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A CONCEPTUAL FRAMEWORK FOR ADJUSTMENT OF THE TRADITIONAL EXPORT SECTOR

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Introduction

While there seems to be general consensus that the traditional export sector of Caribbean countries in recent years has been performing less than satisfactory, there is yet no clearly defined approach for addressing this problem. Some States have responded by total abandonment of certain export crops, some have considered diversification as the approach for re-dressing the problem and yet others have done very little.

This paper, therefore, attempts to examine the relevant concepts in defining a framework for the adjustment of the traditional export agricultural sector in the light of its recent performance. Indeed, whether export agriculture should be scaled down to meet only domestic requirements, scaled down to meet domestic requirement and lower levels of export or fully abandoned is an empirical question. The essential point is that a re-allocation of resources, consistent with national priorities and resource availability is needed. The ultimate production strategy chosen is therefore a function of these equations.

While the range of major export commodities include sugar, coffee, cocoa and bananas, sugar has dominated the socio-economic landscape of the Caribbean for centuries. Accordingly, the case of sugar is used widely in this paper in addressing relevant issues.

The paper is structured to first identify what may be considered to be an acceptable set of socio-economic objectives after which the discussion focuses on the rationale for the adjustment of the traditional export sector. The paper then goes on to discuss the relevant issues in developing conceptual framework followed by some brief comments on operational considerations.

Socio-economic Objectives for the Agricultural Sector

The Agricultural Sector is the key sector for most Caribbean countries. Accordingly, countries in the Region expect that this sector should make significant contributions towards satisfying a large number of national objectives. Conventionally, such objectives tend to include:

1. contribution to national product
2. foreign exchange earnings and/or savings
3. employment creation
4. economic stability
5. linkages with the rest of the economy
6. dynamism and potential for growth
7. contribution to food and nutritional needs.

In planning for the agricultural sector, the strategies and production programmes selected must aim to maximize the fulfillment of these objectives subject to resource availability. However, in proceeding with this task it should be noted that: (a) certain socio-economic objectives may be non-commensurate; and (b) that individual objectives are likely to have different ordering or national priority. These two issues regarding the treatment of multiple socio-economic objectives in what may be described as an optimization process must be explicitly addressed in the development of a sectoral or sub-sectorial plan for agriculture.

Rationale for Adjustment of the Traditional Export Sector

Before proceeding to develop a framework for the adjustment of the export agricultural sector, it is appropriate to firstly examine it to ensure that a case actually exists for so doing. Methodologically, therefore, a set of suitable criteria should be identified against which the sector's performance may be evaluated.

Criteria for Evaluation

The performance of the agricultural sector or its export subsector can be assessed in terms of its achievement of the stated socio-economic objectives. Such an analysis may be conducted using evaluation criteria arising from the various objectives.

C. Bruce in discussing *The role and importance of the Sugar Industry in the economy of Trinidad and Tobago* identified the following criteria as important:¹

1. size of the industry in terms of its relevant share of national product
2. its relative share of foreign exchange earnings and/or savings
3. its demand for resources that are:
 - (a) in excess supply, e.g. labour; and
 - (b) in short supply, e.g. capital and land
4. its integration into, and interdependence with, the rest of the economy considered in terms of the linkages established
5. its dynamism and potential for growth
6. its profitability in conventional terms.

The foregoing seem appropriate for evaluating export agriculture in general and the sugar industry in particular.

Historical Perspective

The traditional export agricultural sector has, from early colonial days, played a dominant role in Caribbean territories. Sugar was then king, controlling the human, land and capital resources in the colonies. The socio-economic patterns which emerged were shaped by both the system of sugarcane

¹ Republic of Trinidad & Tobago: *Report of Committee to consider the Rationalisation of the Sugar Industry*. Vols. I & II, Dec. 1978, Ch. 2, p.12.

production and the relationship of the local industry with the metropolitan centres. In the case of the farmer, the plantation system did not allow for the development of entrepreneurship. With respect to the latter, the concept of the extended state was rather useful as an economic means of procuring raw material and primary foodstuffs for the metropolitan markets. Indeed, the mechanisation was in place for closely integrating production and consumption and it was in the interest of the State to ensure that its market requirements were satisfied to the maximum extent possible by production from within the State. It is, therefore, not surprising to find that the physical and institutional infrastructure in the colonies for export commodities, firstly, sugar cane and subsequently cocoa, coffee, and bananas were well developed.

Current Market Conditions

With changes in political status over the past two decades of most former British colonies in the Caribbean, it was obvious that market security for primary commodities could no longer be guaranteed. More recently Britain's entry into the EEC resulted in further erosion of market security with respect to sugar. These political shifts have been associated with the introduction of considerable uncertainty and instability in the markets for traditional agricultural exports from these former colonies.

The current world recession, together with other specific factors affecting both the supply and demand sides of the international market for export commodities, has adversely affected export agriculture. There has been a general downward pressure on prices and therefore the earnings of the export sector has been declining in real terms.

With respect to international sugar market, the shortfall in world production in 1974 (Table 1) provided a price stimulus with the following consequences:

1. stimulation of production particularly beet sugar
2. stimulation of the development of other sweeteners, in particular, high fructose corn syrup; and
3. had a dampening effect on demand for sugars generally.

As a result of the above influences on the world sugar market, the post 1974 era has been characterized by a world market in which real prices have shown drastic declines and one in which fairly high levels of carry-over stocks have been maintained and production more or less in balance with consumption.

Of greater relevance to the Caribbean territories is the European Economic Community (EEC) production and consumption levels. Table 2 shows that as of 1975 the EEC has been a surplus producer (relative to its consumption); moreover, the level of demand has been relatively constant. Accordingly, the long-run market potential for Caribbean sugar in the EEC does not seem promising.

Further to the above, the world sugar market has undergone structural changes. There is, therefore, little hope that resolution of the current dilemma would likely return the market to conditions of earlier years.

Table 1: World Production and Consumption for Sugar; 1971-1981

(million tons - raw value)		
Year	Production	Consumption
1971	74	74
1972	76	76
1973	76	76
1974	76	77
1975	79	74
1976	82	79
1977	90	83
1978	91	86
1979	89	90
1980	84	88
1981	88	89

Source: International Sugar Organization: *Sugar Year Books*.

Table 2: EEC Production and Consumption of Sugar, 1971-1981

(million tons - raw value)			
Year	Production	Consumption	Surplus (+) Deficit (-)
1971	10.3	10.5	-
1972	9.9	10.5	-
1973	10.2	11.1	-
1974	9.2	11.7	-
1975	10.8	9.5	+
1976	10.8	10.5	+
1977	12.5	9.9	+
1978	12.8	10.6	+
1979	13.3	10.5	+
1980	13.3	10.6	+
1981	13.1	10.5	+

Source: International Sugar Organization: *Sugar Year Books*.

Demand for Resources

It is a well known fact that the traditional export crops dominate land use in the Caribbean. Table 3 indicates that sugarcane, bananas, cocoa and coffee together utilize from 21 percent up to 75 percent of the more suitable agricultural lands (defined as those in land capability classes I to IV). Not only are the areas occupied of higher inherent soil productivity but also these are often contiguous stretches of relatively flat land which seem amenable to mechanized operations.

Table 3: Land Utilization by Traditional Export Agriculture for CARICOM Countries*

Countries	Percent of Agricultural Area (Cap. I-IV) in Traditional Export Crops
Barbados	52
Belize	71
Dominica	50
Grenada	75
Guyana	9
Jamaica	27
St. Kitts-Nevis	21
St. Lucia	49
St. Vincent	38
Trinidad & Tobago	63

- *Notes:
1. Antigua excluded
 2. Commodities include: sugarcane, cocoa, coffee and bananas
 3. Estimates derived from the following sources:
 - (i) Caribbean Comm. Secretariat: *CARICOM Feeds Itself*, 1980.
 - (ii) ECLA: *Agricultural Statistics*, Vol. IV, V., 1982.

It is also a well known fact that the traditional sector employs a large percentage of the agricultural work force in the Caribbean. Accordingly, changes within this sector are indeed sensitive issues since they impinge on the employment and livelihood of a larger number of individuals and households in the Region.

In summary, therefore, it is clear that this sector plays an important role in the utilization of the Region's most important resources - land and labour.

Performance of the Sugar Industry

The performance of the sugar industry in recent years has stimulated a lot of inquiry and self-examination. Although its impact has probably been more dramatic and noticeable than other commodities, similar experiences have been noted in other export industries.

C. Bruce in his analysis of sugar industry in Trinidad and Tobago makes the following observation²:

"the industry is marginal in terms of its contribution to output. In rural terms, its relative share has not only been falling but subject to wide fluctuations."

This industry performance is perhaps characteristic of other sugar producers in the Region, although, at varying levels. Bruce further suggests that the industry's poor performance in Trinidad and Tobago has been due to relatively poor production and export performance since 1972. Both these factors also characterize the industry in other territories.

² Republic of Trinidad & Tobago: *Loc. cit.*

The Options

The foregoing discussions on the traditional export agricultural sector characterize industries which are important in terms of their use of the Region's most valuable resources, yet their contribution to other national objectives have not been commensurate with the demand for resources. In the interest of development it seems appropriate that countries redress this adverse imbalance.

Conceptual Framework for Adjustment

The economic activities pursued in any economy must be in harmony with the social and economic objectives. The resources allocated to such activities in achieving societal objectives must be consistent with the concept of *highest and best use* of a nation's valuable resources.

Adjustment to the export agricultural sector requires a re-allocation of major resources towards a new production strategy so as to better achieve socio-economic objectives. Logically, therefore, such an exercise should start with an examination of the resources which would be available. In this regard, a decision to adjust the export sector means that all or part of the resources allocated to this sector may be re-allocated. From a study of resource characteristics, the climatic and environmental factors and the state of the art in agricultural production technology, it should be possible to identify the production possibilities which may be defined as those which have economic value - that is, a demand exists for such commodities. The task which remains is to select that combination of production activities which maximizes the attainment of the various objectives.

The real challenge faced by planners concerned with adjustment of export agriculture is how to determine the set of economic activities which should be pursued in order to effect an improvement in performance while at the same time addressing problems related to:

1. satisfying multiple objectives some of which may be non-commensurate or non-quantifiable;
2. determining the relative importance of the various socio-economic objectives;
3. handling adjustment in an environment characterized by structural rigidities in the socio-economic system;
4. dealing with the conflict of private versus public interests;
5. handling problems relating to the spatial distribution of resources and resources of variable quality; and
6. coping with the dynamic feature of a socio-economic system.

Dealing with Multiple Objectives

Since the basis for choice is the level to which each production option satisfies national objective, the obvious question which arises is what are the priorities or relative weighting on the various objectives. Very seldom do decision-makers indicate explicit weights attached to various socio-economic objectives. However, from time to time policy-makers may state either implicitly or explicitly priorities in national objectives.

When priorities for objectives are established optimization in terms of selecting the best combination of production options may proceed by

selecting the production options which maximize the attainment of the objective with the highest priority while at the same time ensuring that other objectives are satisfied to certain pre-determined minimum levels. For example, if it is assumed that the following four objectives were identified as important in developing a national agricultural plan:

- | | | |
|----|--|-----|
| 1. | net foreign exchange earnings and/or savings | - F |
| 2. | employment | - E |
| 3. | growth potential | - G |
| 4. | degree of linkage | - L |

and assuming that while the highest priority is given to foreign exchange (F) it is necessary for selected production options to satisfy other objectives to at least the following predetermined levels:

Employment at b_1

Growth potential at b_2

Degree of linkage at b_3

the choice problem may then be formulated as follows:

$$\text{Max. } F = f(X_1, X_2, \dots, X_n)$$

$$\text{subject to: } E \geq b_1$$

$$G \geq b_2$$

$$L \geq b_3$$

where X's are production options.

Alternatively, if the ordering or the weights for the various objectives are not known, indirect approaches may be used to obtain estimates of their relative values. For example, one such approach is to assess public projects/programmes (which have been considered for implementation in the past) in terms of their potential contributions to the various socio-economic objectives. In this regard, both projects voted-on and those shelved should be analyzed. Analysis of the relevant data can reveal the preferences or relative weights which policy-makers tend to place on the various objectives. These may be validly applied to planning if there is good reason to think that these preferences are likely to prevail in the future. Given this information, the choice of a production plan can be obtained from the optimization of the following multi-objective function:

$$Z = \lambda_1 G_1 + \lambda_2 G_2 + \dots + \lambda_m G_m$$

where G_1, G_2, \dots, G_n = various socio-economic objectives

$\lambda_1, \lambda_2, \dots, \lambda_n$ = weights assigned to each objective

The focus in this section on how to explicitly incorporate socio-political preferences in the analytical development of sectoral plans revealed a methodology that is, indeed, generally applicable to public sector planning. However, it is only when such a framework is applied to the unique resources of the traditional export sector that the opportunity is provided to demonstrate

degree of sensitivity and the special considerations which are necessary when contemplating adjustments in this sector. Accordingly, the following sections examines the relevant resources and the production possibilities.

Human Resources

One of the most difficult problems in attempting to restructure the export sector is in the proper treatment of the human resource issues. The particular problems stem from:

1. the large number of people employed in these industries;
2. the age structure of the workforce;
3. the nature of the skills of the workforce
4. the inertia to change.

Not only is the workforce which is engaged in export agriculture large, in many cases entire families are involved in the industry, having served it for most of their productive years. Indeed, it is a way of life for most of the Region's people who have served these industries. Many know no other skills than those developed to serve their particular export industry. Accordingly, any desire to reallocate the human resource in the export sector is, indeed, a most difficult task. It results in the disruption of the routines of an entire life. There is also the problem of attempting to retrain workers who are generally advanced in age.

As a consequence of these characteristics of the human resource, drastic restructuring of export agriculture is likely to be chaotic. More meaningful and productive changes must be implemented through gradual incremental changes in the desired direction. In this regard, the use of the term *adjustments* seem more appropriate than *restructuring*.

In order to pursue a productive strategy for the mobilization of human resource out of export agriculture, it is important to give emphasis to the younger members of the workforce. They tend to be more amenable to retraining with the additional benefit of having a longer working life remaining. A further feature of a successful strategy is to give emphasis to those production activities which are associated with occupations which are more compatible with the aspirations of younger members of the workforce. Accordingly, the availability of occupations which are free from drudgery, typical of most plantation agriculture, is likely to be sufficiently interesting to attract young workers out of the export sector. In summary, therefore, adjustments to the traditional sector must be sensitive to the particular socio-economic characteristics and the goals and aspirations of its human resource.

Land Resource

It is noted earlier that export agriculture not only occupies large areas of land but also generally tends to control the more productive agricultural areas. Accordingly, the reallocation of this resource in the adjustment process should note the following:

1. agricultural productivity of such areas relative to other available land resource in the country;

2. the virtual irreversibility of land use if these productive soils are reallocated to built development;
3. the scope for large scale domestic agriculture, non-traditional export agriculture and diversification of primary products.

The experience in some countries with respect to the reallocation of the land resource which were released when export agriculture was dismantled, at least in part, is tragic. Because of demand pressures for built development some of the most productive agricultural areas were lost to built development. The adjustment process must, therefore, pay particular regard to the scarcity of productive agricultural lands.

Production Possibilities

Production options in the adjustment of export agriculture includes possibilities emanating both from the reallocation of its human, land and capital resources, and from the transformation of its traditional end-products (usually in primary form) into further end products. For example, possibilities have been identified for producing animal feeds, pharmaceuticals and boards from the traditional sugar cane crop. The market potential for many of these non-traditional products seems attractive.

Conclusion

The discussion in this paper suggests that the adjustment of the traditional export agricultural sector is indeed a complex and difficult task. Of paramount importance in developing successful strategies for effecting changes in the social interest is the need to be particularly sensitive to the characteristics of the resources currently allocated to traditional export agriculture, including the degree of inertia, the need for retraining of its human resource. Adjustments should be gradual working towards a social optimum. Particular attention should be given to the over-riding concerns for plans to be flexible and in an effort to emerge with a plan which optimizes socio-economic objectives the analysis must adopt a social accounting framework.