price exceeds the loan rate; otherwise, the loan rate serves as the floor price for the domestic product.

The marketing allotments are not included, even though they are part of the domestic supply management system because presumably under the liberalization scenarios, imports will exceed the 1.36 million metric ton, which "untriggers" the allotments. The PIK program is also not included, as it would be too difficult to predict the necessary reduction in the quantity of sugar beets to push domestic sugar prices above the loan rate. Instead, the model assumes that the CCC purchases the excess sugar that results in the U.S. market.

Simulation results

In this section, we consider the implications of free entry of sugar in the United States from Australia, Mexico, or the Americas. The sugar TRQ system remains in place for imports from other countries.12 Selected simulation results are summarized in table 1.

Under free sugar imports from Australia, the United States increases its imports by about 180 percent. All of those additional imports are imported from Australia because the sugar TRQ remains in place for all other importers. As a result of more demand for imports in the United States, the world price of U.S. sugar imports increases by about 2 percent (it increases by about1 percent under free imports from either Mexico or the Americas). To satisfy the increased demand for their sugar and to be able to draw more resources from the rest of the economy, producers in Australia require a price increase of about 4 percent. Under free imports of sugar from the Americas, the producer price of sugar increases significantly only in Central America and the Caribbean, 1 percent.

The U.S. domestic price of sugar imports, however, declines substantially, because large price gaps are eliminated for the liberalized imports, and price gaps for imports from all other countries decline too because there is less U.S. demand for their sugar. The domestic price of sugar imports declines by about 30 percent under free imports from Australia. Under free sugar imports from Mexico, the domestic price of imports declines by about 24 percent. The largest price decline is obtained under free sugar imports from the Americas, the price declines by about 47 percent.

As a result of increased competition from sugar producers in Australia, Mexico, or the Americas, U.S. producer prices decline. The largest decline is obtained under free sugar imports from the Americas, about 8 percent, which brings about a 65 percent decline in U.S. domestic production of sugar. Sugarcane and sugar beet prices decline by the same percentages as sugar prices; due to lower commodity prices, overall land rents decline by about 1 percent. Under free imports of sugar from Australia, Mexico, or the Americas, rents for land in sugarcane and sugar beet production decline by 22, 16, and 37 percent, respectively.

12 The price gaps for sugar imports from other countries, however, decline as the United States switches demand to liberalized imports.

The welfare impacts of the simulations suggest that the U.S. economy is better off due to free sugar imports from Australia or the Americas. Under, free sugar imports from Mexico, however, welfare declines in the United States by about $70 million. In the general equilibrium model, welfare gains arise mainly owing to improvements in allocative efficiency and improvements in terms-of-trade. In all three simulations, gains from improvements in allocative efficiency are positive for the U.S. economy. The U.S. terms of trade however worsen in all three simulations. Even though the decline in terms of trade is small, it is large enough to offset gains in allocative efficiency under free sugar imports from Mexico.

In a second set of simulations we examine the implications of trade liberalization coupled with insulation of the U.S. producer price at the farm level, i.e., the price received by producers for sugarcane and sugar beets. As in the first set of simulations, the United States unilaterally removes trade barriers on sugar imported from Australia, Mexico, or the Americas. This time, however, the producer price for sugarcane and sugar beets is supported so that it does not decline due trade liberalization. Selected simulation results are summarized in table 2.

As expected, sugar trade liberalization coupled with farm price supports leads to smaller increases in imports than trade liberalization without price supports. Under free imports from Australia, the U.S. imports only 57 percent more sugar (relative to 178 percent more in the earlier simulation). Because of smaller increases in import demand in the United States, the world price of sugar imports barely changes in these simulations. For the same reason, however, all the price gaps between U.S. domestic and world sugar prices (which are endogenous under a TRQ system) decline too. As a result, the domestic price of sugar imports declines by slightly more than in the earlier simulations.

Because the farm price of sugar crops does not decline, there is more supply of sugar crops and their market price declines by 69, 61, or 84 percent. Due to lower sugar crops prices, there is increased supply of sugar in the United States and its market price declines by 29, 26, or 36 percent. Since the world price of sugar increases (even slightly), U.S. produced sugar becomes relatively cheaper and U.S. exports of sugar increase. The U.S. remains a net importer of sugar, however, with imports increasing faster than exports.

The welfare impacts summarized in table 2 suggest that the U.S. economy would not lose from sugar trade liberalization coupled with farm price support. In fact, the welfare impacts show that the U.S. economy is better off with price supports than without price supports when trade from Australia or Mexico is liberalized. The welfare gains from trade liberalization with the Americas under price support are smaller than the welfare gains without price supports. An examination of the components of welfare impacts, however, shows that gains from improvements in allocative efficiency are substantially smaller than those in the earlier experiments. The reason that welfare impacts are higher in these simulations is that the U.S. terms-of-trade improve.

Conclusion

This paper explored the tensions that exist between maintaining the U.S. sugar program and liberalizing the U.S. sugar market in bilateral, regional, and multilateral agreements such as the North American Free Trade Agreement, the Free Trade Area of the Americas, the United States-Central American Free Trade Agreement, the United States-Australia Free Trade Agreement, and the Doha Development Agenda. The paper focused on the effects on the U.S. sugar program of moving to a common market with Mexico and of providing additional access to sugar-producing nations under an FTAA, CAFTA, AFTA, and the DDA. The discussion serves to provide a clear example of the

predicament in which the United States finds itself between maintaining protection on import sensitive commodities all-the-while negotiating for removal of protection on export oriented commodities. The Global Trade Analysis Project (GTAP) model was employed to assess the effects of trade liberalization on the U.S. economy under varying liberalization scenarios for sugar. The simulation results suggest that free sugar imports from some countries would be beneficial to the U.S. economy as a whole. Under free sugar imports, the prices of sugar crops and refined sugar would decline. If farm prices were insulated from free imports by price supports, the welfare gains to the U.S. economy would increase in some cases. The results suggest, however, that the wider the coverage of free imports, the more difficult it would be to sustain price supports.

The U.S. sugar program serves as an example of conflicting domestic and trade policies in agriculture. Not only does the program itself conflict, but the program appears to conflict with goals to liberalize export markets for other agricultural sectors.

Table 1: Selected impacts of U.S. sugar imports liberalization from Australia, Mexico, and Americas

	U.S. sugar liberalization with:		
	Australia	*Mexico*	*Americas*
U.S. impacts, percent change			
Output quantity			
Cane and beats	-25	-19	-41
Sugar	-39	-29	-65
Domestic market prices			
Land	-1	-1	-1
Cane and beats	-5	-3	-8
Sugar	-4	-3	-8
Total sugar imports (quantity at Pw)	178	138	278
Domestic price of sugar imports	-30	-24	-47
World sugar price (for U.S. imports)	2	1	1
Welfare impacts, US$ million			
USA	34	-68	141
Canada	11	20	128
Mexico	11	186	34
Central America and Caribbean	-20	-19	219
Brazil	14	2	163
Rest of South America	1	0	84
Australia	214	-3	-9
Total for the world	185	249	744
Welfare decomposition for USA			
Allocative efficiency	313	208	640
Terms of trade	-259	-270	-463

	U.S. sugar liberalization with:		
Other country impacts, percent change	*Australia*	*Mexico*	*Americas*
Sugar output, quantity			
Canada	2	0	212
Mexico	0	52	4
Central America and Caribbean	1	0	38
Brazil	0	0	4
Rest of South America	0	0	12
Australia	68	0	0
Sugar domestic market prices			
Canada	0	0	0
Mexico	0	3	0
Central America and Caribbean	0	0	1
Brazil	0	0	0
Rest of South America	0	0	0
Australia	4	0	0
Total sugar exports (quantity at Pw)			
Canada	0	0	342
Mexico	1	709	58
Central America and Caribbean	2	0	72
Brazil	1	0	17
Rest of South America	0	0	108
Australia	162	0	0
Sugar exports to U.S.			
Canada	0	0	412
Mexico	0	5,199	417
Central America and Caribbean	0	0	374
Brazil	0	0	418
Rest of South America	0	0	419
Australia	2,470	0	0

Table 2: Selected impacts of U.S. sugar imports liberalization from Australia, Mexico, and Americas coupled with farm price support

U.S. impacts, percent change	U.S. sugar liberalization with: Australia	Mexico	Americas
Output quantity			
Cane and beats	9	8	11
Sugar	4	4	2
Domestic market prices			
Land	1	1	1
Cane and beats	-69	-61	-84
Sugar	-29	-26	-36
Total sugar imports (quantity at Pw)	57	42	100
Domestic price of sugar imports	-36	-31	-47
World sugar price (for U.S. imports)	0	0	0
Welfare impacts, US$ million			
USA	73	47	39
Canada	7	7	52
Mexico	1	51	8
Central America and Caribbean	-88	-82	0
Brazil	-27	-23	5
Rest of South America	-10	-10	19
Australia	34	-24	-37
Total for the world	38	49	237
Welfare decomposition for USA			
Allocative efficiency	34	22	73
Terms of trade	21	7	-52

Other country impacts, percent change	U.S. sugar liberalization with: Australia	Mexico	Americas
Sugar output, quantity			
Canada	-5	-4	65
Mexico	-2	14	-2
Central America and Caribbean	-5	-4	6
Brazil	-1	0	0
Rest of South America	-2	-1	1
Australia	18	-2	-5
Sugar domestic market prices			
Canada	0	0	0
Mexico	0	1	0
Central America and Caribbean	0	0	0
Brazil	0	0	0
Rest of South America	0	0	0
Australia	1	0	0
Total sugar exports (quantity at Pw)			
Canada	-2	-1	116
Mexico	-4	214	14
Central America and Caribbean	-3	-3	22
Brazil	-2	-2	1
Rest of South America	-9	-7	23
Australia	44	-6	-12
Sugar exports to U.S.			
Canada	0	0	143
Mexico	0	1596	148
Central America and Caribbean	0	0	141
Brazil	0	0	143
Rest of South America	0	0	142
Australia	789	0	0