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SUGAR: AN APPRAISAL OF MARKET PROSPECTS AND INVESTMENT REQUIREMENTS IN THE CARIBBEAN*

Leon J. Hunter

(Howard University, Washington D.C., U.S.A.)

Abstract

In deciding on a strategy and programme of rationalization of Caribbean agriculture, decision-makers are faced with choosing between various alternative investment projects. Identification of investment possibilities play a vital role in the direction of rationalization. This paper is designed to provide the foundation on which a policy regarding the sugar Industry could be built.

Introduction

There has been a fairly broad concensus in recent years about the paramount need for diversification of Caribbean agriculture. The advocates of rapid diversification see the need as a necessary way to reduce the dependency of Caribbean economies on the production of primary agricultural products whose prices are subject to wide fluctuations. Severe deterioration in the price picture for a wide range of tropical agricultural products has tended to substantiate the fears and intensify the calls for a new approach and strategy for the agriculture sector. One factor which might have contributed most to the importance of diversification is import substitution.

The import substitution bandwagon which began rolling in the early 1960's gathered increased momentum over the entire decade. The links between import substitution and diversification of agriculture were soon recognized and became a major factor in the strategies of economic development of most governments in the region. The other reasons for supporting a programme of diversification in Caribbean agriculture are well known and need not be elaborated here.

There can be little dispute concerning the need for and the importance of diversification both on theoretical and operational grounds. However, a programme of diversification necessarily involves two questions of choice; one of which concerns the range of products. This choice is not easily determined. Given the present state of agricultural technology in the region, the rudimentary marketing, distribution and pricing systems, product choice becomes rather limited. These constraints, of course, can be reduced, but at rather high costs. The second involves the choice of product or products which will receive less emphasis and consequently less resources.

In recent years advocates of diversification have concentrated on the second choice. Sugar has received the honour of being the product whose *head must roll*. And why not? The external control of the industry and leakage of profits to the metropolitan countries have been well documented and need no more mention here. The suitability of sugar lands to the production of other crops has been generally accepted, notwithstanding some unsettled problems in this area. This fact, and the disastrous price reductions which took place in the middle sixties as a result of substantial surpluses on the world

* In this paper, Caribbean refers to the English-speaking territories plus Guyana.

market, seem to justify the proposition that diversification should take place at the expense of sugar.¹

However, the world situation regarding sugar has changed considerably during the last four years. Market prospects for at least the next decade, have made sugar a *live* investment issue again. Some factors of vital importance should be noted:

1. Sugar is no longer in surplus;
2. There is need for substantial increases in production, both for meeting the requirements of domestic consumption and the rise in exports requirements;
3. There has been considerable deterioration of existing sugar industries in the region due to neglect and uncertainty. If the region is to hold its present share of the market, steps must be taken to maintain existing capacity;
4. The present and projected price picture appears to justify substantial expenditures in capital and rehabilitation of the industry; and
5. The U.K.'s entry into the EEC will not change the conditions of demand for Caribbean sugar.²

If diversification is accepted as a condition for optimum resource allocation within the region, the question as to its form must be first resolved. Strict criteria regarding product choice would have to be applied in order to avoid misallocation of resources. Suitable physical conditions such as soil quality, rainfall adequacy, sufficiently dry harvesting season, and water availability, are some of the factors to be considered. Economic criteria, which are not as clear-cut present some crucial constraints. Market prices and demand conditions are difficult to ascertain. Estimation of cost parameters are not less difficult to determine.

If ample weight is given to the steadily improving status of the world sugar situation, diversification out of this important commodity may not represent the optimum choice and could in fact be extremely low on the scale of preferences.

The purpose of this paper is to examine recent trends in the world sugar situation as it affects the Caribbean. Some estimates of the returns to investment in the industry will be presented and the implications for expansion of sugar production considered. This paper is not an argument against diversification in the broad sense. Its purpose is simply to examine the implications of diversification out of sugar and to give an indication of potential losses and benefits of such a policy.

Sugar in the Caribbean Economies

The importance of sugar to the economies of the Caribbean countries in terms of employment, capital formation, income distribution, government revenues, international trade and foreign exchange earnings has indeed been considerable.³ While the contribution of the sugar industry to each country

¹ Most of the sugar exports of the Caribbean are sold at preferential prices, consequently the effects of world prices of just over 1 cent per pound did not have as devastating an effect on these producers as it did on other countries.

² While it is true that at present prices of around 12 cents a pound, the EEC has the capacity to supply the needs of the U.K., it is hardly likely that the cheaper cost supplies will be eliminated.

³ International Monetary Fund. *International Financial Statistics*. March 1973.

has varied significantly, both in terms of the overall impact and the effect of various elements in the economic landscape, this particular industry, more than any other, has played the most important role in the development of the economic systems within the region.

In recent years, two not unrelated factors significantly contributed to the declining role of sugar in the area. First, governments in the region have considered a reduction in the dependency on sugar as vital to the economic survival of the various economies. Second, the behaviour of private investors, conscious of prior losses and faced with the threat of expropriation -- either real or imagined -- have also been another major cause of the deterioration in the industry.

The Crises of the Sixties

The protracted period of *disaster prices* which persisted at or below two cents per pound -- well below the cost of even the most efficient producers -- from 1965 until late 1968, caused private investors to incur heavy losses. These losses discouraged the upkeep of capital equipment and proper management of cane acreage throughout the region.¹

Reluctance of investors to take further risks in increasing investment in the industry was further accentuated by what they considered to be the adverse effects of domestic price, wage and fiscal policies being adopted by various governments in the region. Recent increases in the cost of equipment and other capital requirements compounded the difficulties. By the end of the sixties when the world price picture improved, the industry showed the results of neglect. The result is that it may be almost impossible to maintain even current levels of production without at least some rehabilitation. Thus, in spite of the greatly improved world sugar situation, investors are still reluctant to take the lead in financing sugar projects in the Caribbean.

Examination of price data for the sixties gives some insight into the causes of the difficulties which the industry faced. Free market prices through the decade have been subject to violent gyrations (Table 1). The large advance in 1963 was precipitated by two consecutive crop failures in Cuba and the uncertainty of future developments in that country. The steep protracted down-turn in prices was caused by the unrestricted expansion of output in most producing areas. This development was partly caused by the suspension of the International Sugar Agreement in 1961. The resumption of operations of the Agreement in 1969 also partly explains this period of recovery.

The preferential prices in the U.S. and U.K. markets showed much less instability. The U.S. price was maintained by quota manipulations, moving with the farm parity index.²

The Commonwealth price paid for U.K. imports under the negotiated price quota is agreed between the U.K. and Commonwealth exporters at intervals for a number of years in advance. The price is quoted in Sterling. The reduction in 1968 and 1969 prices reflects the devaluation of the pound in 1967.

1 Some companies in the Caribbean sold parts of their land for real estate development. In doing so, they were able to earn considerable profits.

2 The USDA determines for each month a *price objective* on the basis of the 1957-59 average price of 6.2 cents per pound, adjusted by the parity index. It then undertakes, through quota manipulations, to maintain actual prices close to the objective. While this undertaking has for the most part been achieved, the high level of *world price* in 1963 which made exports to other areas highly attractive, the U.S. price had to be allowed to exceed the objective in order to obtain adequate supplies.

Table 1. Sugar: Prices on the International Market¹

Year	World	U.S.	Commonwealth ²	Unit Value
				(developing countries)
(U.S. Cents / pound)				
1960	3.14	5.35	5.44	
1961	2.70	5.34	5.52	4.75
1962	2.78	5.56	5.61	4.83
1963	8.29	7.28	5.64	6.50
1964	5.72	5.98	5.64	6.48
1965	2.03	5.80	5.82	4.66
1966	1.76	6.04	5.94	4.64
1967	1.87	6.32	5.94	4.74
1968	1.85	6.54	5.10	4.67
1969	3.20	6.75	5.10	
1970 (Jan.-May)	3.35	6.88		

Notes: 1 F.a.s. or f.o.b. Caribbean or Brazilian ports.

2 Starting in 1965 the figures include the special payments to developing countries introduced in that year.

Sources: International Sugar Council, *Sugar Yearbook* and *Monthly Bulletin*, various issues.

USDA, *Sugar Report*, various issues.

FAO, *State of Food and Agriculture* and *Trade Yearbook*, various issues.

Per Capita Consumption in the Region

Per capita consumption within the Caribbean was estimated to be slightly over 42 kg. in 1966-68.¹ Domestic consumption was approximately 182 thousand tons. This represented about 14 per cent of total production which was about 1.26 m. tons. Per capita consumption compares rather favourably with other countries producing primarily for exports -- the Dominican Republic, Mauritius and Taiwan.

Table 2 shows the per capita and total consumption for the four independent countries in the region for the period 1968-70. While the comparison with other net exporting developing countries is favourable, there is ample room for some increases in the region's per capita consumption, which could represent increased demands for additional production.

On the basis of current FAO population projections and production estimates, per capita consumption in 1975 in the Caribbean is expected to be about 46 kg. This figure implies a domestic requirement of 220 thousand tons. By 1981-83, aggregate consumption is expected to reach 280 thousand tons. Compared to 1966-68, this figure represents a 55 per cent increase in consumption levels and an average annual rate of increase of about 3.5 per cent.² These estimates could very well turn out to be on the low side if income increases faster than current rates.

¹ International Sugar Council. *Sugar Yearbook* and *Monthly Bulletin*, various issues, and FAO, *State of Food and Agriculture*. FAO, Rome, 1970.

² *Op.cit.*

Table 2. Net Exporting Countries, Producing Mainly for Export:
Production, Exports and Consumption: 1968-70

	Population	Production	Exports	Exports as % of Prod.	Consumption	Per Capita Consumption
<i>(Thousand Metric Tons)</i>						
<i>Western Hemisphere:</i>						
Barbados	252	158	142	90	14	55
Br. Honduras	120	64	58	91	5	42
Dominican Republic	4,000	855	685	80	130	32
Guyana	740	353	324	92	28	38
Jamaica	1,950	413	326	79	89	46
Trinidad & Tobago	1,080	239	191	80	48	44
<i>Total</i>		<i>2,082</i>	<i>1,726</i>	<i>83</i>	<i>314</i>	

Source: International Sugar Organization, *Sugar Yearbook*, 1972.

Projections: Consumption, Production and Imports

Developed Countries

Net imports as well as consumption of sugar are heavily concentrated in this group of countries. The four major importing countries -- The U.S.A., Canada, the U.K. and Japan -- account for over 60 per cent of total world net imports.

In the U.S., consumption in recent years have been around 10.5 m. tons. For the same period net imports have been close to 5 m. tons. Per capita consumption has been around 49 kg. and is expected to grow to about 51 kg. by 1975;¹ reflecting, in part, substitution for cyclamates, the use of which has been prohibited -- except for special dietary uses. The principal source of the anticipated increases in consumption is the growth in population. Under present conditions of the U.S. Sugar Act, the shares of mainland consumption to be met by domestic production and by imports is allocated in the proportion of 65:35 between these two sources of supply. Import allocations in recent years have constantly exceeded quotas; This has essentially been caused by persistent and increasing shortfalls in Puerto Rican supplies. Although steps have recently been taken by the Puerto Rican producers to rehabilitate the industry there, the impact of this is only expected to bring about minor increases in production. Prospects for continued shortfalls in U.S. quota allocations are therefore expected to persist, though not at as high a level as in recent years. The projections of U.S. imports in 1981-83 (Table 3) is based on the assumption that the future allocation of shortfalls will continue to be made on

¹ International Sugar Organisation, *op.cit.*,

Table 3. Sugar Consumption and Production, by Main Areas, Actual and Projected

(Million metric tons)

	1959-61	1969-71	Annual av. ¹ % rate of change	1961-63	1971-73 Estimate	1981-83 ² Projected	Annual average % rate of change	
							1961/3-71/3	1971/3-81/3
<i>Developed Consumption:</i>								
W. Europe	11.4	14.8	2.7	12.2	15.6	18.7	2.4	1.9
N. America	9.5	11.4	1.9	9.9	11.8	13.5	1.7	1.3
Japan	1.4	2.9	7.3	1.6	3.2	4.5	7.3	3.5
Oceania & S. Africa	1.4	1.8	2.4	1.5	1.9	2.2	2.5	2.0
Total	23.7	30.9	2.7	25.2	32.5	39.0	2.6	1.8
<i>Production</i>	<i>17.1</i>	<i>23.4</i>	<i>3.2</i>	<i>17.7</i>	<i>24.0</i>	<i>28-30</i>	<i>3.1</i>	<i>1.1-2.3</i>
<i>Centr. Planned</i>								
Consumption	12.0	17.7	4.0	13.3	16.3	24.5	3.2	2.9
<i>Production</i>	<i>11.6</i>	<i>15.9</i>	<i>3.2</i>	<i>12.0</i>	<i>16.0</i>	<i>22-24</i>	<i>3.4</i>	<i>3.2-4.1</i>
<i>Cuba</i>								
Consumption	0.4	0.6		0.4	0.6	0.8		
<i>Production</i>	<i>6.2</i>	<i>6.3</i>		<i>5.1</i>	<i>4.8</i>	<i>6-7</i>		<i>2.3-3.8</i>
<i>Other LDC's Consumption:</i>								
W. Hemisphere	6.2	9.4	4.3	6.8	10.0	14.0	3.9	3.4
Asia - Oceania	5.6	9.9	5.9	6.0	10.5	17.0-18.0	5.8	5.0-5.5
Africa	2.0	3.0	4.6	2.1	3.1	4.5-5.5	4.0	3.8-5.9
Total	13.7	22.4	4.9	14.9	23.6	35.5-37.0	4.7	4.2-4.6
<i>Production</i>	<i>17.9</i>	<i>26.5</i>	<i>4.3</i>	<i>18.2</i>	<i>28.3</i>	<i>41.5-43.0</i>	<i>4.5</i>	<i>3.9-4.3</i>
<i>World:</i>								
Consumption	49.8	71.5	3.7	54.0	75.0	100-102	3.4	2.9-3.1
<i>Production</i>	<i>52.3</i>	<i>72.2</i>	<i>3.3</i>	<i>53.0</i>	<i>73.0</i>	<i>101-103</i>	<i>3.3</i>	<i>3.3-3.5</i>

Note: Figures may not add to totals on account of rounding.

¹ Calculated before rounding.² Totals represent requirements. The tentative area distribution was based on the assumptions discussed in the notes to this table.

the basis of 65:35. The projected level of consumption in 1981-83 is 12m. tons. Since domestic production is not expected to grow by much, substantial import potentials exist. Imports for 1981-83 should be between 5 and 5.4 m. metric tons.

In the United Kingdom, per capita consumption has been around 52 kg. in recent years. No significant change is expected to occur in the future. Population growth should raise consumption from around 2.9m. tons in recent years to over 3.3m. tons in the early eighties, of which about 2.3 will be met by net imports.

In Canada, per capita consumption has fluctuated between 46 and 50 kg. Population increases are expected to account for the increase in consumption. Current production is small and is expected to remain so. Over 80 per cent of consumption is covered by imports. Net imports by 1981-83 are then expected to be about 1.5m. tons as compared to 0.85m. in recent years.

In Japan, there is considerable scope for a substantial rise in per capita consumption which is about 24 kg. -- the lowest of the major importing countries. If the recent growth pattern continues, Japan's consumption should reach 4.5m. tons by 1981-83, of which import demand is expected to be about 75 per cent or 3.3m. tons.

Table 3 summarises the projections for 1981-83. On the basis of available data, the major importing countries should have a production of between 28-30m. tons. Consumption is expected to be about 39m. tons, which leaves a production-consumption gap of between 9 and 10m. tons. Comparing this to the current levels of exports from the net exporting countries of around 7.5m. tons, the prospects for increased exports are extremely good. Additional requirements represent approximately a 26 per cent increase over present exports.

Demand for Exports and Production from the Caribbean Countries

On the basis of estimated aggregate consumption and projected demand for imports, some approximation of production requirements for the Caribbean can be derived. Since the export shares of the net exporting countries are determined by their quotas under special arrangements or, for the free market under the International Sugar Agreement, a tentative indication of country and area distribution for the projected period may be derived on the basis of these quotas.¹ While this approach is subject to some criticism, it is perhaps the best available method. Using this distribution of market shares, Caribbean production requirements to meet the needs of the major preferential markets are estimated to be just under 2m. tons in 1981-83.² This represents an increase over current production levels in excess of 0.8m. tons. If domestic requirements are added to this, production requirements by 1981-83 should be just over 2m. tons.³ Under present conditions the industry will be unable to meet these requirements

¹ This approach to estimating market shares is extremely hazardous, since the agreements are renegotiated every few years. Some changes in the distribution are bound to be made. In the case of the U.S.A., modification of short-fall distribution could lead to changes in proportion among domestic and foreign sources of supply. The allocations under the International Agreement may be revised considerably each time it comes up for renewal. There is no way of gauging the nature and extent of such changes.

² *International Sugar Agreement, 1968*, Article 40.
USDA, *Sugar Report*, Nov. 1969.
The Commonwealth Sugar Agreement, Text of 1968.

³ Based on current population trends, domestic consumption for 1975 and 1981-83 is expected to be approximately 220 and 280, respectively.

unless capacity is considerably increased. Some countries in the region will experience little difficulty in stretching existing capacity, while for others this could be extremely difficult.

Expanding Production to Meet the Projected Requirements

Production increases could come from either expansion in acreage, increases in yields or a combination of the two. There is some difficulty in comparing sugar cane yields with crude sugar yields. The latter depends on other factors such as efficiency of mills, recovery and loss during milling, etc. The major Caribbean producers compare favourably with some of the other major producers.¹ Yields in Guyana are among the highest in Latin America. Given these already high yields it is very unlikely that substantial increases could be expected.

Some increases in crude sugar production can be brought about by improved efficiency in milling. Table 4 summarizes the situation in the four major Caribbean producing areas in 1968-70. Assuming an increase in yields of 10 per cent in all four major producing countries, with no change in the 1968-70 acreage, production could reach as high as 1.26m. tons.² This figure still leaves a required production of over 800 thousand tons which could only be met by increased acreage. Assuming no increase in yields, over 120 thousand hectares will have to be brought into production to meet the requirements in 1981-83. If yields increase by 10 per cent, the required acreage will be between 90-100 thousand hectares.³ Barring some extremely significant breakthroughs in sugar technology, it is most unlikely that an increase in yields exceeding 10 per cent could be obtained. Using as an example, the situation in Guyana where good prospects for increases exist, over the last decade the contribution of area expansion to production growth as a whole was as important as increases in yield.

It is not unrealistic to assume that rehabilitation of a minor sort, not requiring much investment, could be expected to bring about a 10 per cent increase in yields. Of course, the major portion of investment will have to be made in expanding present acreage. The question is whether there is available acreage suitable for sugar production, and what are the investment requirements. Table 4 shows the allocation of required acreage based on the 1968-70 distribution among the four major producers. Assuming additional requirements of 100 thousand hectares by 1981-83, only Guyana and perhaps Jamaica could reasonably be expected to supply the additional acreage requirements. Given the needs for other uses of land, it may be impossible to expect expansion approaching anywhere near what is required.

Investment Requirements for Expanding Production

As suggested earlier, strict economic criteria should be applied to investment decisions in the sugar industry. This objective presents a multiplicity of problems. Foremost among these problems is the choice of a market price which can be applied to output so that estimates of revenues can be determined. The choice of a market price for sugar which will serve as a yardstick is extremely difficult in view of the fragmentation of the international market and the wide margins between prices

1 FAO, *Production Yearbook*, 1972.

2 It should be pointed out that increases in yields will more than likely require additional investment.

3 For the purpose of these calculations a regional average yield of 7.3 and 8.0 tons per hectare have assumed for the no increase and 10 per cent increase, respectively. It is further assumed that the increase to 8 tons per hectare will occur in the first year and will be maintained up to 1981-83.

Table 4. Raw Sugar Production, Yields and Acreage for the Four Major Producers in the Caribbean

	<i>Sugar Area</i>	<i>1968-70 Av. Production</i>	<i>Yield</i>	<i>Total Area</i>
	<i>('000 hectares)</i>	<i>(Metric tons)</i>	<i>(Metric tons per hectare)</i>	<i>('000 hectares)</i>
Barbados	20	153,000	7.65	43
Jamaica	55	408,000	7.42	1,142
Trinidad & Tobago	35	234,000	6.68	513
Guyana	47	347,000	7.38	19,671
Total	157,000	1,142,000		

<i>Yield Increase of 10 Per cent</i>			
	<i>Acreage</i>	<i>Projected Production</i>	<i>Required Additional Acreage</i>
Barbados	20,000	168,200	13,000
Jamaica	55,000	448,800	35,000
Trinidad & Tobago	35,000	357,600	22,000
Guyana	47,000	381,000	30,000
Total		1,255,770	

Source: FAO, *FAO Production Yearbook*, 1972.

received for exports to different destinations. In arriving at an investment decision, economic theory suggests that *equilibrium price* is the appropriate market price which should be applied.

For purposes of this analysis the *equilibrium price* used is the so-called *world or free market price* which is the lowest among the prices received by exporters. Economic criteria then require that investment should be profitable at *free market prices*. *Free market price* forecasts over the next 10 to 15 years are in the range of 5.0 to 6.5 cents (f.o.b.).¹

In practice, three types of investment can be identified, which would expand production.²

(1) *Low*: This type consists of simple improvements which require only minor capital outlays on existing equipment in order to improve productivity. Of course, the amount of expansion which could be expected from this scope of investment is quite limited. The investment requirement for this type of expansion has been put at approximately \$75 per ton.

(2) *Medium*: Expansion of existing industries involving larger expenditures than (1) for transportation facilities, additional milling capacity, land development costs such as drainage and irrigation fall into this category. An estimate for the investment costs necessary for this type of expansion is approximately \$250 per ton.

¹ IBRD, "Price Forecasts for Selected Primary Commodities in the 1970's." April 1973, unpublished.

² Recent studies of the sugar industry tend to support these estimates.

(3) *High*: Expansion of this type involves the establishment of entirely new industries in locations where sugar has not been previously produced. This type of expansion would of course involve considerably greater expenditure than either (1) or (2).

A rough estimate of the total capital investment in the sugar industry over the next 10 years, if a 600 thousand ton requirement is to be fulfilled, is given in Table 5 for investments of types (1) through (3).

Table 5. Estimate of Investment Required in the Caribbean Sugar Industry

Type	('000 tons)	(US\$ per ton)	Total (US\$m.)
(1)	90	75	6.750
(2)	150	250	37.500
(3)	360	500	180.000
Total	600		224.250

Under these assumptions, an annual average investment of over US\$20m. will have to be made in the sugar industry over the next decade. To sustain such a level of investment, outside assistance will obviously be necessary.

Profitability of Investment in the Sugar Industry

Cost-benefit analysis under varying assumptions of investment and variable costs, and the assumed *free market* price range is summarized in Table 6.¹ The calculations were made for variable costs ranging from 2.5 to 4.5 cents per pound. The results indicate that investment up to \$250 per ton would provide ample returns for all combinations of variable costs examined.² Investment of type (3) could be considered only at a variable cost of 2.5 cents per pound. If for some reason *free market* prices were to increase to the range of 6.0 to 7.5 cents per pound, then high investment would be profitable up to a variable cost of 3.5 cents per pound. A *mixed programme* of average investment costs of \$375 per ton would give adequate returns over a much wider range of variable costs.

Recent studies have indicated that variable costs tend to decrease as investment increases in the sugar industry, thus making investment much more attractive as time passes. Profitability could be greatly affected by high wage demands and government fiscal policies. For example, in spite of the existence of high unemployment in many of the countries in this region, wage rates are high and rising.

¹ These calculations are adopted from an unpublished World Bank study. Since the details are too extensive to reproduce here, only the bare essentials are referred to.

² A rate of return of 10 per cent is assumed to be the minimum required.

**Table 6. Percent Rate of Return on Investment at Different
Variable Cost and Price Ranges**

	<i>Investment per Additional ton</i>	<i>World Market Price Rising as shown:</i>	<i>Variable Cost (cts./lb.)</i>				
			<i>2.5</i>	<i>3.0</i>	<i>3.5</i>	<i>4.0</i>	<i>4.5</i>
	<i>(\$)</i>	<i>(cts./lb.)</i>					
(a)	75	5.0 - 6.5	99.5	79.8	68.2	48.1	32.6
(b)	250	5.0 - 6.5	77.7	40.5	31.0	21.8	15.0
(c)	500	5.0 - 6.5	9.9	7.8	5.3	2.9	0.2
		6.0 - 7.5	13.6	11.8	9.8	8.0	5.6
		7.0 - 7.5	15.0	13.2	10.7	9.2	7.1
(b)-(c)	375	5.0 - 6.5	14.1	11.6	8.5	5.5	2.0
		6.0 - 7.5	18.8	16.6	14.0	11.5	8.9
		7.0 - 7.5	20.9	18.8	13.8	14.0	11.5

Some Limitations

Much of this analysis has been postulated on the assumption that the allocation of Caribbean exports to the United Kingdom, at least for the next decade, will not be reduced. This assumption is not unwarranted in the light of certain economic factors and the attitude of both the European Economic Community and the U.K. Under present pricing conditions, the EEC pays between 11 and 12 cents per pound for sugar imports. At these prices the needs of the U.K. could no doubt be met within the EEC. To do so would obviously necessitate increases in sugar acreage and may have undesirable price and supply effects on other products. For this reason, it seems that the tendency would be to refrain from disrupting the flow of imports from traditional U.K. sources. If, on the other hand, for some reason not presently envisaged, the U.K. were forced to substitute low-cost Commonwealth production for higher cost EEC imports, the projected requirements for Caribbean exports will have to be considerably revised.

Given the existing conditions in world agriculture -- especially with respect to food grains -- and the increases in these requirements, it is not now expected that any substantial disruptions in the flow of Caribbean sugar exports to the U.K. can be expected.

Conclusions

The following conclusions seem warranted:

(1) Given the supply-demand situation in the world for sugar exports from the net exporting developing countries, the Caribbean countries could substantially increase their volume of exports to the net importing countries.

(2) Under present and projected *free market* price trends, investment, both in terms of minor rehabilitation and some extensive expansion, appears to be profitable.

(3) Expansion of the sugar industry is a viable investment alternative for the Caribbean in general -- but perhaps to a greater extent in those countries with greater possibilities for substantially increasing acreage.

(4) In order to provide the volume of investment required in the industry over the next decade, substantial external financing will have to be found.

Traditionally, investment in the sugar industry has been justified on two counts: its developmental impact as a *growing point* in the economy and the potential for earning foreign exchange. Experience in the Caribbean suggests that the development effects have, at best, been marginal. This situation has been largely explained by the industry's weak linkages with the rest of the economy, in addition to limited multiplier effects.

These two factors, more than any others, have discouraged governments from actively seeking to bring about expansion in the industry. In deciding on measures to expand investment in the sugar industry, current conditions require that multiplier effects of alternative investment opportunities be considered. In spite of the weak linkages and limited multiplier effects, given the state of sugar technology and already established transportation and storage facilities within the region, expansion of the sugar industry does appear to offer a viable investment alternative in the Caribbean. A substantial portion of this expansion could be undertaken by government alone or in joint ventures with the private sector.¹ The effect will be to increase the linkages with the rest of the economy. At the same time, profits from the industry could be used for diversification both within and outside the industry. The possibilities for diversification within the industry will increase as additional uses for the by-products of sugar cane are found. In this regard the results of recent livestock feedings tests in Barbados using cane pith, molasses, and sugar cane tops are very encouraging. The need for and the commitment to expansion of livestock production in the region represent a significant spill-over effect for the sugar industry and may well be the factor that tips the scale in favour of expansion in the industry.

While some of the estimates in this paper are necessarily highly conjectural and subject to some error, they provide an approximation of the magnitudes involved. Economic development is, in large part, guided by the swift recognition of new investment opportunities, which is especially true for those projects which call for considerable advance planning. Hopefully, this paper will be of some value in *keeping the hot breath of necessity at our necks so that some action is taken.*

¹ The need for and the difficulties of attracting private capital in developing countries have been underscored by A. Vitron of FAO and by R. Liddiard, Chairman of Czarnikow Ltd., at the International Symposium devoted to the situation of the World Sugar Economy and its future development, Nov. 9, 1971, Brussels. Greater emphasis may have to be placed on obtaining the assistance of international financial organisations for expansion of sugar production.

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