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The Sugar Policies of the European Community and the United States and Their Impact on the World Sugar Market

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I. Introduction and Summary

World sugar prices have been more volatile than prices of any other agricultural commodity. Although sugar is produced in virtually every country and consumed worldwide, only 20 percent of world production, or 20 million tons, is traded on the world free market (i.e. outside special arrangements). Except for the European Community (EC) and Australia, the largest exporters are developing countries, such as Cuba, Brazil and the Philippines. Over the past 30 years, exporting countries have, as members of the International Sugar Agreement (ISA), attempted, unsuccessfully, to prevent major price fluctuations. The main reason is that price signals from the free market often do not reach the large producers and importers because of regulated national markets, in particular in the industrial countries.

In recent years, world prices have fallen steeply as an unprecedently large global sugar surplus has built up. This surplus reflects a major structural change in the world market since the mid-1970s that has been related to the policies of the EC and the United States, both of which play a dominant role.

From being one of the world's largest sugar importers, the EC, the only major producer not in the ISA, has become the largest exporter on the free market, with a share of one quarter since 1980. Due to its price support policy, the EC reached an average level of self-supply of 140 percent cent in the 1980s and has accounted for almost the entire growth in the world free market since the mid-1970s. However, the shift from being a net importer to a net exporter has involved considerable costs: EC exports have required subsidies; controlled domestic prices have encouraged production to shift away from the world's most efficient producers, and have had a destabilizing effect on world prices.

The problem of the disposal of surpluses was aggravated, when in May 1982, the United States, the largest importer in the free market, introduced restrictive import quotas to defend its domestic sugar price. Between the beginning 1970s and May 1982, U.S. imports had already declined by about 1.3 million tons or 27 percent, because consumption had been shifting to alternative sweeteners, in particular high fructose corn syrup. As a result of the restrictions, imports have dropped by another 1.5 million tons, and exporters with quotas are benefiting from higher prices, whereas the remaining free market sales are suffering from the effect of the U.S. policy on world prices.

Prospects for reducing the world sugar surplus within the next few years are bleak. Under the recent ISA, which expired in 1984, export restraint measures have neither been sufficient to prevent prices from falling below the margin of even the most efficient producers nor to cope with the surplus. After 1984, there will be even

less control of the world market: many former ISA members are likely to use the new freedom to increase exports and decumulate stocks, which will depress market prices even further. The situation could only be improved if the major participants liberalized their domestic markets and accepted a system of free international trade. The sugar consumer would then benefit from a shift in world sugar production to the more efficient producers.

II. Changes in the Structure of International Sugar Trade

1. Prices, consumption and production since the mid-1970s

Since the mid-1970s, there has been a tendency to overproduction in the world sugar market (Table 1, Chart 1). Production rose by an annual average of 3 percent between 1969/70 and 1981/82 to 100 million tons, while consumption rose by an annual average of only 2 percent to 90.0 million tons. 1/ Since then the gap has narrowed due to lower production growth. Stocks remained above the normal level in most years and reached an all-time high of 45 percent of consumption in 1982/1983. World prices were extremely volatile, with real prices often doubling or being halved within a single year (Chart 1).

World prices have been depressed whenever world stocks exceeded normal levels, as they did during 1976/77-1978/79, and as they have since 1981/82; prices have recovered or increased sharply whenever stocks approached or dropped below the normal stock level, as during 1979/80-1980/81. By the end of 1982, prices had declined below the estimated variable costs of raw sugar production of 6.5-7.0 cents/lb, dropping to a low of 4.0 cents/lb in August 1984. 2/ In real terms, the prices of the last quarter of 1982 barely exceeded the low of 1966, and the high of 1974 was 11 times larger than the prices of the last quarter of 1982. The main reasons for the recent worldwide accumulation of sugar have been changes in the geographical pattern of consumption and institutional factors, which have inhibited consumers and producers from responding to world market prices. As a result, the industrial countries have increased their share in world production and exports, while reducing their share in consumption.

By comparison with the industrial countries, faster growing consumption in developing countries has been due to faster growth in population

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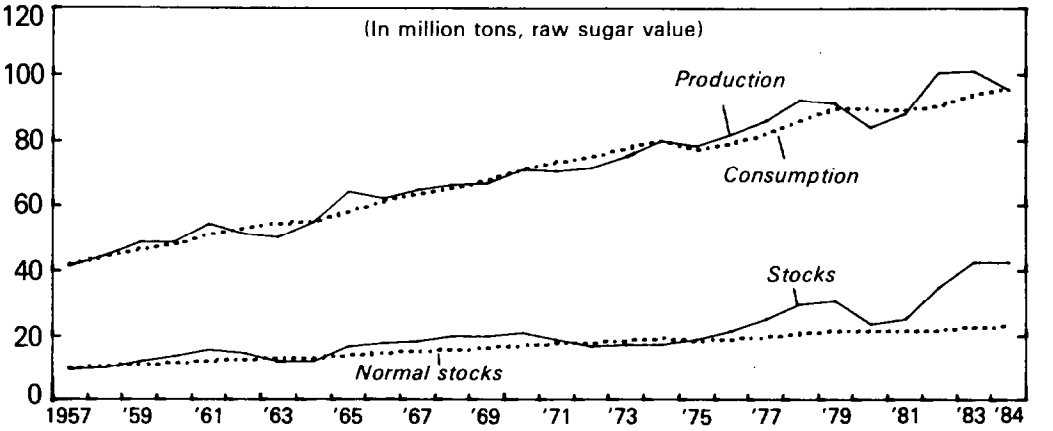
1/ Sugar years ending August.
2/ Cost estimates of Landell Mills Commodity Studies and the U.S. Department of Agriculture.

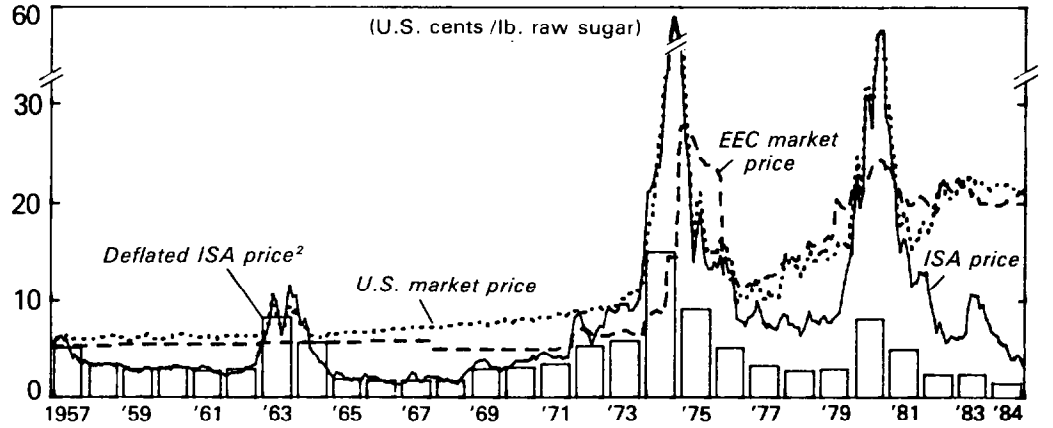
CHART 1

WORLD SUGAR TRADE

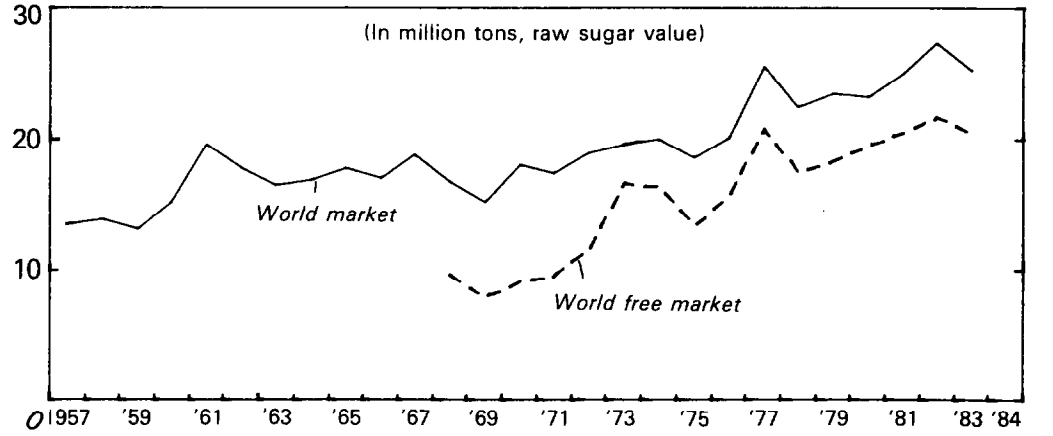
WORLD PRODUCTION, CONSUMPTION, AND STOCKS[1]



WORLD SUGAR PRICES



WORLD NET EXPORTS



Sources: U.S. Department of Agriculture, Foreign Agriculture Circular, Sugar; International Sugar Organization, Sugar Year Books.

[1] Years ending in August.

[2] In constant 1957 U.S. dollars; deflator: U.N. unit value index in U.S. dollars of manufactured exports of developed countries.

Table 1. Sugar: World Supply, Demand, Stocks and Prices

Sugar Years Ending August	Production (1)	Consumption (2)	Production Greater (+) or Less (-) than Consumption (3)	Ending Stocks (4)	Normal Stock Level 1/ (5)	Stocks/ Consumption Ratio (6)	World Prices 2/ (7)
			(Raw value in million of metric tons)				
1957	41.4	42.3	-0.8	9.6	10.1	22.7	5.2
1958	44.5	44.3	0.2	10.0	10.6	22.6	3.7
1959	48.9	46.7	2.2	12.4	11.2	26.6	3.1
1960	49.1	48.0	1.1	13.5	11.5	28.1	3.1
1961	54.4	51.2	3.2	16.0	12.3	31.2	3.1
1962	51.3	53.3	-2.0	14.7	12.8	27.6	2.6
1963	50.4	54.6	-4.2	11.9	13.1	21.8	6.4
1964	54.8	55.2	-0.4	12.2	13.2	22.1	8.1
1965	64.5	58.3	6.2	16.6	14.0	28.5	2.6
1966	62.1	61.4	0.7	18.0	14.7	29.3	2.0
1967	64.9	63.8	1.1	18.4	15.3	28.8	1.8
1968	66.5	65.3	1.2	20.0	15.7	30.6	2.0
1969	67.1	67.8	-0.7	20.1	16.3	29.6	3.1
1970	71.2	71.1	0.1	20.8	17.1	29.2	3.4
1971	70.7	73.5	-2.8	19.0	17.6	25.8	4.3
1972	71.4	74.9	-3.5	17.0	18.0	22.7	6.4
1973	75.1	77.7	-2.6	17.3	18.6	22.3	8.8
1974	80.0	80.0	0.0	17.5	19.2	21.9	18.7
1975	78.5	77.0	1.5	19.1	18.5	24.8	30.5
1976	81.7	79.2	2.5	21.2	19.0	26.8	13.6
1977	86.3	81.9	4.4	25.0	19.6	30.5	8.3
1978	92.5	85.1	6.4	29.8	20.7	34.6	7.5
1979	91.2	89.6	1.6	30.7	21.5	34.3	8.2
1980	84.2	89.5	-5.3	23.6	21.5	26.4	21.0
1981	88.3	89.0	-2.2	25.0	21.4	28.1	24.7
1982	100.5	90.5	10.0	35.0	21.5	38.7	10.4
1983	101.3	93.8	7.5	42.5	22.5	45.3	7.6
1984 E	95.6	95.6	--	42.5	23.0	44.5	6.5
1985 P	97.5	96.1	1.4	43.9	23.4	45.7	4.1 3/

Sources: U.S. Department of Agriculture, Foreign Agriculture Circular, Sugar; Sugar Sweetener Outlook and Situation; Foreign Agricultural Service Report, F.O. Licht International Sugar Report.

E = Estimate.

P = Projection.

1/ Calculated as 24 percent of current consumption.

2/ Average of the New York No. 11 spot price and the London daily price, i.e., ISA price.

3/ September 1984 - January 1985.

and income, and higher income and price elasticities. 1/ But, above all, the growing level of domestic production has influenced per capita consumption, whereas in most industrial countries, per capita production has not increased per capita consumption. 2/ In addition, many exporting and importing countries, particularly the EC, the United States, and Japan, have not passed on the decrease in world prices to their consumers. Substitute sweeteners have also reduced sugar demand in some industrial countries, especially in the United States, where high fructrose syrup (HFCS) now replaces almost 25 percent of sugar consumption. HFCS is a liquid sweetener derived from starch and used by the food manufacturing industry and is sugar's sole important competitor, apart from noncaloric sweeteners. 3/ HFCS production is likely to continue supplanting sugar in industrial countries. Consequently, most of the increase in sugar consumption can be expected to come from the developing countries, which are projected to increase their share above their current 45 per cent of world sugar consumption, reducing the share of the industrial

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1/ The World Bank estimated for developing countries the following income elasticities of per capita demand for sugar (1981, p. IV.4, 1982, p. 55): For countries with low consumption levels (mostly Asia and Africa, with less than 10 kg per capita consumption) elasticities around unity and for countries with higher consumption levels (30 kg to 40 kg per capita in most Latin American countries) elasticities around 0.7. Estimated price elasticities were relatively small with -0.02 for African, -0.06 for Asian and -0.08 for Latin American countries.

Estimates for most industrial countries (1982, p. 55) yield an average elasticity of per capita demand with respect to income of about 0.2 over the past 15 years. Over this period elasticities have been declining rapidly, however, and are now close to zero. The exceptions are Southern Europe and Japan, where elasticities average about 0.7 and where the decline has been much less marked. The centrally planned economies in Europe had an average income elasticity of demand of 0.4, but again, this value has undergone a rapid decline. The estimated price elasticities were -0.05 for industrial countries and -0.04 for the centrally planned economies in Europe.

2/ In net exporting developing countries, most of which are in the Western Hemisphere, annual consumption is relatively high, between 35 kg and 45 kg per capita, but its upward trend shows little evidence of approaching saturation. In the net importing developing countries, which are mostly located in Asia and Africa, annual per capita consumption is very low, often no more than 5 kg to 10 kg.

3/ The growth and location of HFCS production and consumption is limited by several of its properties. Its consumption is confined to a sizable food manufacturing industry because HFCS is available only in liquid form and has to be stored at constant temperatures. Its production is dependent on a reliable source of starch based feedstock, usually corn (but also sweet potatoes, wheat, rice) and also on outlets for the by-product, the protein-rich corngluten, which is used as livestock and poultry feed.

countries below their current 35 percent, while the share of the centrally planned economies in Europe is projected to remain close to their current 20 percent.

There has been only a small response in production to the recent slump in world sugar prices. This is mostly due to the insulation of the major beet producers from world price movements, and partly to the perennial nature of sugar cane, which accounts for 60 percent of world sugar production. The major beet producers, Western and Eastern Europe, and the United States, generally need government protection to compete with the developing cane-producing countries. 1/ Yields per hectare are lower for beet sugar, factory costs are higher due to the shorter harvesting season, and land charges, rent, labor and mangement costs are higher. Developing countries still produce about 50 percent of the world's sugar but they have recently lost ground in world production and exports. 2/ Net exporters among developing countries faced a decline of their share in world production from 48 percent in 1974/75 to 44 percent in 1982/83; since their share in world consumption simultaneously increased from 26 percent to 33 percent, their share in world exports fell from 69 percent to 57 percent (Table 2). 3/

2. The EC and the U.S. sweetener markets

Producers in the EC and the U.S. have been guided by national sugar policies. As a result, the EC has become a major exporter while the United States, although remaining a major importer, has reduced its needs for imports (Table 2).

1/ As an exception, only France, the most efficient beet producer, compares favorably with cane producers. In 1982, estimated raw sugar costs (ex-factory) amounted to 16.4 cents/lb. in France, equaling roughly average cane producer costs (Landell Mills Commodity Studies, 1982).

The World Bank (1981) estimates the cost of production (in 1977 constant U.S. dollars) for major producers of raw sugar to be in the range of 14 to 18 cents/lb. for beet and of 9 to 17 cents/lb. for cane. Within these ranges, costs in a given country depend on: (i) the productivity and cost of cane or beet per unit of land; (ii) the extraction rate of sugar from sugar cane or beet; (iii) the age and management efficiency of processing facilities; and (iv) wage rates. The lower-cost producers of cane are Brazil, Colombia, Cuba, El Salvador, Guatemala, Fiji, Australia, and the Philippines.

2/ Latin America accounts for more than half the production of developing countries, Cuba and Brazil being the major producers. India is the main producer in Asia, followed by the Philippines, while African countries produce little. The industrial countries supply over 30 percent of global output, while 14 percent come from the centrally planned economies in Europe.

3/ The data refer to the exporting members of the International Sugar Agreement, excluding the few industrial countries (Table 2).

Table 2. Shares of Some Major Producers in World Sugar Supply and Demand 1/

(In percent)

(September/ August)	Production 1974/ 75	Production 1977/ 78	Production 1980/ 81	Production 1982/ 83	Production 1983/ 84P	Consumption 1974/ 75	Consumption 1977/ 78	Consumption 1980/ 81	Consumption 1982/ 83	Consumption 1983/ 84P	Ending stocks 1974/ 75	Ending stocks 1977/ 78	Ending stocks 1980/ 81	Ending stocks 1982/ 83	Ending stocks 1983/ 84P	Exports 1974/ 75	Exports 1977/ 78	Exports 1980/ 81	Exports 1982/ 83	Exports	Imports 1974/ 75	Imports 1977/ 78	Imports 1980/ 81	Imports 1982/ 83	Imports 1983/ 84P
World (in 1,000 tons raw value)	78,523	92,544	86,832	101,384	95,553	77,085	86,170	88,375	93,803	95.589	18,883	29,846	21,344	27,433	...	22,850	27,247	27,240	31,701	30,670	22,975	25,955	26,513	28,452	27,839
EC 2/	11.7	13.4	14.8	14.5	12.1	14.1	12.1	11.7	10.9	10.6	6.8	10.0	13.0	15.6	...	9.3	17.8	20.6	21.3	19.3	16.0	10.6	9.0	7.4	9.9
ISA: 3/																									
Exporting members 4/	55.5	55.0	54.0	51.5	54.8	31.2	32.5	33.6	37.1	35.6	45.0	43.6	37.3	50.0	...	82.1	73.8	68.9	69.1	69.7	2.5	5.0	8.4	6.3	5.9
Importing members	19.8	18.6	17.2	15.9	17.8	35.9	35.3	34.1	33.9	31.2	32.3	26.3	30.0	27.2	...	3.3	2.1	4.7	3.2	3.6	55.4	54.6	53.1	52.4	54.0
US 5/	6.7	5.9	6.3	5.3	5.0	11.7	11.5	10.3	8.7	8.1	12.7	11.2	11.7	7.9	...	0.8	--	2.6	4.5	1.0	16.9	17.0	18.2	10.1	12.4
USSR 5/	9.8	9.5	7.9	7.3	9.1	14.2	13.8	13.9	14.0	13.8	12.4	9.3	10.2	12.6	...	0.4	0.5	0.5	0.5	0.8	14.4	14.3	15.8	20.8	20.1
Cuba 6/	8.0	7.8	7.4	7.1	8.6	0.6	0.6	0.6	0.7	0.7	5.6	4.2	2.2	5.2	...	24.0	20.2	20.2	21.4	23.1	--	--	--	--	--

Sources: United States Department of Agriculture, Foreign Agricultural Circular, Sugar, Molasses, and Honey; ISO, Sugar Year Book.

P = Provisional.

1/ Includes trade under special and bilateral arrangements.
2/ Includes intra EC-trade.
3/ Membership as of May 1982.
4/ Most members are developing countries (except for Austria, Australia, Hungary, the Republic of South Africa, and Yugoslavia.
5/ Importing member of the ISA.
6/ Exporting member of the ISA.

Sugar consumption of both the EC and the U.S. has fallen, as have their shares in global consumption (Tables 2 and 3). In the EC, per capita consumption fell from 40 kg in 1973/74 to 34.5 kg in 1982/83, causing a drop in total consumption from 11.3 to 10.2 million tons. In the United States, per capita consumption also dropped and is projected to fall below the 32.2 kg of 1983. The decline in U.S. sugar consumption from a total of 10.8 million tons in 1973/74 to 8.1 million tons in 1982/83 occurred mainly because consumption shifted to other sweeteners, in particular HFCS. 1/ Further potential inroads in the sweetener market are threatened by aspartame, a new low-caloric sweetener.

The fast development of production and consumption of HFCS in the United States has been related mainly to two factors. The potential market for liquid caloric sweeteners is large, since more than two thirds of all sweeteners are used in the manufacturing of food, in particular beverages, which have an expanding market in the U.S. Furthermore, HFCS production has benefited from its cost advantage vis-à-vis U.S. grown sugar; profitable production was maintained even during periods of low world sugar prices due to the price umbrella established by the national sugar policy. 2/

U.S. sugar policy has been geared to profitable sugar production for the domestic market. Beet and cane producers who cannot compete with low cost-producers in the world, have been protected by sugar price support programs whenever world market prices have not provided adequate returns. Otherwise, the U.S. market price has been largely determined by free market prices, as during the periods January 1975 to September 1977 and October 1979 to December 1981. The U.S. market price was quite stable compared to world prices until 1974; from then until the introduction of restrictive import quotas in May 1982 it fluctuated considerably, mostly parallel with world prices (Table 3).

1/ Sugar covered only 54 percent of total caloric sweetener consumption in 1983, compared with 76 percent in 1975. Corn sweeteners contributed 39 percent in 1983, with HFCS accounting for 23 percent or 3.2 million tons. HFCS is projected to continue its growth although more slowly, reaching 4.3 million tons in 1985 or 16.3 kg per capita. This compares with a consumption of 13.5 kg per capita in 1983.

2/ The cost of HFCS production (including capital cost) in the United States has been estimated in the range of 16-19 cents/lb. (refined sugar equivalent basis, 1981 constant U.S. dollars; World Bank, 1982, p. 59). This is substantially below the average cost of sugar production in the United States. Costs of sugar production, excluding land, have been estimated for cane (raw sugar) at 18.4 cents/lb. for 1980/81; costs of sugar production from beet have been estimated for refined sugar at 19.4 cents/lb. for 1980/81 (USDA, Shapouri H., a.o., 1982). HFCS loses its cost advantage if raw sugar prices fall below 12 cents/lb. in the U.S. (1981 constant U.S. dollars).

Table 3. United States Sugar Supply Balance

(In 1,000 tons raw value)

Years Ended August	Area Harvested (1,000 ha.)	Yield (t/ha.)	Production	Consumption	Ending Stocks	Exports	Imports	Cents/lb. Raw Sugar U.S. market price 1/	Cents/lb. Raw Sugar World market price 2/
1957	642	7	4,188	8,200	1,898	9	3,779	6.2	5.2
1958	639	6	4,013	8,341	1,879	11	4,315	6.2	3.7
1959	652	7	4,401	8,571	1,850	6	4,147	6.2	3.1
1960	691	6	4,460	8,671	1,913	5	4,279	6.3	3.1
1961	738	7	4,805	8,868	1,678	6	3,834	6.4	3.1
1962	749	7	4,899	9,186	1,660	3	4,192	6.4	2.6
1963	814	6	5,842	9,256	1,512	4	4,070	7.4	6.4
1964	908	6	5,854	9,194	1,729	5	3,562	7.7	8.1
1965	887	7	5,985	9,253	1,956	3	3,498	6.6	2.6
1966	816	7	5,483	9,589	1,693	3	3,846	6.9	2.0
1967	809	7	5,518	9,535	1,927	1	4,252	7.2	1.8
1968	950	6	5,466	9,535	2,383	1	4,526	7.4	2.0
1969	987	6	5,792	9,716	2,782	1	4,324	7.7	3.1
1970	896	6	5,592	10,043	3,096	1	4,756	8.0	3.4
1971	954	6	5,605	10,579	2,943	--	4,821	8.3	4.3
1972	945	6	5,564	10,900	2,580	--	4,973	8.9	6.5
1973	722	8	6,045	11,179	2,546	--	5,099	9.7	8.8
1974	920	6	5,378	10,826	2,444	--	5,346	18.5	18.7
1975	908	6	5,254	8,997	2,399	189	3,887	32.0	30.5
1976	1,061	6	6,535	9,800	2,718	80	3,664	15.1	13.6
1977	928	7	6,234	10,019	3,375	40	4,482	10.9	8.3
1978	829	7	5,436	9,872	3,335	14	4,414	12.7	7.5
1979	837	7	5,557	9,751	3,549	12	4,416	14.9	8.2
1980	769	7	5,187	9,519	2,903	336	4,822	23.3	21.0
1981	757	7	5,505	8,916	2,774	1,146	4,428	26.6	24.7
1982	783	7	5,435	8,529	2,604	272	3,196	18.4	10.4
1983	721	7	5,110	8,024	2,410	145	2,865	21.7	7.6
1984 E	723	7	4,836	7,750	2,613	325	3,442	21.9	6.5

Sources: U.S. Department of Agriculture.

E = Estimate.

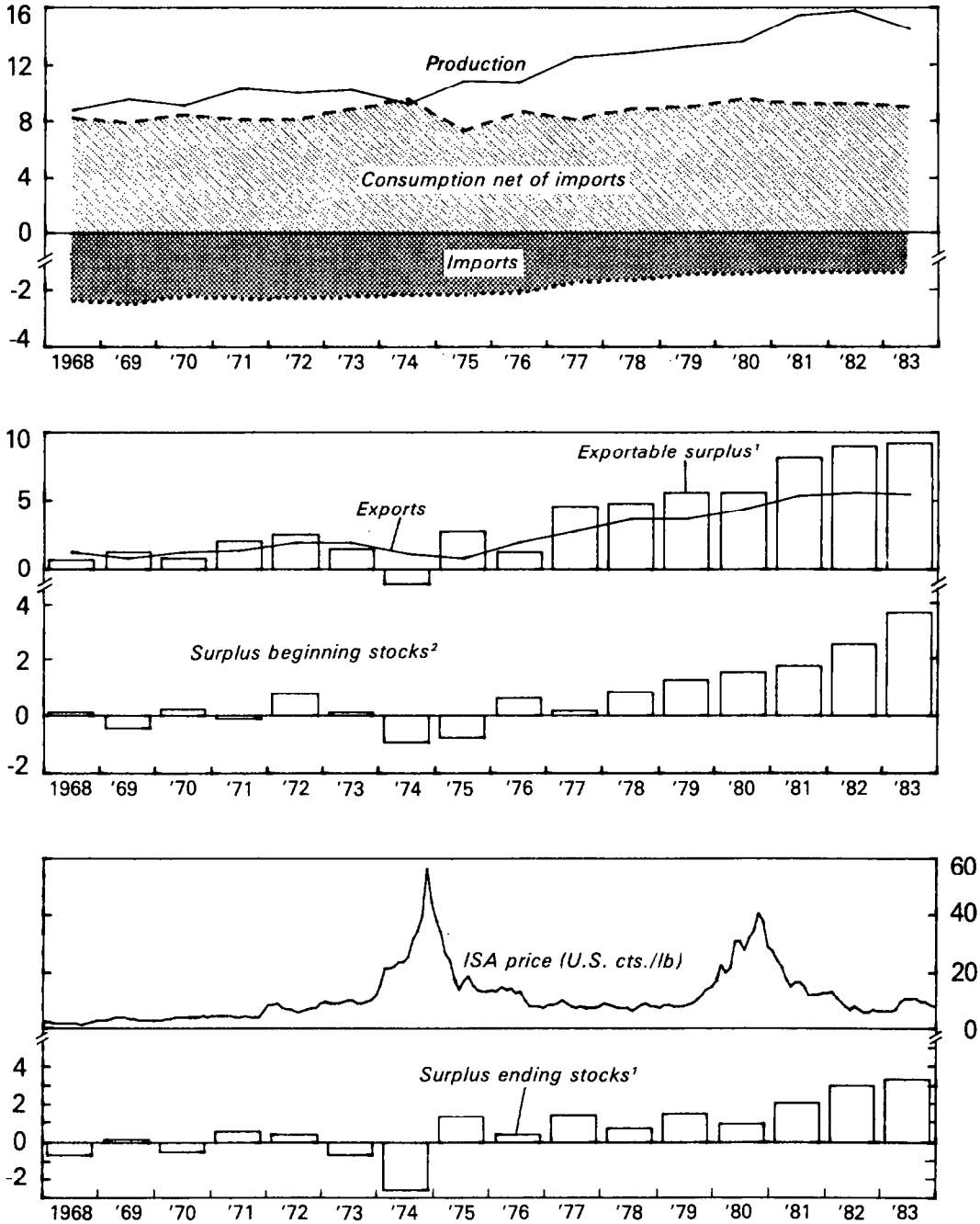
1/ It is the price of sugar imports into the United States (c.i.f. duty fee paid) which serves as the domestic price of raw sugar: New York spot, Contract No. 12. Normally the U.S. import price exceeds the free market price because it is on a c.i.f. basis whereas the free market price is on a f.o.b. basis.

2/ ISA daily price: arithmetical average of the New York contract No. 11 spot price (raw sugar, f.o.b., stowed Caribbean Port in bulk) and the London Daily Price (f.o.b., stowed Caribbean Port in bulk).

CHART 2

EUROPEAN COMMUNITY: SUGAR TRADE

(In millions, raw value)



Sources: International Sugar Organization, Year Books; staff estimates.

[1]Exportable surplus: Production minus consumption net of imports plus surplus beginning stocks.

[2,3]Surplus beginning (ending) stocks: Deviation of stocks from the estimated normal stock level at the beginning (end) of the period.

Although U.S. sugar production increased only modestly during the 1970s, and returned in the 1980s, due to reduced plantings, to the low level of the early 1960s, the 4.8 million tons produced in 1983/84 accounted for 62 percent of consumption compared with a ratio of 56 percent in 1969/70 (Table 3). Correspondingly, sugar imports declined in absolute and relative terms. They accounted for 3.4 million tons or 44 percent of consumption in 1983/84 compared to 4.8 million tons or 47 percent in 1969/70. Some part of the decline since 1981/82 reflects the introduction of country-specific import quotas in May 1982.

Throughout the EC, sugar production has increased rapidly since 1975, when the Community adopted special incentives for production in response to the worldwide shortage of sugar in 1974. Production expanded by 32 percent during the second half of the 1970s and by another 22 percent during the two years that ended in 1981/82, when output peaked at 16.3 million tons. Subsequently production declined as a result of lower planting and an exceptionally bad yield in 1983/84 to a low of 12.0 million tons, which will be succeeded by a recovery to about 13.0 million tons in 1984/85. Community producers have benefited from stable guaranteed prices, which have exceeded world market prices by an average 71 percent between 1968/69 and 1983/84. The EC intervention price increased by 108 percent until 1983/84, with the largest increases occurring in the second half of the 1970s.

In the face of declining consumption, and despite a 38 percent reduction in imports, a growing gap has developed between EC production and demand since the mid-1970s. The gap has been reflected mostly in export growth, but in the past few years also in the accumulation of stocks (Chart 2).

3. The framework of international sugar trade

Not all the production which enters world trade is subject to world market conditions. Instead, 20 percent of world net exports are traded under special arrangements (Table 4, Chart 1). These special arrangements include exports from developing countries to the EC under the Lomé Convention, Cuban exports to Socialist countries and exports from the U.S.S.R. to Socialist countries. Trade under these special arrangements explains why trade data from Cuba and U.S.S.R. differ so much in both markets (compare Tables 2 and 4). In the total market, Cuba was the largest sugar exporter until 1983/84, accounting for about 1/4 of world exports, however, in the free market Cuba held that position only temporarily during the 1970s and never accounted for more than 15 percent of the market. Similarly, the U.S.S.R. has been the second largest importer of sugar in the total market, with shares of 14 percent to 20 percent since the mid-1970s, but in the free market it has only been a major importer since 1980, with a share of about 10-15 percent. Since the introduction of import quotas by the United States in May 1982, the U.S.S.R. has emerged as the largest importer in both the world and the free market.

Table 4. Major Participants in the World Free Market of Sugar

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
						(Raw value in '000 tons)								
Memorandum item:														
World production	72,896	73,959	75,652	77,818	76,397	78,842	82,403	90,356	90,605	89,210	84,392	91,932	100,743	96,815
Exports														
World exports 1/	21,695	20,934	21,786	22,478	22,097	20,603	22,757	28,422	25,037	25,929	26,726	28,952	30,403	28,777
World net exports 2/	18,053	17,337	18,973	19,548	19,914	18,505	20,074	25,445	22,355	23,397	23,194	25,039	27,304	25,267
World net exports to the free market 3/	13,948	14,455	16,567	16,486	16,240	13,351	15,553	20,749	17,443	18,264	19,417	20,480	21,613	20,494
							(In percent)							
Shares in world free market net exports														
EC 1/	143	80	809	780	138	—	1,174	2,310	3,321	3,388	4,233	5,277	5,513	4,798
	(1.0)	(0.6)	(4.9)	(4.7)	(0.8)	—	(7.5)	(11.1)	(19.0)	(18.6)	(21.8)	(25.7)	(25.5)	(23.4)
ISA exporting 4/ members	11,592	12,529	14,307	14,316	14,727	12,483	13,301	17,254	12,934	14,020	14,421	14,575	14,831	14,574
	(83.1)	(86.7)	(86.4)	(86.8)	(90.7)	(93.5)	(85.5)	(83.1)	(74.2)	(76.8)	(74.3)	(71.1)	(68.6)	(71.1)
Of which:														
Cuba	2,103	2,159	1,801	1,774	2,169	1,652	1,380	1,483	2,006	2,057	2,189	2,243	1,697	1,686
	(15.1)	(14.9)	(10.9)	(10.8)	(13.4)	(12.4)	(8.9)	(7.1)	(11.5)	(11.3)	(11.2)	(10.9)	(7.9)	(8.2)
Australia	1,660	1,779	2,315	2,124	1,828	1,976	2,621	2,965	2,002	2,003	2,410	2,979	2,504	2,422
	(11.9)	(12.3)	(14.0)	(12.9)	(11.3)	(14.8)	(16.9)	(14.3)	(11.5)	(11.0)	(12.4)	(14.5)	(11.6)	(11.8)
Brazil	1,102	1,119	2,628	2,975	2,303	1,730	1,252	2,487	1,925	1,942	2,662	2,670	2,788	2,800
	(7.9)	(7.7)	(15.9)	(18.0)	(14.2)	(13.0)	(8.0)	(12.0)	(11.0)	(10.6)	(13.7)	(13.0)	(12.9)	(13.6)
Philippines	1,178	1,411	1,262	1,455	1,636	1,006	1,515	2,575	1,419	1,157	1,793	1,277	1,301	999
	(8.4)	(9.8)	(7.6)	(8.8)	(10.1)	(7.5)	(9.7)	(12.4)	(8.1)	(6.3)	(9.2)	(6.2)	(6.0)	(4.8)
						(Raw value in '000 tons)								
Imports														
World imports 1/	21,273	20,624	21,233	22,426	21,519	20,504	21,932	27,032	24,877	24,004	26,553	28,043	29,390	27,152
World net imports 2/	17,630	17,026	18,421	19,497	19,336	18,406	19,249	24,056	22,194	22,472	23,021	24,130	26,290	23,642
World net imports from the free market 3/	13,615	14,248	15,973	16,688	15,690	13,523	14,902	19,553	17,423	17,724	19,483	19,688	20,798	19,202
							(In percent)							
Shares in world free market net imports														
ISA importing members 4/	9,086	9,417	11,002	11,077	10,231	8,362	9,911	12,178	9,677	10,512	10,787	10,119	10,512	10,297
	(66.7)	(66.1)	(68.9)	(66.4)	(65.2)	(61.8)	(66.5)	(62.3)	(55.5)	(50.5)	(55.4)	(51.3)	(50.5)	(53.5)
Of which:														
USA	4,744	4,992	4,913	4,821	5,188	3,312	4,159	5,271	4,237	4,422	3,215	3,679	2,343	2,465
	(34.8)	(35.0)	(30.8)	(28.9)	(33.1)	(24.5)	(27.9)	(27.0)	(24.3)	(24.9)	(16.5)	(18.6)	(11.3)	(12.8)
Canada	984	935	939	952	905	953	887	973	947	943	893	768	816	910
	(7.2)	(6.6)	(5.9)	(5.7)	(5.8)	(7.0)	(6.0)	(5.0)	(5.4)	(5.3)	(4.6)	(3.9)	(3.9)	(4.7)
Japan	2,480	2,363	2,744	2,396	2,836	2,441	2,505	2,785	2,352	2,684	2,315	1,596	2,233	1,856
	(18.2)	(16.6)	(17.2)	(14.4)	(18.1)	(18.1)	(16.8)	(14.2)	(13.5)	(15.1)	(11.9)	(8.1)	(10.7)	(9.6)
USSR	n.e.5/	n.e.	799	1,106	n.e.	247	644	1,082	70	178	2,220	1,989	2,916	2,856
	--	—	(5.0)	(6.6)	--	(1.8)	(4.3)	(5.5)	(0.4)	(1.0)	(11.4)	(10.1)	(14.0)	(14.8)

Sources: International Sugar Organization, Sugar Year Books, Statistical Bulletins.

1/ Intra EC-trade excluded.
2/ The total of countries' exports (imports) after deducting their imports (exports) of sugar.
3/ The sum of each country's net exports (imports) after deducting its net exports (imports) under special arrangements. These special arrangements include exports to the EEC under the terms of the Lomé Convention, and under the Agreement of July 1975 with India, Cuban exports to Socialist countries and USSR exports to Socialist countries.
4/ Membership as of May 1982. For continuity purposes, the composition of the group of ISA members was kept unaltered during the period 1970-83. In reality, the composition has often changed, and for the subperiod 1974-77 there was even no active International Sugar Agreement.
5/ Net exporter: n.e.

Although the world free market is defined as the trade--either net exports or net imports--of all countries outside these special arrangements, some part of it is still not the result of free market forces. Countries often maintain long-term bilateral arrangements at preferential prices. It is estimated that as much as 50 percent of world sugar trade is conducted under long-term contracts, mainly on a government-to-government basis. As a result of the recent increase in bilateralism, the remainder of the free market has been shrinking. Simultaneously, the ability of responding to supply shocks has been adversely affected and with it the stability of world market prices.

The EC has a special position in international sugar trade. One of the reasons is that it maintains its own multilateral sugar import system under the Lomé Convention. Historically, some countries in Africa, the Caribbean and the Pacific (ACP), which had been traditional exporters to the United Kingdom, acquired the special status to continue their exports at favorable conditions after the United Kingdom entered the EC. 1/ The special import status was formalized in the Sugar Protocol of the Lomé Convention. Its preferential imports of about 1.4 million tons of raw sugar add to gross EC imports, but they do not affect net EC imports, because an equal amount is exported in refined form. The EC budget subsidizes the difference between the import price under Lomé and world market prices for refined exports. Another reason for the Community's special position has been its decision not to join the ISA.

The ISA was in effect intermittently since 1954; the recent Agreement expired at the end of 1984. The Agreement between consuming and producing countries aimed at stabilizing prices on the free market within an agreed range, recently 13-23 cents per lb.; stabilization was to be achieved through a system of export quotas and special stocks of 2.5 million tons of sugar, nationally owned but internationally controlled. Member countries could obtain financing through the Buffer Stock Financing Facility of the Fund. The Agreement also contained provisions for the limitation of imports of sugar by members from nonmembers, which was to be activated or abandoned in response to world market price developments, similar to the application of the other ISA instruments.

The instruments of the ISA have proved insufficient to prevent the price from fluctuating widely from a peak of 41 cents/lb in October 1980 to 4 cents/lb since September 1984. In particular, export quotas were ineffective holding the supply of ISA members to the free market down to its residual import requirement. Although since 1981 actual export quotas were kept at the minimum foreseen under the Agreement, they exceeded every year the residual import requirement of the free market, and since 1982, by a considerable margin of about one third.

1/ See Appendix I.

Since a new Agreement on economic quantitative provisions could not be reached, an administrative agreement was concluded for 1985 to 1986, providing only a platform for cooperation in sugar matters and eventual negotiations for a new ISA. The absence of a successor economic agreement to the ISA implies further downward pressure on world market prices, as major exporters are expected to use the freedom from export restrictions and stock requirements for increasing exports.

4. The world free market

The structure of the world free market has changed markedly since the mid-1970s (Table 4). On the export side, the EC has emerged as the largest net exporter, accounting for 23 percent of the free market in 1983, and for almost the entire market growth of about 5 million tons. EC production has expanded rapidly since the mid-1970s and exports benefited from the preference of developing countries for white sugar imports; this has been reflected in a shift to white sugar trade. 1/ At the same time, the members of ISA kept their net exports at about 14 million tons, accepting a decline in their market share from 86 percent in the early 1970s to 71 percent by 1983. For recent years, this reflects voluntary export restraint on the part of the ISA members. In addition, the EC has recently exercised some export restraint by relegating some of its surplus production to extra stocks (Chart 2). In 1981, the surge in EC exports to 5.3 million tons and in the exportable surplus to about 7.9 million tons was accompanied by a sharp decline in world market prices. The price decline has continued almost without interruption through 1984, while exports have remained virtually unchanged, with the exportable surplus increasing further until 1983, followed by a reduction in 1984.

On the import side, the share of ISA members accounted for only 53 percent of the free market in 1981; the same group of countries had had an import share of about 65 percent during the first part of the 1970s. The largest importer, the United States, reduced imports from

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1/ The recent shift from raw to white sugar in international trade has weakened the position of the traditional exporters of raw sugar. Estimated raw sugar exports in 1982 were only 4 percent larger than in 1970, whereas white sugar exports doubled. The shift has been related to the rapid growth in sugar imports by developing countries and to their preference for white sugar (especially in the oil-exporting countries). At the same time, producers of beet sugar have benefited from their cost advantage over the cane producers in refining sugar to the white stage. The net exporters of white sugar (mostly the EC, but recently also India) have determined the price margin between raw and white sugar on the world market, and the margin has been very low, thus posing a problem for the cane producing exporters of raw sugar, which are mainly developing countries.

about 4.8 million tons in the early 1970s to about 3.5 million tons by the beginning of the 1980s; consequently, the U.S. share fell from about 32 percent to about 18 percent. After the introduction of restrictive import quotas in May 1982, U.S. imports dropped to 2.4 million tons or 12 percent.

III. The EC Sugar Policy Since the Mid-1970s

1. The EC sugar regime

In order to achieve income support and guaranteed sugar supplies in the Community, the EC sugar regime operates through a system of support prices, and subsidies and levies on sugar exports and imports. The EC sugar market has been regulated by three successive regimes, a transitory regime during 1968/69-1974/75, a second regime during 1975/76-1980/81 and the current regime for 1981/82-1985/86. The sugar regime differs from most other EC support regimes in two respects: intervention buying is not open-ended but restricted by quotas, and producers pay for the cost of surplus disposal.

The support prices are fixed annually for the EC sugar marketing year (beginning on July 1). They usually refer to the processed product in the form of white sugar of standard quality and apply to bulk sugar, ex-factory and f.o.b. The support system consists of five prices: the target price, a purely theoretical price serving as reference for the intervention price which is the minimum price guaranteed to producers and fixed at 5 percent below the target price; the basic beet price (or if the price is net of certain production levies, the minimum beet price) applies to beet processors; it is derived backwards from the white sugar intervention price by allowing for the processing margin, the yield of sugar from beet, the beet processor's receipts from molasses sales (counted as credit), and the costs of delivering beet to processors; finally the threshold price, which is the minimum selling price for third country imports (excluding preferential imports) and is safeguarded by a system of variable imports levies.

At the intervention price, agencies in each member country are required to purchase, within the maximum production quota, sugar offered to them. In the sugar deficit areas (Italy, the United Kingdom and Ireland) the intervention prices exceed the common Community price by the costs of transportation from the main surplus area. In practice, however, intervention purchases have been small; instead the export refund system has become the major instrument of domestic price support. Under this system, traders bid for the refund (restitution) they need to be able to compete on the world market. Restitutions are granted on quantities assumed to be in surplus of internal needs, whenever the world market price is below the threshold price, which is the minimum selling price for imported sugar. Correspondingly, imports levies

equal the difference between both prices. In the reverse situation, when the world market price exceeds the threshold price, import subsidies may be granted, and an export levy shall be charged on EC exports. The provisions for an import subsidy and an export levy were introduced in response to the 1974 sugar shortage and boom in world market prices. So far, export levies have been applied in 1974, 1975, 1980 and 1981, while import subsidies were paid only in 1974 and 1975.

The production quota system consists of three quotas: "A", "B" and "C". Together, the A and B quotas constitute the maximum quota and the amount of sugar which enjoys price guarantees. Sugar produced above the maximum quota, referred to as C sugar, is to be exported without any price support. Each member country receives a national A and B quota. The total of national A quotas is roughly equivalent to the estimated Community's demand.

Under the current sugar regime (1981/82-1985/86) the extent of price guarantees on A quota and B quota sugar has been reduced in order to achieve self-financing of the restitution scheme. A production levy of 2 percent of the intervention price applies on the A and B quota. If it is insufficient, an additional levy of up to 30 percent may be charged on B quota production, and, if necessary, a further 7.5 percent levy in the following year, thus increasing the overall levy on B sugar to 39.5 percent of the intervention price.

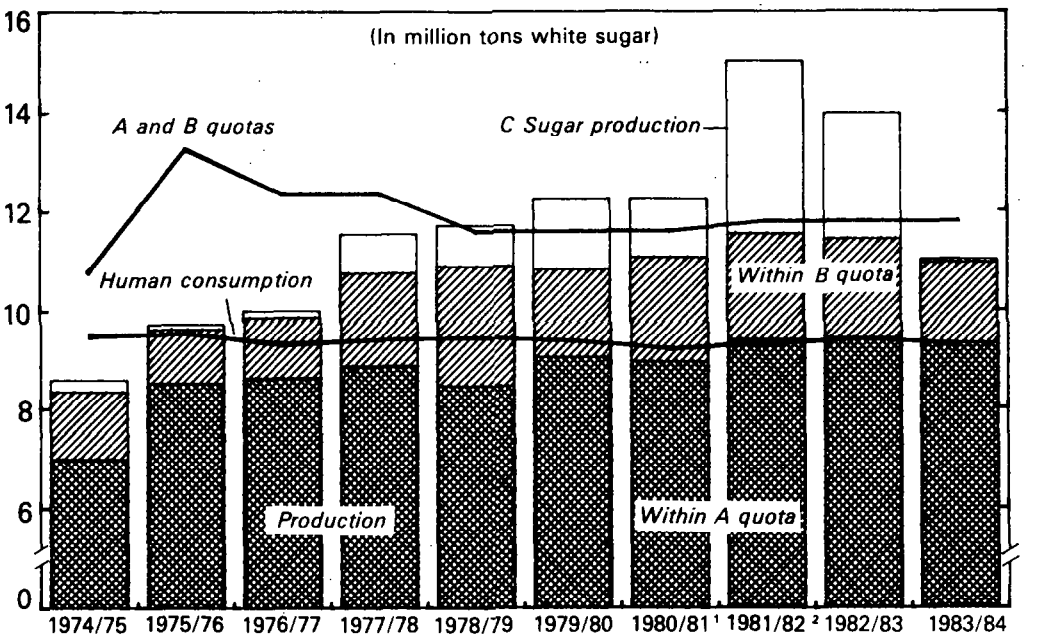
As a result of the EC sugar policy, Community stocks have increased in recent years. Apart from holding compulsory minimum stocks as a safeguard against scarce Community sugar supplies, producers may carry forward B or C sugar into the next sugar year, which then will be charged against the A quota. At present, the maximum amount for carry-over is limited to 20 percent of the A quota. In response to falling world market prices, producers opted for increased carry-over stocks in 1981/82 and 1982/83. Since 1981/82, producers have been encouraged to accumulate supplementary quota stocks in order to relieve the pressure on world market prices caused by EC exports of quota sugar. In 1981/82 and 1982/83 they met the Community's annual target of 700,000 tons of supplementary stocks.

2. The impact on domestic sugar production and consumption

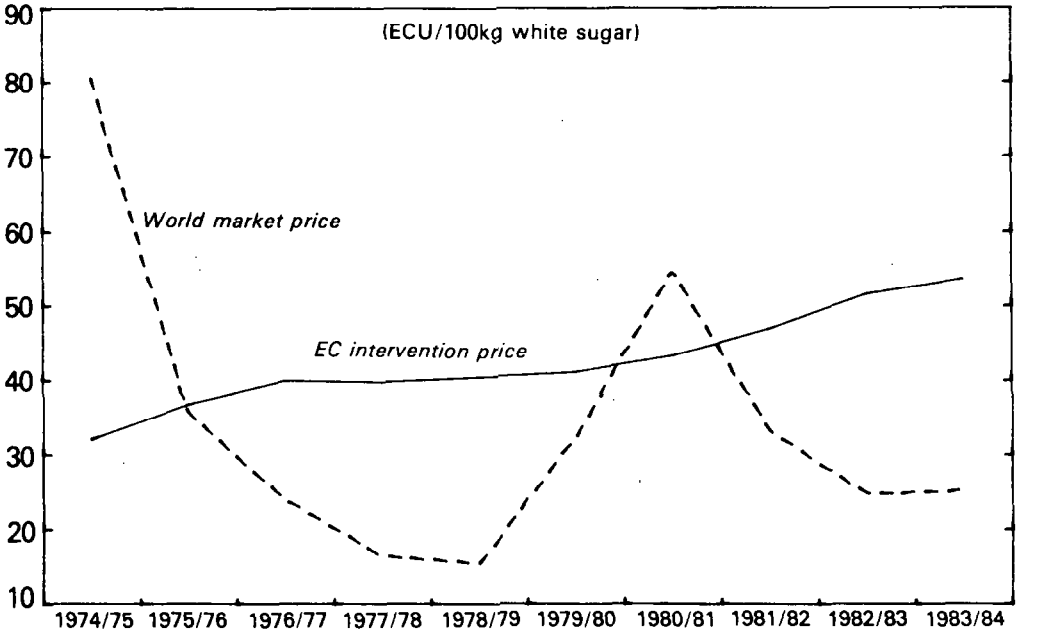
All three sugar regimes have met, with varying degrees of success, the dual targets of the Common Sugar Policy: to limit overall EC sugar production while ensuring production in less suited areas and stimulating production in most suited areas. While the first sugar regime (1968/69-74/75) was still characterized by voluntary production restraint, the second sugar regime (1975/76-1981/82) was geared to stimulation of production in response to the 1974 sugar shortage. The quotas were increased substantially and and far above domestic needs; the producer levies were reduced, and the intervention price was raised by an average annual 7 percent or a total of 47 percent, on top of the already exceptionally high increase of 12 per cent in 1974/75.

CHART 3

EC: SUGAR CONSUMPTION, QUOTA ALLOCATIONS, PRODUCTION, AND PRICES



EC AND WORLD SUGAR PRICES



Sources: I. Roberts, G. Tie and S. Murphy, EC sugar policy and world market prices, Quarterly Review of the Rural Economy, Vol. 3, No. 4, November 1981; Commission of the European Communities. The Agricultural Situation in the Community, several annual reports; CAP-Monitor, April 1982; Green Europe, Newsletter on the Common Agricultural Policy; F.O.Licht, International Sugar Report, Vol. 114, No. 31.

[1] Excluding Greece which did not have a quota at the beginning of the crop year 1980/81.

[2] From 1981/82 on including Greece. To the EC quotas, Greece adds 0.29 million tons for A sugar and 0.03 million tons for B sugar.

The current sugar regime was designed in view of growing problems with the disposal of surplus Community sugar. A moderate increase of 1 percent in the A quota of the former nine members of the EC (excluding Greece) and an 11 percent reduction of the B quota, as well as the full responsibility of producers for losses from surplus disposal, reflect the attempt to bring production in line with market outlets. 1/ Nevertheless, the quota policy continued to set the maximum production limits far above the Community's consumption requirements (Chart 3). Only the A quota turned out to be broadly in line with consumption, whereas the recent cut in B quotas has failed to interrupt sugar expansion. Moreover, as the quota policy does not restrict production of C sugar, producers have been free to expand production beyond quota limits, which they have increasingly done since quotas have been reduced.

The increase in EC sugar output since 1975/76 has reflected extensive use of production quotas. Although the maximum quota of 11.8 million tons in 1982/83 was only 1.0 million tons larger than in 1974/75, actual quota production increased during the same period by 3.1 million tons to 11.4 million tons, because of the low level of quota uptake at the beginning of the second sugar regime. Use of A quota rose from 89 percent in 1974/75 to 98 percent by 1982/83, and of the B quota from 47 percent to 92 percent. B quota production doubled to 2.1 million tons by 1982/83, although the B quota has been gradually reduced by an overall 45 percent from its peak in 1975/76. Overall production increased by 63 percent, led by a twelve-fold increase in C sugar production from 0.2 million tons in 1974/75 to 2.5 million tons in 1982/83. With a share of 18 percent in the total production of 1982/83, C sugar has become increasingly relevant for EC sugar output and will be even more so in the future (Chart 3).

With the increasing share of C sugar in total output, production decisions appear to depend increasingly on world market prices. When the share of C sugar was still small, its response to price declines was slow and small (Chart 3); the high capital intensity of sugar beet production, the specialized nature of the equipment, and the EC price support made C sugar production affordable. The intervention price allows the more efficient Community producers to produce C sugar on a marginal cost basis for disposal at world market prices. Even some of the less efficient producers have found it rewarding to hedge against yield shortfalls by planting an extra acreage so that they were able to fulfill their A and B quotas even in bad years.

1/ The target of aligning Community production with world market needs was also pursued by continuing the production quota system for isoglucose production. This system, similar to the one for sugar, was introduced in July 1979. The total production quota for isoglucose has been kept at the modest size of 1 1/2 percent of the maximum sugar quota, and the EC has been a net importer of isoglucose.

However, after the continuous substantial deterioration in world market prices and the build-up of high Community stocks, producers decided in 1982/83 and again in 1983/84 to cut acreage and thus C sugar production. The decision was consistant with the Community's efforts to contain exports, which began in 1981/82 with the stocking instead of exporting of quota and C sugar. Due to poor weather in 1983/84, there was virtually no C sugar, and B sugar output far short of the quota and subsequently some reduction in stocks; in response producers expanded acreage again in 1984/85 to the range prevailing prior to the peak of 1981/82, thus aiming at a C sugar output of 10-18 percent of total production.

The EC price policy has had a negative impact on consumption and has been costly for EC consumers. Consumers have incurred costs in two forms: directly through producer prices exceeding world market prices, and indirectly through tax funds being used to subsidize exports (Table 5). The direct or opportunity costs to consumers, accounting for the major share of overall costs, have fluctuated widely due to the instability of world market prices. The budgetary costs from export subsidies have also been determined by world market price fluctuations, but in addition by the growth in exports of quota sugar and, more recently, the larger financial participation of producers, which has prevented the consumer costs of export subsidies from surging far above the peak of 1978/79.

However, the EC sugar policy has also had benefits for the consumer. Without the Common Sugar Policy, the consumer would be more dependent on world market supplies, which could involve less supply security and probably would be more costly in times of a world wide sugar shortage. Assuming that planting decisions reflected past developments of world market prices, thereby enforcing the price cycle, Community producers themselves would add to fluctuations in world supply, whereas under the Common Sugar Policy planting decisions are, in principle, made under the stable conditions of guaranteed prices. The level of guaranteed prices has permitted producers to hedge against low yields by planting extra acreage. As a result, the yield-related variation in Community sugar supply has been transmitted to the rest of the world via changes in exports, rather than being reflected in import fluctuations; however, since 1981/82 there has been some change in EC policy towards stabilizing exports via stocking measures in response to the cost of sugar disposal in depressed world markets.

Table 5. Consumer Costs of the EC Sugar Price Support Policy

	Human Consumption Per Capita	Human Consumption White Sugar	Degree of Self-Supply	Estimated Cost Per Ton of White Sugar Consumed	of Which		EC Intervention Price
	(kg/head)	(In million tons)	(In per cent)	- - - - - - - - (In ECUs) - - - - - - -	from net expenditure on export restitutions	from difference between EEC intervention price and world market price	(ECU/ton of white sugar)
1974/75	36.7	9.47	90	-482	3	-485	320
1975/76	36.7	9.52	101	18	6	12	368
1976/77	34.6	9.31	110	192	31	161	401
1977/78	36.1	9.38	123	281	48	233	397
1978/79	36.3	9.43	123	300	50	250	405
1979/80	36.0	9.36	130	99	11	88	411
1980/81	35.0	9.19	130	-97	16	-113	433
1981/82 1/	35.0	9.50	157	333	42	290	470
1982/83 2/	34.5	9.39	147	321	53	268	515

Sources: Commission of the European Communities, The Agricultural Situation in the Community, several annual reports; Bulletin of the European Communities, Supplement 6/80, Reflections on the common agricultural policy; staff estimates.

1/ Data include Greece; before 1981/82: EC-9.
2/ Provisional.

3. The budgetary costs of the EC sugar regime

Export restitutions have become the major expenditure item of the sugar program since the tremendous growth in exports of quota sugar, which began in 1977 (Table 6). The expenditure on the sugar program by the European Agricultural Guarantee and Guidance Fund (EAGGF) has risen from ECU 229 million in 1976 to ECU 1,316 million in 1983. Export refunds have accounted for more than half the expenditure, with most of the remainder being used for the refund of storage costs. Net expenditures on sugar support were reduced after the introduction of the maximum producer levy in 1982/83. Stockpiling prevented a further immediate increase in export restitutions and may have helped to mitigate the downward pressure on world market prices, but substantial storage costs were incurred and, as storage levies increased, passed on to the consumer. 1/

The Common Sugar Policy has not been self-financing. Only in years of exceptionally good world market prices, like in 1980, were the receipts from the sugar levies sufficient to cover 80 percent of the expenses. Export refunds were self-financing only in that year. In normal years, however, 35 percent to 50 percent of the expenses under the sugar program had to be financed by transfers from the EC budget. Even under the current regime, which aims at budget neutrality of quota sugar exports, the balance can only be achieved so long as the costs remain within the margin set by the maximum producer levy. 2/

4. The impact of the EC sugar policy on the world market

Several factors indicate that the EC sugar policy tends to increase the volatility of world market prices. 3/ First, exogenous supply fluctuations from adverse weather conditions are greater with the present policy than under liberalized trade. This is due both to the greater instability (frequency and magnitude) of yields in the EC than in the rest of the world, which could be observed during 1962-79, and to the larger share of Community in world production, that EC price support

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1/ Storage costs are reimbursed through a flat refund to the producer. They are financed by a storage levy charged on sales of sugar.

2/ Producer levies (in percent of the intervention price): 2 percent on A sugar and a maximum of 39.5 percent on B sugar. In 1981/82 producer levies of 2 percent on A and 32 percent on B sugar were applied. In 1982/83 the levy on B sugar was raised to 39.5 percent (where it remained through 1984/85) to reimburse Community funds for the net expenses on export restitutions during 1981/82. Producer levies were sufficient to cover costs of exports (excluding the re-export of sugar imported from ACP countries) in 1982/83 but too small in 1983/84; thus a balance may be attained only over a period of several years.

3/ See U. Koester and P. Schmitz (1981).

Table 6. EC Sugar Support Costs and Receipts from Sugar Levies

Year	Costs of Sugar Program: Export restitutions	Costs of Sugar Program: Other 1/	Costs of Sugar Program: Total	Sugar Support Costs/EAGGF Guarantee Section Expenditure	Receipts From Sugar Levies	Expenditure Less Receipts
	(In millions of ECUs)			(In per cent)	(In millions of ECUs)	
1974	9	100	109	3.5	75	34
1975	37	272	309	6.5	80	229
1976	62	167	229	4.1	133	96
1977	409	189	598	8.8	321	277
1978	640	238	878	10.1	411	467
1979	685	255	940	9.0	467	473
1980	286	289	575	5.1	467	108
1981	409	358	767	6.9	483	284
1982	774	498	1,242	10.0	706	536
1983	758	558	1,316	8.3	948	368
1984 2/	1,140	462	1,602	8.7	1,225	377

Source: Commission of the European Communities, The Agricultural Situation in the Community, several annual reports.

1/ Mainly storage charges. The remainder consists of reimbursement to producers, refining subsidies, producer refunds for sugar sales to the chemical industry, and import subsidies (the latter were exceptionally large in 1975: 175 million ECUs).
2/ Commission estimate.

policy stimulates. 1/ Secondly, the EC sugar policy tends to accentuate the cycles of world market prices to the extent that EC production is linked to changes in world market prices.

Under the current EC policy the amplitude of price cycles could be greater or smaller than under free trade, depending on the price elasticities of demand and supply. If EC price policy implied total insulation from world market prices for EC producers, the policy would reduce the cycles of world sugar prices, provided that the elasticity of production with respect to EC prices were larger than the elasticity of Community demand. Indeed, the price elasticity of production commonly exceeds the one of demand in empirical studies of the EC market. 2/ Thus, under the EC price policy, the destabilizing consumer behavior would be overcompensated by the absence of destabilizing producer decisions, whereas under free trade, the stabilizing effect of consumer behavior would be overcompensated by the destabilizing response of producers to changes in world market prices. However, under the current EC policy, producer decisions are linked to changes in world market prices through producer levies and the production of C sugar. Moreover, the links have recently been enforced with the increasing producer participation in the subsidizing of quota sugar exports and the growing share of C sugar production. Therefore, the EC price system is apt to increase the world price cycles insofar as the EC share in the world free market is larger than without the price system, and the residual part of EC production which is designated for the free market responds to large world price fluctuations with a lag, thus enforcing the price cycle.

1/ Estimates (employing the price elasticities of production presented in Appendix II) show that during the period 1969-80, EC production would have been on average 21 percent to 29 percent smaller at world market prices in all years when world prices were below the EC producer prices. In the years of higher world prices, 1974, 1975 and 1980, the producer response could have resulted--on average--in production that was 34 percent to 44 percent larger.

In addition, the EC price policy has had a sizeable effect on the accumulation of world stocks. More than 50 percent of the movements in the world stock ratio may be explained by the behavior of EC production relative to EC consumption (Appendix II). Furthermore, this has influenced world prices, because the world stock ratio determines, in part, world prices. For the response of world prices to changes in the world stock ratio an elasticity of -2.88 has been estimated (compared to an elasticity of -6.27 in response to changes in world production).

2/ For the EC U. Koester and P. Schmitz (1982) estimate price elasticities of demand of -0.1 (short-term) and -0.3 (long-term) and price elasticities of supply of 0.3 (short-term) and 1.5 (long-term). Our own estimate of the price elasticity of production is 0.7 (Appendix II).

IV. The U.S. Sugar Policy Since the Mid-1970s

1. The instruments

Support policy for the U.S. sugar industry relies on some basic instruments: domestic price support programs, import duties and fees, and import quotas.

Domestic price support programs focus on a minimal price objective for domestically-grown sugar cane and sugar beet. The instruments are purchase and loan programs, and sometimes direct price support payment programs. Under price support loan programs, farmers receive loans at particular rates (cents/lb. of sugar), which then determine the lower limit for market prices of domestic sugar. Similarly, purchase programs guarantee farmers sales at specified prices, the purchase rates or prices.

Under loan programs, farmers have the option to redeem the loan or to default and forfeit the sugar to the Commodity Credit Corporation (CCC). Their choice is based on the prevailing market price compared with the costs of sugar sales in the form of loan principal (based on loan rate), and interest and other sales costs such as transportation. If the market price is not high enough, farmers are better off forfeiting sugar at the loan rate (and avoiding interest payments). To minimize the risk of forfeiture or purchasing by the CCC, the government defines a market price objective (a minimum market price level or a market stabilization price (MSP)) above the loan or purchase rate, that it attempts to maintain through duties and fees on imported sugar.

Despite the government price support measures, actual market prices may prevail below the MSP when large quantities of imports enter the U.S. market. In times of depressed world market conditions with rapidly declining prices, importers are inclined to sell at a discount, thereby reducing the U.S. market price; or duties and fees may become insufficient to cover the gap between the MSP and the free market price, because the legal maxima have been reached (for duties: 2.8125 cents/lb., 96-degree raw sugar, for fees: 50 percent of the world price). In such a case the domestic price support program can be defended by restrictive import quotas.

The tariff system for imports of sugar is, within certain statutory limits, at the discretion of the President. Import duties may be set within a range of 0.625 cents/lb. and 2.8125 cents/lb. raw value, and for fees only an upper limit of 50 per cent of the world price applies. The President can impose fees to regulate commodity imports whenever he finds that such imports tend to render ineffective or materially interfere with commodity market price support or stabilization programs of the U.S. Department of Agriculture. The same applies for the imposition of restrictive quotas, which are not allowed to exceed 50 per cent of the quantity imported during a representative period determined by

the President. Global, and occasionally countryspecific, nonrestrictive quotas have been in effect for a long time, first under the U.S. Sugar Act of 1948 and from 1975 on under succeeding Presidential Proclamations, allowing for imports of about 7 million short tons and thereby avoiding the snapback of the duty to 1.875 cents/lb., the statutory rate in periods without sugar legislation. The global quotas far exceeded the actual level of sugar imports. From April 1981 on, imports from nonmember countries of the ISA were restricted in compliance with the Agreement's rules.

2. U.S. sugar price support measures

No sugar price support measures were taken during 1975 and 1976, when only the statutory duty of 0.625 cents/lb. on raw sugar imports (0.6625 cents/lb. on refined sugar) applied. But deteriorating sugar prices prompted the introduction of a new sugar price support program in November 1977. Loan rates for the 1977 and 1978 crop sugar were established at 13.50 cents/lb. and at 14.73 cents/lb. raw value, respectively. In August 1979, another loan program, with a rate of 13.0 cents/lb., was adopted for the 1979 crop. The loan rate was lowered to avoid substantial forfeitures to CCC, after the loan rates for the two previous crops proved too high relative to the prevailing market prices.

No price support programs were proposed for the 1980 and 1981 crops. With world market prices beginning to increase in August 1979, import fees, which had been introduced in November 1977 and varied in response to world price fluctuations increasing up to 3.36 cents/lb., were rolled back to zero for raw sugar (and 0.52 cents/lb. for refined sugar) by October 1979. Concurrently, import duties were reduced from the legal maximum of 2.8125 cents/lb. raw value, which had also been imposed in November 1977, to the legal minimum of 0.625 cents/lb. in February 1980.

After world prices had plummeted, a domestic support program was reintroduced in December 1981 for the crops of sugar beet and sugar cane of 1982 through 1985 (crop year ending June 30). Crops of the first year, 1981/82, were supported by a purchase program with a purchase price of 16.75 cents/lb. for raw sugar. Sugar produced during the succeeding years, 1982/83-1985/86, has been covered by a nonrecourse loan program, at annual increasing loan rates of 17, 17.50, currently 17.75, and 18 cents/lb. for 1985/86. To reduce the risk of the CCC acquiring sugar during the life of the program, import duties and fees were used to raise the price of imported sugar to the respective levels of the MSP, which equaled 19.08 cents/lb. during January-May 5, 1982; 19.88 cents/lb. during May 6-September 30, 1982; 20.73 cents/lb. in fiscal 1982/83; 21.17 cents/lb. in fiscal 1983/84, and 21.57 cents/lb for fiscal 1984/85. 1/ However, the domestic spot price for raw sugar never reached

1/ The components of the 1984/85 MSP of 21.57 cents/lb. are: 17.75 loan rate, 2.68 transportation costs, 0.94 interest and 0.20 "incentive factor."

the initial MSP of 19.08 cents/lb. because large quantities of imported sugar entered the U.S. market as a result of rapidly declining free market prices.

When free market prices fell below 9 cents/lb., the U.S. Government adopted, on May 11, 1982, a restrictive import quota system for the first time since 1974 (Table 7). The individual country quotas were apportioned among exporting countries according to their export performance in the United States during 1975-81, when no restrictive quotas had applied. Following the imposition of import quotas, the domestic price for raw sugar rose from 17.89 cents/lb still in April to 21.03 cents/lb in June 1982, even above the increased MSP of 19.88 cents/lb. Until October 1982, the domestic market price remained above the MSP and import fees were being reduced from June 1982 to zero until October 1982. Import quotas were changed from a quarterly to an annual schedule, with an overall quota of 2.89 million short tons applying for the fiscal year ended September 1983, which was succeeded by annual quotas of 3.17 million short tons for fiscal 1983/84 and 2.68 million short tons for October 1984-November 1985. Under the first two annual quota regulations the domestic market price remained above the respective MSP. As the domestic market price fell below the MSP under the current quota regulation, import fees were reintroduced in January 1985 and amounted to 1.287 cts/lb by February 1985.

Foreign suppliers to the U.S. market have benefited not only from the cutback of import fees but also increasingly from remission of import duty under the Generalized System of Preferences (GSP), which has applied to imports from developing countries since 1976. 1/ From 1976 to 1979, when GSP sugar imports never accounted for more than 15 percent of U.S. sugar imports, they increased to 40 percent in 1980 and reached 60 percent in 1983. In the current fiscal year, about 38 percent of imports under the quota system are dutiable, namely those from Australia, Brazil, Canada, the Philippines, and South Africa.

3. Effects of the restricted import quota system

The imposition of restrictive import quotas has so far achieved the objective of the sugar price support program, thus protecting the interest of domestic producers. Without this protection, they would have incurred substantial losses with respect to returns and market shares. However, the quota system has established a price umbrella for competitive sweeteners, increasing the incentive for sweetener users to switch to HFCS.

1/ Developed countries, in principle Communist countries, and OPEC countries are excluded from the GSP. An otherwise eligible beneficiary may be excluded on the grounds of a "competitive criterion" which is based on the value of U.S. sugar imports from the respective country.

Table 7. U.S.: Sugar Import Quotas

(In short tons, raw sugar value)

		Share in U.S. Market 1/ (per cent)	May 11-June 30 Quota 1982	July 1-Sept. 30 Quota 1982	Import Quota 10/1/82-9/30/83	Import Quota 9/26/83 9/30/84	Import Quota 10/1/84-11/30/85
1.	Dominican Republic	17.6	38,720	73,920	492,800	535,392	447,040
2.	Brazil	14.5	31,900	60,900	406,000	441,090	368,300
3.	Philippines	13.5	29,700	56,700	378,000	410,670	342,900
4.	Australia	8.3	18,260	34,860	232,400	252,486	210,820
5.	Guatemala	4.8	10,560	20,160	134,400	146,016	121,920
6.	Argentina	4.3	9,460	18,060	120,400	130,806	109,220
7.	Peru	4.1	9,020	17,220	114,800	124,722	104,140
8.	Panama	2.9	6,380	12,180	81,200	88,218	73,660
9.	El Salvador	2.6	5,720	10,920	72,800	89,163	74,561
10.	Colombia	2.4	5,280	10,080	67,200	73,008	60,960
11.	South Africa	2.3	5,060	9,660	64,400	69,966	58,420
12.	Nicaragua	2.1	4,620	8,820	58,800	6,000	6,000
13.	Swaziland	1.6	3,520	6,720	44,800	48,672	40,640
14.	Costa Rica	1.5	3,300	6,300	42,000	62,415	52,302
15.	Thailand	1.4	3,080	5,880	39,200	42,588	35,560
16.	Mozambique	1.3	2,860	5,460	36,400	39,546	33,020
17.	Guyana	1.2	2,640	5,040	33,600	36,504	30,480
18.	Taiwan	1.2	2,640	5,040	33,600	36,504	30,480
19.	Zimbabwe	1.2	2/	2/	33,600	33,504	30,480
20.	Belize	1.1	2,420	4,620	30,800	33,462	27,940
21.	Canada	1.1	2,420	4,620	30,800	33,462	27,940
22.	Ecuador	1.1	2,420	4,620	30,800	33,462	27,940
23.	Jamaica	1.1	2,420	4,620	30,800	33,462	27,940
24.	Mauritius	1.1	2,420	4,620	30,800	33,462	27,940
25.	Honduras	1.0	2,200	4,200	28,000	59,514	50,017
26.	Bolivia	0.8			22,400	24,336	20,320
27.	India	0.8			22,400	24,336	20,320
28.	Barbados	0.7			19,600	21,294	17,780
29.	Fiji	0.7			19,600	21,294	17,780
30.	Malawi	5.9 2/ 0.7	12,980 3/	24,780 3/	19,600	29,294	35,400
31.	Trinidad & Tobago	0.7			19,600	21,294	17,780
32.	Others	0.3 4/			99,000 5/	134,208 6/	125,000 7/
	Total	100.0	220,000	420,000	2,890,600	3,173,150	2,675,000

Source: U.S. Department of Agriculture.

1/ Based on actual exports during 1975-81, excluding each country's highest and lowest years.
2/ Zimbabwe received a share of the group allocation of 12,980 short tons and 24,780 short tons.
3/ Under the quarterly quotas the share is to be distributed on a first serve basis among the countries listed under 19 and 26 to 32.
4/ Under the fiscal 1983 quota the share is to be distributed equally among the following countries: Haiti, Ivory Coast, Madagascar, Mexico, Paraguay, St. Kitts-Nevis.
5/ Adjusted to reflect the minimum quantity of 16,500 short tons allocated to each country.
6/ Congo, Haiti, Ivory Coast, Madagascar, Mexico, Paraguay, St. Christopher-Nevis, Uruguay all receive 16,776 short tons each.
7/ The same countries as under 6/ and in addition Gabon and Papua New Guinea all receive 12,500 short tons each.

Costs of the import quota to the consumer are directly related to the difference between the market stabilization price and the domestic market price which would otherwise prevail. Based on the assumption that, in the absence of restrictive quotas, the domestic market price (No. 12 New York spot) would have averaged 16 cents/lb from May 11 through September 30, 1982 and 17 cents/lb to 17 3/4 cents/lb during fiscal 1983, consumers may have incurred additional costs of an estimated US$1,270 million to US$1,130 million until September 1983. 1/

The interests of foreign suppliers to the United States have been affected in different respects. On the one hand, exporters received secured but reduced access to a stable, higher price on the U.S. market. On the other hand, exporters depended on the free market to sell any sugar in excess of the U.S. quota. The world free market price may have been lower than it would have been without the U.S. quota because of the larger quantities of sugar available for sale. The net effect on a sugar exporter's revenues varies depending on the relative quantities of sugar sold in the U.S. and in the world market, as well as the relative prices received. Consequently, the net effect has likely been different for each individual exporting country.

For the total group of foreign suppliers to the U.S. sugar market, estimated export earnings, for example in fiscal 1983, were considerably higher with quotas than without. Assuming that the net price (No. 12 New York spot net of duty and c.i.f.) realized by the exporters was about 17 1/3 cents/lb. raw sugar or about 115 percent higher than without the restrictive quota system, the earnings totaled US$1,002 million. This left an estimated 0.70 million tons to 0.93 million tons for sale on the free market, where an average price of 7.9 cents/lb fetched earnings of another US$121 million to US$161 million. 2/ However, if the total tonnage of 3.5 million to 3.8 million tons had been sold in the U.S. market in the absence of restrictive quotas, earnings would probably not have exceeded US$628 million to US$673 million and thus have reached only about two-thirds of the U.S. market earnings under the quotas or, in the case of residual sales in the free market, have remained below three-fifths of the total export earnings.

1/ The estimates are based on calculations of the USDA in: Final Regulatory Impact Analysis, June 1982.

2/ The total volume of sugar imports entering the U.S. market in fiscal 1983, in the absence of restrictive quotas, was estimated in the range of 42 percent to 45 percent of U.S. sugar consumption. Because of lower U.S. market prices under these conditions, consumption was estimated at 8.57 million tons, thus 5 percent higher than in Table 3. The respective imports of 3.53 million and 3.79 million tons would have increased stocks from 2.60 million in 1981/82 by 0.07 million tons and 0.33 million tons, respectively.

V. Conclusions

The above analysis has shown that the recent policies followed by the EC and by the U.S. have been detrimental to the world sugar market. At considerable costs, the EC has become the largest exporter in the world free market by expanding its production by an overall 44 percent since the mid-1970s. The direct costs in the form of budget subsidies have been increasing with export growth; and also the indirect costs have been mounting with the misallocation entailed by controlled domestic prices and the related destabilizing effect on world prices. Consequently, export earnings of developing countries, which are for the most part low-cost producers, have been depressed since 1982. Although the EC has recently promoted restraint of production and exports through a cut in production quotas, less pronounced price increases and encouragement of stocking, a significant adjustment of EC production to world market conditions would require more drastic changes. They should be geared to self-sufficiency, preferably, net imports, in order to allow for a reduction in world stocks and a shift of production to the most efficient producers.

U.S. production has not expanded since the 1970s and producer prices have followed world prices more closely. However, developments on the U.S. market have aggravated the world sugar disequilibrium. Inroads of high fructose corn syrup in the U.S. sweetener market have brought about a declining trend in U.S. sugar consumption, which resulted in a drop in imports of 1.3 million to 3.6 million tons by 1981/82. Imports have been further constrained by restrictive import quotas which the U.S. imposed in 1982 in response to the depressed world prices; these have had a disruptive effect on the trading partners and have increased the pressure on the remainder of the world free market to absorb additional supplies.

In the absence of a large-scale production failure or major policy changes, world sugar will remain in surplus for several years, because a return to a normal stock-consumption ratio would require the absorption of about 20 million tons surplus stocks -- equivalent to 20 percent of world consumption. The prospect for international action has become bleak since major producers and net exporters failed to conclude a new International Sugar Agreement. In the absence of any controls on net flows to the world free market after the recent Agreement expired in December 1984, adjustment of national production or consumption policies have become even less likely, although critical if major imbalances are to be eliminated in the long run.

The most drastic adjustment would involve the liberalization of domestic markets and removal of trade barriers. The beneficiaries would be, on the one side, consumers in developed countries with a history of protective domestic sugar policy and, on the other, developing country sugar exporters who could count on a shift in production back to the lower-cost producers and on more stable prices. However, since in the

absence of national support, high cost producers would not be able to compete, it is unlikely that Governments would adopt this policy. Instead, more moderate options could be examined. To contain production, existing incentives could be reduced, cuts in output rewarded, or production in excess of certain limits be taxed. Actually, programs which reward production cuts have been quite successful for some agricultural commodities in the U.S. To encourage consumption, incentives for the use of sugar for other than human consumption could be introduced, the relative advantage of alternative sweeteners could be curtailed, or at least the growth of the alternative sweetener markets could be controlled. The implementation of national adjustment measures would be encouraged if Governments were supported by an international framework of control of the world sugar market.

EC: Preferential Imports Under the Sugar Protocol

Country July/June	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
	(ACP Sugar Quotas in tons, white sugar equivalent)					
Barbados	49,300	49,300	49,300	49,300	49,300	49,300
Belize	39,400	39,400	39,400	39,400	39,400	39,400
Congo	4,957	4,957	4,957	4,957	4,957	8,000
Fiji	163,600	163,600	163,600	163,600	163,600	163,000
Guyana	157,700	157,700	157,700	157,700	157,700	157,700
India	25,000	25,000	25,000	--	--	10,000
Jamaica	118,300	118,300	118,300	118,300	118,300	118,300
Kenya	93	93	93	93	4,000	4,000
Madagascar	10,000	10,000	10,000	10,000	10,000	10,000
Malawi	20,000	20,000	20,000	20,000	20,000	20,000
Mauritius	487,200	487,200	487,200	487,200	487,200	487,200
St. Kitts-Nevis	14,800	14,800	14,800	14,800	14,800	14,800
Anguilla	14,800	14,800	14,800	14,800	14,800	...
Suriname	2,667	2,667	1,634	--	--	--
Swaziland	116,400	116,400	116,400	116,400	116,400	116,400
Tanzania	10,000	10,000	10,000	10,000	10,000	10,000
Trinidad & Tobago	69,000	69,000	69,000	69,000	69,000	69,000
Uganda	409	--	--	--	--	--
Zimbabwe	--	--	--	6,000	25,000	25,000
Ivory Coast	--	--	--	--	--	2,000
Total	1,288,826	1,288,417	1,287,384	1,266,750	1,289,657	...

Imports of the ACP countries under the preferential quotas have duty free status. The ACP countries receive guaranteed prices that are usually well above world market prices. The guaranteed price is negotiated annually and must remain within the price range fixed for Community sugar beet producers. If ACP countries fail to obtain at least this guaranteed price on the EC market, they can realize the price through sales into intervention. Since the EC was no signatory to the ISA, exports from the ACP countries to the EC did not fall under the ISA quotas. Because of the favorable EC prices, the ACP countries gave priority to filling their EC rather than their ISA quotas.

The ACP countries have recorded substantial income transfers from the EC sugar protocol. Other developing countries without preferential agreements not only forego such benefits but are probably even adversely affected. The EC as a surplus producer disposes of the ACP sugar on the world market, bearing the subsidy costs, while the income transfer allows the ACP countries to afford production and sales at low world market prices. Otherwise, the ACP countries would be pressed to reduce or not to expand production and sales, thus sharing the burden of adjustment, when excess supply and depressed world market prices are in prospect. U. Koester and P. M. Schmitz (1982) estimate for 1979 that the transfer effects of the EC Sugar Protocol compensated the ACP countries by as much as 4 1/2 times for the costs which they incurred because world market prices were lower than they would have been without the EC sugar policy.

Quantitative Analysis of Some Variables in the World Sugar Market

A. EC production (annual data, 1969-80)

I. $\ln ECPROI_t = 6.79 + 0.72 \ln INTP_t$
(1.00) (0.9998)

R^2: 0.82 DW: 2.02

ECPRO: Volume of EC sugar production (raw value) (ISO - Sugar Year Book)

INTP: EC intervention price for white sugar (Commission of the EC)

II. $\ln ECPROII = 8.45 + 0.57 \ln SELLPR_t + 0.13 \ln ISOR_t$
(1.00) (1.00) (0.9976)

R^2: 0.91 DW: 1.93

ECPRO: As in I.ECPRO

SELLPREC: Index of EC national producer sales prices of sugar calculated in ECU's and deflated by an index of EC national purchase prices for agricultural inputs (Eurostat)

ISOREC: ISO world sugar price deflated by an index of EEC national purchase prices for agricultural inputs (Eurostat; ISO-Sugar Year Book)

B. The World Sugar Market: Prices - Production - Stock-ratio

I. World sugar prices (annual data, 1958-1982)

$ISORMAN_t = 27.84 - 6.27 \ln PRO_t - 2.38 \ln STK_t/CON_t$
(0.9999) (1.00) (0.9993)

R^2: 0.98 DW: 2.02

ISORMAN: ISO world market price for raw sugar, deflated by the U.N. unit value index of manufactured exports of developed countries (ISO - Sugar year book; UN).

PRO: Volume of world sugar production (USDA)

STK/CONS: Stock ratio: volume of world sugar stocks/volume of world sugar consumption (USDA)

II. World sugar stocks (annual data, 1969-1982)

$$STK_t/CONS_t = \underset{(0.9700)}{0.13} + \underset{(0.9901)}{0.14}\ ECPROD_t/ECCONS_t$$

R^2: 0.55 DW: 1.85

ECPROD/ECCONS: Ratio of EC sugar production and consumption (USDA)

STK/CONS: World sugar stock ratio (USDA)

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