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## The U.S. Sugar Program in the 1980's

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Household and table use accounts for only about one-fourth of the sugar consumed in the United States. Most sugar and other sweeteners are consumed in manufactured products, from soft drinks to baked goods, cereals, processed and canned foods, dairy products, and confectionery items. Sugar itself is valued not only as a sweetener but as a preservative, bulking agent, and appearance enhancer. It has many other qualities, including the "snap" in some cookies.

U.S. Government intervention in the sugar market, which began 200 years ago, is as controversial as ever. More than five legislative bills sought to address the "sugar problem" in the last Congress, and new bills have been introduced in the 101st Congress. Not only Congress but the Administration, private industry, public interest groups, and foreign officials have proposed changes in the U.S. sugar program.

One reason the program attracts controversy is that it affects more than just the sugar industry. Producers of other sweeteners benefit from the price umbrella provided by Government support for sugar. The corn-wet-milling industry, for example, closely monitors changes in the sugar program. In 1987, sales of sugar equaled about \$4.4 billion, while corn sweeteners reached about \$2.2 billion. Honey, maple syrup, cane syrup, edible molasses, refiner syrup, and low-calorie sweeteners (saccharin and aspartame) added several hundred million dollars more. Another low-calorie sweetener, acesulfame-K, was introduced in 1988.

Sugar is also a lightning rod for controversy internationally. More than 110 countries produce sugar, which is pro-

cessed from sugarcane in tropical climates as well as from sugarbeets in temperate zones. Not surprisingly, sugar has long been involved in North-South, developed-developing country trade issues.

Over the years, quite a few developing countries have become dependent on sugar as a significant source of foreign exchange, national income, and employment. Sugar support programs that restrict imports, raise domestic prices (thereby lowering demand), and hold down world sugar prices vitally affect the welfare and stability of many countries. Sugar policies and programs—particularly in the larger producing and trading countries like the United States and members of the European Community—have important foreign policy implications.

### Why Have a Sugar Program?

Sugar is the most price-volatile among internationally traded commodities. This provides not only the U.S. Government but many other nations a ready rationale for supporting their domestic industries.

Historically, world prices have followed a 1- to 2-year cycle of high prices, followed by a long period of low prices. After 5 to 10 or more years of slow growth and low prices, demand tends to outpace the world's sugar-producing capacity. The market then becomes sensitive to production shortfalls and potentially explosive price spikes. High prices in turn encourage many countries to invest in their sugar industries. Typically, world investment in production capacity far exceeds demand, bringing about another round of low prices.

"World" prices, however, are a misnomer in that they apply to only a small part of world sugar output. Global exports equal about one-fourth of total

production, but part of those exports are governed by bilateral agreements with preferential terms, including prices typically above the "world" level. The volume of exports sold using the so-called world, or free market, price has varied over the years but has been as low as about 12 percent of world sugar production. Consequently, small changes in world production and consumption tend to exaggerate the swings in world prices. These "ups and downs" occur throughout the broader price swings of the sugar cycle.

Cyclical swings in prices are dramatic episodes. For example, during 1980-88, prices for raw sugar went from a high of 29 cents a pound in 1980 to an average 6.5 cents in 1982-87, far below costs of even the world's most efficient producers. Average production expenses for 61 countries ranged between 12.6 and 15.4 cents a pound for raw cane sugar during 1980-87.

Persistently low world prices have caused sugar industries to seek protection. The capital investment for producing and processing sugarbeets and sugarcane is substantial and often involves extensive and expensive infrastructure. Once the investment in a plant is made, there is strong incentive to fully use its productive capacity. Many jobs and local community well-being are also at stake. Therefore, governments have frequently intervened in sugar production and marketing to stabilize prices both for consumers and producers, maintain employment, secure revenue, and assure supplies of a common staple and important food component. Globally, however, the aggregate effect has only weakened the adjustment of supply to price changes, diverted resources from other industries, and prolonged low-price periods.

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### Government Intervention

U.S. Federal involvement in sugar began in 1789 with an import tariff to raise revenue. For the next century, the sugar tariff yielded close to 20 percent of all import duties, which were the major source of Government revenues until the Civil War. Tariffs were fixed, usually at about 2.5 cents a pound of sugar.

An ad valorem tariff was imposed in 1894 and continued until passage of the Jones-Costigan Act, often called the Sugar Act of 1934. The Act's basic features, modified only slightly in subsequent legislation, lasted 40 years and required comprehensive regulation of domestic sugar production, imports, and prices. U.S. growers received benefit payments, which were funded by a processing tax, if they restricted their acreage and met other conditions. Foreign countries were assigned quotas each year, specifying the amount of sugar they could sell to the United States.

Between 1975 and 1981, U.S. Government support for sugar was sporadic. No price support was provided for the 1975 and 1976 crops but, when world prices plunged, an amendment to the Food and Agriculture Act of 1977 offered processors short-term payments for part of the 1977 crop equal to the difference between a market price objective and actual prices. Subsequently, nonrecourse loans were provided for the rest of the 1977 crop and all of the 1978 crop, and tariffs were imposed on sugar imports to ensure that domestic prices reached desired levels. Loans were also provided for the 1979 crop, but no program was established for 1980 and most of the 1981 crop because of high world prices. *(Program terms are explained in the Glossary.)*

Falling world sugar prices after mid-1981 led to inclusion of sugar in the Agriculture and Food Act of 1981. For part of the 1981 and 1982 crops, the Federal Government agreed to purchase raw cane



sugar at 16.75 cents and refined beet sugar at 19.70 cents a pound if prices for commercial sales were not sufficiently high. To avoid these purchases, the Government imposed tariffs on imported sugar to keep supplies in check and raise prices to the desired level.

For the rest of the 1982 crop and subsequent 1983-85 crops, loans were made available at rates starting at 17 cents per pound and climbing to 18 cents for raw cane sugar (20.15 cents, rising to 21.06 cents, for refined beet sugar). In May 1982, restrictive import quotas replaced tariffs as the mechanism to achieve desired domestic supplies and market prices.

The Food Security Act of 1985 continues support for sugar producers through nonrecourse loans for the 1986-90 crops. The mechanics of supply and price management through import quotas were not changed, but the 1985 Act strengthened effective support for sugar in some important ways. The Secretary of Agriculture not only has the authority to increase loan rates when domestic costs of production rise or other circumstances change, but each year has to provide a justification if the rate is not raised. More significantly, the Act mandates that

the President use all available authority to operate the sugar program "at no cost to the Federal Government" by preventing sugar from being forfeited to the Commodity Credit Corporation (CCC). This puts pressure on the Government to keep import quotas tight and prices high in the domestic market so as to reduce the risk of forfeiture to near zero.

### How the Program Works

The sugar program provides price support through nonrecourse loans for domestically grown sugarcane and sugarbeets. However, unlike most other commodity programs, loans are made to processors and not directly to producers. This is because sugarcane and sugarbeets, being very bulky and perishable, must first be processed into sugar before they can be traded or stored. Beets are processed directly into refined sugar, while cane is milled into raw sugar and then marketed to cane refiners for further processing. When processors sell the sugar, growers share in the returns. The loans made to processors are expressed in cents per pound of raw cane sugar or refined beet sugar.

Raw cane sugar and refined beet sugar are used as collateral for loans

obtained from the CCC. To qualify for loans, processors must agree to pay producers no less than the USDA-established minimum price support levels based on the loan rates for sugarcane and sugarbeets. Generally, growers receive about 60 percent of the loan or sale proceeds of the sugar and processors 40 percent, but the exact arrangements vary by contract.

The Food Security Act of 1985 set the minimum national loan rate for sugarcane at 18 cents per pound for raw cane sugar. Sugarbeets are to be supported at a level that is "fair and reasonable" in relation to the loan rate for sugarcane. But what is fair and reasonable? USDA calculates the beet loan rate by using a production-weighted, 10-year ratio of prices received for sugarbeets relative to sugarcane. The ratio, multiplied by the cane loan rate plus fixed marketing expenses for beet sugar, is the national average loan rate for refined beet sugar. This rate usually runs about 3 cents above the loan level for cane sugar.

Loan rates differ by location. The farther a processor is from its markets, the lower the loan rate. If freight costs for a region are above the national weighted average, the difference is reflected in a lower loan level. The opposite is also true. For example, Hawaii's loan rate for 1988-crop raw cane sugar was 17.42 cents a pound, while Louisiana's was 18.27 cents. This is done so that the loans do not distort the routine marketing of sugar. In other words, no area will have more of an incentive to default on its loans than any other (*see box*).

The processing company can either repay its loan with interest or default on it. If the firm defaults, the sugar held as collateral is forfeited to the CCC. The processor (borrower) will be inclined not to default if the market price for sugar is high enough to permit repayment of the loan, interest, freight, and related market-

### Regional Loan Rates and Support Levels

The national weighted average loan rate for 1988-crop raw cane sugar was 18.00 cents a pound. The corresponding loan rate for refined beet sugar was 21.37 cents. These national rates were adjusted for location, so they reflect where the sugar offered as collateral for a price support loan was processed.

The loan rate for sugar processed in a specific region is based on freight costs associated with moving it to regional markets.

Minimum price supports for sugarbeets and sugarcane are established based on regional loan rates. Processors participating in the sugar program must pay producers at least the minimum price support for their region.

### Sugar Loan Rates and Price Support Levels Vary Among Regions

Area	Loan rate <sup>1</sup>		Price support level <sup>2</sup>	
	1987	1988 <sup>3</sup>	1987	1988 <sup>3</sup>
	Cents per pound		Dollars per ton <sup>4</sup>	
<b>Sugarcane regions</b>				
Florida	18.07	17.76	24.68	24.71
Hawaii	17.64	17.42	*	22.17
Louisiana	18.54	18.27	23.20 <sup>5</sup>	20.72 <sup>7</sup>
Texas	18.29	18.03	*	16.89 <sup>9</sup>
Puerto Rico	17.53	17.19	*	16.52 <sup>9</sup>
U.S. weighted average	18.00	18.00		
<b>Sugarbeet regions</b>				
Michigan and Ohio	22.10	21.94	28.44	29.53
Minnesota and eastern North Dakota	21.15	21.04	28.74	30.45
Colorado, Nebraska, and southeast Wyoming	21.01	20.91	31.39	31.16
Texas	21.76	21.74	33.85	33.74
Montana, northwest Wyoming, and northwest North Dakota	20.97	20.90	31.41	31.21
Idaho and Oregon	20.76	20.55	31.87	31.46
California	21.13	21.34	32.30	32.55
U.S. weighted average	21.16	21.37		

<sup>1</sup>For refined beet or raw cane sugar. <sup>2</sup>For sugarbeets or sugarcane. <sup>3</sup>Loan rates and price support levels (except U.S. weighted average) reflect 1.4-percent reduction in program outlays mandated by the Omnibus Budget Reconciliation Act of 1987. <sup>4</sup>Net-ton basis (excludes dirt, leaves, and other extraneous materials). <sup>5</sup>Determined by contract. <sup>6</sup>A formula was used for mills that used a core sampler. <sup>7</sup>\$20.38 per gross ton (includes dirt, leaves, and other extraneous material) for mills that used a core sampler. <sup>8</sup>Determined by local legislation. <sup>9</sup>Per gross ton.

ing expenses. (Freight is not part of the formula for beet sugar since the buyer pays for transport.) Prior to the 1985 Act, part of Florida's 1984 crop was forfeited at a net cost to the Government of \$47 million. But because the current program is required to be run "at no cost," the market stabilization price (MSP) plays a critical role. For purposes of the overall sugar program, the MSP serves as a reference price—the level considered sufficient to avoid loan forfeitures.

The MSP is comprised of the national average loan rate for raw cane sugar, loan interest for 6 months, transportation and handling costs, and a market incentive of 0.20-cent a pound (table 1).

Transportation costs are based on average shipping charges from Hawaii to U.S. ports north of Cape Hatteras, North Carolina. This means that the MSP will be high enough to cover the processing area with the highest costs. As a result, all the other sugarcane areas are automatically covered from risk of forfeiture.

Sugarbeet areas are also protected from forfeiture because the cost of refining raw sugar, including weight loss in the physical refining process, is more than 4 cents a pound. Therefore, the price of refined cane sugar would exceed the market price at which beet sugar is forfeited.

The MSP is announced each September for the next fiscal year. For fiscal 1988, the MSP was 21.76 cents a pound and actual market prices in New York averaged 22.10 cents (includes insurance and freight charges).

**Import Quotas**

To get U.S. prices up to the MSP, USDA estimates the domestic demand for sugar and then limits supply. No limit is placed on domestic production, but imports are restrained by a quota. Without the quota, low-priced sugar in

**Table 1. How the Market Stabilization Price for Sugar Is Calculated**

	Fiscal year		
	1987	1988	1989
	<i>Cents per pound</i>		
National average loan rate	18.00	18.00	18.00
Transportation and handling costs <sup>1</sup>	2.93	2.96	2.97
Loan interest <sup>2</sup>	0.65	0.60	0.63
Incentive	0.20	0.20	0.20
<b>Market stabilization price</b>	<b>21.78</b>	<b>21.76</b>	<b>21.80</b>

<sup>1</sup>Average shipping charges from Hawaii to U.S. ports north of Cape Hatteras, North Carolina. <sup>2</sup>Weighted-average cost of money to the Commodity Credit Corporation.

the world market would flood the U.S. market, undercut the MSP, and thus interfere with the operation of the sugar program (figure 1).

Before May 1982, tariffs were used to raise the U.S. sugar price to the desired level. However, the duty could not exceed 2.8125 cents a pound, raw value, and the fee could not exceed 50 percent of the sugar price for U.S. imports. When world prices plunged in the 1980's, tariffs were no longer able to assure achievement of the MSP and restrictive quotas were imposed.

Today, only a nominal duty exists, at the legal minimum of 0.625-cent a pound. Fees are zero for raw sugar and 1 cent a pound for refined. With the restrictive quota in place, the duty and fee do not affect the price of U.S. sugar,

**Figure 1. U.S. Sugar Prices Are Supported Above World Prices**



but serve to capture some of the price premium of sugar marketed in the United States. Most nations eligible to ship sugar to the United States receive duty-free status under the Generalized System of Preferences, the Caribbean Basin Initiative, or both. (See *Glossary for details*.) All countries are subject to the fee on refined sugar, little of which is imported.

The size of the import quota each year is determined on the basis of estimated demand for sugar in the U.S. market and domestic supplies. Conditions can change, however, and the quota revised. For example, in 1988, the drought reduced sugar production far below the forecasted level and, in order to keep prices from skyrocketing, the quota was raised from 758,000 tons to 1,057,000.

Allocation of the quota to individual countries is generally based on their share of the U.S. market during 1975-81 when imports were relatively unrestricted. Quotas were extended to 39 countries for 1989. Nicaragua and South Africa, original quota recipients, have been excluded and their shares reallocated.

The United States actually imports more sugar each year than prescribed by the quota. The extra imports enter under special programs at world prices. (The world price plus charges for delivery to New York averaged about 12 cents a pound in 1988 versus quota sugar priced at about 22 cents.) Quota-exempt raw sugar enters the United States for refining and then is reexported as refined sugar or in sugar-containing products. A small amount of quota-exempt sugar comes in for industrial uses as polyhydric alcohol. Sugar also enters the domestic market indirectly through imports of sugar-containing products.

### Industry Structure in the 1980's

The U.S. sugar industry has seen radical changes in the 1980's. The sugar program has been a major factor, but no less significant has been the development and use of high fructose corn syrup (HFCS) as a low-cost substitute for liquid sugar in many industrially processed foods and beverages, especially soft drinks. Mainly because of HFCS, corn sweeteners replaced sugar as the dominant sweetener in the United States in 1985.

Consumption of refined sugar fell 1.9 million tons or nearly 20 percent between 1980 and 1988, despite population and income growth. HFCS use, which raced from 2.2 million tons to 6.0 million, accounted for most of this loss (table 2). Over 70 percent of HFCS use is in beverages. HFCS is also used in baked goods, canned and processed foods, dairy products, and confectionery. However, since 1987, overall sugar consumption has slowly begun to rise again

as displacement of sugar by HFCS has ebbed.

HFCS now accounts for about 45 percent of combined sugar-HFCS consumption. This may be close to the limit that HFCS can be substituted for sugar unless other technological breakthroughs occur. Seasonally, sugar demand is now more stable throughout the year because of its declining use in soft drinks. The annual surge in demand caused by higher soft drink consumption during the summer no longer occurs.

High world sugar prices during 1980 and 1981 were a catalyst in the U.S. shift to HFCS, but the sugar program itself contributed to the rapid investment in HFCS production that occurred during 1975-85. Existence of a sugar program in the 1981 Farm Act—covering the 1982-85 crops—guaranteed a minimum price for sugar that served as an umbrella sheltering HFCS and other sweeteners from low world prices.

**Table 2. Sugar Consumption Fell as High Fructose Corn Syrup Use Rose**

Year	Sugar <sup>1</sup>		Corn sweeteners			Other		Total caloric sweeteners
	Raw value	Refined basis	HFCS <sup>2</sup>	Glucose syrup	Dextrose	Pure honey	Edible syrups	
<i>Million tons, dry basis</i>								
1975	10.3	9.6	0.5	1.9	0.5	0.1	<sup>3</sup>	12.7
1980	10.2	9.5	2.0	2.0	0.4	0.1	<sup>3</sup>	14.1
1985	8.1	7.6	5.3	2.2	0.4	0.1	<sup>3</sup>	15.6
1988	8.1	7.6	5.9	2.2	0.4	0.1	<sup>3</sup>	16.3
<i>Pounds per capita, dry basis</i>								
1975	—	89.2	4.9	17.5	5.0	1.0	0.4	118.0
1980	—	83.6	18.0	17.6	3.5	0.8	0.4	123.9
1985	—	63.4	44.1	18.0	3.5	1.0	0.4	130.4
1988	—	61.7	48.0	18.0	3.6	1.0	0.4	132.7

— = not applicable. <sup>1</sup> Sugar consumption is the total of U.S. sugar deliveries for domestic food and beverage use, and sugar imported in blends and mixtures. <sup>2</sup> High fructose corn syrup. <sup>3</sup> About 50,000 tons.

Beneath the price umbrella, HFCS prices paralleled sugar prices closely but consistently at a discount. HFCS producers were able to reap considerable revenues—because of much lower production costs than for sugar—for further research, development, and promotion. Relatively low corn prices and net starch costs during 1975-85 contributed to HFCS's development and its competitive position in the sweeteners market. Further advances in enzyme technology have permitted HFCS to be mass-produced at a cost so low that in the United States HFCS can now compete with sugar from practically any source, unless the sugar is sold below cost.

In 1988, HFCS and other corn sweeteners accounted for over 500 million bushels of annual corn use in the United States or more than 6 percent of a normal crop. Although the corn-wet-milling industry, which produces corn sweeteners, and corn growers are among the strongest supporters of the U.S. sugar program, it is an uneasy alliance. Development of a high-quality and low-cost crystalline fructose would expand corn's potential for further penetration of the sugar market.

The decline in U.S. sugar deliveries in the 1980's came about not only from HFCS but from increased imports of sugar-containing products, which could be manufactured more cheaply abroad. These imports reduced the sugar needs of U.S. food firms. The General Accounting Office, an arm of Congress, estimated the loss in domestic sugar demand at about 175,000 tons annually.

While industrial demand for sugar dropped in the 1980's, household and table use continued to rise as the population grew. Changes in income affect sugar demand, but only slightly. Because the United States is a mature

economy, where sugar intake is already close to saturation, sugar consumption would likely rise less than 1 percent with a 10-percent rise in income. Price changes also have little effect on sugar use, which declines about 0.5 percent with a 10-percent price rise.

Estimates of the sugar program's impact on consumers are controversial, partly because it is not clear what the world price would be if all trade-distorting government policies were eliminated worldwide. International comparisons of sugar production costs are complicated by differing standards on minimum wages, health and safety, environmental safeguards, and other factors.

If a truly competitive world price were, say, 15 cents a pound and another 1.5 cents were needed to get the sugar to U.S. ports, the estimated costs of the pro-

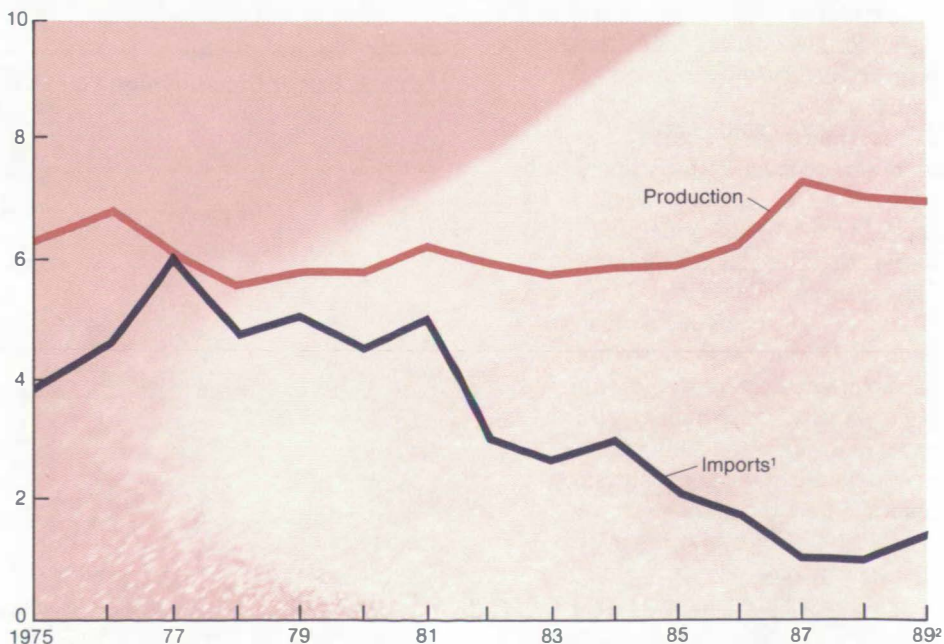
gram to sugar consumers would be about \$1 billion a year at 1989's MSP of 21.8 cents a pound. But this would only be a start in a full accounting of the gains and losses. The sugar program also influences the prices of other sweeteners, especially HFCS.

### The U.S. Sugar Supply

Vast changes in the U.S. sugar supply occurred in the 1980's. Although domestic sugar demand fell, production increased. As a result, imports plunged from a 1979-81 annual average of over 4 million tons to a quota of about 1 million in 1988 (figure 2). The 1988 quota represented 13 percent of sugar consumption compared with the customary 40 to 50 percent before the 1980's. Even more telling is the fact that imports accounted for only about 7 percent of combined

Figure 2. U.S. Sugar Production Has Risen While Imports Have Fallen

Million tons, raw value



<sup>1</sup>Imports for domestic use, excludes reexports. <sup>2</sup>Estimated.

consumption of sugar and HFCS in 1988 and 9 percent in 1989. Foreign suppliers benefit from the premium price in the American market. However, export earnings have been severely hurt because the percentage reduction in the quota has been much greater than the percentage gain in U.S. prices. This has been especially galling to countries targeted for U.S. assistance through the Caribbean Basin Initiative.

Reduced sugar imports (almost all raw cane) have also hurt American cane refiners, which previously processed more raw sugar from abroad than from U.S. mills. Ten refineries out of 21 have ceased operations since 1981. With cane imports down and beet production rising more than domestic cane production, beets have become a more important source of U.S. sugar. They accounted for over 40 percent of total use in 1988, compared with about 30 percent in the 1970's. If the 1988 drought had not occurred, beet sugar's share would have been nearly 50 percent.

The consequences have been far reaching for the flow of sugar in the United States. In a reversal of previous patterns, beet sugar is now shipped into the Northeast and South, and cane refiners' profits are being pressured by

lower priced beet sugar. Such changes have spurred some significant corporate restructuring. Cane refiners are now owners of sugarbeet processing firms. One company has diversified its operations to include the largest cane refining firm in the country, a beet processing firm, and a wet-milling company for manufacturing corn sweeteners.

### How Sustainable Is the Program?

Pressures to change the U.S. sugar program may occur as domestic sugar production rises and demand falls because of increasing use of competing sweeteners. Import needs could drop to the point where quotas no longer effectively help manage supply. Even before then, lower quotas could spell severe problems for sugar-dependent countries that are strategically significant to the United States.

Already, bills to lower loan rates and to guarantee import levels, if only for some countries, have been introduced in the 101st Congress. New farm legislation is up for consideration in 1990, and price support for sugar will surely be scrutinized relative to other crops. The program is also susceptible to significant change as a result of the Uruguay Round of multilateral trade negotiations, where government intervention in agricultural

markets is under serious discussion for the first time in history. Pressure for change in the program has been heightened by a General Agreement on Tariffs and Trade (GATT) panel finding in May 1989 that U.S. use of sugar import quotas is inconsistent with GATT trade rules. ■

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