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2014 Outlook of the U.S. and World Sugar Markets, 2013-2023

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ABSTRACT

This report evaluates the U.S. and world sugar markets for 2013-2023 using the Global Sugar Policy Simulation Model. This analysis is based on assumptions that general economic conditions, agricultural policies, population growth, weather conditions, and technological changes remain at the long-run conditions.

Both the U.S. and world sugar economies are predicted to improve over the next ten years. World sugar prices increased from 17.9 cents/lb in 2009 to 22.5 cents/lb in 2010 and 27.2 cents/lb in 2011 before falling to 17.5 cents/lb in 2013. In early 2014 ICE No.11 sugar prices were at 15.1 cents/lb. World sugar production declined 15% in 2013 while consumption increased slightly. World demand for sugar is expected to be strong during the next few years, resulting in world sugar prices recovering from the lows in 2014 and 2015. Sugar prices are expected to increase to 24 cents/lb by 2023. The U.S. wholesale price of sugar is projected to increase from a low 31 cents/lb in 2014 to near 38 cents/lb by 2023. It is projected that Mexican exports to the United States will increase from 1.75 million metric tons in 2013 to 1.84 million metric tons in 2023. World trade volumes of sugar are expected to increase throughout the forecast period.

Keywords: sugar, production, exports, consumption, ending stocks

HIGHLIGHTS

Total world sugar trade is projected to increase by 13.1% from 58.7 million metric tons to 66.4 million metric tons between 2013 and 2023. World sugar prices are projected to increase from $0.16/lb in 2014 to $0.24/lb in 2023. U.S. wholesale sugar price is projected to increase from $0.305/lb in 2014 to $0.378/lb in 2023. Recent world carryover stocks which were as low as 19% of consumption in 2009 have increased to almost 23% in 2013. The increase in carry-over stocks has reduced world sugar prices.

U.S. sugar imports are predicted to increase by 4.3% over the 2013-2023 period compared to the recent average import. U.S. sugar production is projected to increase by 9.6% between 2013 and 2023. U.S. sugar consumption is projected to increase by 12.7% and ending stocks are predicted to decrease 14.1%. However, the U.S. sugar industry could face some uncertainty, mainly because of recent increases in sugar imports from Mexico and possible imports from the Trans-Pacific-Partners if the United States reaches an agreement with those countries.

Brazil's production is expected to increase by 19.1% from the 2011-2013 average of 37.8 million metric tons to 45.1 million metric tons in 2023. Exports could increase by 22.2% to 32.4 million metric tons in 2023, while consumption increases by 11.8%.

Canada's production is predicted to decrease between 2013 and 2023. Canada's imports are expected to increase by 15.5%. Consumption is predicted to increase 13.6% and ending stocks are predicted to increase by 7.5%.

Mexico's production is expected to increase by 16.6%, and exports are expected to increase from the 2011-2013 average due to increases in its exports to the United States.

The European Union (EU) is expected to remain as an importer due to the EU-27 sugar policy reform. Their production is predicted to decrease by 1%, while consumption will increase by 4.2%.

Exporting countries, such as Australia, Thailand, South Africa, Cuba, Mexico and Brazil are predicted to increase their production and exports during the forecasting period.

Most importing countries, except for China, are predicted to increase their imports for the 2013-2023 period.

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INTRODUCTION

Sugar is produced in over 100 countries worldwide. In most years, over 70% of world sugar production is consumed domestically and the remaining is traded in the world. However, a significant share of this trade volume takes place under bilateral long-term agreements or on preferential terms. Since only a small proportion of world production is traded freely, small changes in production and government policies tend to have large effects on world sugar markets. As a result, sugar prices have been unstable in the world market.

During late 2005 and the first quarter of 2006, world sugar price increased from about $0.12/lb to over $0.18/lb because of increased use of sugarcane for ethanol production in Brazil. World sugar price fell to $0.12/lb in late 2006 and $0.11/lb by early 2007 due to increased production in other exporting nations. The yearly average price was $0.187/lb in 2009 and increased to $0.27/lb in 2010 and increased further to $0.32/lb in 2011. The stocks to use ratio has varied between 34% in 1968 and 17% in 2010. The ICE (Intercontinental Exchange) No. 11 price follows an opposite relationship with the stocks to use ratio. When the stocks to use ratio is high (low), ICE prices are low (high). A decrease in the stocks to use ratio increased sugar price from $0.08/lb in 2000 to $0.27/lb in 2010. Similar price increases occurred in 1974-1975 and 1980-1981. However, the current stocks to use ratio of 17.9% which has increased substantially since 2009, lowered the price of sugar. In 2013, the ICE No. 11 sugar price dropped to $17.99/lb. By early 2014 the price dropped to $15.1/lb.

This report evaluates the U.S. and world sugar industry for 2013-2023 using the Global Sugar Policy Simulation Model developed by Benirschka et al. (1996). This model was run utilizing 2013 data. The outlook projection is based on an assumption that farm and trade policies adopted by sugar exporting and importing countries remain unchanged over the 2013-2023 period.

Sugarcane is a perennial grass that is produced in tropical and subtropical climate zones. It matures in 12 to 16 months. Once the cane is harvested, the sucrose starts breaking down. Thus, sugarcane mills are located close to the cane fields to minimize transport costs and sucrose losses. Mills convert sugarcane into raw sugar which is shipped to refineries for further processing. In contrast to raw sugar producing mills, refineries are unconstrained by seasonal production patterns and operate throughout the year. Unlike sugarcane, sugarbeets are an annual crop of temperate climate zones. Because of disease problems, sugarbeets are always grown in crop rotations. Since sugarbeets are bulky and costly to transport, beet processing facilities are located close to production. In contrast to sugarcane, sugarbeets are directly processed into refined sugar. Raw sugar is produced only from sugarcane.

Raw sugar and refined sugar are two different products. They are both traded internationally. Beet sugar producing countries export refined sugar, while cane sugar producing countries export either raw or refined sugar. In recent years, the share of raw sugar in total sugar exports has been about 60%.

OVERVIEW OF THE WORLD SUGAR INDUSTRY AND SUGAR POLICIES

For the 2009-2013 period, annual global sugar production was approximately 168 million metric tons with about 33% of production exported from exporting countries. The largest sugar producing region is Brazil, followed by the India and the EU (Table 1).

Table 1. World Sugar Supply and Utilization, 2009 to 2013 Average

Country/ Region	Beet/ Cane	Consumption	Production	Net Exports	Ending Stocks	Per Capita Consumption
		----------1,000 metric tons, raw value----------				Kg
Algeria	-	1,232	0	(1,238)	62	32
Australia	C	1,235	4,127	2,976	164	59
Brazil	C	11,552	37,650	25,930	(447)	57
Canada	B	1,179	110	(1,081)	242	34
China	B/C	14,720	12,754	(2,878)	4,650	11
Cuba	C	663	1,382	709	116	57
European Union	B	18,080	16,749	(1,663)	2,930	50
Egypt	B/C	2,788	1,930	(752)	266	34
Former Soviet Union	B/C	9,247	7,032	(2,751)	1,538	31
India	C	24,086	25,696	893	7,954	19
Indonesia	C	5,017	1,912	(3,316)	794	21
Japan	B/C	2,060	772	(1,290)	548	16
Korea	-	1,333	0	(1,339)	467	27
Mexico	C	4,817	6,049	1,147	1,079	41
South Africa	C	1,763	2,123	364	191	39
Thailand	C	2,470	9,546	7,029	2,833	36
Columbia	C	1,794	2,291	502	364	40
Guatemala	C	766	2,417	1,756	195	55
Pakistan	C	4,300	4,298	(14)	1,004	23
United States	B/C	10,397	7,648	(3,047)	1,713	34
Rest of World	B/C	37,312	21,792	19,925	9,217	19
World	B/C	165,417	167,623	54,860	36,223	21

Source: USDA-FAS, PS&D website.

Per capita sugar consumption was highest in Australia followed by Brazil and Cuba. Brazil converts a substantial portion of sugar cane into ethanol. Per capita sugar consumption in the United States was 34 kg, which is above world average per capita consumption (21 kg). Per capita sugar consumption was lowest in China at 11 kg per capita, but that may increase substantially as per capita income increases. Annual global sugar consumption for the 2009-2013 period was 165 million metric tons.

The major sugar exporting countries were Brazil, Thailand, Australia, and Guatemala. These countries accounted for 67% of global exports from 2009 to 2013. Relatively few countries dominate world sugar exports, but imports are less concentrated. Major importing countries were Indonesia, United States, China, Former Soviet Union (FSU), EU, Korea, Japan, Algeria, and Canada. Imports by these countries accounted for about 32% of all sugar imports from 2009 to 2013.

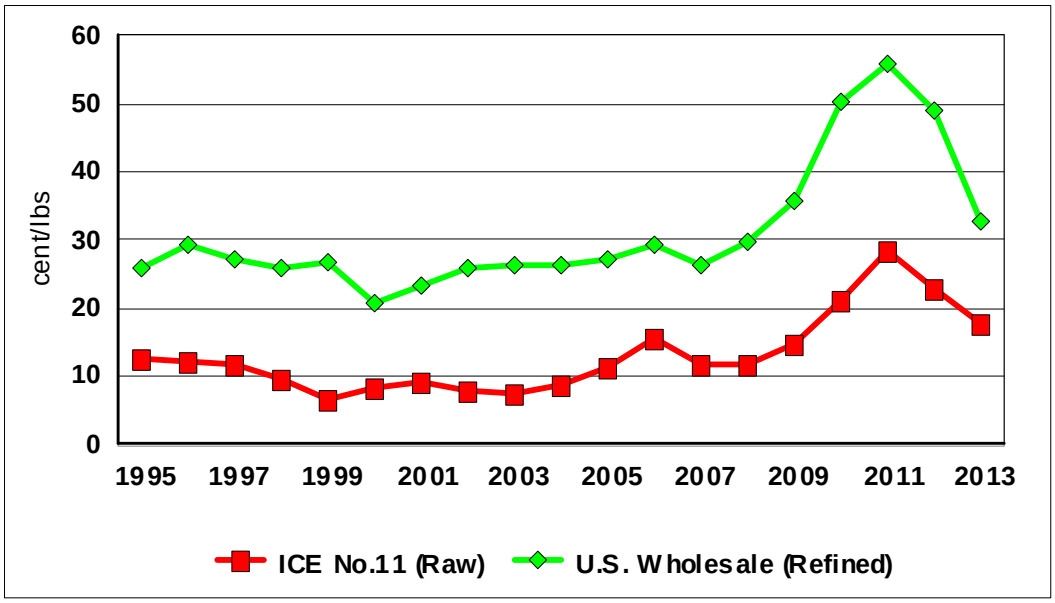

Figure 1. U.S. and World Sugar Prices (Nominal)

The ICE No.11 raw sugar price is usually considered to be the world market price for sugar. Except for years with high world market prices, there was a substantial wedge between the U.S. wholesale price of sugar and the world market price. Over the last decade, U.S. wholesale prices fluctuated between $0.22 and $0.56/lb. World market prices ranged between $0.06/lb and $0.28/lb (Figure 1). Figure 1 shows the dramatic price increase in world sugar price in late 2008 and 2009. In 2003, the price averaged $0.07/lb, but it had risen to $0.12/lb in 2005 and it was $0.18/lb in June 2006 before falling to $0.11/lb in 2007. World sugar price increased to $0.16/lb in 2009, $0.22 in 2010 and $0.32 in 2011. The high world sugar price also increased the U.S. wholesale price to $0.30/lb in 2006, falling to $0.26/lb in 2007, before increasing to $0.28/lb in 2008, $0.34 in 2009 and $0.50 in 2010. U.S. wholesale prices peaked in 2011 at $0.56/lb before falling to $0.33/lb in 2013. However, in late 2013 and early 2014 U.S. wholesale prices for refined beet sugar fell to $0.263/lb.

Figure 2 shows the relationship between world stocks to use ratio and the world raw sugar price. The correlation between the two series is -0.52 indicating that there is a strong negative correlation between them. The stocks to use ratio has fallen from 31% in 2000 to 17% in 2010. That decrease has increased price from $0.075/lb in 2000 to $0.33/lb in 2011. However that ratio increased to 23% in 2012 which explains the current decrease in sugar prices. Predicted carry-over stocks for 2013 are higher than in 2012, which will continue to pressure prices in the near term.

The volatility of world sugar prices could be due to the nature of supply response to price changes stemming from high fixed costs of sugar production. An increase in sugar production in response to rising sugar prices requires significant investments in processing facilities, and it takes some time until new production capacity becomes available. Once the facilities are in place, they tend to be used at full capacity to spread the fixed costs. Thus, when prices fall, production remains at full capacity. Sugar production is relatively unresponsive to price in the short run;

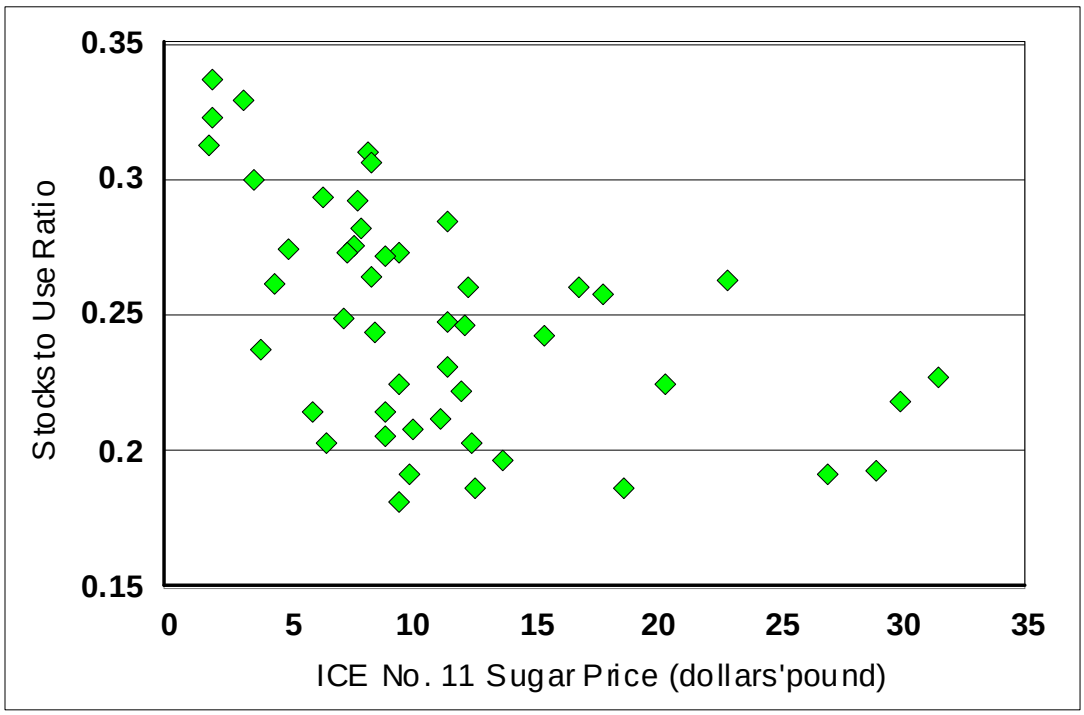

Figure 2. World Stocks to Use Ratio and ICE No. 11 Raw Sugar Prices, 1967-2013

however sugar price does respond to changes in consumption. The increase in the world price of sugar in 2005 and 2006 is mainly because Brazil increased the production of ethanol from sugar cane. However, the price dropped in 2007 because of increased production of sugar from sugarcane in response to higher sugar prices in 2005 and 2006.

The United States produces both beet and cane sugar. Cane sugar is produced mainly in Florida, Louisiana, and Texas. Beet sugar is produced largely in the Great Lakes region, Upper Midwest, Great Plains, and far western states. Both cane and beet sugar production increased by 12% from 1995 to 2013 (Figure 3). U.S. total sugar production increased about 12% from 6.5 million metric tons in 1995 to 8.1 million metric tons in 2013 (Figure 4).

U.S. consumption of sugar increased by 25.8% from about 8.4 million metric tons in 1995 to 10.7 million metric tons in 2013 (Figure 5). The balance was imported from more than 40 countries. U.S. sugar imports decreased 71% from 4.5 million metric tons in 1974 to 1.3 million metric tons in 1987 and then increased to an average of 2.2 million metric tons during the 1995 to 2013 period. Under the North American Free Trade Agreement (NAFTA), Mexico currently is allowed to export unlimited quantities of sugar to the United States. Mexico exported 732 thousand metric tons of sugar into the United States in 2009 and 1,709 thousand metric tons of sugar into the United States in 2010, 1,071 thousand metric tons in 2011, 2,124 thousand metric tons in 2012 and 1,745 thousand metric tons in 2013. The U.S.-Central American Free Trade Agreement (CAFTA), which is a free trade agreement (FTA) currently with six Central American countries, provides additional sugar imports of 110,000 metric tons, with additional increases of 3,000 metric tons per year.

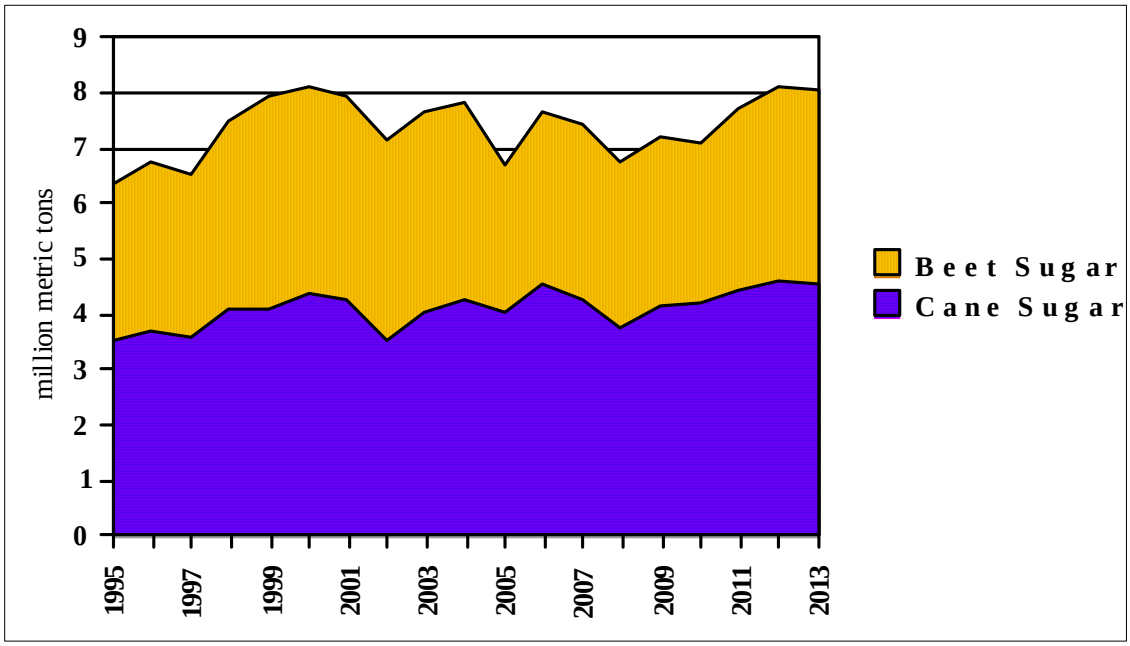

Figure 3. U.S. Beet and Cane Sugar Production

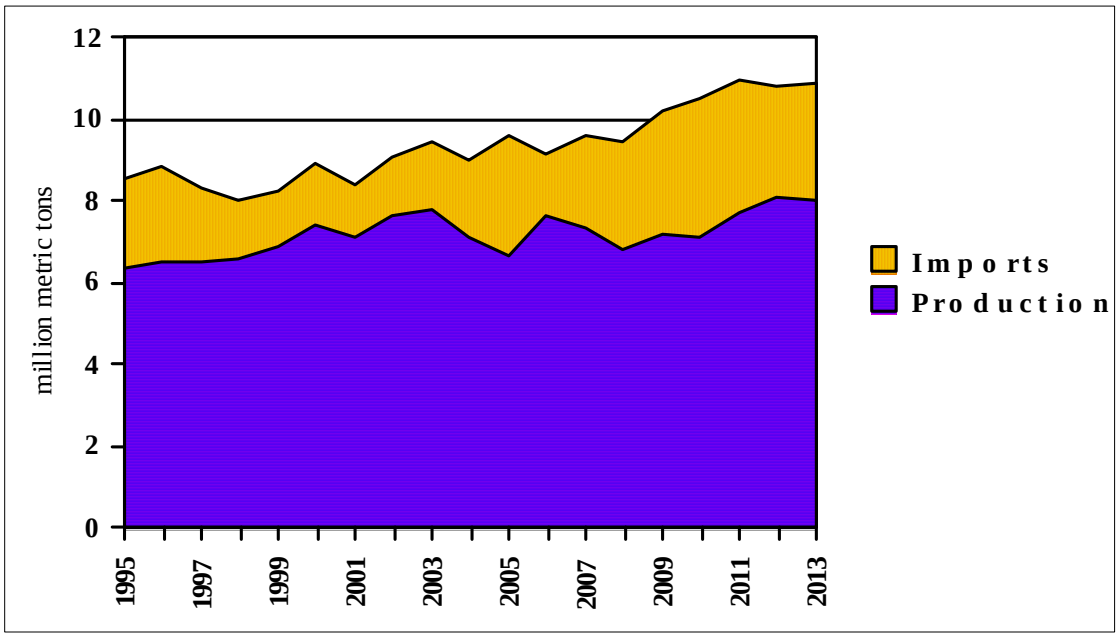

Figure 4. U.S. Sugar Production and Imports

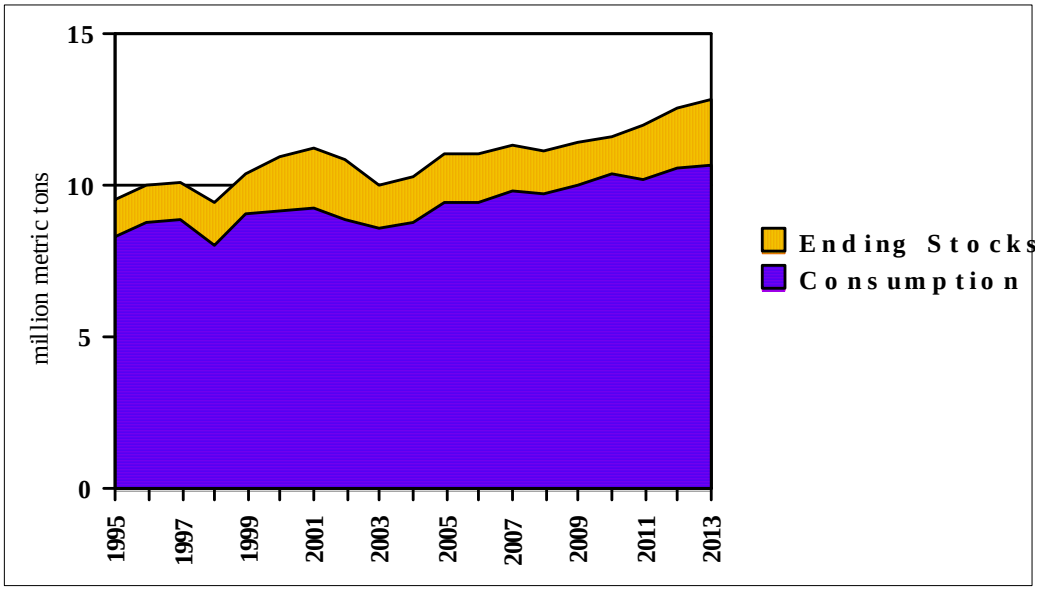

Figure 5. U.S. Sugar Consumption and Ending Stocks

U.S. Sugar Programs and Policies

The U.S. sugar program was established by the Food and Agricultural Act of 1981. Several modifications were made by the Food Security Act of 1985; the Food, Agriculture, Conservation, and Trade Act of 1990; the Federal Agriculture Improvement and Reform Act of 1996; the Farm Security and Rural Investment (FSRI) Act of 2002; the Food, Conservation, and Energy Act of 2008, and the Agricultural Act of 2014.

The core policy tools in the program are the loan program, import restrictions, and production allotments. The main purpose of the loan program is to maintain a minimum market price for U.S. producers. Processors use sugar as collateral for loans from the U.S. Department of Agriculture (USDA). The program permits processors to store sugar rather than sell it for lower than desired prices. Loans can be taken for up to nine months. Processors pay growers for delivered beets and cane, typically about 60% of the loan. Final payments are made and the loan is repaid after the sugar has been sold.

Under the FSRI Act, the sugar loan rate was set at $0.18lb for raw cane sugar and $0.229/lb for refined beet sugar. However, loan rates were increased under the 2008 Farm Bill to $0.1875/lb for raw cane sugar and $0.2409/lb for refined beet sugar. Loans under the 2008 Farm Bill become recourse loans if the tariff rate quota (TRQ) is at 1.5 million metric tons or below, regardless of the price. When the TRQ is set above 1.5 million metric tons, the loans are nonrecourse. Under the nonrecourse loan, a processor can forfeit collateral (sugar) to the Commodity Credit Corporation (CCC) instead of loan repayment if market prices fall below the loan rates. Processors who obtain a nonrecourse loan must pay farmers an amount for their sugarbeets and sugarcane that is proportional to the loan value of sugar. This is the same as under previous legislation.

The Uruguay Round Agreement (URA) on agriculture made minor adjustments for sugar trade. U.S. import quotas on sugar were converted into TRQs, implying that a specified amount of sugar can be imported at the lower of two alternative duty rates. The amount of cane sugar subject to the lower duty rate increased from 1,117,195 metric tons to 1,231,497 metric tons for 2005 due to production losses from Hurricane Katrina. The minimum low-duty import of refined sugar is 22,000 metric tons. The minimum low-duty imports for raw and refined sugar add up to 1.256 million metric short tons raw value of sugar per year. The high duty (about $0.15/lb) is imposed on the amount of sugar imported over the import quota. The first-tier duty ranges from zero to $0.0625/lb.

The second tier-duty for raw cane sugar was reduced from $0.1762/lb in 1995 to $0.1582/lb in 2000 under the URA. The duty for refined sugar was reduced from $0.186/lb in 1995 to $0.1621/lb in 2000. The duties have remained constant since 2000. The sugar quota has been allocated among more than 40 quota-holding countries, allowing imports of specific quantities of sugar at first-tier duty rates. The quota allocation is based on historical exports to the United States for the 1975 to 1981 period.

NAFTA allowed a rapid reduction in the second-tier duty for Mexican sugar over the past several years. This implies that Mexico is in a unique position to increase its exports of sugar to the United States above the allocated quota. Mexico is replacing sugar with High Fructose Corn Sweetener (HFCS) in their beverages. Mexico gained unlimited duty-free access to the U.S. sugar market on January 1, 2009. In 2009 before conversion, Mexico consumed 5.4 million metric tons of sugar. In 2013, that dropped to 5.1 million metric tons of sugar. HFCS consumption increased from 653 thousand tons in 2009 to 1.9 million metric tons in 2013.

The United States signed a free trade agreement in 2005 with the Central American countries of El Salvador, Guatemala, Honduras, Nicaragua, Costa Rica and the Dominican Republic. Currently, Mexican exports of sugar into the United States are duty free. CAFTA allows 107,000 metric tons of additional sugar to be imported into the United States in the first year of implementation of the agreement, with additional increases of about 3,000 metric tons per year. This increase, however, does not have a significant impact on the price of U.S. sugar or world trade flows. Recent trade negotiations with Australia do not include increased sugar imports.

Domestic and Export Subsidies in South Africa and Mexico

South Africa has both internal price supports and export subsidies. South Africa reduced its subsidized exports by 200 thousand metric tons to 702 thousand metric tons although net exports for 2011 were only 330 thousand metric tons. Mexico also has subsidized exports and is subsidizing raw sugar storage.

Brazilian Production and Exports

Brazil is the largest sugar producing country in the world. The production of sugar has increased 391% since 1990. About 54% of Brazilian sugar cane is converted into ethanol for fuel. The USDA does not record sugar cane that is converted into ethanol in the production and consumption data. The only source for that information is through the Global Agricultural

Information Network (GAIN) of the USDA. Exports have risen from 1.2 million metric tons in 1990 to 27.3 million metric tons in 2013. Sugar that is converted into ethanol is subsidized at prices higher than the world price. Recent increases in the world oil price have increased the price of ethanol which in turn increased Brazil's conversion of sugar into ethanol, reducing potential sugar exports from Brazil. That reduction in the growth of sugar exports could be one of the main forces for world sugar price increases. Brazil decreased its exports by 7.8% in 2011 which provided strength for sugar prices in 2011 but increased exports in 2012 and 2013.

Sugar Trade in Australia, China, and India

Australian sugar exports were handed by the Queensland Sugar Corporation (QSC) until 2008 when it was dissolved and replaced by a public corporation, the Queensland Sugar Limited (QSL), established under the Sugar Industry Act 2008. The QSL is responsible for the domestic marketing and exports of 90% of the raw sugar produced in the state of Queensland, which produces 95% of the sugar produced in Australia. State trading enterprises (STEs) were not addressed in the URA. Other countries, including China and India, handle their sugar trade through STEs similar to the QSC.

GLOBAL ECONOMITRIC SUGAR SIMULATION MODEL

The Global Econometric Sugar Simulation Model is used to analyze the U.S. and World sugar industries for the 2014-2023 period. The outlook projection is based on an assumption that current farm and trade policies adopted by sugar exporting and importing countries will remain unchanged. Assumptions associated with macroeconomic variables, such as GDP growth rates, interest rates, inflation rates, exchange rates, and consumer price indices in the United States and other countries, are based on projections prepared by Global Insight. Average weather conditions, historical rates of technological change, and current policies are also assumed to prevail during the projection period.

The model contains nine exporting countries and regions [Australia, Brazil, Columbia, Cuba, Guatemala, India, Mexico, South Africa, and Thailand] and 12 importing countries and regions [Algeria, Canada, China, Egypt, European Union, Former Soviet Union, Indonesia, Japan, Pakistan, South Korea, United States, and a Rest of the World region]. The model forecasts production, consumption, stocks, and exports or imports for sugar over a ten-year period. The model is solved for a set of equilibrium sugar prices in which demand for sugar equals supply for every year. The model used the predicted prices of all agricultural commodities, except sugar, from UDSA. The model uses 2013 as the base year of the simulation.

OUTLOOK FOR THE WORLD SUGAR INDUSTRY

Total world sugar trade is projected to increase by 13.1%, from 58.7 to 66.4 million metric tons over the 2013-2023 period. Most exporting countries will increase their sugar exports for the same period. Exports will increase 22.0% for Brazil, and 8.0% for Australia. Exports are also expected to increase for Cuba (28%), Mexico (33%), and Thailand (20%) during the same time period. World sugar price, referred to as the ICE No. 11 price of sugar, is projected to decrease from $0.18/lb in 2013 to $0.16/lb in 2014 before slowly increasing to $0.24 in 2023 (Figure 6).

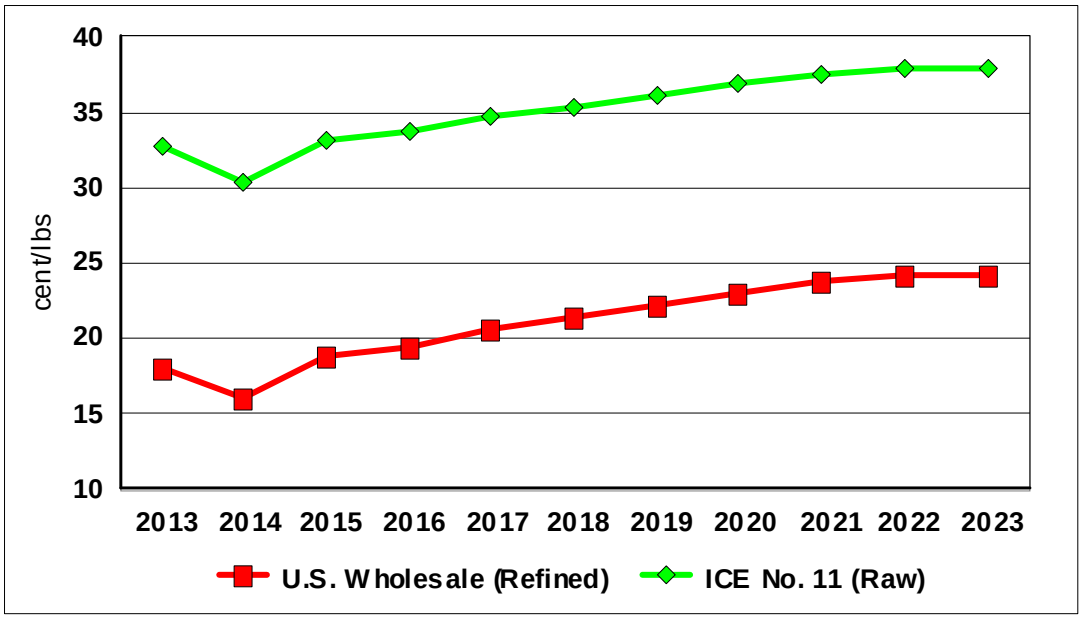

Figure 6. Estimated U.S. and World Sugar Prices

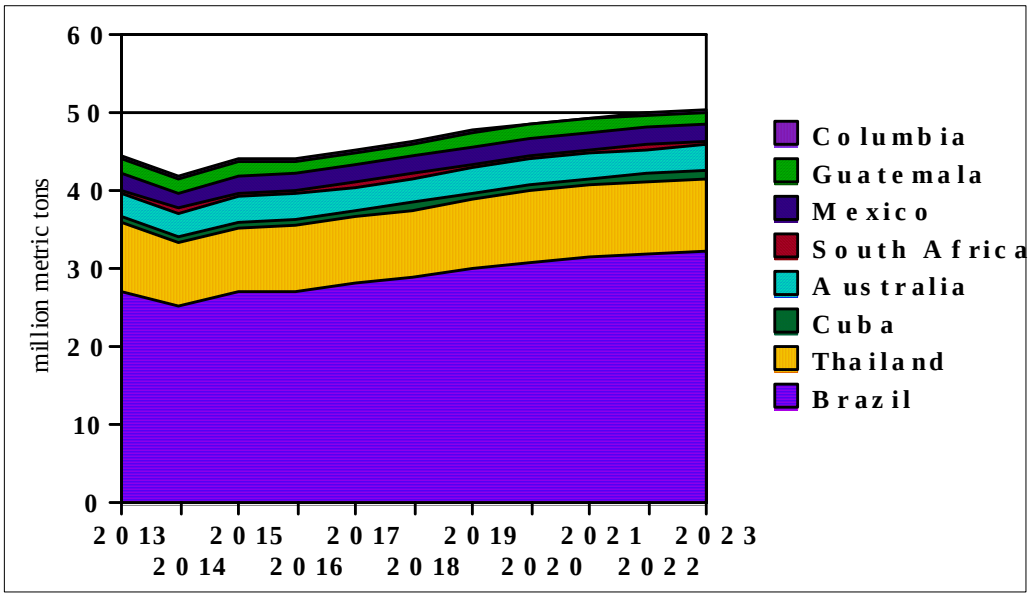

Figure 7. Projected World Sugar Exports by Country

United States

Table 2 shows production, consumption, imports, and ending stocks of sugar for the United States. U.S. sugar production is predicted to increase to 8.8 million metric tons in 2023. The increase in sugar production is due mainly to an increase in both U.S. sugarbeet and sugar cane production. U.S. sugar consumption is predicted to increase by 13.0% from 10.5 million metric tons (the 2011-2013 average) to 12.0 million metric tons in 2023. Ending stocks are also predicted to decrease by 14.1% by 2023 (Table 2). Imports are predicted to decrease 13.3% from the 2011-2013 average. However, the imports depend upon Mexico's sugar production and consumption and the continued conversion of Mexico's soft drink industry from sugar to HFCS.

Table 2. U.S. Sugar Production, Consumption, Imports, and Carry-over Stocks, 2013-2023 Average

	Average (2011-2013)	2013	2023	% Change (2011-13) to 2023
	----------1,000 metric tons----------			
Production	7,966	8,054	8,827	9.6
Beet	4,537	4,559	5,087	11.6
Cane	3,429	3,494	3,740	7.0
Net Imports	2,943	2,832	2,553	4.3
Consumption	10,511	10,691	12,045	12.7
Carry-over Stocks	1,986	2,175	1,868	-14.1
Per capita Consumption (kg)	33	35	34	3.0

Exporters

Figure 7 shows the projected sugar exports for the major exporting countries. Brazil is the largest sugar exporter followed by Thailand and Australia. Brazil's production is predicted to increase by 19.1% from 37.8 million metric tons in 2011-2013 to 45.1 million metric tons in 2023 (Table 3). Brazil's exports are predicted to increase from 26.5 million metric tons in 2011-2013 to 32.4 million metric tons in 2023. Its domestic consumption is predicted to increase by 11.8% from 11.3 million metric tons in 2011-2013 to 12.7 million metric tons in 2023.

Thailand's exports are predicted to increase by 20.2% from the 2011-2013 average of 7.9 million metric tons to 9.5 million metric tons in 2023 (Table 3). Consumption increases from 2.6 million metric tons for the 2011-2013 average to 2.8 million metric tons in 2023. Sugar production in the country also is predicted to increase by 18.0% from 10.4 million metric tons to 12.3 million metric tons in 2023.

Australia's exports are predicted to increase by 8.2% from the 2011-2013 average to 3.2 million metric tons in 2023 (Table 3). Production is predicted to increase by 11.6% from 4.1 million metric tons to 4.6 million metric tons in 2023. Sugar consumption is expected to increase by 15.7% from 1.2 million metric tons to 1.4 million metric tons in 2023.

Cuba's exports are predicted to increase by 28.3% from the 2011-2013 level to 2023 (Table 3). It is predicted that Cuba will increase its sugar production by 17.2%, and consumption is predicted to increase by 9.2%. These projections are based on the assumption that the political situation remains the same between the United States and Cuba.

Mexico's production is predicted to increase by 16.6% from 6.5 million metric tons in 2011-2013 to 7.6 million metric tons in 2023. Mexico is expected to export 2.0 million metric tons by 2023, mainly to the United States under NAFTA. Sugar consumption is predicted to increase by 21.0% from 4.9 million metric tons in 2011-2013 to 6.0 million metric tons in 2023. Ending stocks are predicted to increase by 10.3%.

Colombian exports are predicted to decrease by 36.7% from the 2011-2013 average to 244 thousand metric tons in 2023 (Table 3). Production is predicted to increase by 9.1% from 2.3 million metric tons to 2.5 million metric tons in 2023, however sugar consumption is expected to increase by 18.4% from 1.9 million metric tons to 2.3 million metric tons in 2023.

Guatemala's exports are predicted to decrease by 6.7% from the 2011-2013 average of 1.8 million metric tons (Table 3). Consumption increases from 778 thousand metric tons for the 2011-

2013 average to 978 thousand metric tons in 2023. Sugar production in the country also is predicted to increase by 3.9% from 2.6 million metric tons to 2.7 million metric tons in 2023.

South African sugar production is expected to return to normal levels after several years of smaller than normal crops. South Africa's production is predicted to increase by 15.1% to 2.4 million metric tons in 2023. South Africa's exports are predicted to increase 166.9% by 2023. Sugar consumption is predicted to increase by 2.5% and ending stocks are predicted to increase by 59.9%.

India's production is predicted to increase by 10.2% from 27.1 million metric tons in 2011-2013 to 29.8 million metric tons in 2023. India's exports are predicted to decrease 60.4% by 2023. Sugar consumption is predicted to increase by 17.7% and ending stocks are predicted to increase by 5.3%.

Importers

Figures 8 through 10 show sugar imports by the major sugar importing countries. Sugar imports of selected Asian and African countries are expected to change by -5.4% and 41.8%, respectively, for the 2013-2023 period. Major Asian importers are Indonesia, Japan, South Korea, and China and major African importers are Algeria and Egypt.

Canada's production is predicted to decrease from the 2011-2013 average of 128 thousand metric tons to 121 thousand tons by the year 2023, and consumption is predicted to increase from 1.2 million metric tons to 1.4 million metric tons in 2023 (Table 4). As a result, Canada's imports are predicted to increase by 15.5% from 1.1 million metric tons to 1.3 million metric tons in 2023.

The EU has changed the internal sugar policy by reducing domestic sugar support. This has reduced production. Because of that change, the EU has become a net importer of sugar. EU imports are predicted to increase slightly from 1.9 million metric tons in 2011-2013 average to 2.2 million metric tons in 2023 (Figure 8). Sugar production in the EU is predicted to decrease by 1.0% and consumption is predicted to increase from 18.3 million metric tons from the 2011-2013 average to 19.0 million tons in 2023 (Table 4). Most of the increase in consumption is due to an increase in income for the Eastern European countries recently included in the EU.

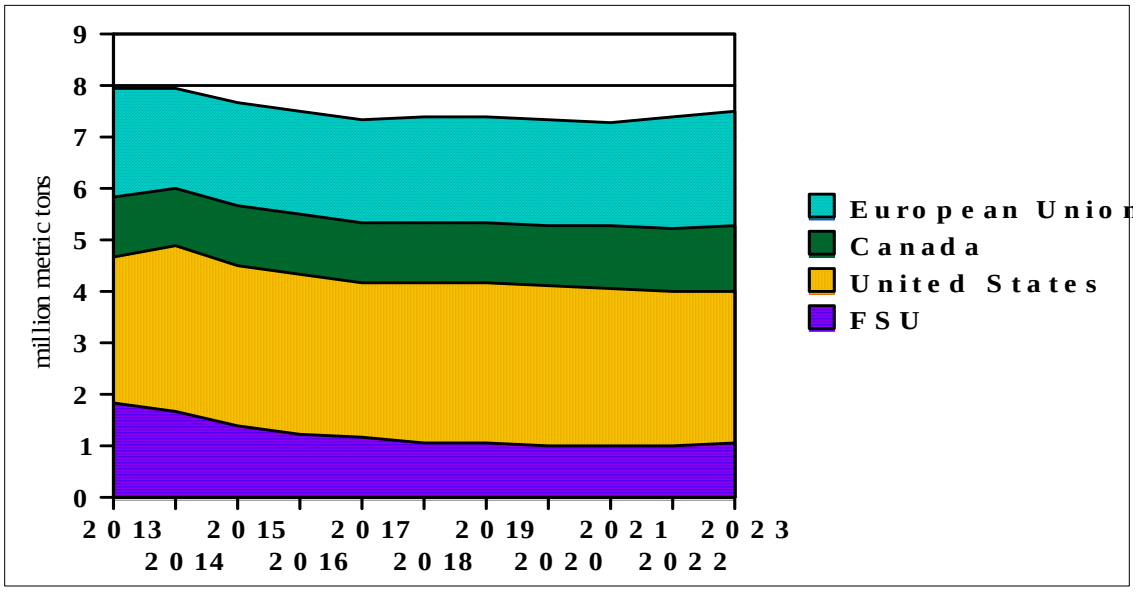

Figure 8. Projected World Sugar Imports by Country, Major Importers

Table 3. Sugar Production, Consumption, Exports, and Carry-over Stocks in Exporting Countries

	Average (2011-2013)	2013	2023	% change (2011-13) to 2023
	----------1,000 metric tons--------			
Brazil				
Production	37,833	38,750	45,052	19.1
Net Exports	26,517	27,250	32,395	22.2
Consumption	11,320	11,260	12,659	11.8
Carry-over	(372)	(295)	219	NA
Thailand				
Production	10,378	10,900	12,250	18.0
Net Exports	7,866	8,700	9,462	20.2
Consumption	2,577	2,650	2,819	9.4
Carry-over	2,947	3,790	3,158	7.2
Australia				
Production	4,078	4,300	4,551	11.6
Net Exports	2,923	3,190	3,164	8.2
Consumption	1,197	1,218	1,385	15.7
Carry-over	71	65	79	11.8
Cuba				
Production	1,503	1,600	1,762	17.2
Net Exports	810	850	1,039	28.3
Consumption	663	749	724	9.2
Carry-over	136	150	157	15.4
Mexico				
Production	6,545	6,890	7,631	16.6
Net Exports	1,532	2,254	2,042	33.3
Consumption	4,934	5,140	5,968	21.0
Carry-over	1,205	1,044	1,330	10.3
Columbia				
Production	2,293	2,400	2,503	9.1
Net Exports	385	310	244	-36.7
Consumption	1,909	2,000	2,259	18.4
Carry-over	342	390	334	-2.1
Guatemala				
Production	2,566	2,600	2,667	3.9
Net Exports	1,806	1,850	1,686	-6.7
Consumption	778	797	978	25.7
Carry-over	156	73	126	-19.0
India				
Production	27,090	25,450	29,840	10.2
Net Exports	1,072	200	424	-60.4
Consumption	24,949	26,000	29,366	17.7
Carry-over	9,083	9,475	9,568	5.3
South Africa				
Production	2,122	2,450	2,442	15.1
Net Exports	203	375	541	166.9
Consumption	1,852	1,885	1,898	2.5
Carry-over	232	363	371	59.9

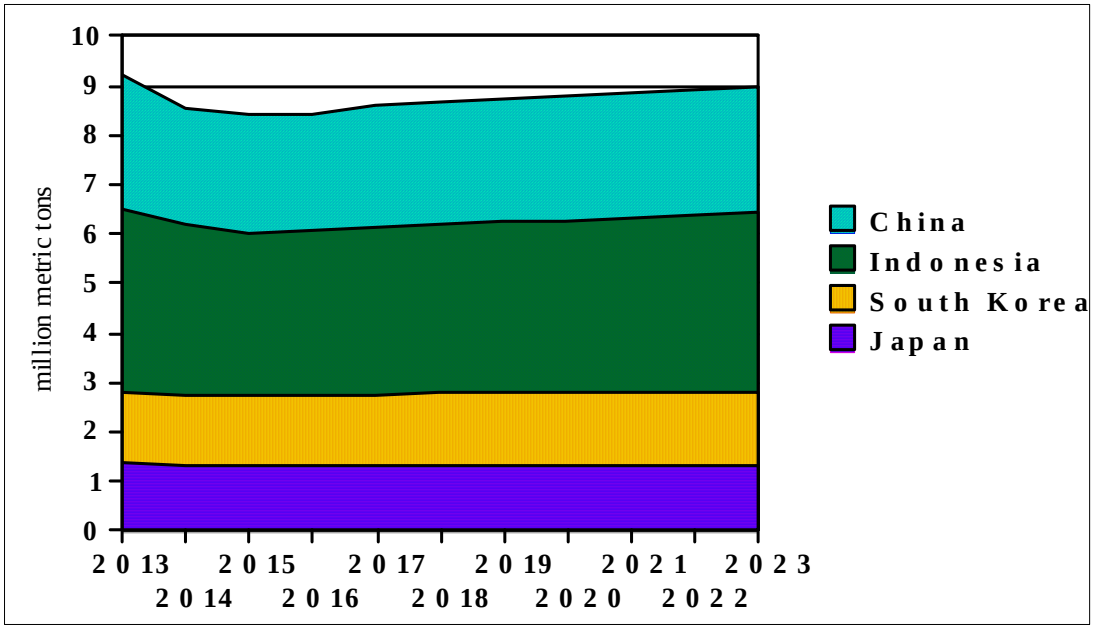

Figure 9. Projected World Sugar Imports by Country, Asian Countries

The FSU's production is predicted to increase by 8.0% from the 2011-2013 average of 8.0 million metric tons to 8.7 million metric tons in 2023, and consumption is predicted to increase by 6.4% from 9.2 million metric tons to 9.8 million metric tons for the same period. Imports are predicted to decrease by 12.3% from the 2011-2013 average (Table 4).

China is expected to decrease its imports by about 30.5% between 2011-2013 and 2023 (Table 4). China's production is predicted to increase by 13.0% from 13.7 million metric tons for the 2011-2013 average to 15.5 million metric tons in 2023, and consumption is predicted to increase by 12.4% from 15.1 million metric tons to 17.0 million metric tons for the period.

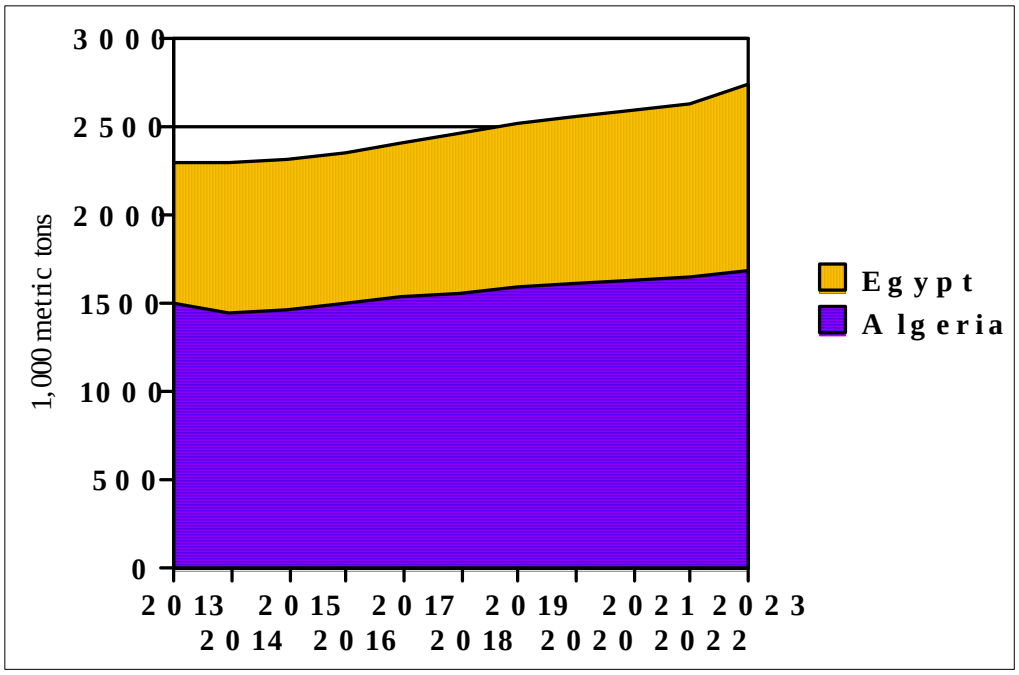

Figure 10. Projected World Sugar Imports by Country, African Countries

Japan's imports are predicted to increase by 3.6% from the 2011-2013 average of 1.3 million metric tons to 1.4 million metric tons in 2023, due to a slight decrease in domestic production (Table 4).

In South Korea, consumption is predicted to increase by 6.1% for the time period and its imports are predicted to increase by 5.7% for the period. There is no domestic production of either sugar cane or sugar beets in South Korea.

In Algeria, consumption is predicted to increase by 22.2% from 1.4 million metric tons in 2011-2013 to 1.7 million metric tons in 2023. The increase in consumption results in increasing imports from 1.4 million metric tons for the 2011-2013 average to 1.7 million metric tons in 2023.

Egypt's imports are predicted to increase by 23.8% from 0.8 million metric tons in 2011-2013 to 1.0 million metric tons in 2023, due mainly to increased consumption. Consumption is predicted to increase by 20.4% from 2.8 million metric tons to 3.4 million metric tons in 2023.

Indonesia's imports are predicted to increase by 5.9% from 3.4 million metric tons in 2011-2013 to 3.6 million metric tons in 2023. Consumption is predicted to increase from 5.2 million metric tons for the 2011-2013 average to 5.9 million metric tons in 2023.

Table 4. Sugar Production, Consumption, Imports, and Carry-over Stocks in Importing Countries

	Average (2011-13)	2013	2023	% change (2011-13) to 2023
	----------1,000 metric tons----------			
Algeria				
Production	0	0	0	NA
Net Imports	1,400	1,500	1,692	20.8
Consumption	1,395	1,500	1,691	22.2
Carry-over	67	70	75	12.5
Canada				
Production	128	125	121	-5.7
Net Imports	1,095	1,150	1,263	15.5
Consumption	1,214	1,275	1,379	13.6
Carry-over	258	260	277	7.5
China				
Production	13,714	14,800	15,496	13.0
Net Imports	3,628	2,755	2,522	-30.5
Consumption	15,100	16,000	16,976	12.4
Carry-over	6,425	8,345	7,478	16.4
Egypt				
Production	2,000	2,020	2,370	18.5
Net Imports	847	800	1,049	23.8
Consumption	2,837	2,820	3,419	20.4
Carry-over	223	160	180	-19.4
European Union				
Production	16,970	16,000	16,807	-1.0
Net Imports	1,920	2,150	2,216	15.4
Consumption	18,250	18,300	19,011	4.2
Carry-over	3,747	3,894	3,899	4.1
Former Soviet Union				
Production	8,013	7,113	8,655	8.0
Net Imports	1,256	1,858	1,102	-12.3
Consumption	9,160	9,181	9,747	6.4
Carry-over	1,734	1,625	1,556	-10.2
Indonesia				
Production	1,960	2,080	2,261	15.2
Net Imports	3,432	3,700	3,635	5.9
Consumption	5,178	5,200	5,897	15.0
Carry-over	872	1,394	777	-10.9
Pakistan				
Production	4,730	4,930	5,410	14.4
Net Imports	(620)	(430)	(328)	-47.1
Consumption	4,383	4,450	5,136	17.2
Carry-over	906	729	623	-31.2
Japan				
Production	753	750	725	-3.8
Net Imports	1,307	1,364	1,355	3.6
Consumption	2,047	2,115	2,079	1.5
Carry-over	547	549	548	0.1
Korea				
Production	0	0	0	NA
Net Imports	1,372	1,420	1,450	5.7
Consumption	1,366	1,418	1,449	6.1
Carry-over	479	490	508	6.1

CONCLUDING REMARKS

This report provides an overview of the U.S. and world sugar markets for the 2013-2023 period using the Global Sugar Policy Simulation Model. The baseline projections are based on a series of assumptions about general economic conditions, agricultural policies, weather conditions, and technological change.

Total world sugar trade is projected to increase by 13.1% from 58.7 million metric tons in 2013 to 66.4 million metric tons in 2023. In early 2011, ICE No.11 sugar price increased to 32 cents/lb from a low of $0.15/lb in early 2010. The price in early 2011 was about $0.32/lb. The yearly average price for sugar in 2012 was $0.22/lb. The price of world raw sugar decreased from to $0.175/lb in 2013 to $0.151/lb in early 2014. The price of world raw sugar is expected to increase slowly to $0.241/lb in 2023. World sugar production decreased 1% in 2013 while consumption increased 2.3% in 2013.

World ending stocks in 2013 have increased 49.1% since 2009. In 2009 carryover stocks were at 29.0 million metric tons and at the end of 2012 stocks were 43.3 million metric tons.

Imports by most importing countries are predicted to increase from the 2011-13 average to 2023 although China's imports are predicted to decrease. Imports by Egypt and Algeria are predicted to increase by 23.8% and 20.8%, respectively.

U.S. sugar consumption is predicted to increase by 12.7% for the 2013-2023 period. Production is expected to increase by 11.6% for beet sugar and by 7.0% for cane sugar. Imports are predicted to increase by 4.3% for the period.

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