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## Sweetener Policies in Japan

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### Abstract

Japan's policies affecting caloric sweeteners (sugar, corn syrup, etc.) protect high-cost domestic production of sugarcane and sugarbeets against foreign competition. A complicated set of policies uses mandatory levies on imports of raw sugar and general budget funds to subsidize processors of domestic sugar for the high cost of domestic cane and beets. The focus of government efforts is moving away from market price stabilization policies toward support for domestic production that minimizes the impact of government policies on consumer prices. However, government interventions such as control over the amount of raw sugar imports, prohibitive duties on refined sugar imports, high tariffs on imported products that contain sugar as an ingredient, and quotas, tariffs, and other controls on sugar substitutes remain in place. These interventions continue to impose higher prices on consumers, to limit Japan's imports of sugar and other sweeteners, and to distort economic activity within Japan.

**Keywords:** Japan, sugar, sweeteners, high-fructose corn syrup, policies, domestic support, state trading, trade, trade liberalization.

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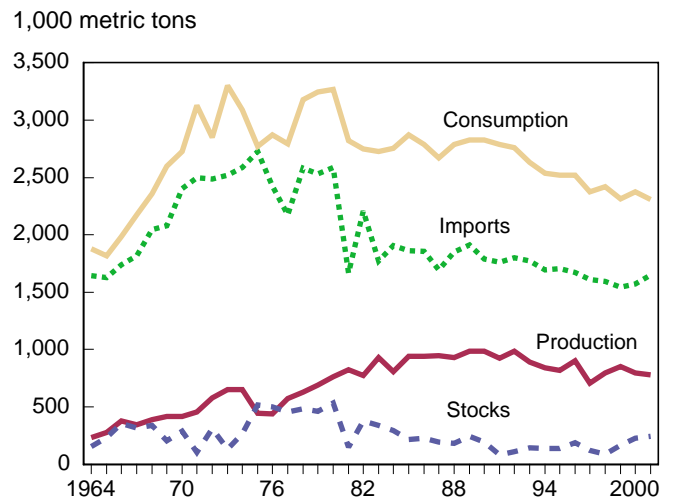
## Introduction

Japan is one of the leading agricultural importing nations in the world. This article is one in a series examining Japan's policies that protect and regulate its agricultural markets. These policies are of special interest because they are subject to review in the current round of global trade negotiations conducted by the World Trade Organization.

Japan has far-reaching policies that affect caloric sweeteners (sugar, corn syrup, etc.) because it wishes to protect high-cost domestic production of sugarcane and sugarbeets against foreign competition. Sugarbeets are raised in the northernmost large island, Hokkaido, while sugarcane is grown in southernmost Japan, on small islands south of Kyushu, extending to Okinawa. Sugar production is about 800,000 tons, with sugar consumption about 2.3 million tons, and total supply of sweeteners about 3.9 million tons (see fig. 1). A large industry producing high-fructose corn syrup (HFCS) from imported corn and domestic potato and sweet potato starch has evolved since 1977. Corn from the United States has been the main feedstock for producing HFCS in Japan, and, at a level of 3 million tons a year, Japan's imports of corn for HFCS are about 20 percent of its total corn imports.

A complicated set of policies uses mandatory levies on imports of raw sugar and general budget funds to subsidize processors of domestic sugar for the high cost of domestic cane and beets. Japan's Government has recently tried to adjust policies to allow consumer prices to fall to levels closer to world trade prices. The focus of government efforts is moving away from market price stabilization policies toward support for domestic production that minimizes the impact of gov-

Figure 1  
**Sugar: Production, consumption, and trade in Japan**



Source: USDA, PS&D, 12/11/01.

ernment policies on consumer prices. However, government interventions such as control over the amount of raw sugar imports, prohibitive duties on refined sugar imports, high tariffs on imported products that contain sugar as an ingredient, and quotas, tariffs, and other controls on sugar substitutes remain in place. These interventions continue to impose higher prices on consumers, to limit Japan's imports of sugar and other sweeteners, and to distort economic activity within Japan.<sup>2</sup>

<sup>2</sup> For a discussion of U.S. sugar policies, see <http://www.ers.usda.gov/briefing/sugar/policy.htm>

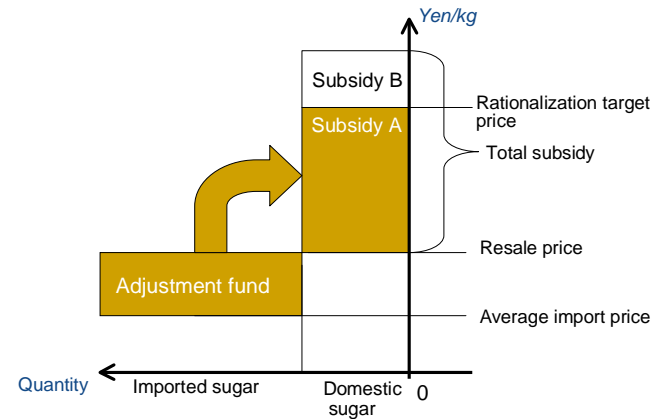
## Domestic Policies

**Sugar.** Farmers receive a guaranteed minimum price for cane or beet. The Ministry of Agriculture, Forestry, and Fisheries (MAFF) sets this price each year, according to the Sugar Price Stabilization Law of 1965, and the Revised Sugar Price Adjustment Law of 2000. Cane millers and beet processors must pay farmers at least the guaranteed minimum price. For sugar year 2001 (October 2001-September 2002), the minimum price was 17,040 yen/ton (\$131) for sugarbeets and 20,370 yen/ton (\$157) for sugarcane.

Sugar processors receive a “domestic sugar rationalization target price” for raw sugar, according to the Sugar Price Stabilization Law as amended in June 2000. It is set each year by MAFF, and is defined as “the cost of sugar that domestic refiners are able to receive if they rationalized (through restructuring, etc.)” In principle, MAFF is trying to encourage refiners to make their operations more efficient, and does not attempt to cover the costs of refiners that have been unable or unwilling to reduce costs. In sugar year 2001, the target price is set at 151,800 yen/ton (\$1,168).

MAFF provides a subsidy to sugar refiners to compensate them for the difference between the market price of domestic sugar and the “target price.” The Agriculture and Livestock Industries Corporation (ALIC), a government-owned firm, provides the subsidy (A), based on funds collected in a surcharge on imports (see fig. 2). An additional subsidy is given to domestic processors out of Japan’s national budget (B). The total amount of subsidy (A plus B) varies by growing region (see table 1). According to MAFF, currently subsidy (A) is worth approximately 77 billion yen and subsidy (B), 13 billion yen, for a national total of 90 billion yen (\$692 million). The subsidies to the processors allow them to buy sugarcane and sugarbeets at the high mandated prices that farmers receive.

Figure 2  
Prices and subsidies in Japan's sugar refining sector



Source: FAS/Tokyo.

**Corn sweetener policies.** Starch-containing products, like grains and potatoes, can be processed to extract the starch, and the starch can be refined into sweeteners. The corn sweetener industry arose in Japan because of the high sugar prices that were a result of government policies. Using imported corn, refiners could produce starch and then extract high fructose and other sweeteners that could replace sugar in many uses—particularly in soft drink production. To prevent HFCS from hurting demand for domestic sugar and to obtain funds with which to help pay for the sugar subsidies, the government began intervening in the HFCS market in 1982. Since then, ALIC has been buying all HFCS from processors and reselling it to them after adding a surcharge (unless HFCS prices are at unusually high levels).

The surcharge is calculated by formula as a fraction of the difference between an average supply price for HFCS and a higher target price for HFCS. The

Table 1—Total subsidy to sugar refiners, October 2001-September 2002, in three producing regions

Kagoshima		Okinawa		Hokkaido	
yen	\$US	yen	\$US	yen	\$US
<i>per ton</i>					
204,797	1,652	206,247	1,664	84,480	681

Source: FAS/Tokyo.

surcharge was 2,163 yen/ton (\$17) for the first quarter (October-December 2001) of sugar year 2001. MAFF calculates quarterly target volumes for HFCS production for each manufacturer. If the target is exceeded, the manufacturer pays a secondary surcharge of 1,218 yen/ton, or \$9 (for sugar year 2001), making the total surcharge 3,381 yen (2,163 + 1,218) if targets are exceeded.

This acts as a kind of production quota for HFCS, giving MAFF power to determine what production will be. Proceeds from the surcharges go to ALIC's Sugar Production Promotion Fund and are used to lower the surcharge placed on imported raw sugar that is used by sugar refiners. Thus, the surcharges are an effort to reduce the competitiveness of HFCS versus sugar, and to prevent the balance between sugar and HFCS from changing.

## Border Policies

**Sugar.** ALIC purchases all raw sugar imports from importing companies at the average import price (revised quarterly) and sells the sugar back to them at a predetermined resale price (also revised quarterly)<sup>3</sup>. The sugar does not actually change hands during the transaction. In July-September 2001, the average import price was 32,580 yen/ton (\$251) and ALIC's resale price was 59,960 yen/ton (\$461). The difference, or surcharge, is 27,380 yen/ton (\$211), and accrues to ALIC. ALIC's profit on this transaction is calculated by MAFF so that the total amount collected (in addition to surcharges from HFCS producers) would be sufficient to fully compensate the domestic processors for the difference between the market price of domestic sugar and the "target price." This difference is called the "Adjustment Fund" and goes into ALIC's Sugar Production Promotion Fund (see fig. 2). If world prices are at extremely high levels, companies do not have to sell to and buy back from ALIC. This has not occurred in the last 20 years.

Each quarter, MAFF determines an import volume target for raw sugar for each importer based on ALIC's resale volume to that importer in an ordinary year. If

<sup>3</sup> Japan notifies its sweetener policies to the World Trade Organization (WTO) as part of its Aggregate Measurement of Support (AMS) total, i.e., as part of the amber box. However, Japan does not report the ALIC as a state trading organization for sugar, and does not report government control over the volume of sugar and corn imports to the WTO.

the target is exceeded, MAFF assesses a secondary surcharge. Currently the volume target (for all firms together) is approximately 1,470,000 metric tons annually and the secondary surcharge is 23,309 yen/ton (\$179). This authority stems from an amendment to the Sugar Price Stabilization Law in 1982.

Although the raw sugar tariff was reduced to zero in April 2000, refined sugar imports face a tariff of 21.5 yen/kg with an additional surcharge of 53.88 yen/kg, equivalent to \$414/ton (this surcharge is effective for the 2001 sugar year). This effectively bars refined sugar imports, which are virtually zero (see table 2).

**Corn imports for sweetener use.** Corn can be processed into corn starch and then refined to make HFCS. Under the pooled quota system, MAFF allocates a semi-annual import quota specifically for corn to be used to produce starch. For example, in the first half of Japanese fiscal year 2001 (April-September 2001) the amount was 1,287,500 tons. The amount of the quota is calculated by dividing the planned production quantity of corn starch by .66 (to get the amount of unmilled corn needed for starch production). Thus, in addition to its control over HFCS production volume through surcharges, MAFF also has a mechanism to control imports of the main input to HFCS.

Planned corn starch production must be matched by purchases of domestic potato and sweet potato starch in the ratio of one part of potato starch for 12 parts of corn

**Table 2—Tariffs, tariff-rate quotas, and trade in Japan's sweetener sector, 2002**

Commodity	Tariff		Comment	Tariff-rate quota		Imports in 2001
	Ad valorem	Specific		Tariff	Quota size	
	Percent	Yen/kg		In-quota ad valorem	Over-quota specific	
				Percent	Yen/kg	1,000 tons
Raw sugar, centrifugal	0					1,531
Refined sugar		21.5				0
High-fructose corn syrup	50	25	Greater of the ad valorem or specific tariffs			0
Corn for starch manufacture	0					(see text) 3,521
Starch, except wheat				25	119	157 175
Wheat starch				25	34.4	Wheat quota 0.001

Notes: In 2001, the average value of the yen was 120.96 yen/US\$. One kilogram equals 2.204 pounds.

Source: Japan Tariff Association. *Customs Tariff Schedules of Japan, 2002*.

starch.<sup>4</sup> Corn sweetener producers can import (at the zero tariff rate) up to 12 times the volume of potato starch that they use. Any corn imports beyond that volume face a tariff of 12,000 yen per ton or 50 percent of the value of a shipment, whichever is higher.

During the Uruguay Round (UR), Japan committed itself to allowing at least 3.75 million tons of corn imports for industrial (including sweetener) use each year, with a zero tariff. The maximum ratio of potato to corn starch in domestic sweetener production was set at 1:11. Since 1994, the ratio of potato to corn starch has dropped as low as 1:13. For the second half of Japanese fiscal year 2001 (October 2001-March 2002) the ratio was set at 1:12.

In addition to the quota on corn as a source of substitute sweeteners, Japan blocks the import of HFCS with a high tariff and limits starch imports through a tariff-

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<sup>4</sup> This requirement for domestic purchase was part of Japan's UR commitment in 1995.

rate quota of 157,000 tons per year. Japan's former absolute quota on starch imports was successfully challenged in a dispute before the General Agreement on Tariffs and Trade in 1987. Japan declined to liberalize starch imports, choosing instead to compensate its trade partners in other ways (see Elleson), in order to protect its domestic sugar industry from imports of a potential feedstock for high fructose sweeteners. Later, in the UR, Japan agreed to allow over-quota starch imports, but only at a much higher tariff (see table 2).

To prevent Japan's food manufacturers from circumventing the high barriers to trade in pure sweeteners (sugar and HFCS) or sweetener feedstocks (corn and starch), Japan has also placed higher tariffs on intermediate or final products that contain sugar. For example: citrus juices containing added sugar are assessed a tariff of 29.8 percent or 23 yen/kg (whichever is greater), while juices without added sugar face a tariff of 25.5 percent; cake mixes with added sugar have a tariff of 23.8 percent versus 12 percent for mixes with no sugar added; etc.

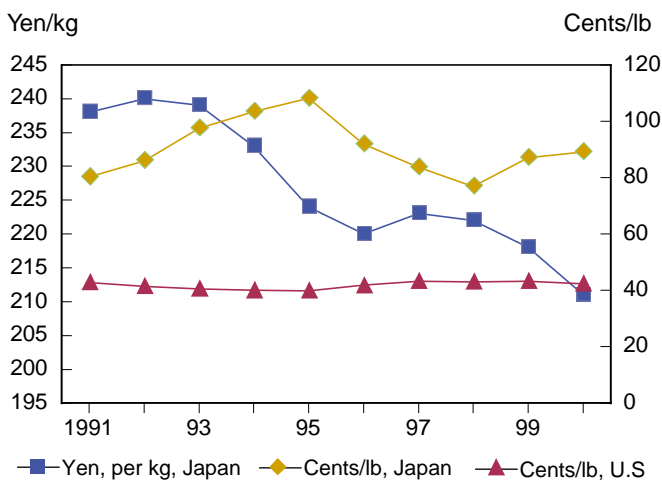
## Policy Implications

**Prices.** The most important price determining wholesale refined sugar prices in Japan is the resale price of imported raw sugar (59,960 yen/ton), since two-thirds of raw sugar is imported and subsequent pricing by sugar refiners depends on this base price. Equivalent to \$461/ton (at an exchange rate of 130 yen/US\$), the resale price is about 22 cents per pound. This is well above the world price for raw sugar in 2000, about 8.5 cents/lb. The retail price for refined sugar in Tokyo in 2000 averaged 211 yen/kg, or 89 cents/lb. This is twice as high as the U.S. retail price for refined sugar in 2000, 42 cents/lb (see fig. 3).

The guaranteed price for sugarcane (in sugar year 2001) is equivalent to about \$0.61/lb. for raw sugar. This is over 6 times higher than the calendar-year 2001 import unit value (a good indicator of the world price) for raw sugar. For sugar beets, the guaranteed minimum price of 16,930 yen/ton is equivalent to \$0.33/lb. for raw sugar—over 3 times the average import price.

**Gains and losses.** Japan's farmers who raise sugarcane and sugarbeets receive much higher prices as a result of Japan's policies. The Organization of Economic Cooperation and Development (OECD) estimated that this price support amounted to 67 percent of the total value of Japan's production of sugar from domestic cane and beets in 1999.

Figure 3  
**Sugar retail prices, Japan and the United States**



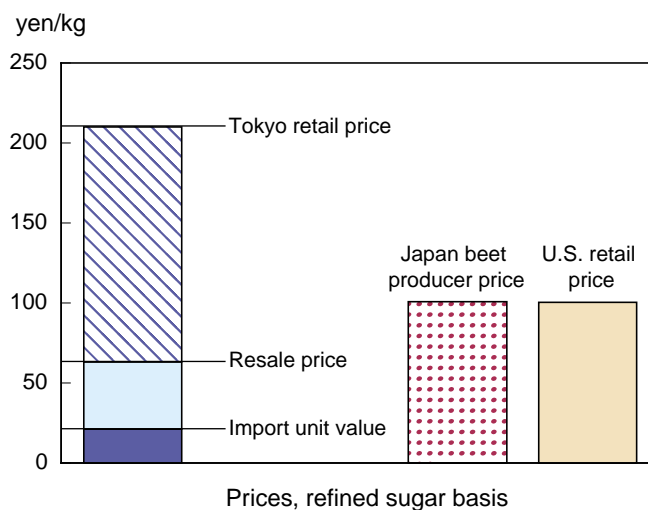
Sources: Monthly Statistics of Agriculture, Fishery and Forestry, Japan, various issues; and ERS, USDA.

Japan's corn sweetener industry arose in the 1970s, taking advantage of the high sugar prices. Using imported corn, the industry refined HFCS at a cost below the price of sugar in Japan. Over time, Japan's Government imposed several burdensome requirements on the corn refiners. One was a requirement to use domestic starch from potatoes and sweet potatoes for a fraction of HFCS production. The government sets a standard price for those potatoes used for starch production. In 2001, the price was 25,233 yen/ton (\$209/ton) for sweet potatoes and 13,960 yen/ton (\$115) for white potatoes. In 1999, the last year with available data, one-fifth (206,000 tons) of total sweet potato production and 37 percent (1,088,000 tons) of white potato production was used for starch. HFCS refiners would prefer to buy corn, which has a higher starch yield, if they could do so at world prices. However, the corn tariff is at least 50 percent unless imports are accompanied by purchases of domestic potato starch. Another burden was imposed on HFCS manufacturers in 1982—the surcharge on syrup production for HFCS (see page 3). Despite the obstacles caused by government policies, the corn sweetener industry has grown by taking market share away from sugar, and now has over 40 percent of the sweetener market.

**Consumers pay.** Japan's consumers face higher prices as a result of the sweetener policies. The OECD estimated that Japan's control of refined sugar prices added 176 billion yen (\$1.54 billion) to consumer food costs during 1999. The reason for these higher costs is that the sweetener policies raise Japanese sugar prices far above world sugar prices. If Japan's retail sugar prices fell to U.S. levels—a reasonable scenario for this relatively undifferentiated product—they would be 50 percent lower than the current level (see fig. 4). Because of high sweetener prices, consumers have less to spend on other items, and consumption of sweeteners is lower in Japan than it would be otherwise.

ALIC's mandate to purchase all raw sugar at the border and all domestically manufactured HFCS means that the government has considerable control of the market (unless world sugar prices or domestic HFCS prices are at extremely high levels (see page 3). The price at which ALIC resells sweeteners to the processors becomes a floor that helps determine the user price of refined sugar and HFCS, and the surcharge from this transaction is, at least partially, passed on to consumers by the processors.

Figure 4  
**Comparing sugar prices, 2000**

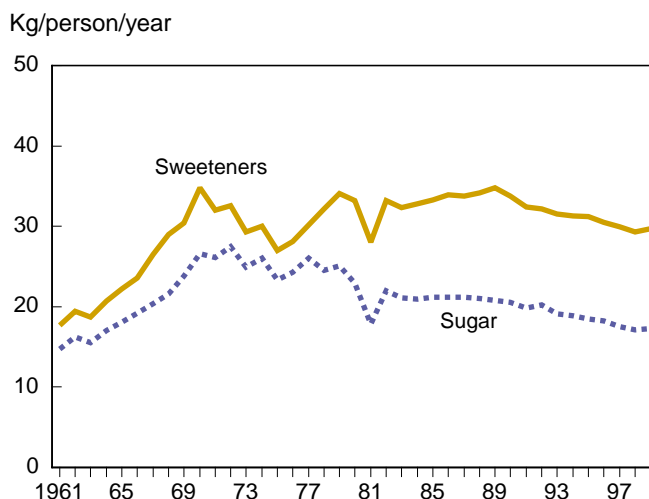


Sources: Monthly Statistics of Agriculture, Fishery and Forestry, various issues; and ERS, USDA.

One consequence of the high price of sugar in Japan has been to raise the cost of manufacturing food products that contain sugar. Food manufacturers and food importers have increasingly turned to foreign sources of prepared foods or food preparations to avoid Japan's high sweetener costs, and sweetener consumption for processed food has been falling in Japan. Sweetener supply (which is roughly equal to use, either by households or by food and beverage manufacturers) in Japan peaked in 1989, at 4.4 million tons, and has fallen off by about 500,000 tons since. The decline on a per-person basis is evident in figure 5. Rather than marking just a reduced level of sweeteners in foods and beverages, the decline may partly reflect imported products that already contain sugar being substituted for products to which sugar is added in Japan.

MAFF adjusts the surcharge on raw sugar at the border primarily to compensate for processor costs of buying sugarcane and sugarbeets in Japan. Its surcharge varies according to world prices but also according to internal policy goals. The surcharge can prevent Japan's consumption and production of sweeteners from changing according to world price signals. Thus, Japan's contribution to absorbing more sweeteners when world prices are low, or less of these products when world prices are high, may be reduced. The rest of the world is forced to balance supply and demand without a contribution from Japan. Furthermore, by preserving its own high-cost production, Japan imports less than it would without the sweetener policies. Its farmers produce more, and its

Figure 5  
**Sweetener consumption in Japan**



Source: FAOSTAT.

consumers use less sugar than if prices in Japan were lower. This reduces world demand for sweeteners and thus the world price for sweeteners.

**Possible effects of liberalization.** A 1999 study by the Australian Bureau of Agricultural and Resource Economics (ABARE) estimated that world prices would rise by 5 percent and the volume of sugar trade would grow by 500,000 tons if Japan were to cut its tariffs, surcharges, and levies on sugar imports to zero over a 5-year period. The study assumed that HFCS production would be unaffected and that most Japanese domestic sugar production would remain because of other means of support by the government. Production declined by 200,000 tons (22 percent) and consumption increased by 300,000 tons (13 percent) in the ABARE simulation.

Recent modeling at the Economic Research Service (ERS) using a multi-commodity partial equilibrium framework<sup>5</sup> has simulated what might happen if Japan were to eliminate all its border protection as well as all its domestic support that is trade-distorting. The results for sugar are striking. After a few years of adjustment, sugar production falls by over 40 percent. Consumer and producer prices in Japan fall by over 70 percent. Imports rise by from 560,000 to 735,000 tons over current levels, and world sugar prices rise by 1.1-1.4 percent, depending on what assumption is made about HFCS markets. Trade liberalization would provide

<sup>5</sup> Documentation of the model can be found at <http://coldfusion.aers.psu.edu/wto/>.



substantial benefits to Japan's consumers and to sugar producers in exporting countries.

A key uncertainty is the reaction of Japan's HFCS production to falling sugar prices. While sugar and HFCS can substitute for each other in most uses, there is a preference for HFCS in soft drink production—a major use. A range of model scenarios used different assumptions about the linkage between HFCS produc-

tion and sugar prices. If HFCS production is unaffected—there is no substitution of imported sugar for Japan's HFCS—then sugar imports rise by 560,000 tons, and the world sugar price would rise by 1.1 percent. If HFCS output in Japan is sensitive to the sugar price decline, and were assumed to drop by as much as 300,000 tons in corn equivalent, then Japan's sugar imports would rise 735,000 tons over current levels, and world sugar prices by 1.4 percent.

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