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Economic Incentives and the Agri-Food Sector of OECS Countries: A Quantitative Assessment

Prepared for the
Organisation of Eastern Caribbean States (OECS)
Agriculture Diversification Coordinating Unit (ADCU)

November 1994



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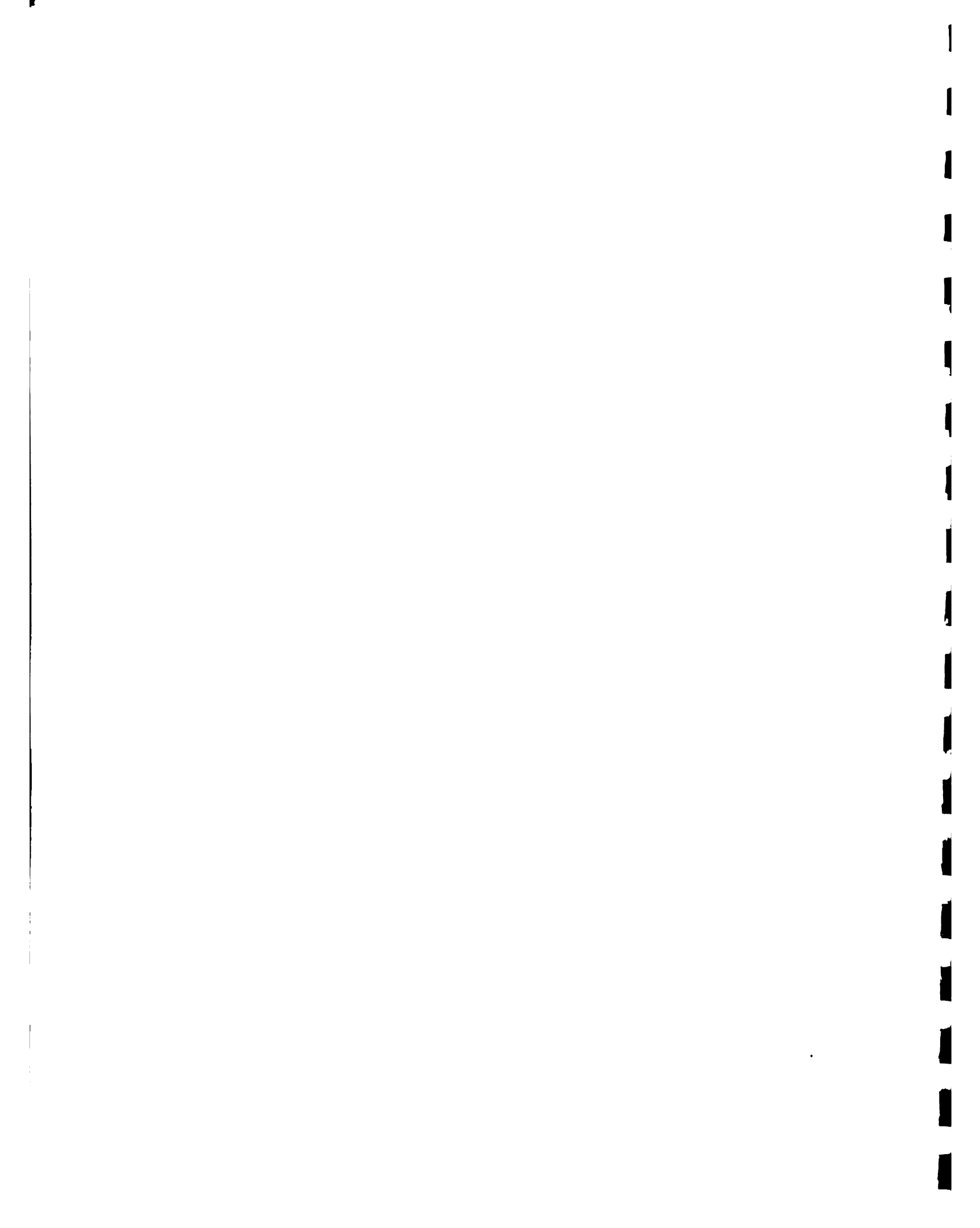
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Executive Summary

Beginning in the mid 1980s emerging concerns over the disappointing performance of the non-traditional agricultural sector of Organization of Eastern Caribbean States (OECS) countries, despite the introduction of what appeared to be considerable levels of public sector support began to challenge established thinking regarding how agricultural development should be facilitated. In addition to publicly funded support, considerable international donor financing aimed at overcoming various institutional and infrastructural constraints to diversification of the agricultural sector was also undertaken. These concerns were further fuelled by the contraction of non-traditional exports, particularly in the post-1986 period and the apparent re-orientation of many of the national country level diversification programs toward an emphasis on home market production and import substitution.

A further concern related to the possible erosion of the preferential status for bananas and sugar in the European Union (EU). This concern has taken on an added dimension particularly since the agricultural sector has been brought under GATT discipline. The significant economic contribution made by these commodities in the economies of four OECS countries has underscored the importance of non-traditional export expansion and the need to use such expansion as a medium to stimulate economic growth through trade.

This study assesses the impact of economic incentives on the agri-food sector of eight OECS countries by analysing the effect of policy induced measures on exports, private investment, farm-firm efficiency and industry protection. Based on the analysis the relevance of various policy measures in regard to the objective of increased competitiveness is evaluated. Options for overcoming the dis-incentives to the efficient operation of existing support measures as well as proposals for re-structuring and policy reform are also advanced.



Unlike other studies undertaken in this area which have focussed solely on fiscal incentives, the present study assesses the impact of economic incentives on the agri-food sector of OECS countries. These economic incentives includes fiscal incentive measures as well as other forms of policy induced supports. The distinction between fiscal and economic incentives is particularly important, since the finding of this study concurs with an emerging body of economic research which indicates that the predominant form of support in developing countries is induced by border protection measures (tariffs, quantitative restrictions, etc.). The study also differs from previous efforts in its heavy reliance on quantitative analysis (econometric and static equilibrium analysis). Such reliance enables this analysis to surmount many of the limitations of previous studies, insofar as it renders a reasonable assessment of the impact of existing policy measures on the agri-food sector. Finally, since the study has undertaken both macro- and micro-analysis, the formulation of fairly industry specific recommendations, which are consistent with developments at the level of the macro-economy is made possible.

The study is targeted at policy makers and planners, as well as the regional and international donor financing community. Certain aspects of the study however, are also likely to be of interest to private sector institutions engaged in, or contemplating investment in the agri-food sector of OECS countries. In this regard this study complements the one previously undertaken by the OECS/ADCU on agricultural diversification in the OECS.

The econometric results presented in the study indicated that the economic incentive measures in effect among OECS countries over the 1980-1992 period did not achieve its impact in regard to attracting private investment into the agri-food sector. Similar results were obtained in relation to the impact of economic incentives on agri-food export growth. The results also indicate that macro-economic stability and trade openness will be important in achieving increased private sector investment and agri-food export among OECS countries.



Results of the static equilibrium analysis indicated that the economic incentive measures in effect between 1980-1992 provided a substantial degree of protection to the agri-food producing sector of OECS countries. This resulted in domestic production being favored over exports. Significant production and marketing inefficiencies were identified as being major contributors to the poor performance of the agri-food producing sector. Consequently, the results suggest that in the re-design of economic incentives programs, attention to initiatives aimed at addressing the root causes of these inefficiencies will be critical. The net tariff equivalents indicate that the impact of non-quantitative restrictions on protection to OECS agri-food producers is significant. Hence tariff phase-outs by themselves will not necessarily provide the impetus required by OECS agri-food producers to increase their efficiency and competitiveness.

The study found that the existing regime of incentives were designed with a heavy bias toward providing support to the manufacturing sector (textiles and apparel, light assembly etc.). As a result many agri-food processors have not been able to benefit substantially, from these programs. In addition, the study found that by not providing duty free concessions to some types of intermediate inputs required in the production process and by not providing other critical types of support for agri-food processors, OECS countries continued to discriminate against higher value-adding type activities.

Based on the study the need to maintain an appropriate mix of trade and macro-economic policies appears to be critical if economic incentive measures are to have a positive impact on private investment and on agricultural exports. The results suggest that the impact of incentives on these two variables will depend on the ability of individual OECS governments to maintain investments and expenditures in well-targeted areas. At the industry level, the provision of support facilities such as long-term development financing facilities, export credit insurance, facilities for human capital development and for the provision of research, development and extension services to the agri-food sector at reasonable cost, will



continue to be critical. Based on this and on the need to concentrate resources on supporting a few commodities, industry targeting is proposed as a framework for facilitating the provision of the requisite support services in an efficient manner, while allowing different OECS countries the option of promoting different commodities.



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INTRODUCTION

The objective of this study is to evaluate the impact of fiscal and other support measures on the agricultural sector of the Organization of Eastern Caribbean States and the British Virgin Islands. This objective arose out of the concerns expressed by the Governments of the OECS member states in regard to the state of the agricultural sector. These concerns were based on their observations of issues such as the need for diversification in the sector and the trend toward trade liberalization and the harmonization of fiscal and other supports to agriculture.

For the countries in which the role of the agricultural sector is of paramount importance, i.e., the Windward Islands and St Kitts and Nevis, their continued dependence on export commodities with preferential markets in the European Union has become undesirable due to the trend in that Union toward a Single Market with the elimination of preferential treatment for ACP commodities. Thus a move among the OECS member states to diversify their agricultural product mix is noticeable. The selection of the appropriate commodities upon which such diversification efforts are based in part must depend on an analysis of the international competitiveness of relevant alternatives. Competitiveness in this context refers to the ability of producers and the marketing system to deliver a commodity to retail outlets at prices at or lower than the costs of cheapest imports of the identical commodity, where these imports are not subject to any tariff or non-tariff measures which affect the price or flow of the commodity.

One important contributor to the competitiveness of commodities is the regime of fiscal and other support measures provided to agricultural production. A high incidence of subsidies and incentives results in market distortions whereby farmers may obtain inputs at lower prices and are thus able to sell products at prices higher than those which would obtain in the absence of such measures. The net effect is that farmers are able to operate at higher costs of production which implies that they are likely to be internationally uncompetitive. An assessment of the incidence of subsidies and incentives is thus an essential part of the explanation of the causes of the uncompetitiveness of the region's agricultural commodities.



The current trend in the international market place is towards trade liberalization and the harmonization of fiscal and other supports to agriculture. This trend is being promoted via international and bilateral agreements such as the new GATT Agreement, NAFTA, the Single Market of the European Union. An important aspect of the negotiations for such agreements is the setting of realistic goals for the reduction to internationally acceptable levels of national support measures. Essential to such negotiations therefore, is knowledge of what measures are actually in place and the level of support they provide. Of equal importance is an understanding of the consequences of the removal of such fiscal and other support measures and in particular, the effects on the welfare of producers and consumers.

Perhaps the overriding question in the context of the OECS countries, is whether their agricultural sectors can survive the elimination of all protection and the emergence of full international competition. A complete appreciation of what measures are in effect and the level of support they provide will assist in answering such a question.

Outline of the Study

To fulfill the objective of this evaluation a particular methodological approach is adopted which is now summarized. A review of the performance of the agricultural sectors of the OECS over the 1980 - 1990 period is presented in Chapter 1. This review provides background information on the sectors and also allows an analysis of the possible causal links which may exist between the level of support to the sectors via fiscal and other measures and the performance of the sectors.

Chapter 2 undertakes a documentation of recent trends (between 1984-86 and 1994) with respect to the subsidy and incentive programmes for the agri-food sector (defined for these purposes as the agricultural production sector and the food processing subsector) in the individual countries and the chapter lists the subsidies and incentives that are currently in place in 1994. An individual country analysis of the possible causal links which may exist between the subsidy and incentive programme of the country, the performance of the agricultural production sector and the economy as a whole is also undertaken.



The subsidy and incentive programme incorporates all measures offered directly by Government Departments and Ministries, involving the provision of services at prices less than "free" market prices, as well as those measures administered by quasi-governmental agencies such as development banks and marketing boards.

Chapter 3 describes the methodological approach used to assess the micro-economic impact of the subsidy and incentive programme. This analysis concentrated on an assessment of the competitiveness of selected commodities. The Nominal Protection Coefficient (NPC) measure which gives an indication of the total price distortion of the commodity was employed.

An assessment is also made of the comparative efficiency of the production of the commodity by calculation of the Effective Protection Coefficient (EPC). Calculation of the impact of the subsidy and incentive programme on the competitiveness of each commodity is estimated using the Net Tariff Equivalent (NTE).

The effects of the fiscal incentives and other supports (including tariffs) for the commodity on consumer and producer welfare are then assessed. In the case of consumers, the contribution of consumers to the welfare of producers was estimated by the Consumer Subsidy Equivalent (CSE%), and the effect of the removal of fiscal and other supports for the commodity on the welfare of consumers was measured by the percentage increase (or decrease) in consumption of the commodity. In the case of producers, the effect of fiscal and other supports on the welfare of producers of the commodity was calculated by the Producer Subsidy Equivalent (PSE%).

The selection of the commodities for this study was based on their acknowledged potential as diversification alternatives for the individual member countries. None of the traditional crops were therefore included in the analysis (with the exception of cotton in Nevis).

A macro-economic impact assessment of the subsidy and incentive programme in the OECS using econometric analysis is undertaken in Chapter 4. This chapter also provides the



details and results of this analysis. This assessment focussed particularly on the effect of the subsidy and incentive programme with regard to:

- (a) the level of private investment in the agricultural sector and
- (b) the level of agricultural exports.

An evaluation is undertaken of the success of the system of fiscal incentives and other support measures for the agri-food sector of the OECS. This evaluation is based on the microeconomic and macroeconomic impact outlined above as well as on the administrative efficiency of the system and its ability to achieve developmental goals. Particular emphasis was placed on the agro-processing sub-sector.

The evaluation undertaken in Chapter 5 facilitates the formulation of a number of recommendations for the improvement of the system of fiscal incentive and other support measures to the agri-food sector of the OECS which are then presented in Chapter 6.



CHAPTER 1

REVIEW OF THE AGRICULTURAL SECTOR, 1980 - 1990

Introduction

This section reviews the role and performance of the agricultural sector in the economies of the OECS states and the British Virgin Islands. The analysis will begin with an examination of the performance of the economies in general as measured by real growth in gross domestic product (GDP) as well as examination of the major economic sectors. The primary focus of the section, however, will be on the performance of the agricultural sector over the 1980 - 1990 period. To this end, an examination of trends in food production as well as agricultural trade will be undertaken.

The analysis of food production is based on estimates of production volumes. Analysis of agricultural trade performance utilizes the economic measure of trade dependency, i.e., the Trade Dependency Index (TDI). Data used in this analysis was extracted from the regionally harmonized trade information system, the Standard International Trade Classification (SITC). The TDI methodology developed by Johnson (1992) is a fairly new trade measure which describes the relative degree to which producers and consumers in a country (or economic sector such as agriculture) rely on trade. The TDI is given as:

$$TDI = \frac{Tr}{(E + Tr)} \quad (1)$$

where 'Tr', defined as total trade is equal to the sum of exports (X) and imports (I) and 'E' represents domestic consumption of goods and services produced in a country. In the methodology, $E + Tr = GDP + I$. TDI is thus a ratio of total trade to total economic activity (TEA) where TEA is defined as $E + Tr$ or $GDP + I$. The TDI index can be computed for three levels of aggregation: total, merchandise, and sector-specific trade, in this case, agricultural trade. Each level can be separated into an export and import component to identify sources of trade dependency.



TDI_e of exports and TDI_i of imports, are given as:

$$TDI_e = \frac{X}{(E + Tr)} \quad (2)$$

and

$$TDI_i = \frac{I}{(E + Tr)} \quad (3)$$

The properties of the TDI facilitate cross-country comparisons. A TDI value of zero (0) indicates an autarkic economy with no trade occurring (neither imports nor exports), while a TDI value of one hundred (100) indicates a completely specialized economy which exports all the commodities it produces domestically and imports all the commodities it consumes. A TDI which tends toward 100, indicates an increasing dependence on trade. For example, a TDI of 75, based on agricultural trade for a particular country, implies that for every \$100 worth of agricultural goods produced and consumed, \$75 worth is the result of trade, (i.e, this country is three times more dependent on agricultural trade than one with an index of 25).

If index values reach or exceed 100 percent this indicates that exports exceed GDP. This is possible if gross exports are used since the index depends on net exports, (i.e it represents value added by the exporting country). Since it is impossible to net out the import value from gross exports, the export value in these cases, was set equal to the GDP. Modification of the TDI computation in this manner was necessary for St.Kitts, St.Lucia, St.Vincent and Grenada.

Two TDIs, each decomposed into their export and import components were computed for each OECS country; TDI_M based on merchandise trade denoted by and TDI_A based on agricultural trade. Due to the relatively easy accessibility to GDP and import data, the denominator of the TDI uses GDP + I. Analysis of TDI_M was based on current total GDP at factor cost. The trade dependency analysis for the agricultural sector used the sector's composition of current GDP at factor cost. Merchandise trade was measured by the use of the sum of SITC sections 0 to 9 of total exports and imports, while the computations for agricultural trade were based on SITC sections 0, 1 and 4.

The Leeward Islands and the BVI

This sub-grouping is comprised of Antigua and Barbuda, St.Kitts and Nevis (hereinafter referred to as Antigua and St.Kitts, respectively), Montserrat and the British Virgin Islands (BVI). The agricultural sector plays a minor role in these economies, averaging a per annum share of 4% over the 1980 - 1990 period. In St.Kitts, the average share of GDP was 12% and this was due mainly to the important contribution of the sugar industry.

Low sectoral production in these economies which display such a minor contribution by the agricultural sector, is mainly attributable to the natural resource conditions of these countries. Such conditions include small land mass, unsuitability of arable land for extensive crop production, problems associated with surface water supply and low rainfall, as well as the existence of more remunerative employment opportunities in other economic sectors, particularly the tourism and service sectors.

In these economies, a low percentage of the labour force is engaged in agriculture. The manufacturing and service sectors in the Leeward Islands account for a large portion of employment. 30.4% of the labour force of the BVI was employed in the 'Trading, Hotels and Restaurants' sector, while 18.77% and 38%, of the labour force in Montserrat was employed in "Trading, Hotels and Restaurants" and "Other Services" respectively, over the 1980 -1990 period. In St.Kitts, the garment industry and the electronics industry employed approximately 11% each of the labour force, with hotels and guest houses employing 9%.

Employment in the agricultural sector generally declined among the Leeward Island countries during the period under review. In Antigua, employment in the agricultural sector declined from roughly 20% in 1975 to 9 % in 1981. In the BVI, the agricultural sector accounted for only 1.4% of the estimated total labour force over the 1987-1990 period, while in Montserrat the agricultural sector accounted for only 9.14% over the 1980 to 1990 period. According to the employment figures for the agricultural sector in St.Kitts, 51% of the labour force (approximately 6000) was employed either directly or indirectly in the sugar industry between 1980 and 1990.



Antigua and Barbuda.

Over the 1980 - 1990 period, the Antiguan economy experienced real growth, averaging 6.3% per annum. Table 1.1 indicates that the agricultural sector in comparison to other sectors contributed least to real GDP. Compared to the upward trend exhibited by the manufacturing and tourism sectors, the agricultural sector's share of GDP declined from 7.2% in 1980 to 3.7% in 1990. This decline resulted from slow and in some cases negative growth in the livestock and fisheries sub-sectors.

TABLE 1.1: PERCENTAGE CONTRIBUTION OF KEY SECTORS TO REAL GROSS DOMESTIC PRODUCT ANTIGUA

INDICATOR:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	MEAN
GDP,EC\$M, 1977 prices	194.2	203.8	204.6	218.6	234.9	255.4	280.5	305.8	329.3	346.7	355.9	266.34
GDP Growth Rate	6.70	4.94	0.39	6.84	7.46	8.73	9.83	9.02	7.68	5.28	2.65	6.32
% Agriculture in GDP	7.16	6.08	5.72	5.31	3.96	3.68	3.60	3.70	3.61	3.61	3.71	4.56
Agric. Growth Rate	0.00	-10.79	-5.65	-0.85	-19.83	1.08	7.45	11.88	5.31	5.04	5.60	-0.07
% Manufac. to GDP	5.87	6.82	6.79	6.50	6.30	5.95	5.63	5.40	5.10	4.99	5.00	5.85
% Tourism * in GDP	13.34	12.71	12.76	14.09	16.56	16.72	16.29	16.06	16.46	15.52	15.88	15.12
Composition of the Agricultural Sector (%):												
Crops	15.83	20.16	23.93	20.69	25.81	26.67	25.74	27.43	26.05	25.60	26.52	24.43
Livestock	39.57	45.16	52.99	55.17	40.86	45.74	44.55	42.48	42.86	43.20	41.67	44.93
Forestry	2.16	2.42	2.56	2.59	3.23	3.19	3.96	3.54	3.36	3.20	3.03	3.02
Fishing	42.45	32.26	20.51	21.55	30.11	24.47	25.47	26.55	27.73	28.00	28.79	28.01

* Hotels and Restaurants used as a proxy measure for the tourism sector.

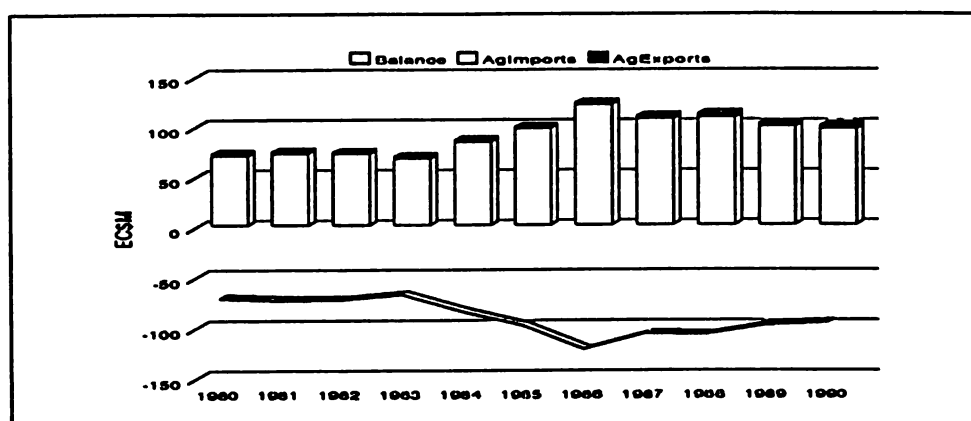
The livestock sub-sector is a major component of Antigua's agricultural sector. Livestock accounted for close to one-half of the agricultural sector's contribution to GDP, fisheries just over one-fourth while crop production made up the remainder of the total value of the agricultural sector. Crop production consists largely of vegetables, pineapple, watermelon and root crops as well as tree crops. Table 1.2 provides an indication of the performance of food production in Antigua over the 1980 - 1988 period.

TABLE 1.2: VOLUME (tonnes) OF PRODUCTION OF MAJOR COMMODITIES, ANTIGUA, 1980-1988.

CROP/GROUP	1980	1981	1982	1983	1984	1985	1986	1987	1988	Mean
Pineapple	105.0	144.8	203.1	199.2	224.0	102.5	105.3	116.0	139.0	148.74
Watermelon	39.6	65.9	51.4	53.2	13.1	135.0	162.7	617.5	741.0	208.8
Vegetables	1098.6	1286.3	1279.4	1368.6	1238.1	1257.2	1391.2	1282.5	1539.0	1111.0
Root Crops	471.3	767.7	529.9	897.7	418.5	454.1	371.3	458.5	545.5	546.0
Other	558.1	617.2	814.8	131.5	171.5	385.5	315.0	347.5	417.5	417.5
Total Crop Production	2272.6	2881.9	2878.6	2650.2	2065.2	2334.3	2345.5	2822.0	3382.0	1579.0
Fish Landings (mt)	1106.5	1382.7	1004.4	1125.5	1247.9	1189.4	1308.3	1635.4	2044.3	

Most of the output of the agricultural sector is consumed domestically, with fish and fish preparations, cereal and preparations dominating agricultural exports. The export of beverages, particularly during 1980 - 1986 accounted for over 50% of total agricultural exports, compared to its share of 24% after 1986. Despite the relatively low fresh agricultural commodity export volumes, the SITC data indicates a steady increase in the agricultural sector's contribution to domestic export earnings over the 1980 to 1990 period. Figure 1.1 illustrates the share of exports relative to imports in the agricultural trade sector during the decade.

Figure 1.1: Agricultural Trade Balance, Antigua, 1980 - 1990



Over the period under review, agricultural commodity imports accounted for a large proportion of total imports, averaging 20.3%. The percentage share of agricultural commodity imports to total imports however, declined from 29.16% in 1980 to 15.83% in 1990. This notwithstanding, the net effect of increasing agricultural export shares and decreasing agricultural

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import shares was not sufficient to significantly narrow the recurring agricultural trade deficit, which averaged EC \$86 million over the decade.

Antigua has also experienced consistent deficits on its total merchandise trade accounts. The presence of trade deficits usually implies a highly import-dependent economy and this is supported by Table 1.3 which reports high TDI values. The Antiguan economy was fairly heavily dependent on the import sector. According to Table 1.3, the dependency of the Antiguan economy on merchandise trade over the 1980 - 1991 was less acute than that of the agricultural sector. Trade dependency for the economy declined considerably by the end of the decade. A TDI value of 43.36 was obtained compared to an index value of 62.27 for 1980. This declining dependency was also evident in the agriculture sector's TDI over the 1980 - 1991 period. The relatively high TDI_A values in Table 1.3 however, indicate that the agricultural sector was highly dependent on trade, particularly on agricultural imports. The extremely low values for agricultural TDI_x imply that the contribution of agricultural exports to total agricultural trade was negligible.

TABLE 1.3: TRADE DEPENDENCY INDICES - ANTIGUA, 1980 - 1991

TDI:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
TDI_M	62.27	66.51	62.47	53.43	53.14	53.85	55.11	54.73	50.83	45.69	43.36	47.98
TDI_x	14.38	15.67	8.29	8.20	6.25	4.91	4.75	4.00	4.15	3.62	3.36	6.68
TDI_y	47.89	50.84	54.17	45.23	46.89	48.94	50.36	50.75	46.68	41.33	39.51	41.29
TDI_A	81.54	80.91	80.55	77.98	83.23	82.02	84.41	80.66	79.77	76.85	74.64	77.71
TDI_z	2.53	2.51	2.34	2.86	2.25	1.48	1.45	2.39	2.86	2.77	2.83	2.16
TDI_t	79.01	78.39	78.22	75.12	80.98	80.54	82.96	78.27	76.91	74.08	71.81	75.55

Montserrat

Montserrat is relatively small with a population of under twelve thousand and an average GDP of EC 43.37 million over the 1980 - 1990 period. Real GDP peaked at EC\$61.4 million in 1990, a level well below that recorded by any other OECS country over the same period. The economy of Montserrat registered positive real growth over the 1980 - 1990 period, with the exception of the year 1983 when a 4% fall in real GDP was experienced (See Table 1.4). The high growth rates from the 1980 - 1990 period resulted mainly from a boom in the construction

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

sector. In 1989 and 1990, the contribution of the construction sector jumped by 122.6% and 60%, respectively over their respective 1988 and 1989 values.

Economic activity was centered in the Government Services sector which, over the 1980 - 1990 period, was the largest contributor to real GDP. Apart from Construction, the other sectors of significance in the Montserrat economy over this period were Distributive Trade, Real Estate and Housing. According to Table 1.4, although its percentage share declined at the end of the period, the contribution of the Manufacturing sector averaged 7.6% between 1980- 1990. The contribution of the both the agricultural and tourism sectors to real GDP was weak, averaging roughly 3% over the 1980 and 1990 period.

TABLE 1.4: PERCENTAGE CONTRIBUTION OF KEY SECTORS TO REAL GROSS DOMESTIC PRODUCT, MONTSERRAT

INDICATOR:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	MEAN
GDP,EC\$M, 1977 prices	36.09	37.38	39.06	37.34	38.22	40.53	41.66	43.88	48.01	53.53	61.40	43.37
GDP Growth Rate	9.8	3.57	4.47	-4.38	2.35	6.05	2.79	5.33	9.41	11.5	14.7	5.96
% Agriculture in GDP	4.21	4.57	4.15	3.76	4.55	4.39	4.01	4.03	3.81	2.40	2.17	3.82
Agric. Growth Rate	-6.75	12.50	-5.26	-13.40	24.02	2.30	-6.18	5.99	3.39	-29.67	3.34	-0.88
% Manufac. to GDP	8.67	9.36	8.81	9.61	9.21	8.64	8.52	8.45	7.83	5.64	3.27	7.60
% Tourism* in GDP	3.57	3.05	2.79	2.81	3.61	3.75	3.00	3.14	3.19	3.36	2.62	3.17
Composition of the Agricultural Sector (%):												
Crops	46.71	49.12	49.38	41.34	48.85	41.01	44.31	46.33	48.63	24.09	19.55	41.76
Livestock	30.26	30.41	28.40	30.65	30.46	37.08	32.34	31.64	29.51	44.06	48.12	33.90
Forestry	14.47	12.87	13.58	16.93	13.22	12.92	14.37	13.56	13.11	19.43	18.80	14.79
Fishing	8.55	7.60	8.64	9.27	7.47	8.99	8.98	8.47	8.74	12.43	13.53	9.34

* Hotels and Restaurants used as a proxy measure for the tourism sector.

There was substantial fluctuation in the agricultural sector growth rates over the 1980 - 1990 period. In 1980, crop production comprised roughly 50% of the agricultural sector's contribution to GDP, however by 1990, its share fell by over half, to 20%. Crop production suffered a major setback in 1989, registering a 65% decline in output over the 1988 figure (Table 1.4). The livestock sub-sector and the other hand, which on average constituted 13% of the agriculture sector's value in real GDP over the 1980 - 1990 period, recorded steady growth after 1985. While the share of livestock in the agriculture sector was 30% in 1980, by 1990 it had increased to just under 50%. Fishing and forestry sub-sectors averaged 14.7% and 9.3%, respectively, as a share of agriculture in GDP.



While crop production was the major activity in the agricultural sector, output over the 1980 - 1990 period was relatively low. Montserrat produced mainly short term crops such as vegetables and legumes, with limited production of root crops. The traditional crop, cotton, has been in decline since the late 1970s. Table 1.5 provides information on crop production in Montserrat over the 1980 - 1987 period. As indicated there was a declining trend in production, particularly in the post 1984 period. This trend was most noticeable for cotton production. Low output volumes from the agricultural sector over the 1980 - 1990 period have contributed to the weak position of agricultural commodity exports in merchandise trade.

TABLE 1.5: VOLUME (tonnes) OF PRODUCTION OF MAJOR COMMODITIES, MONTSERRAT, 1980-1989

CROP/GROUP	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	MEAN
Seed Cotton	5	38	25	32	0	0	0	3	0	0	9
Vegetables	233	240	238	138	365	323	121	130	73	57	177
Root Crops	258	268	265	198	335	310	255	275	177	110	232
Other	315	275	255	201	263	208	203	200	6	3	176
TOTAL	811	821	783	569	963	841	579	608	256	170	594

Data on merchandise trade for Montserrat from 1980 to 1992, indicates an increase in the deficit on its agricultural trade account (Figure 1.2). A drastic reduction in export value of agricultural commodities from EC \$221,000 in 1980 to EC \$ 18,000 in 1990 contributed in part to the rapid increase in the agricultural trade deficit during the latter half of the 1980 - 1990 period. Most of Montserrat's trade in agricultural commodities was comprised of live plants with limited exports of fresh fruit and vegetable.

Figure 1.2: Agricultural Trade Balance, Montserrat, 1980 - 1990

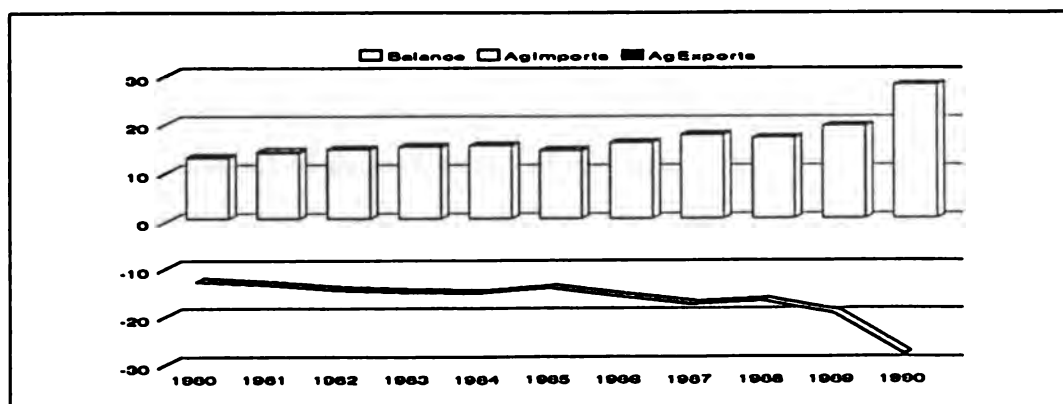




Table 1.6 presents the results of the TDI computed for Montserrat over the 1980 - 1991 period. The results suggest that during the 1980 - 1990 period, the economy was not highly dependent on merchandise trade. The overall dependency of the economy on trade declined slightly during the mid-1980s, averaging 44.7 in terms of the TDI measure of dependency over the period. As was generally the case, the prime source of dependency was merchandise imports. The TDI values for the agricultural sector were generally higher than those of the economy. The high TDI_A values in Table 1.6 indicate a high dependency on agricultural trade.

TABLE 1.6: TRADE DEPENDENCY INDICES - MONTSEERRAT, 1980 - 1991

TDI:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
TDI _M	46.38	49.24	48.73	49.89	42.51	41.68	40.97	45.43	41.76	40.77	43.70	45.34
TDI _E	3.12	5.16	5.50	9.45	6.49	5.68	4.08	5.57	3.31	2.01	1.82	1.69
TDI _I	43.26	44.08	43.23	40.45	36.03	36.00	36.90	39.86	38.45	38.77	41.88	43.66
TDI _A	85.25	84.20	81.60	82.22	79.83	77.50	78.16	78.28	76.24	83.76	87.12	83.64
TDI _U	1.50	2.55	0.61	0.47	0.86	1.29	0.47	0.50	0.40	0.12	0.06	0.20
TDI _L	83.76	81.66	80.98	81.75	78.97	76.22	77.69	77.78	75.84	83.63	87.06	83.44

As is evident from the values of the TDI, the agricultural sector in Montserrat was fairly close to being concentrated on imports, since it imported the major portion of its domestic requirements and exported little. The declining TDI values in the mid-1980s indicate a reduced dependency by the agricultural sector on trade. This may either have been the result of increased agriculture sector output or a reduction in imports related to some other factor. cursory examination of the available GDP and trade data would appear to support the former case.

St. Kitts

Though grouped with the Leewards, the economy of St. Kitts is similar to that of the Windward Islands in terms of the dominance of one crop - sugar cane. The sugar industry in St. Kitts over the 1980 to 1990 period, contributed to the growth of GDP in real terms, through its impact on both the agriculture and manufacturing sectors, comprising on average, over 50% to the agricultural and manufacturing sector share in real GDP. The sugar industry's contribution to real GDP has been declining since the early 1980s, from 60% and 54% respectively in 1980



to 41% and 26% respectively, in 1990 (Table 1.7). Over the 1980 - 1990 period, the industry declined at a per annum rate of 6.5%.

Despite the decline of the contribution of the sugar industry, the economy of St. Kitts registered positive growth over the 1980 - 1990 period (Table 1.7). With the exception of a 1.1% decline in 1983, real growth, was relatively stable, averaging 5.64% per annum over the 1980 - 1990 period. GDP peaked at EC \$140.6 million in 1990, an increase of over 70% from its 1980 level. Although the sugar industry was a significant contributor to GDP, that industry was not the major determinant of real economic growth. Growth in manufacturing (excluding sugar), tourism and construction, accounted for an increasing share of GDP over the 1980 - 1990 period.

TABLE 1.7: PERCENTAGE CONTRIBUTION OF KEY SECTORS TO REAL GROSS DOMESTIC PRODUCT ST. KITTS

INDICATOR:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	MEAN
GDP, EC\$M, 1977 prices	80.28	84.38	89.70	90.81	96.72	102.31	108.40	116.43	127.93	136.42	140.58	106.72
GDP Growth Rate	3.92	5.11	6.30	-1.09	9.02	5.57	6.16	7.415	9.79	6.72	3.01	5.63
% Agriculture in GDP	16.74	16.70	15.71	14.87	12.40	11.46	10.48	10.00	9.60	8.60	6.85	12.13
Agric. Growth Rate	-9.56	4.84	0.00	-4.19	-11.19	-2.25	-3.07	2.46	5.50	-4.48	-17.90	-3.62
% Manufac. to GDP	16.85	14.40	14.68	12.91	13.60	12.16	12.42	11.36	10.69	10.15	8.59	12.53
% Sugar in Manufac.	54.25	56.21	57.63	50.51	49.73	45.58	44.65	40.29	39.40	37.76	25.83	45.62
% Tourism* in GDP	3.25	3.45	2.79	2.73	3.80	4.54	5.74	6.52	5.99	5.54	5.63	4.54
Composition of the Agricultural Sector (%):												
Sugar Cane	59.75	56.56	58.55	63.11	58.80	52.99	54.14	52.84	52.12	50.81	41.33	54.64
Other Crops	14.81	14.55	12.35	9.26	9.76	11.43	11.97	12.89	14.01	15.17	14.95	12.83
Livestock	16.44	18.03	17.67	15.63	17.18	20.31	15.76	16.15	15.80	16.97	21.70	17.42
Fishing	8.48	10.36	10.86	11.41	13.59	14.51	17.25	17.18	17.10	15.94	20.56	14.30

* Hotels and Restaurants used as a proxy measure for the tourism sector.

While the percentage of activity in the manufacturing industry based on the use of sugar cane declined from 9% in 1980 to 25% in 1990, sugar-cane production remained the leading activity in the agricultural sector. The general growth pattern of the agricultural sector mirrored the trend in sugar-cane production over the 1980 - 1990 period. Generally, the contribution of the sector to GDP declined at a per annum rate of 3.62%, registering positive growth only in 1981, 1987 and 1988. Table 1.7 also indicates that the combined contribution of the livestock



and fisheries sub-sectors to the agricultural sector's share of GDP was generally higher than that of the non-sugar crop producing sub-sector.

Non-sugar crops, though accounting for a small share of the agricultural sector's value to GDP, performed far better than the sugar industry over the 1980 - 1990 period, averaged roughly 13% as a share of the agricultural sector. Data on sugar cane and food crop production are presented in Table 1.8. Production of non-sugar crops over the 1980 - 1990 period included root crops and vegetables.

TABLE 1.8: VOLUME (tonnes) OF PRODUCTION OF MAJOR COMMODITIES, ST. KITTS, 1980-1990

CROP/GROUP	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Sugar Cane (ground)	358000	344000	356000	282000	304000	268000	265000	264000	276000	257000	172000
Seed Cotton	0	0	0	0	15	15	23	18	18	0	0
Vegetables	210	259	255	253	225	245	292	317	413	411	349
Root Crops	341	518	499	380	303	302	354	403	392	516	463
Tree & Other Crops	687	683	596	540	634	582	1050	1186	650	331	256
TOTAL	359238	345461	357350	283173	305177	269144	268144	265922	277472	258259	173067

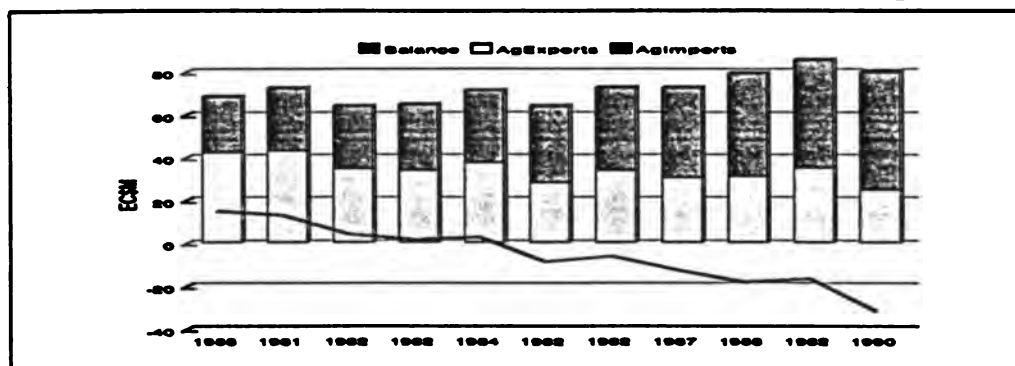
Exports of sugar and preparations dominated the agricultural trade of St.Kitts over the 1980 - 1990 period. During the first half of the decade, sugar exports comprised, on average, over 85% of total agricultural exports compared with 75% over the latter half of the decade. The declining production and manufacturing of sugar cane in St.Kitts was also reflected in the decline in the export value of sugar from EC\$40.1 million in 1980 to EC \$16.2 million in 1990, the lowest export value over the 1980 - 1990 period. Exports of fruits and vegetables, on average, accounted for less than 1% of total agricultural exports over the decade. In comparison, fruit and vegetable imports averaged of 12.6% of total agricultural imports over the 1980 - 1990 period.

St.Kitts registered positive, albeit declining balances on its agricultural trade account during 1980 - 1984, thereafter experiencing increasing deficits, primarily due to the decline in the value of sugar exports by over 50% in 1985 (Figure 1.3). Despite the positive balance on agricultural trade experienced in the first half of the decade, the merchandise trade deficit



deteriorated throughout the decade, increasing from EC \$55 million in 1980 to EC \$224 million in 1990. Overall, total exports averaged EC\$64.6 million over the decade, while total imports averaged EC\$ 180 million (i.e., exports constituted only 23% of the value of imports).

Figure 1.3: Agricultural Trade Balance, St.Kitts, 1980 - 1990



TDI_T computed on total trade, (i.e., trade in goods and services), indicated that over the 1980 - 1991 period, the economy of St.Kitts was highly dependent on trade with high TDI values of 93.7, 86.5 and 84.1 being recorded for 1980, 1985 and 1991, respectively. The data also indicates that the primary source of this dependence was imports. The values obtained for TDI_M averaged 65 over the 1980 -1991 period indicating that the economy of St.Kitts was dependent on merchandise trade, at least in the first half of the decade. Table 1.9 also indicates a strong downward trend in the TDI_M index suggesting a tendency by the economy of St.Kitts to produce more of its domestic requirements. While the import sub-sector remained the primary source of trade dependence, the declining TDI_i values at the end of the period is indicative of this declining dependency.

TABLE 1.9: TRADE DEPENDENCY INDICES - ST. KITTS, 1980 - 1991

TDI:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
TDI _T	82.93	76.44	65.85	68.47	64.66	64.74	62.63	64.58	60.71	59.61	56.88	53.68
TDI _e	29.01	29.56	19.63	18.08	18.08	18.40	17.93	16.82	13.82	13.01	11.37	10.71
TDI _i	53.92	48.87	46.22	50.39	46.58	46.34	44.70	47.76	46.89	46.60	45.51	42.97
TDI _A	100.00	100.00	100.00	100.00	100.00	100.00	100.00	92.840	100.00	100.00	94.40	98.85
TDI _s	48.10	43.97	50.36	42.96	46.00	40.01	46.06	38.69	44.65	39.89	28.85	35.85
TDI _l	51.90	56.03	49.64	57.04	54.00	59.99	53.94	54.15	55.35	60.11	65.54	63.00



A review of the TDI for the agricultural sector in Table 1.9, indicates much of the same pattern as that indicated by merchandise trade TDI. The values for TDI_A suggest that the agricultural sector in St.Kitts was highly specialized, exporting virtually all it produced and importing all it consumed. This arises as a result of the dominance of sugar comprising over 95% in total agricultural exports, as explained in the TDI methodology however, when the value of exports exceeds the GDP, the resulting index values will exceed 100. In computing the TDI_A , the export value was set at a value equal to the GDP.

An analysis of the components of the TDI_A suggests that imports were the primary source of agricultural trade dependency. The values in Table 1.9 however, indicate the TDI_x values were close to those for the TDI_i in some years, particularly so at the beginning of the decade. In one year, the TDI_x actually exceeded the TDI_i , however, after 1986, the agricultural sector became more dependent on imports. The performance in TDI_A mirrored the declining role of the sugar industry in the St.Kitts economy.

British Virgin Islands

Data limitations only allowed detailed analysis of the agricultural sector of the BVI from 1980 to 1988. During this period however, the data indicated that the BVI economy grew at a real average annual rate of 6.1%. GDP was positive every year of the period since 1980, increasing to EC \$142.3 million in 1987 from EC \$102.5 million in 1980 (Table 1.10)

TABLE 1.10: PERCENTAGE CONTRIBUTION OF KEY SECTORS TO REAL GROSS DOMESTIC PRODUCT BVI

INDICATOR:	1980	1981	1982	1983	1984	1985	1986	1987	MEAN
GDP, EC\$M, 1977 prices	102.49	103.1	105.46	111.70	117.89	118.15	123.97	142.75	115.7
GDP Growth Rate	14.04	0.65	2.23	5.92	5.54	0.22	4.93	15.15	6.08
% Agriculture in GDP	5.67	5.51	5.53	5.25	5.04	4.92	4.64	3.99	5.08
Agric. Growth Rate	1.04	-1.03	1.39	0.51	1.37	-2.19	-1.03	-0.87	-0.10
% Manu. to GDP		3.10	3.20	3.00	2.90	2.90	3.30	3.40	3.16
% Tourism* in GDP		23.80	23.10	23.40	21.80	22.40	21.90	24.30	24.17
Composition of the Agricultural Sector (%):									
Crops	39.07	37.04	36.54	33.62	31.82	30.64	29.04	27.54	33.16
Livestock	7.40	8.006	8.409	9.227	9.936	8.784	9.39	8.60	8.71
Fishing	53.53	54.96	55.06	57.17	58.25	60.41	61.57	64.04	58.12

* Hotels and Restaurants used as a proxy measure for the tourism sector.

The two leading contributors to GDP were the Tourism and the Real Estate and Housing sectors which averaged 24% and 18% of real GDP respectively. The share of the agricultural sector in real GDP which was generally low, declined further over the 1980-1987 period (from 5.6% to 3.9%). The major contributor to agriculture GDP was the fisheries sub-sector which comprised over 50% of agriculture GDP. Crops comprised 40% of agriculture GDP and livestock 10% of agriculture GDP. Fisheries was the only sub-sector which experienced positive per annum growth throughout the 1980-1987 period. By contrast, the crops sub-sector experienced negative growth every year from 1980 to 1987. Traditionally, crop production in the BVI consists largely of vegetables and other short term crops. Since the end of the 1980s however, the cultivation of fruit crops has been promoted. These crops include mango, avocado and banana (Table 1.11).

TABLE 1.11: VOLUME (tonnes) OF PRODUCTION OF MAJOR COMMODITIES, BVI, 1988-1992

CROP/GROUP	1988	1989	1990	1991	1992
Bananas	127.2	142.5	125.0	145.0	151.0
Vegetable/Root Crops	30.1	33.8	39.0	44.5	55.0
Other Fruits	167.4	187.5	175.0	189.0	191.0
Total Crop Production	324.8	363.8	339.0	378.5	397.0

A complete desegregated series on merchandise trade, was not available for the BVI. The available data however, suggested that the BVI, over the 1980 - 1990 period, was a highly import-dependent economy. Imports of agricultural commodities comprised 22.6% of total merchandise trade while the contribution of the export sub-sector to trade was minimal. The bulk of domestic exports are described in SITC 1 section 'Beverages and Tobacco'. Trade data on domestic exports for the 1977 - 1983 period revealed rum to be the single largest export earner, followed by exports of fresh fish.

The values obtained for the TDI_M over the 1980 - 1988 period, indicate that the BVI economy was not as heavily dependent as the other Leeward Islands on merchandise trade. The average value of the TDI_M over the period was 55.1 (See Table 1.12). Imports comprised over 98% of this dependency. The slight increase in TDI_M values from 46.93 in 1980 to 51.29 in 1988 also suggests an increase in merchandise trade dependency. The high TDI_A values over the



1982 - 1986 period suggest that the BVI agricultural sector was extremely dependent on trade in agricultural commodities. An average TDI_A value of 90 implies that of every \$100 worth of goods produced and consumed, \$90 worth was the result of trade. As was the case with total merchandise trade, the primary source of this dependency was imports. The BVI's dependency on agricultural trade increased over the 1982-1986 period.

TABLE 1.12: TRADE DEPENDENCY INDICES - BVI, 1980 - 1991

TDI:	1980	1981	1982	1983	1984	1985	1986	1987	1988
TDI_M	46.93	50.91	52.37	51.77	51.28	52.96	53.53	52.23	51.29
TDI_L	1.31	1.97	0.86	1.6	1.48	1.21	1.41	1.24	1.27
TDI_I	45.62	48.94	51.51	50.17	49.81	51.75	52.12	51.00	50.02
TDI_A			87.29	92.32	88.35	89.80	90.95		
TDI_L			5.44	10.11	5.44	5.85	7.31		
TDI_I			81.55	82.22	82.21	83.95	83.64		

The Windward Islands

This sub-grouping comprises Dominica, St.Lucia, St.Vincent and the Grenadines (hereafter referred to as St.Vincent) and Grenada. The agricultural sector is an important component of economic activity in the Windwards, ranging from an average of 27% of real GDP in Dominica over the 1980 - 1990 period to 14% in St.Lucia. Generally, the 1986 - 1988 period was associated with a boom in the agricultural sector in the countries of the Windwards. This boom, which resulted from higher banana prices, was reflected in an increase in the agricultural sector's contribution to GDP and its exports.

While generally favourable natural resource and other conditions make possible the cultivation of a wide range of agricultural crops, a feature of the agricultural sector of the Windwards continues to be the heavy dependence on bananas in Dominica, St.Lucia and St.Vincent. In contrast, Grenada's agricultural sector is fairly well diversified. Generally, since the early 1980s the markets for many of the leading traditional crops have been depressed. This has resulted in a general reduction of the agriculture sector's contribution to GDP in the Windwards.

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The agriculture sector remains one of the single largest employers in the Windward Island economies. Employment data for the sector is imprecise since no mechanism exists for the collection of agricultural labour force statistics. Available data for Dominica indicates that agriculture accounted for 33.3% of the economically active labour force in 1990. In St. Lucia, 11.7% of the labour force was employed in agriculture over the 1985 - 1989 period. Competing employment sectors in the Windwards include the distributive trade, with employment opportunities in the tourism sector beginning to expand in almost all countries. Over the 1985 - 1989 period, distributive trade and hotels (commerce) employed 27.6% of the labour force in St. Lucia, while the manufacturing sector employed 18.6%. Commerce accounted for 14.8% of the employed labour force in Dominica in 1990 and for 10% in St. Vincent in 1980.

Dominica

The growth pattern of the economy of Dominica over the 1980 - 1990 period was closely linked to the performance of the banana industry. Real GDP grew at an annual rate of 5.6%, with negative growth being registered in 1989 due mainly to the passage of Hurricane Hugo (Table 1.13).

TABLE 1.13: PERCENTAGE CONTRIBUTION OF KEY SECTORS TO REAL GROSS DOMESTIC PRODUCT, DOMINICA

INDICATOR:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	MEAN
GDP, EC\$M, 1977 prices	92.21	97.92	100.45	102.55	108.34	109.86	117.30	123.49	135.43	133.91	143.72	115.02
GDP Growth Rate	16.44	6.41	2.37	2.11	5.44	1.69	6.84	6.80	7.92	-1.12	6.58	5.59
% Agriculture in GDP	25.66	29.53	29.46	29.10	29.05	27.93	31.12	31.05	30.02	26.00	25.08	28.54
Agric. Growth Rate	-2.11	18.19	2.26	0.84	5.18	-2.57	15.95	4.80	5.68	-16.78	3.44	3.17
% Manufac. to GDP	6.72	7.46	8.53	8.52	7.26	8.10	7.91	7.96	8.00	8.57	8.22	7.93
% Tourism* in GDP	0.98	0.89	0.96	1.07	1.04	0.99	1.05	1.09	1.15	1.22	1.57	1.09
Composition of the Agricultural Sector (%):												
Crops	71.94	72.30	72.83	72.29	72.64	69.20	73.64	73.00	74.91	70.76	74.00	72.50
Livestock	6.80	7.40	7.84	8.41	7.59	10.82	9.56	10.00	9.102	10.74	10.68	9.00
Forestry	7.14	8.78	8.79	8.71	8.42	7.17	5.84	6.00	5.44	6.46	7.00	7.25
Fishing	14.12	11.83	10.54	10.59	11.66	12.81	10.96	11.00	10.55	12.04	8.68	11.34

* Hotels and Restaurants used as a proxy measure for the tourism sector.

The abnormally high growth rates at the start of the period were the result of an inflow of resources to support economic rehabilitation (following Hurricane David in 1979). This recovery was reflected mainly in the construction sector, whose contribution to real GDP increased from EC \$6.6 million in 1979 to EC \$11.9 million in 1980, an increase of 80%. High



annual growth rates between 1986 and 1988 were the result of an increase in the agriculture sector's contribution to GDP arising from an increase in the contribution of the banana industry in response to higher prices.

The agricultural sector continued to be the leading contributor to real GDP growth, averaging 27% of total GDP over the period. With the exception of the 1986 - 1988 period, the sector accounted for a declining share of total GDP. The manufacturing and tourism sector's contribution to real GDP, though relatively small, was positive over the same period. Per annum growth rates in the agricultural sector over the 1980 - 1990 period averaged 3%. The period was however, characterized by wide fluctuations in annual sub-sectoral growth. Crop production comprised over 70% of the value of the agriculture sector's contribution to GDP, with the bulk of the remainder shared between livestock and fisheries.

Table 1.14 indicates that the production of bananas dominated the agricultural sector over the 1980 - 1990 period. Citrus was also important particularly grapefruit, with an average estimated production of 13,030 tonnes. The production of root crops and tree crops were also significant as was the production of coconuts. Coconut production however, declined due in part, to pest and disease problems and to the general decline in the region's oils and fats industry.

TABLE 1.14: VOLUME (tonnes) OF PRODUCTION OF MAJOR COMMODITIES, DOMINICA, 1980-1990

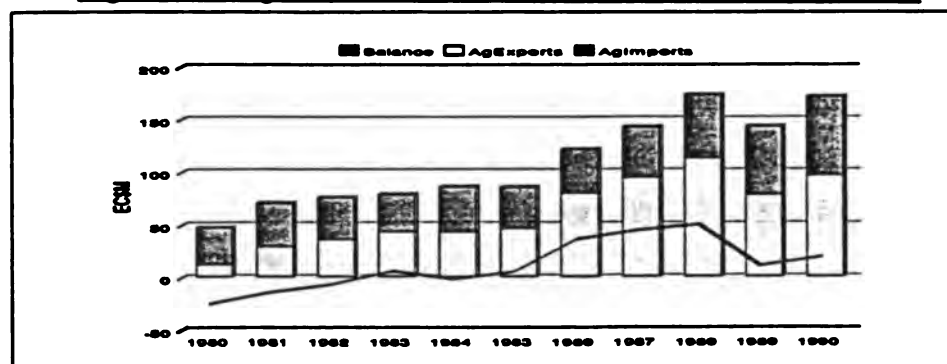
CROP/GROUPS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Bananas	13716	35252	35423	38013	41177	42656	62741	67725	72824	58259	66706
Citrus & Tree Crops	18305	19028	20310	18402	20059	25748	42535	37646	61146	57135	35768
Root Crops	28189	27018	56855	26841	27597	24818	28186	25370	26727	28832	31061
Vegetables	4985	5343	5403	4606	4763	5051	5374	4420	2556	2038	4270
Other Crops	1439	1579	1670	1502	1652	1949	2306	2535	7778	6884	6450
TOTAL	66634	88220	87951	89382	95248	100222	141142	137697	171031	153148	144255

Data on merchandise trade indicates that exports of food and live animals, on average, comprised over 57% of total merchandise trade. Exports of beverages and tobacco also increased in the post- 1986 period. Figure 1.3 illustrates an increase in agricultural exports from a total value of EC \$11.5 million in 1980 to EC \$95.7 million in 1990. With the exception of the pre-



1986 period, the agricultural sector registered relatively positive trade balances while the merchandise trade accounts were in deficit over the entire 1980 - 1990 period.

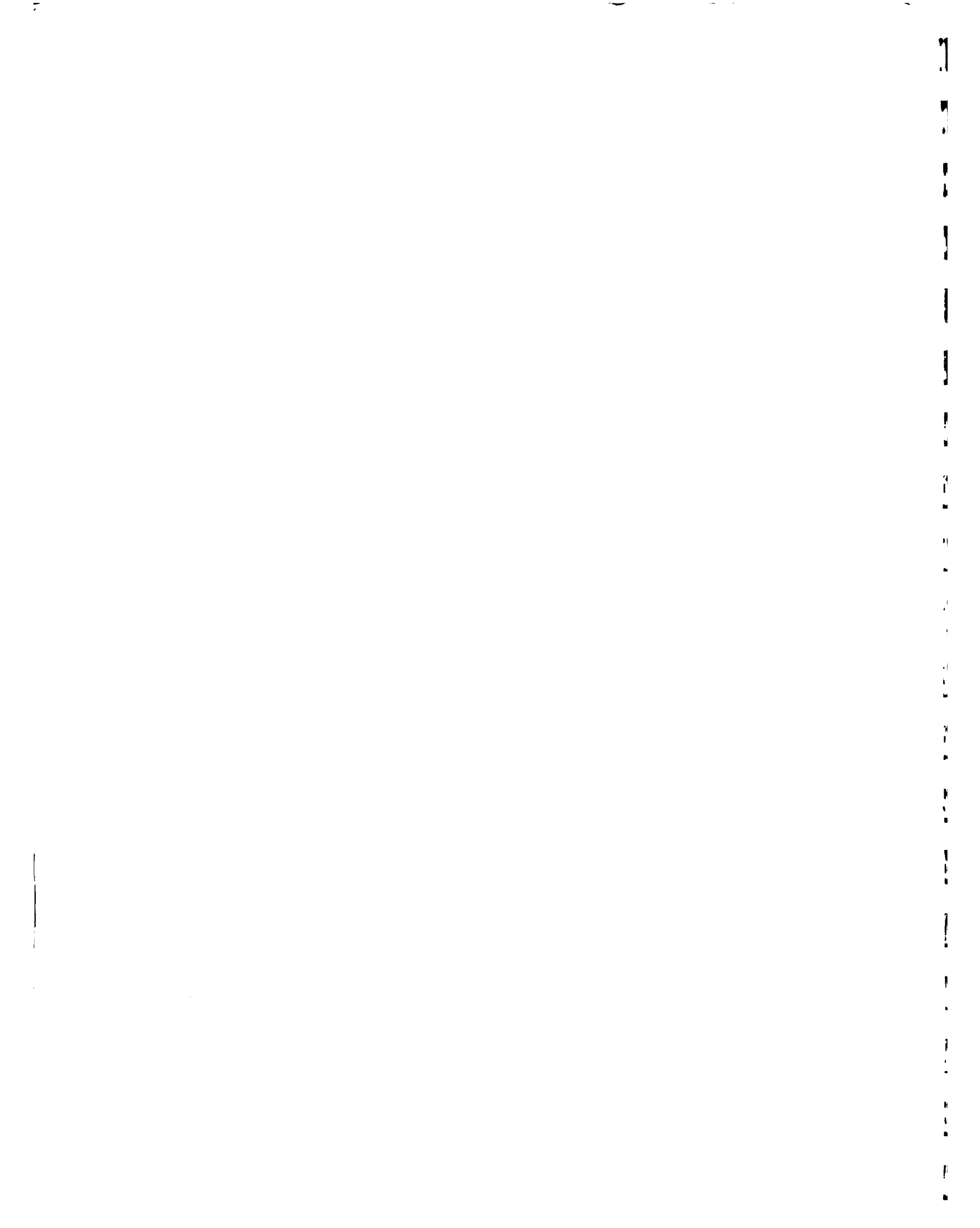
Figure 1.3: Agricultural Trade Balance, Dominica, 1980 - 1990



The declining index based on merchandise trade for Dominica indicates an average TDI of 65. This implies that the Dominican economy was fairly dependent on trade. As was the case throughout the OECS, the TDI increased towards the end of the decade. According to Table 1.15, imports, which comprised over 50% of the TDI_M over the 1980 - 1990 period, were the primary source of trade dependency. The average value of the TDI_A over the 1980 - 1991 period was 88.9, indicating that the Dominican agricultural sector was also highly trade dependent. According to the data in Table 1.15, for every \$100 worth of agricultural goods produced and consumed, \$88.9 resulted from trade. The high TDI_A values also implied that over the period, Dominica produced a large portion of its agricultural requirements. With the exception of the 1980 - 1982 period, the relatively higher values recorded for the TDI_x than for the TDI_i , indicate that the primary source of trade dependency lay in exports.

TABLE 1.15: TRADE DEPENDENCY INDICES - DOMINICA, 1980 - 1991

TDI:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
TDI_M	56.90	64.76	66.51	64.83	62.77	60.33	66.37	67.32	69.03	64.65	67.42	63.76
TDI_x	9.65	18.03	22.61	24.55	19.27	20.48	29.06	28.27	26.80	19.19	21.45	21.11
TDI_i	47.25	46.73	43.90	40.28	43.51	39.85	37.30	39.05	42.23	45.46	45.97	42.66
TDI_A	58.90	77.95	83.64	88.80	85.58	83.55	100.0	100.0	100.0	92.13	99.27	97.17
TDI_e	14.51	31.81	38.87	48.43	42.50	44.96	64.74	62.67	61.31	50.01	55.61	54.17
TDI_c	44.39	46.14	44.77	40.37	43.08	38.59	32.56	37.33	38.69	42.12	43.66	43.00



St. Lucia

The St. Lucian economy recorded strong growth over the 1980 - 1990 period (See Table 1.16), with an annual real GDP growth rate of 6.3%. Real GDP was EC \$424 million in 1990, almost twice the GDP value recorded for 1980 and the highest of all the OECS countries. While most of the major sectors recorded increased production, the agricultural sector was the major contributor to economic growth. The data in Table 1.16 suggests increasing economic activity in the manufacturing, tourism and construction sectors over the 1980 - 1990 period.

The agriculture sector which comprised, on average, 14.3% of total GDP over the 1980 - 1990 period, grew at an average annual rate of 7% over that period. Bananas alone contributed 8.3% to total GDP and comprised over 50% of the agriculture sector's value in GDP. The dominance of bananas which increased in the decade of the 1980s, appears to have occurred at the expense of the other sub-sectors, for which the share in GDP declined throughout the 1980 - 1990 period. The share of the fisheries sub-sector to GDP, remained small but relatively constant over the period.

TABLE 1.16: PERCENTAGE CONTRIBUTION OF KEY SECTORS TO REAL GROSS DOMESTIC PRODUCT, ST. LUCIA

INDICATOR:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	MEAN
GDP, EC\$M, 1977 prices	217.1	226.6	230.45	241.0	257.7	284.2	330.5	335.9	383.0	410.5	424.0	303.72
GDP Growth Rate	-1.05	4.42	1.68	4.59	6.92	10.39	16.27	1.58	14.04	7.24	3.27	6.30
% Agriculture in GDP	14.09	12.40	13.50	14.11	15.06	14.57	16.22	12.35	16.27	13.52	14.74	14.26
Agric. Growth Rate	-14.72	-8.17	10.68	9.32	14.12	6.707	29.47	-22.57	50.12	-10.91	12.61	6.97
% Manufac. to GDP	10.50	9.58	8.81	10.00	10.67	12.63	12.95	13.34	12.66	11.84	12.05	11.37
% Tourism* in GDP	9.03	7.68	7.73	8.13	8.50	8.37	8.59	9.32	8.54	8.31	8.63	8.44
Composition of the Agricultural Sector (%):												
Bananas	33.01	47.33	41.48	42.65	51.55	55.07	63.992	61.45	70.14	67.03	66.88	54.60
Other Crops	50.98	34.16	38.59	38.24	31.44	28.99	22.76	26.02	17.66	21.44	23.36	30.33
Livestock	7.19	8.54	10.29	8.82	7.99	7.25	7.46	5.30	6.90	5.41	4.48	7.24
Forestry	4.58	4.98	4.18	3.82	3.09	2.90	2.05	2.41	1.61	1.62	1.28	2.96
Fishing	4.25	4.98	5.47	6.47	5.93	5.80	3.73	4.82	3.69	4.50	4.00	4.88

* Hotels and Restaurants used as a proxy measure for the tourism sector.

Unlike the other Windward Islands, the share of bananas in total sectoral production increased steadily over the period, from 33% in 1980 to 67% in 1990. According to Table 1.18, banana production accounted for over 90% of the agricultural sector's output. Non-banana crops



contributed an average of 30.3% to the agriculture sector's value in GDP. Production of mango increased substantially after 1988, as did production of citrus and fruit crops (Table 1.18). Agro-processing based on the coconut and sugar cane sub-sectors declined over the 1980 - 1990 period due primarily to declining product demand. In contrast production of refined and un-refined coconut oil and coconut meal, which was depressed during the mid-1980s, increased toward the end of the 1980 - 1990 period.

TABLE 1.18: VOLUME (tonnes) OF PRODUCTION OF MAJOR COMMODITIES, ST.LUCIA, 1981 1990

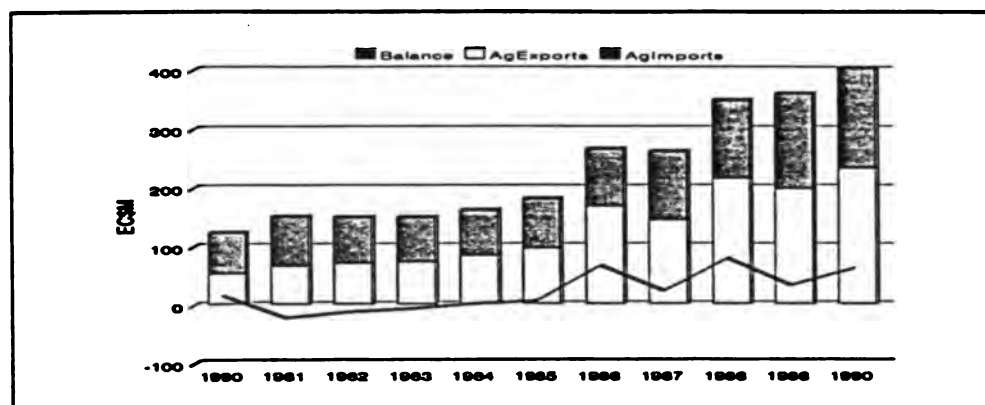
CROP/GROUPS	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Bananas	45912	43965	58293	69476	93000	1237000	105200	155100	131600	165600
Citrus & Tree Crops	1560	2996	4468	3173	2708	2718	5685	9294	10695	11523
Root Crops	937	640	1116	914	807	714	1490	1489	1816	2988
Vegetables	48	99	85	190	154	195	373	262	341	531
Other Crops	495	360	517	1165	755	1165	678	707	698	776
TOTAL	48952	48059	64477	74916	97422	128492	113433	166852	145150	181418

St.Lucia registered deficits on its merchandise trade accounts over the 1980 - 1990 period. Merchandise imports, inflated by imports of manufactured goods, machinery and motor vehicles exceeded total exports. Food imports over the 1980 - 1990 period were also high, representing on average 24% of total imports. Figure 1.4 displays the increasing trend in food imports, from EC \$60.3 million in 1980 to a high of EC \$142 million in 1990.

Agricultural exports on average, accounted for 70% of total domestic exports over the 1980 -1992 period. Agricultural exports were concentrated in the 'fruits and vegetables' category which comprised mainly banana exports. Exports of beverages and 'fixed vegetable fats and oils' also contributed significantly to agricultural export earnings over the 1980 -1990 period. According to Figure 1.4, St.Lucia sustained positive agricultural trade balances for the period 1984 to 1990, registering a surplus of just over EC \$80 million in 1988.

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Figure 1.4: Agricultural Trade Balance, St. Lucia, 1980 - 1990



The St. Lucian economy, over the 1980 - 1991 period, was fairly dependent on merchandise trade. Table 1.19 indicates that the primary source of this dependency was imports. The average TDI_M was 63.23, of which TDI_i comprised 70%. Generally, the trend exhibited in Table 1.19 was one of decreasing dependency as the export sub-sector's performance improved toward the end of the period.

TABLE 1.19: TRADE DEPENDENCY INDICES - ST. LUCIA, 1980 - 1991

TDI:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
TDI_M	71.07	65.01	60.98	59.06	57.64	56.37	62.58	61.53	69.03	66.15	66.67	62.66
TDI_e	19.26	15.72	15.88	18.19	16.57	16.57	21.83	18.91	24.16	18.83	21.30	16.99
TDI_i	51.81	49.29	45.10	40.88	41.07	39.80	40.75	42.62	44.87	47.32	45.37	45.38
TDI_A	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
TDI_x	38.96	35.74	40.50	44.98	46.49	47.66	53.04	42.52	47.35	41.03	43.56	40.85
TDI_y	61.04	64.26	59.50	55.02	53.51	52.34	46.96	57.48	52.65	58.97	56.44	59.15

As previously outlined when the value of exports exceeds the GDP, the resulting index values will exceed 100. In computing the TDI_A , the export value was set at a measure equal to the GDP. This implies a highly specialized agricultural sector, with a tendency to export most of its production and import most of its consumption requirements. While the lower TDI_x values indicate that the export sub-sector was not the major source of trade dependency, the closeness of the export index to the TDI_i values, indicates a fairly balanced pattern of trade dependency.

St. Vincent

Table 1.20 indicates that the St. Vincent economy grew at a per annum rate of 6.3% between 1980 and 1990. The agricultural sector was a major contributor to this growth, averaging 16.7% of real GDP over the 1980 - 1990 period compared with 10.6% recorded for the manufacturing sector and 3% for tourism.

TABLE 1.20: PERCENTAGE CONTRIBUTION OF KEY SECTORS TO REAL GROSS DOMESTIC PRODUCT, ST. VINCENT

INDICATOR:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	MEAN
GDP, EC\$M, 1977 prices	99.4	106.6	112.1	118.5	125.3	130.8	140.2	149.1	161.9	172.8	187.8	136.75
GDP Growth Rate	3.43	7.22	5.16	5.77	5.56	4.50	7.20	6.35	8.59	7.202	7.05	6.18
% Agriculture in GDP	12.61	16.59	16.70	17.06	17.18	17.84	17.25	15.48	17.82	16.91	18.05	16.68
Agric. Growth Rate	-14.41	41.10	5.83	8.07	6.48	8.31	3.69	-4.59	25.05	1.28	16.02	8.80
% Manufac. to GDP	11.42	10.85	10.92	10.60	11.04	10.54	10.43	10.71	10.35	10.92	8.44	10.56
% Tourism* in GDP	3.71	3.03	3.01	3.02	2.86	2.89	2.78	3.20	3.10	3.14	3.24	3.10
Composition of the Agricultural Sector (%):												
Crops	71.91	80.66	81.19	82.64	81.51	78.82	78.66	77.46	81.14	80.53	82.45	79.72
Livestock	13.25	8.37	8.18	7.32	7.34	9.86	9.80	9.75	9.04	83.18	7.26	8.85
Forestry	10.85	8.48	8.98	8.46	9.57	9.73	9.97	11.10	9.43	9.89	9.06	9.59
Fishing	3.99	2.49	1.66	1.58	1.58	1.59	1.57	1.69	1.39	1.40	1.24	1.83

* Hotels and Restaurants used as a proxy measure for the tourism sector.

The agricultural sector performed well over the 1980 - 1990 period, registering negative growth only in 1980 and 1987. This positive growth pattern reflected very closely the performance of the crop producing sub-sector over the period. Table 1.20 indicates that crop production, by far the major activity of the agricultural sector during this period, comprised over 80% of the sector's output. The share of the livestock and fisheries sub-sectors totalled just under 20%, while fisheries remained small, contributing 7% to GDP.

Like Dominica and St. Lucia, the agricultural sector in St. Vincent was dominated by banana production. The average annual production of bananas increased throughout the 1980 - 1990 decade, peaking at 89,600 tonnes in 1990 (Table 1.21). Non-banana agriculture in St. Vincent is dominated by the production of root crops, mainly dasheen and eddo, and rhizomes (mainly arrowroot). Production of rhizomes, which stood at 11% of total crop production in 1980, declined to less than 1% in 1990. This decline was most pronounced after 1987. Mango, plantain and ginger production also contributed to the relatively high non-banana output.

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TABLE 1.21: VOLUME (tonnes) OF PRODUCTION OF MAJOR COMMODITIES, ST. VINCENT, 1980-1990

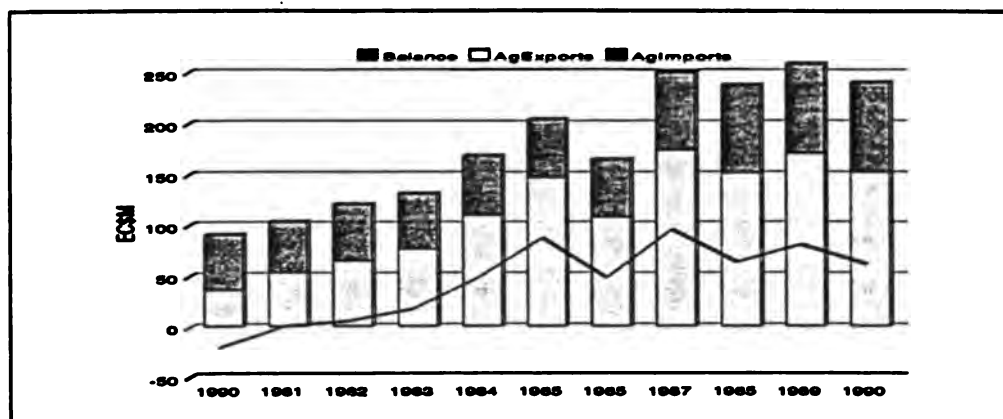
CROP/GROUP	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Bananas	21055	34526	29603	26239	36983	46114	43930	40940	71111	74690	89600
Fruit & Tree Crops	1367	2613	3693	3231	4002	3768	3746	3138	3945	3700	3477
Root Crops	14488	15938	18242	21329	24933	20949	39196	16589	16147	13958	12090
Vegetables	1314	1124	1346	1234	1279	1421	3005	1236	1302	1305	1382
Other	2307	2441	2546	1966	3787	4100	3163	2228	2161	2137	1875
TOTAL	40531	56462	55430	53999	70984	76352	92040	64131	229669	95790	108424

St. Vincent's trade performance was similar to that of the other Windward Islands. Consistent deficits on its merchandise trade account were experienced over the 1980 - 1990 period. The large deficits indicate that during this period, St. Vincent was a highly import-dependent economy. The size of the deficit, which stood at EC \$112 million in 1980, declined rapidly over the 1981 - 1985 period, due to a slower rate of growth in imports. In 1985, the deficit stood at EC \$43 million in 1985, the lowest achieved over the 1980 - 1990 period. Increased imports of manufactured goods and machinery and transport, as well as declining performance of exports, resulted in even larger deficits in the post 1986 period.

Agriculture accounted for 80% of total domestic exports, with bananas dominating exports. Banana exports averaged EC \$52.5 million over the period. Exports of beverages, which were low at the beginning of the decade, contributed an increasing portion of total agricultural export earnings at the end of the 1980 - 1990 period. The recurrent agricultural trade surpluses between 1981 - 1990, were insufficient to offset the high imports of manufactured and other non-agriculture commodities (Figure 1.6).



Figure 1.6: Agricultural Trade Balance, St. Vincent, 1980 - 1990



The TDIs on merchandise and agricultural trade are presented in Table 1.22. The pattern is similar to that of the other OECS countries. The values obtained for TDI_M averaged 73.4 over the 1980 - 1991 period, ranking St. Vincent's TDI_M the highest among the OECS countries. This indicates that the St. Vincent economy was more highly dependent on merchandise trade over the 1980 - 1991 period than the economies of its OECS partners. That economy's trade dependency increased, particularly during 1980 to 1985, declining thereafter to its lowest level of 65 in 1991. The TDI_A values recorded were similar to those of St. Lucia. The index values imply that St. Vincent's agricultural sector was highly trade dependent over the 1980 - 1991 period. A review of the TDI_x and the TDI_i , however indicates that, particularly over the first half of the decade, the pattern of trade dependency was heavily skewed toward imports. Since 1984 however, the nature of St. Vincent's trade dependence has been somewhat more balanced, with the import and export indices virtually offsetting each other.

TABLE 1.22: TRADE DEPENDENCY INDICES - ST. VINCENT, 1980 - 1991

TDI:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
TDI_M	67.60	68.32	71.84	74.40	79.98	82.52	78.43	69.35	81.49	74.28	72.83	65.09
TDI_x	14.39	19.98	23.79	27.52	32.91	36.36	33.13	23.94	33.48	27.42	27.53	21.13
TDI_i	53.22	48.34	48.05	47.17	47.07	45.89	45.30	45.41	48.01	46.86	45.30	43.96
TDI_A	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
TDI_e	27.76	35.40	36.31	39.68	42.32	46.47	49.39	48.59	46.14	44.13	48.84	49.37
TDI_f	73.24	64.60	63.69	60.32	57.68	53.53	50.61	51.41	53.86	55.87	51.16	50.63



Grenada

The data in Table 1.23 suggests modest growth for the economy of Grenada over the 1980 - 1990 period. Although positive growth was registered every year during the period, the economy of Grenada at an average rate of 4.83% over the decade, the lowest of all the OECS countries.

Performance varied with high growth levels being achieved during the middle part of the decade. Real GDP rose to EC\$222.7 million in 1990, an increase of roughly 40% over the 1980 figure of EC\$ 136.1. The agricultural sector contributed most to real GDP, averaging 18.8% over the 1980 - 1990 period, compared with 5.1% and 4.3% respectively, for the manufacturing and tourism sectors.

The weak performance of the economy over the 1980 - 1990 period resulted in part from the slow growth of the agricultural sector, of 0.3% per annum. This resulted from slow and in some cases, negative growth in the individual crop producing sub-sectors. Crop production comprised over 80% of the agriculture sector's GDP over the decade. This percentage declined in the latter half of the decade, and was only partially offset by a corresponding steady increase in the share of the fisheries sub-sector which accounted for 11% of the agricultural sector GDP over the 1980 - 1990 period.

TABLE 1.23: PERCENTAGE CONTRIBUTION OF KEY SECTORS TO REAL GROSS DOMESTIC PRODUCT, GRENADA

INDICATOR:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	MEAN
GDP, EC\$M, 1977 Prices	136.1	137.8	141.8	134.2	151.6	161.5	178.1	196.4	200.3	214.6	222.7	171.3
GDP Growth Rate	2.16	1.20	2.94	1.46	2.33	6.59	10.27	10.25	2.03	7.09	3.77	4.80
Agriculture in GDP	23.61	25.19	21.37	20.27	21.73	18.50	15.90	15.41	15.30	14.92	14.15	18.76
Agric. Growth Rate	5.90	8.00	-12.68	-4.22	13.43	-9.26	-5.22	6.85	1.29	4.44	-1.59	0.3
% Manufact. in GDP	3.75	3.32	5.10	4.27	4.66	5.22	4.99	5.46	6.09	6.44	6.52	5.07
% Tourism* in GDP	3.56	3.95	3.54	3.54	4.12	4.82	4.82	4.40	4.63	4.80	5.32	4.32
Composition of the Agricultural Sector (%):												
Crops	83.17	84.70	81.89	79.92	80.87	80.52	78.39	78.52	78.21	78.16	76.76	80.10
Livestock	5.23	5.04	6.00	6.03	4.86	6.09	6.18	6.28	6.43	6.37	6.70	5.93
Forestry	2.24	2.16	2.61	2.79	2.55	2.88	3.39	3.30	3.43	3.41	3.65	2.95
Fishing	9.37	8.10	9.50	11.26	11.72	10.51	12.04	11.90	11.94	12.06	12.89	11.03

* Hotels and Restaurants used as a proxy measure for the tourism sector.

Table 1.24 indicates that banana production was most significant over the 1980 - 1990 period. Nutmeg, mace, and cocoa, the two other major crops, were however relatively more important in terms of export value than were bananas. Other important crops included avocado, breadfruit, grapefruit, mango, soursop, root crops and plantains.

TABLE 1.24: VOLUME (tonnes) OF PRODUCTION OF MAJOR COMMODITIES, GRENADA, 1980 - 1990

CROPS/GROUPS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Bananas	15682	14725	13115	11636	11342	10873	10297	10495	10297	9727	8728
Spices	3092	2943	3359	2594	2768	2557	2557	3386	3430	3353	3196
Citrus & Tree Crops	13369	13982	13719	12954	13610	14066	12556	12128	12303	12708	13299
Root Crops	1436	1394	1581	1271	1639	1193	1407	1414	1342	1416	1393
Vegetables	968	993	1016	928	790	767	973	1017	1040	1075	1084
Other	1322	1251	1238	1172	2121	2011	1630	1537	1550	1597	1620
TOTAL	35869	35289	34028	30556	32270	31467	29690	29976	29961	29875	29319

The merchandise trade sector of Grenada over the 1980 - 1990 period was characterized by a rapidly increasing trade deficit which increased from EC\$88.6 million in 1980 to almost three times that size in 1990. Analysis of the trade data for Grenada indicated a highly specialized domestic sub-sector comprising over 91% of total agricultural exports. Exports of agricultural commodities averaged EC\$54.2 million over the period. Food imports were 28.4% of total imports and averaged EC\$58.5 million over the same period.

Grenada sustained positive balances on its agricultural trade only in 1983 and during 1985 - 1988. The mean agricultural trade balance was EC\$-5.8 million indicating that generally Grenada's agricultural imports exceeded agricultural exports. As illustrated in Figure 1.7, there was a slightly declining trend in the contribution of agriculture to export earnings after 1987. This may be the result of a decline in the major crop industries. Agricultural imports as a percentage of total imports were however, relatively stable over the period.

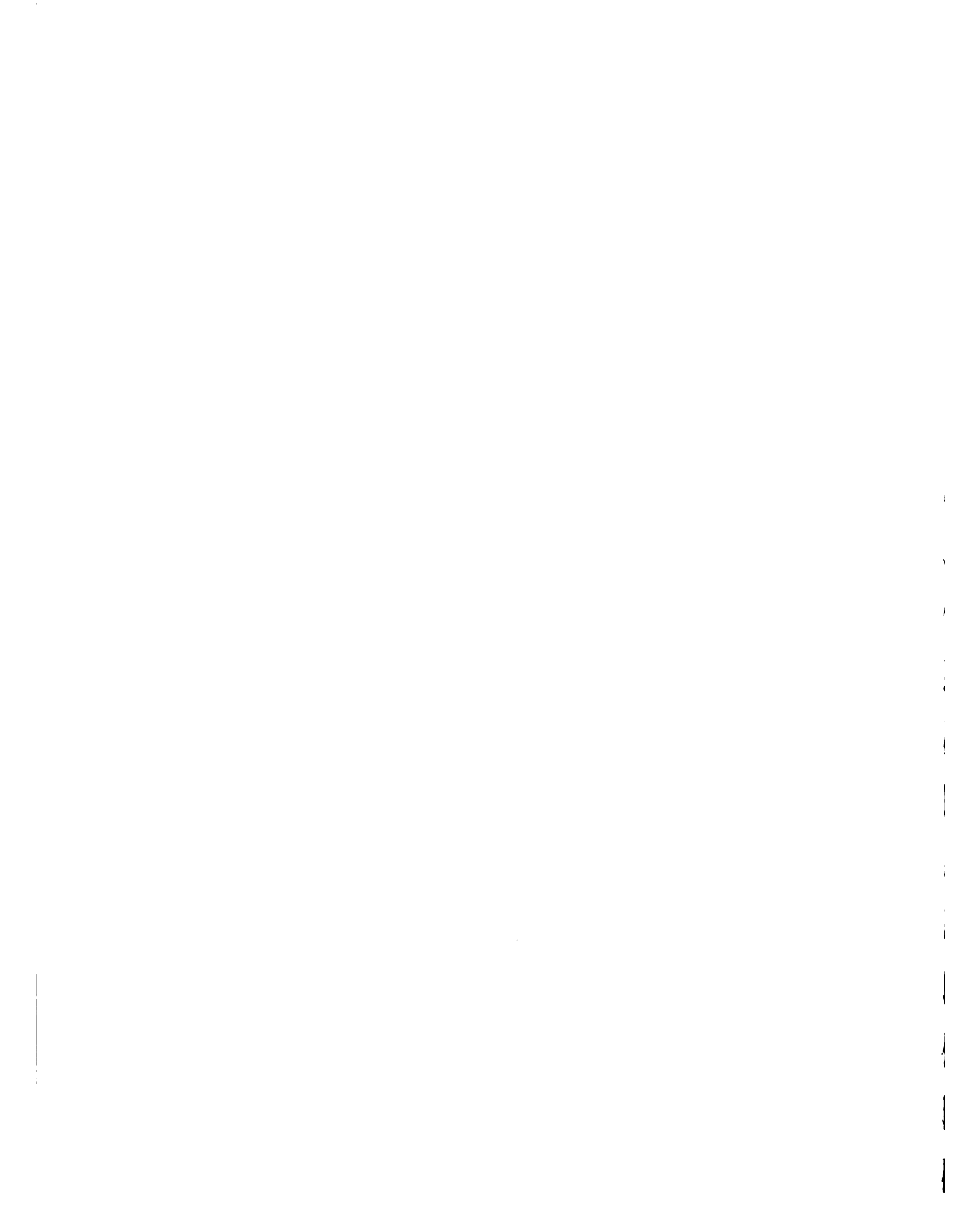
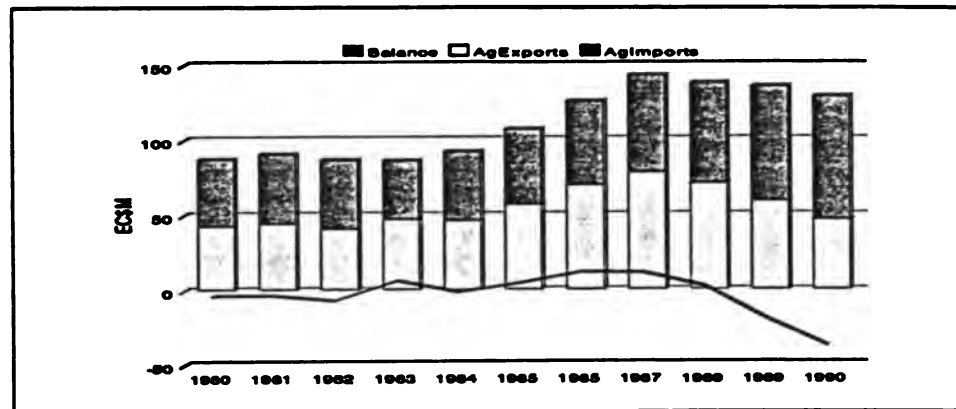


Figure 1.7: Agricultural Trade Balance, Grenada, 1980 -1990



The Grenadian economy, over the 1980 - 1991 period, was fairly dependent on merchandise trade. Table 1.25 indicates that the primary source of this dependency was imports. The average TDI_M was 52.25, of which TDI_i comprised 76%. Generally, the trend exhibited in Table 1.25 was one of decreasing trade dependency. As explained earlier, when the value of exports exceeds the GDP, the resulting index values will exceed 100.

TABLE 1.25: TRADE DEPENDENCY INDICES - GRENADA

TDI:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
TDI_M	55.83	56.90	55.22	54.37	50.45	52.83	55.49	53.63	52.04	48.06	47.27	44.90
TDI_x	14.36	14.75	13.66	13.65	12.38	12.89	14.23	14.08	13.67	10.53	9.17	7.42
TDI_i	41.17	42.14	41.56	40.72	38.07	39.94	41.27	39.55	38.37	37.53	38.11	37.49
TDI_A	94.23	92.31	93.40	100.0	96.52	100.0	100.0	100.0	99.17	91.44	87.82	81.79
TDI_x	45.65	44.84	43.51	53.93	48.11	48.69	48.88	51.32	50.79	39.62	31.58	27.57
TDI_i	48.58	47.47	49.89	46.07	48.42	51.31	51.12	48.68	48.38	51.81	56.24	54.21

In computing the TDI_A , the export values for these years were set at a measure equal to the GDP. This implies a highly specialized agricultural sector, with a tendency to export most of its production and import most of its consumption requirements. However based on the average value of the TDI_x , the Grenadian agricultural sector, on average, produced 47% of its agricultural requirements over the 1980 - 1990 period. With the exception of 1983, 1987 and 1988, the primary source of dependency over the period was imports. This was indicated by the higher TDI_i over TDI_x . Generally, the closeness of the export index to the TDI_i values, particularly in the pre 1988 period, indicates a fairly balanced pattern of trade dependency.

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CHAPTER 2

REVIEW OF SUBSIDIES AND INCENTIVES FOR THE AGRI-FOOD SECTOR

This Chapter reviews the subsidy and incentive programmes for the agri-food sector. The programme for the agricultural production sector is first reviewed, followed by the programme for the agro-processing sub-sector.

Agricultural Production Sector

With respect to the agricultural production sector, the review proceeds by examining the changes that have taken place in the OECS subsidy and incentive regimes between 1985-1986 and 1994. For Montserrat and the BVI, no information was available prior to 1993-1994. In undertaking this review, individual country tables of the major policies employed will be utilized for ease of exposition.

A review of the changes in the subsidy and incentive regimes of the OECS reveals that the period since 1986 has been highlighted by a general reduction of the level of subsidies and incentives offered to OECS agriculture. Indicative of this is the sharp reduction in the number and types of services provided to producers at zero cost. Services such as the provision of planting material, tractor and veterinary services are now being provided on a "cost recovery basis" and there is even an increasing trend toward the provision of these services at commercial rates.

Over the decade of the 1980's, several Development Banks in the region have had to reduce their lending at concessionary rates of interest. Some have even begun to charge commercial rates for loans. There are instances, where reductions in the supply of long term finance have caused Development Banks to only offer very limited loans (especially in the case of Antigua and Barbuda).



The involvement of Central Marketing agencies in the provision of subsidized inputs to farmers has been severely reduced in the OECS. The Central Marketing agencies which continue to exist mainly operate retail outlets, especially supermarkets, and some do limited purchases of farmers' produce.

For the most part, the fiscal incentives that the States offer to farmers have remained in effect. These include tax reliefs and duty free entry of agricultural inputs. In a few cases, especially in the Windward Islands, the States have been forced to introduce other taxes, for example, consumption taxes and levies, as revenue generating measures.

For all of the OECS external financing of the agricultural sector has declined throughout the decade of the 1980s, with the exception of sporadic surges in countries affected by natural disasters. This reduction in the level of foreign capital invested in OECS agriculture has in turn led to fairly serious decline in the total level of investment in the sector.

The reduced inflow of foreign capital may be the result of increased interest by investors in other regions of the world. Whatever the reason, many OECS states have reacted by imposing higher tax rates, and using tax receipts to finance public sector agricultural investment. Along with the drop in foreign capital has been the reduced impact of NGOs in the agricultural sector of the region especially since 1990. This has been especially marked in St Vincent.

The analysis examines the subsidy and incentive programmes for the individual countries with a comparison (where data permits) of the situation in 1984-86 and 1994, and comments on any perceived relationship between changes in these programmes and the performances of the economies and the agricultural sectors.

Antigua

The subsidy and incentive programme for Antigua has four main features as illustrated in Table 3.1. The Ministry of Agriculture is the main agency involved in the programme, providing a wide range of subsidized services to farmers. The cost of provision of these services climbed from approximately \$4m in 1984 to \$11m for 1994. The 1994 allocation



however, represents 3% of the State Budget as opposed to the 5% that the 1984 figure represented. The services that the Ministry now provides include extension, veterinary, plant protection, feeder roads, and soil and water conservation. The State has stopped artificial insemination and soil preparation services, and now charges producers for tree seedlings.

In the field of credit, the Antigua and Barbuda Development Bank is the State's agency for the supply of credit at (to quote the Bank) "...lower rates of interest than commercial banks". In recent years however, the Bank has severely reduced its activity with disbursements for agriculture (crops, livestock and fishing) falling from \$610,000 and \$429,000 in 1988 and 1989 to \$278,000 in 1992.

The Central Marketing Corporation (CMC) was formerly a major instrument of the subsidy and incentive programme of the Government of Antigua by supplying inputs to farmers at subsidized prices and also acting as a buyer of last resort for farmers' produce, at prices higher than going market prices in periods of seasonal oversupply. The CMC also provided extensive credit to farmers for the purchase of the subsidized inputs. Currently the CMC still purchases farmers' produce, if such produce is brought to the Corporation's premises. The CMC no longer gives credit to farmers for the purchase of inputs, but strives to have the inputs available for farmers. These inputs are still sold at a "limited subsidy".

The fourth major feature of the subsidy and incentive programme of Antigua is the provision of duty free concessions on the imports of agricultural inputs. This was also a feature of the programme in 1986 when Antigua received very little foreign funding for agriculture in comparison to other states in the OECS. The only foreign funding reported in 1986 was a grant by "Meals for Millions" for the provision of "tree planting material" free to farmers. By 1994, even this limited funding had ended.

Antigua does however receive technical support for its agricultural programmes from a number of international agencies. CARDI assists in agricultural research, while UWI's Department of Agricultural Extension's Leewards Outreach Office is located in Antigua. IICA also maintains an office in Antigua which provides support for state programmes. The



Government of Antigua currently provides no price support for any commodity and there are no licensing restrictions for the importation of agricultural commodities. The agricultural sector in Antigua has witnessed a cut back in the subsidies and incentives that are being offered to farmers. This is particularly evident in regard to the availability of investment funds at concessionary rates and the services provided by the CMC and the Ministry of Agriculture. In general, it can be concluded that agriculture receives a low level of state support and very little protection in Antigua and this should be reflected in low values for the nominal protection coefficient, provided that farmers are technically efficient producers of the commodities and there is an efficient marketing system.

As has been discussed in Chapter 1, the agricultural sector of Antigua and Barbuda remained fairly static over the 1980s, showing no real growth. Meanwhile the economy grew at a fairly good rate of 6.6%, which suggests that agriculture made a declining contribution to the economy. The weak performance of the sector is consistent with the reduction in the level of support that it received in the form of subsidies and incentives. In particular the limited loan funds that were available at concessionary rates (including CMC credit) would have resulted in a drop in investment in the sector. Such a drop would have slowed the rate of growth of productive capacity and thus the rate of growth of agricultural product. Meanwhile rapid investment in other sectors of the economy especially tourism, would have accounted for the growth of the overall economy and the relative decline of the agricultural sector contribution to that economy.

TABLE 2.1: INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, ANTIGUA, 1994

Category/Description	Value	Remarks
1. Direct Budget Ministry of Agriculture: <ul style="list-style-type: none"> - Extension services, - data collection information and planning. - plant propagation, - plant protection, - marine and forest conservation, - soil and water management, - provision of breeding stock, - animal health programme, - research, - food processing. 	\$4 million spent in 1984 approximately 5% of budget. \$11 million estimate for 1994 Budget 3% of budget	Revenue is derived from activities but expenditure exceeds revenue.



TABLE 2.1 cont'd: ANTIGUA, 1994

Category/Description	Value	Remarks
<p>2. Credit</p> <p>(a) The Antigua and Barbuda Development Bank funded by Government and the Caribbean Development Bank provides finance for agriculture and related projects at concessionary rates.</p> <p>(b) The Central Marketing agency formerly offered extensive credit to farmers. An effort is now made to ensure that inputs are in place and they are sold at a limited subsidy. Also does limited purchasing of farmers' produce.</p>	<p>Loans based on Bank's capacity to lend and the feasibility of the project.</p>	<p>At present funds in the bank for agricultural loans are scarce.</p>
<p>3. Fiscal Concessions</p> <p>(a) Tree planting material provided at Government Station.</p> <p>(b) Seedlings sold to farmers by five Government stations.</p> <p>(c) Assistance with crop sanitation for sea island cotton producers by a Government-owned unit.</p> <p>(d) Young improved livestock sold to small farmers by a Government-owned unit.</p> <p>(e) Irrigation advice given to small farmers by agricultural engineer.</p> <p>(f) Government constructed mini-dams with water made available to farmers for irrigation and animal production.</p> <p>(g) A 20 hectare irrigated farm has been developed for use by 13 selected farmers in food production.</p> <p>(h) Fishermen purchase ice for preservation of catches from a Government facility.</p> <p>(i) Motor vehicles for use in agriculture or fishing, agricultural chemicals, animal feeds, fencing material, fish pot wire, fishing equipment and fishing boats are accorded duty free entry into the State.</p>	<p>This service is charged at 80% of cost.</p> <p>Sale price at 60% cost.</p> <p>Free.</p> <p>There is no charge for the use of these facilities.</p> <p>Commodity sold at 50% of cost.</p>	<p>1986 Free. 1994 available at reduced cost</p> <p>No special subsidy for seedlings at present but sold below cost.</p> <p>Limited ponds and streams also maintained by Government.</p> <p>Project scaled down due to problems including repayment by the farmers.</p>
<p>4. Government Services</p> <p>(a) Agricultural Department staff have assisted in the establishment of the Antigua and Barbuda Small Farmers' Association. Government has provided free Secretarial service and provided a meeting place.</p> <p>(b) The Livestock Division is assisting relocated farmers to set up a cooperative.</p> <p>(c) Land leases for livestock of up to 49 years are now being processed.</p>		<p>The Association is experiencing organizational problems at present.</p>

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Table 2.1 Cont'd - Antigua

Category/Description	Value	Remarks
(d) Government bears the burden of experimental work on sea-island cotton including the selection of planting material. Substantial funds are annually sunk into this establishment.	Approximate cost \$75,000 in 1986	Planting material would not otherwise be available. All of the activities of this Division contribute to the improvement of farm income. This Division has very limited scope and capacity to handle periods of gluts.
(e) The Chemistry and Food Technology Division tests soil, plant tissues, pesticides and fertilizers; it assists small farmers with preservation via solar drying of some food crops; it purchases otherwise unsuitable fruits and vegetables.	Approximately \$150,000 budgeted for 1994.	
(f) Government bears the burden of making feeder roads to farms.		
<p>5. Institutional Support</p> <p>Regional: - CARDI</p> <p>International: - IICA</p> <p style="padding-left: 40px;">-OAS/Chinese/Taiwan/Israelis</p> <p>Agronomic livestock and farming systems research. Support of Ministry programmes. Vegetable Production Research.</p>		

Montserrat

The subsidy and incentive programme of Montserrat focuses on the direct provision of services by the Department of Agriculture and a number of fiscal incentives or concessions. The Department of Agriculture currently provides a range of services to farmers including extension, land preparation and veterinary assistance. Since 1986, however, the Department has eliminated a number of the services it supplied to farmers including planting material, improved animals, mini-dam construction, ice to fishermen, and subsidized fertilizer for white potato production.

The Government of Montserrat offers a number of fiscal incentives to the agricultural sector including exemption of agricultural income from income tax, and duty free entry of agricultural inputs. A number of inputs are also provided at subsidized cost including materials for honey production and rodent control, and land preparation and cultivation services. CARDI

also provides assistance to agricultural sector development, particularly in agronomic research. Restrictions are imposed on the importation of selected vegetables and fruits when local produce is available. A system of price control also exists which specifies a maximum mark-up for major imported foods such as flour, sugar, rice, canned and pickled meats, dairy products and salted and canned fish.

The Development Finance Marketing Corporation which once supplied credit to farmers for the purchase of inputs is no longer in existence. Credit supply to farmers appears to be available only through commercial banks. There was no evidence of any foreign assistance via grants or loans to the agricultural sector of Montserrat. Such assistance may however, be available in the form of overall budgetary support to the State.

It may be concluded that over the last decade there has been a reduction in the support provided to the agricultural sector of Montserrat in the form of subsidies and incentives. This reduction may have contributed to the sluggish performance of the agricultural sector over the decade (an average annual growth rate of -0.88%).

As in the Antigua and the BVI, the sluggish performance of the agricultural sector would not have affected too greatly the economy as a whole since agriculture only contributed on average about 3.8% of total GDP. Thus changes in the subsidy and incentive programme would not be expected to influence the performance of the economy of Montserrat. Given the declining level of support for the agricultural sector, it may be expected that the NPCs for the agricultural commodities in Montserrat should be generally low. The exception should be in the category of fresh fruit and vegetables, where the existing quantitative restrictions should afford a high degree of protection and therefore should result in high values for the NPCs (and NTEs) for those commodities.

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TABLE 2.2: INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, MONTSERRAT 1994

Description	Value	Remarks
1. Direct Budget Administrative machinery, extension services, information, plant propagation, plant protection, fisheries, soil and water management, provision of breeding stock, research, animal health, data collection, research marketing training.	7% of the budget for 1983 1994-No estimate	These services are non-revenue producing underpin and support all agricultural activity.
2. Credit The Development Finance Marketing Corporation advances inputs to selected farmers recoverable on-sale of produce.	1994-No longer in effect	Currently being reassessed, several defaulters have been registered.
3. Fiscal Orchard Crops - citrus, mango are being encouraged. Assistance provided for planting, fencing and fertilizing for 2 years only.	1994-No longer in effect	1986 - \$90 per acre for fencing. \$90 per acre for planting, free fertilizer for 2 years. Free plants if more than 4 years.
4. Concessions (a) Cheap ice provided for fishermen. (b) Profits not taxed if derived from agricultural activity. (c) Honey Development; - free advice - equipment made available at 70% of cost. (d) Agricultural implements and chemicals accorded duty free entry. (e) Improved animals - sheep, goats, pigs, cattle made available. (f) Rodent control. (g) Pest control by spraying. (h) White potato production fertilizer. (i) Propagation material sold. (j) Clearing new land. (k) Heavy cultivation (l) Farm plan preparation. (m) Mini-dam construction for irrigation water. (n) Restriction of imports of selected vegetables and fruits when local material is available.	1994-No longer in effect 1994-No longer in effect. Free bait. 1994-No longer in effect. 1994-No longer in effect. 1994-No longer in effect 80% of cost. 65% of cost. Free Service. 1994-No longer in effect.	1986-Sold at 70% of cost to encourage investment in agriculture. Still in effect. To improve production by effective pollination. Still in effect. Still in effect. 1986-provided at 50% of cost. Still in effect. 1986-provided at 85% of cost. 1986-provided at 80% of cost. 1986-provided at 40% of cost. Still in effect. Still in effect. Still in effect. 1986-provided at 25% of cost. Still in effect.
5. Special Project (a) 50 acre irrigated facility for vegetable production by 30 farmers. (b) Agro-industrial establishment purchases surplus material reducing crop losses. (c) Provision of abattoir facility, leased to private operator to encourage processing of home-grown meat.	No longer in effect. No longer in effect.	Project continues.

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Table 2.1 cont'd - Montserrat

6. Institutional Support

Regional: -CARDI

-UWI

Agronomic livestock and farming systems research.

Department of Agricultural Extension provides support to extension activities formerly under CAEP and AREP.

St Kitts and Nevis

St. Kitts/Nevis will be discussed with separate attention paid to the special features of the subsidy and incentive programme of St. Kitts and Nevis. The subsidy and incentive programme of St. Kitts/Nevis follows the typical pattern of the OECS with a focus on four main elements: provision of services by the Department of Agriculture, subsidized credit schemes, fiscal incentives and the purchase of farmers' produce by a central marketing agency. In addition, the State has implemented a system of quantitative restrictions on imports. The Department of Agriculture offers the usual range of support services to farmers including extension, veterinary and animal production, land preparation, and the provision of planting material etc. At present, these services are provided at cost plus a mark-up, except for veterinary services which are provided free of charge. In 1986, these services were either provided at cost or (as in the case of veterinary services) free of cost.

With respect to fiscal incentives, agricultural income is exempt from income tax. The State also grants duty free exemption for imported transport vehicles and other equipment for farming and fishing. The government operated marketing agency CEMACO (Central Marketing Company) buys farmers' produce "at remunerative prices" and operates a retail outlet (supermarket) for, among other things, the resale of such produce.

In 1986, two sources of subsidized credit were available to farmers in St Kitts and Nevis, the Department of Agriculture's Loan Scheme and the Development Bank of St Kitts and Nevis. Currently, the scheme of the Department of Agriculture for granting interest free loans to purchasing seeds, fertilizer etc., and fishing motors and gear is not very active and the loans available from Bank of St Kitts and Nevis bear interest charges at commercial rates.

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The government of St Kitts currently places a limited restriction on the imports of agricultural products from extra-regional sources as part of a crop forecasting and import balancing system. No system of price control is currently in effect.

St Kitts/Nevis continues to receive foreign assistance for agricultural diversification which has been a main plank of the State's agricultural policy. This assistance has come especially from USAID and FAO/UNDP but funding from British sources and the CDB has recently come to an end with the completion of the specific projects. The Government currently receives technical assistance for agriculture from the Republic of Taiwan, CARDI and the University of the West Indies' Department of Agricultural Extension, via the Leewards Outreach Office. CARDI (which has incorporated CARDATS) and the Ministry of Agriculture have been particularly involved in agronomic and livestock research and development, which has yielded good results, especially in white potato.

In general, St Kitts/Nevis appears to provide a low level of support for its agricultural sector and as is the trend in the OECS, the level of support has declined over the 1980s, especially in the areas of subsidized loans and inputs. The level of agricultural output and its percentage contribution to the economy of St Kitts/Nevis, have declined over the 1980's mirroring the decline in the level of support to the agricultural sector. No strict causation may be implied however, because the subsidies and incentives are targeted to the non-sugar sub-sector which has increased its percentage contribution to agricultural output. The state-owned sugar industry, which contributed over 50% of the value of agricultural output in the 1980's has been in a state of decline, and this may have been the major cause of the decline in value of agricultural output.

It may be concluded that the agricultural sector in St Kitts is in receipt of moderately high but declining support from the current subsidy and incentive programme. Moderately high values of the NPCs (around 1.5) can therefore be expected for agricultural commodities. The restrictions placed on the importation of agricultural products from extra-regional sources however, should provide a fair degree of protection for domestic agricultural produce such as fresh fruit, vegetables and root crops. The NPCs could therefore be expected to be even higher



for these crops. Other commodities not subject to quantitative restrictions could be expected to have higher NPCs if the production and marketing systems are inefficient. No information was available on the fiscal support, if any, that is provided to the sugar industry.

TABLE 2.3: INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, ST. KITTS, 1994

Category/Description	Value	Remarks
1. Direct Budget and Special Support		
i. Vegetable seedlings	1986-50% of cost of production 1994-At cost of production.	Available at La Guerite Agricultural Station.
ii. Vegetable seeds	1986-At cost 1994-At cost plus markup.	Available at CEMACO (Central Marketing Co. & Dept. of Agric.)
iii. Fruit Tree seedlings	1994-At subsidized cost.	From the Propagation Unit at the La Guerite Agric. Station
iv. Input supplies:- -Plant protection	1986-At cost 1994-At cost plus markup.	Available at the Dept. of Agriculture - insecticide, fungicide, etc.
-Fertilizer	1986-At cost 1994-At cost plus markup.	NPK fertilizers and sulphate of ammonia.
v. Veterinary services	Dept. staff salaries (& allowances) Vet. (1) Livestock Officer (2), Animal Health Asst. (AHA's) & lab technicians.	Provision of: a) stud services b) replacement stock - multiplication program on Livestock Station Diagnostic tests at Vet Lab (free of cost)
vi. Tick control project	1986-BDD Grant. 1994 project completed	Provision of cattle dips and mobile spraying units
vii.a) CAEP	1986-USAID sponsored (through UWI/MUCIA) 1994 Project completed.	Provision of transport vehicles, audio-visual equipment, training, etc.
b) Agric. Extension Service & Co-operative Program	Dept. staff salaries (& allowances), Agric. Extension officer (1), Agric. assistants.	
viii. Training of farmers and fishermen	Dept. staff and fisheries project staff	
ix. Technical assistance (& training) project	Sponsored by the Gov't of Taiwan (Republic of China)	
x. Small farm equipment pool (SFEP) Project	CDB loan to St. Kitts-Nevis (EC\$0.704m) for Project Manager's salary & purchase & operation of equipment.	Provision of equipment services to small farmers for land preparation and crop protection (spraying). 1994 - Farmers pay subsidized cost
xi. Soil and Water Conservation Project	1986- USAID sponsored. 1994- Project completed.	
xii. Feeder Roads Project	CDB sponsored. 1986-Completed.	



Table 2.3 cont'd - St.Kitts

Category/Description	Value	Remarks
xii. Central Marketing Co. (CEMACO)	Marketing Board - Manager & Staff	Market (supermarket) outlet for marketing of farmers' produce at remunerative prices.
xiii. Integrated Pest Management Project	SSMC & CARDI jointly sponsored - dormant.	
xvi. S.S.M.C. (formerly N.A.C.O.)	S.S.M.C. Technical staff equipment and supplier. No value available.	Provision of land preparation at subsidized cost; supply of fertilizer at cost; use of marginal lands for peanut/vegetable production rent-free or low rental; 1986-spraying services at subsidized cost and transport of farmers produce - 1994-No longer offered. Research project on crop protection. 1994-dormant.
2. Credit		
i) Interest Free Loans	Dept. of Agric. support: 1986- EC\$60,000 (\$20,000 to farmers & \$40,000 to fishermen). 1994-Not very active.	Loans for purchase of farmers' supplies of seeds, fertilizers and pesticides and fishermen's nets, out-board motors, other gear and traps.
ii) Low Interest Loans 1994 commercial rates	Development Bank of St. Kitts-Nevis: *1984: Food Crops 12,685 Livestock 19,000 Fishing 111,760 Total 143,445 1994-Loans provided at commercial rates.	1994-Not very active Provision of loan capital for food crop and livestock projects and for fishing.
3. Fiscal Concessions		
i) Duty-free concessions	On imported transport vehicles and other equipment for agricultural use and for fishing.	
ii) Import licenses	Import licensing regime in place for most food commodities. Import restricted when local supply available.	
4. New Projects	1994, FAO/UNDP Agric Diversification Project World Bank Agric Support Project	Approximately US \$0.9million Approximately US 1.1million
6. Institutional Support	Regional: CARDI Agronomic livestock and farming systems research. UWI Department of Agricultural Extension provides support to extension activities formerly under CAEP and AREP.	

Note: * Total for both St. Kitts and Nevis.

Nevis

Nevis benefits from the programme of subsidies and incentives for the State of St Kitts and Nevis. There are however, special projects on Nevis in support of agricultural development associated with infrastructural improvement have been funded by USAID, British and Taiwanese sources and involve mainly soil and water conservation, land distribution and abattoir



construction. Special features of Nevisian agriculture include the absence of sugar production and the importance of cotton production. Price support and seed supply services exist for the cotton industry but it is not clear whether these measures represent state subsidies, given the high prices that currently exist for sea island cotton.

TABLE 2.4: INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, NEVIS 1994

Category/Description	Value	Remarks
1. Direct Budgetary Support		
a. Vegetable seedlings	At subsidized cost.	Available at Prospect Agric. Station
b. Vegetable seeds	1986-At cost 1994-At cost plus markup.	Available formerly at the Marketing Depot and presently at the input supply outlet.
c. Fruit tree seedlings	At subsidized cost.	From the Propagation Unit at Prospect Agric. Station
d. Farm supplies	1986-At cost(duty free) 1994-At cost (duty-free) plus markup.	Fencing wire, wallaba fence posts, etc.
e. Input supply/Small farm equipment pool(s)	CDB loan to St. Kitts-Nevis (EC\$0.640M) for purchase and operation of equipment, & technical assistance grant (1 year) for temporary Project Manager. 1994-Farmers pay for cost of operation.	Provision of equipment services to small farmers for land preparation and crop protection (spraying), and input supplies (seeds, fertilizers and other agric. chemicals).
f. Veterinary services	Department staff salaries & allowances - Veterinarian (1) Animal Health Assistants (AHA's) Livestock Officer (1).	Provision of Stud services, Replacement stock from Multiplication Program on Livestock stations (Maddens & Indian Castle), Vet lab tests.
g. Abattoir Project	1986-BDD Grant (EC\$630,000)	Construction of Central Abattoir 1986-completed and operational.
h. Tick Control Project	1986-BDD Grant (EC\$400,000), 1994-completed.	Provision of Cattle Dips and mobile Livestock Spraying Unit
i. Importation of Poultry Feeds	1986-At cost 1994-Cost plus markup.	For sale of poultry farmers
j. - Agric. Extension Service	Deptl. staff salaries & allowances - Agric. Extension Officer (1) & Agric. Assts.	General Agric. Extension services.
- CAEP	USAID sponsored through UWI/MUCIA. 1994-completed	Provision of transport vehicles, audio visual equipment, etc.
k. Farmers and Fishermen Training	Deptl. staff & Fisheries Officer - salaries.	Regular organized training activities.



Table 2.4 cont'd - Nevis

Category/Description	Value	Remarks
1. Cooperative Program		
	Dept. staff - Coop Officer (1) & Asst. in collaboration with Fisheries Officers, Schools, 4-H clubs, etc.	Establishment of Farmers' Co-ops (Cades Bay & New River), 1986-Fishing Complex (Charlestown) with financial assistance from the Credit Unit of Canada (CUC).
m. Irrigation Projects: New River area Spring Hill Dam and Pipeline for Cades Bay area	1986-BDD Grant (EC\$251,500) Taiwanese Grant (EC\$170,000).	Provision of irrigation systems for intensive vegetable production by small farmers in selected areas.
n. Soil & Water Conservation Project (Water Resource Management) preceded by a well drilling project sponsored by CIDA)	1986-USAID sponsored.	Construction of water catchments to improve water supplies for livestock and irrigation of crops and watershed management.
o. Land Use Unit (and Land Development Corporation)	1986-BDD Grant (EC\$782,800) Land Use Officer & Dept. staff.	Supply of surveying and other equipment, zoning of lands and allocation & disposal of lands in Gov't estates to small farmers.
p. Feeder Roads Project	CDB sponsored 1986-completed.	Provision of access roads to small farmers' lands at New River, Fountain etc.
2. Credit		
i. Interest-free Loans	Dept. of Agric.(see xvi) St. Kitts). 1994-Limited use of facility	Loans for purchase of farmers' & fisherman's supplies & equipment
ii. Low Interest Loans	Development Bank St. Kitts and Nevis (see 2i) St. Kitts)	Provision of loan capital for food crops & livestock projects and for fishing.
3. Fiscal Concessions		
i. Duty-free concessions	On imported transport vehicles & other equipment for agric. use and fishing.	
ii. Cotton industry: processing marketing, price support and seed supply.	Active participation in the West Indian Sea Island Cotton Assoc. (WISICA) in the provision of suitable market(s) at remunerative price(s). Ginning of cotton crop & baling of the lint, &the production of good quality seed for planting.	
iii. Marketing of Vegetables & Fruits by Nevis Growers' - a farmer group	Full concessions granted.	
iv) Use of Government Estates by Small Farmers	Cultivation of lands on Gov't estates by small farmers at low nominal annual rental.	
v. Communal grazing at New River (established since mid-1950's)	Communal grazing of 'improved' pastures in paddocks on New River at nominal daily fees.	

British Virgin Islands

The British Virgin Islands (BVI) has a fairly extensive programme of subsidies and incentives. The Departure of Agriculture provides a wide range of services to the sector at no cost and this represents a departure from the general trend. The Department of Agriculture supplies free planting material, extension, veterinary, land preparation, and conservation and abattoir services. The BVI also makes grants of Crown land to eligible farmers groups.



The Government of the BVI provides a range of fiscal incentives for agriculture. As in the rest of the OECS, there is duty free importation of inputs into the BVI and in addition subsidies are paid on a number of agricultural inputs as detailed in Table 3.2.

The BVI reported foreign capital grant funds for the agricultural sector from USAID, Canadian and British sources. These funds were used largely for the construction of abattoir, public market, veterinary and plant propagation facilities.

No quantitative restrictions exist for agricultural imports into the BVI, however, it would seem that the level of imports are voluntarily decreased when the local produce is available.

The BVI Development Bank provides loans at concessionary interest rates (10% to 12%) for farming and fishing.

Given the high level of support to the agricultural sector, fairly high values could be expected for the nominal protection coefficients for agricultural commodities for the BVI. The agricultural sector of the BVI did not show the positive rates of growth that may have been expected given the extent of the programme of subsidies and incentives. This is no doubt due to the intense competition for agricultural labour by other sectors of the economy notably tourism and poor physical conditions for agriculture.

Because of the minor importance of agriculture in the country, however, the performance of the economy as a whole was not impaired by the sluggish performance of the agricultural sector. On the other hand, the economy was no doubt able to afford the cost of support given to the agricultural sector because of the rapid rate of economic growth (about 8% from 1986 to 1993), and continued foreign assistance.



TABLE 2.5: INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, BRITISH VIRGIN ISLANDS, 1994

Category/Description	Value	Remarks
1. Direct Budget Department of Agriculture provides services in the following Divisions: - Extension services - Marketing - Livestock - Veterinary - Abattoir - Engineering and Soil Conservation - Agricultural Service - Fruit Trees	\$607,500 estimate for 1990 Budget.	See Appendix for a listing of all services provided by the Department of Agriculture.
2. Credit The BVI Development Bank funds low/moderate interest loans for agriculture and fishing. Rate of interest 10%-12%.	Loans based on Bank's capacity to lend and the feasibility of the project.	See Appendix for details
3. Fiscal Concessions		
(a) Duty free importation of agricultural inputs such as tools, chemicals, and seeds.		
(b) Subsidies on inputs as follows: - chemicals (plants) 100% - drugs (livestock) 100% - fencing materials 20% - irrigation supplies 66% - building materials 20% - plastic mulch 66% - grafted seedlings 80%		
4. Land Grant of Crown land to farmers' groups cultivating short term crops		Two groups exist in Virgin Gorda and Tortola
5. Special Projects Construction and Equipment of Abattoir Abattoir Services Anegada coconuts Plant Propagation Unit Cappons Bay Vegetable Garden Tractor Veterinary Clinic Poultry Feed Purchase of Livestock Purchase of land Abattoir Abattoir Reconstruction of Public Market Trickle Irrigation Project Vegetable cool storage	228,690 91,800 138,391 51394 33,750 64,800 48335 0,500 108,000 270,000 390,530 40,500 102,600 62,089 32,400	Aid funds approved - - - Canadian Fund - Revolving Fund Breeding Stock for Govt use Structural Adj. USAID \$81000 from Structural Adj. Anegade Expt. Project



Dominica

The subsidy and incentive programme of the Commonwealth of Dominica has the basic features so far noted for the Leeward Islands with an emphasis on support services provided by the Ministry of Agriculture, fiscal incentives, and the provision of credit at concessionary interest rates. Unlike the general pattern of the Leeward Islands however, the scope of the subsidy and incentive programme for Dominica has not been much reduced since the mid 1980's. The major reductions in support to the agricultural sector have been in the level of foreign funding of agricultural projects, and in the services offered by the Ministry of Agriculture.

The Ministry of Agriculture still provides a range of support services for farmers such as extension, veterinary, land preparation and plant protection. Limited funds have however, curtailed some of these services, especially those related to land preparation, construction of roads and bridges, and provision of improved breeding stock.

The Agricultural and Industrial Development (AID) Bank of Dominica is the main source of credit for agriculture, which it provides at rates of interest lower than those available from commercial banks. One of its sources of funding is an IFAD project.

Government continues to offer fiscal concessions in terms of tax free agricultural incomes, and duty waivers on agricultural inputs. A system of quantitative restrictions (via import licensing) on the imports of agricultural commodities (food) exists in Dominica, administered by the Controller of Supplies. There is also a system of price control in place for imported commodities.

Dominica has also seen a reduction of foreign grant funding for agriculture, especially from Canadian and British sources. Currently there is a USAID project for diversification, and technical assistance is available from the French and Chinese. IICA also assists in government programs and CARDI and UWI Extension Department also provide technical assistance.



Unlike the general pattern in the Leeward Islands, the State does not provide a "guaranteed market" for agricultural produce. The one commodity that has such market access is bananas. The Government has however provided the agricultural sector with an export agency DEXIA, which is described in a later section of this chapter.

As noted above, the scope and level of support for the agricultural sector of Dominica has not been much reduced since the mid 1980's. In the 1980s, the agricultural sector grew at an average annual rate of 5.57%, and the economy at a rate of 4.28%. Much of this growth can be attributed to expansion of the banana industry which benefitted from the subsidy and incentive programme, especially in the supply of subsidized credit and the fiscal concessions.

It should be added that the Dominica Banana Marketing Corporation (DBMC) provides a wide array of services for banana farmers including credit, inputs and marketing services. These services however, are paid for from the proceeds of the sale of bananas, and therefore do not represent a subsidy from the State. It should also be noted however that the Government of Dominica acts as a guarantor of the DBMC. Since there is a wide ranging subsidy and incentive programme in place in Dominica, as well as a system of quantitative restrictions, it would be expected that the level of price distortion as measured by the NPC would be high.

TABLE 2.6: INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, DOMINICA

Category/Description	Value	Remarks
I. Direct Budgetary Support The Ministry of Agriculture provides several services: <ul style="list-style-type: none"> - Extension, Diversification and Advisory - Livestock Development - Produce Chemist Lab - Machinery Pool 		
Ministry of Agriculture Programmes a. Tractor pool: farmers pay a minimum fee b. Construction of feeder roads, bridges, solar drying systems c. Testing agricultural produce for commercial adaptability d. Provision of livestock fencing material at cost price e. General extension assistance f. improvement of breeding stock	- Plant Protection and Quarantine - Veterinary Services - Meteorological Unit - Coconut Development Unit	limited equipment, no ploughs limited funds through CARDI mainly in post-harvest technology Revolving fund mainly for rabbit production normal budget funding limited funds Description of these services provided in the Appendix



Table 2.6 cont'd - Dominica

Category/Description	Value	Remarks
2. Credit (i) IFAD Project Programme for support small farmers and fishermen, administered by the AIDB. Eligibility requirements include a net worth of less than EC\$150.00 and a guarantor. Loans vary from a lower limit of \$1080 to an upper limit of \$6750.00 at 5 1/2% per annum on a reducing balance.	Loans distributed EC'000 1982 770.0 1983 612.2 1984 481.0 1985 543.5	Fishermen are the most delinquent borrowers. Catches are sold in Guadeloupe due to higher prices. Loans to fishing is more difficult to monitor than crop agriculture.
3. Fiscal/ Concessions		
a. Tax Free Income: Farmers income - those derived from farming - is tax free		
b. Concessions: Agro-processing - tax holidays up to 10 years - duty free concession on spare parts, machinery and building material - duty free exemption on raw materials not produced locally - repatriation of profits - for exporting business duty free entry of packaging material.		
c. Import Licenses: Duty waiver on:- - equipment and other inputs for agricultural purposes - 50% waiver on vehicles An import licensing regime is in place for most food commodities.		
4. Special Projects		
a. Tree Crop Development Project: Implemented from 1979 in four phases. Crops: Avocado, mango, orange, grapefruit.		BDD funded. Small remnant fund remains. Propagation to finish in 1994. Extension is following up.
b. Coconut Rehabilitation Project: Started in 1976. Government of Canada assisted with the purchase of fertilizer to be set up as a revolving fund. Farmers to contribute to cess which would eventually replace Canadian funding - \$500,000.		Project finished extra acreage planted etc. Price of coconut fell badly so that cess could not be collected.
c. Floriculture Development Project: Implemented in 1984 to assist commercial growers. Objectives: i) to identify best flowers for market; ii) to organize skill training to produce cut and pack flowers; and iii) to find source for new plant propagation material.		No funds. French and Chinese producing orchids, anthuriums and tissue culture.
d. Banana Growers' Association leaf spot control.		Contracted and aerial
e. OAS Youth Training Programme - Activities and Number of persons: Rabbit production (9); Horticulture (11); Sheep & Goat Rearing (16); Crop Agriculture (13); Bee keeping (12); Fishing (12); Livestock production (12).		1986-Funded by OAS, USAID and the Dominican Gov't. Still goes on under Youth Division.
f. Irrigation Project - To establish irrigation system for the Rock Vegetable Cooperative Group - 13 farmers		Cam \$48,000 received. Project completed. Free technical assistance from Ministry working in conjunction with Israelis.
g. Coffee Development Project		Limited activity.
h. OAS Fisheries Statistics - To collect statistical data on fish landed, fishermen and fishing boats.		Project stopped.



Table 2.6 cont'd - Dominica

Category/Description	Value	Remarks
<p>5. Regional Agencies</p> <ul style="list-style-type: none"> - CARDI - CAEP/UWI - CARDATS <p>6. International</p> <ul style="list-style-type: none"> - IICA - French Technical Mission (FTC) - OAS/USAID <p>Farming Systems Research Extension reorganization Farm Management (merged into CARDI) Mite control and support of state programmes. Research & development Skills training programme</p>		

St Lucia

The subsidy and incentive programme of St Lucia follows the established pattern for the OECS. The Ministry of Agriculture provides services such as extension, veterinary, engineering as well as fisheries and forestry development.

The St Lucia Development Bank is the major supplier of agricultural credit on concessionary terms. As in the rest of the Windward Islands, the St Lucia Banana Growers Association (SLBGA) has been a major source of credit at concessionary rates for banana farmers. The source of these funds however, has been revenue from banana sales and loans to the Association, so that this credit does not represent a true subsidy to the producers. The SLBGA has recently faced severe financial difficulties which may have impaired its ability to grant credit to farmers.

Government also offers the usual fiscal incentives or concessions to agriculture which include income tax exemption, and the waiver of duties on imports destined for use in agricultural production. Plant propagation and land preparation services are provided at subsidized prices, and the Engineering Department provides a subsidy of one third of the labour cost associated with conservation work done on farm holdings which have been "assessed as critical in the vicinity of catchment areas".



More recently, government introduced a consumption tax and a service charge which have been imposed on agricultural imports. St Lucia has in place quantitative restrictions via an import licensing system for a wide list of commodities including agricultural commodities. Licenses to import these goods are only granted if the Government is satisfied that demand cannot be satisfied from local production.

Major USAID projects on the island have ended and St Lucia is no longer in receipt of substantial foreign funding. St Lucia however now receives technical assistance from IICA, the French Technical Mission and the Republic of Taiwan, in addition to CARDI and the UWI Department of Agricultural Extension. The Windwards Outreach Office of the Department of Agricultural Extension of the UWI is located in St Lucia.

St Lucia has had a policy of intensification of the production of traditional crops, especially bananas, while promoting the diversification of production via support to non-traditional areas of production in a general import substitution strategy. Support to the non-traditional commodities is thus more pronounced, and this is accompanied by the use of quantitative restrictions.

Perhaps because of the predominance of the banana industry (on average 55% of agricultural output), however, the level of support of the agricultural sector particularly in terms of foreign funding has not been as great for St Lucia as for the other states of the OECS. The high annual average rate of growth achieved by the agricultural sector for the 1980s (7%) is no doubt due to the rate of growth of banana exports and highly favourable banana prices in the period 1986 to 1990. The high rate of agricultural growth also accounted for a high rate of economic growth of 6.3% in the 1980s.

Given the general level of support for the agricultural sector, it is expected that the NPCs would be moderately low for St. Lucia. In view of the protection provided by the quantitative restrictions, the NPC values for fresh fruit, vegetables and root crops should perhaps be relatively higher than those for other agricultural commodities.



TABLE 2.7 INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, ST. LUCIA 1994

Category/Description	Value	Remarks
<p>1. Direct Budgetary Support Ministry of Agriculture budget allocation: - Extension Division - Engineering Division - Forestry Division.</p>	<p>- Veterinary Division - Fisheries Division</p>	
<p>2. Credit St. Lucian Development Bank - Interest rate 10.5% - 12% . Grace period up to three years</p>	<p>1992/1993 270 loans for agricultural purposes valued at \$EC 4.7 million at average interest rate of 11.5 % (of reducing balance)</p>	<p>Financed by IFAD/CDB & the Gov't of St. Lucia. The project involves other components. For instance, community development, extension and technology and production & marketing.</p>
<p>3. Fiscal/Concessions Vehicles - 5% consumption tax rather than 25% (20% waiver)</p>		<p>175 farmers benefitted from this scheme in 1992</p>
<p>4. Concessions granted on: - Beekeeping equipment - Agricultural implements - Tractor tyres and tubes - Irrigation equipment - Spraying equipment - Veterinary preparations - Fishing equipment (5% service charge) Items allowed duty free but may include a consumption tax, and 3% service charge</p> <p>b. Fuel for fishing subsidy \$0.75/gallon</p> <p>c. Exemption from income tax</p>	<p>Estimated value of subsidy \$237,000 in 1992</p>	<p>Agro-processing companies of approved status under the Fiscal Incentive Act get 100% duty waiver.</p> <p>Up to \$75,000.</p>
<p>5. Special Projects: i) Staff-Co-op - An umbrella organization comprising the Pig Producers Cooperative, Egg Producers Cooperative, Broiler Producers Cooperative and Ti Rocher Farmers Cooperative. Now nearly defunct.</p>		<p>Purchase and distribution of inputs and feed; training of members and marketing of produce - pork, eggs and chicken.</p>
<p>6. Institutional Support</p> <p>i. Local: Ministry of Agriculture Engineering Division provides 1/3 labour cost subsidy on conservation work on farm holdings. Forestry: Planting material provided free to assist conservation of steep or highly erodible soils. Banana Association provides technical support and agricultural inputs.</p> <p>ii. Regional: CARDI: Farming System Research WINBAN: Banana Research & Development Centre serving the Windwards. UWI: Provides support for agricultural extension activity. Windwards-Outreach Office located in St. Lucia.</p> <p>iii. International: - IICA: - French Technical Mission (FTC)</p> <p>Support of Ministry's program and of development activities by reinforcing farmers' organizations and promoting the diversification of agricultural production.</p>		



St Vincent

The programme of subsidies and incentives in St Vincent and the Grenadines provides for its farmers the full range of services that are found in the OECS. The Ministry of Agriculture supplies plant protection, veterinary, extension, soil conservation and plant propagation services.

Currently, the major sources of formal credit for agriculture in St Vincent is the Development Bank of St Vincent and the Grenadines which offers loans at concessionary rates. Other credit sources include commercial banks, credit unions and non-governmental organizations (NGOs). Recently the NGOs have greatly reduced their activity and no longer perform this role with the zeal of former years in the agricultural sector.

The St Vincent Marketing Corporation has developed into "just another agency that buys and sells farmers' produce for local consumption (via its supermarket) or for export, strictly on the basis of demand and supply". Some agricultural inputs are also sold by the Corporation at a small subsidy.

In St Vincent, fiscal incentives are also given for agricultural production. There is a duty and consumption tax exemption on imported agricultural inputs. In St. Vincent however, there is no income tax exemption. In addition, the State levies an export tax on commodities but the exact status of this tax is unclear. Planting material is provided to farmers at a 20% subsidy. St. Vincent has instituted an import license regime to protect its market for food commodities. Most of these quantitative restrictions apply to third country imports, although some apply to imports from CARICOM, especially pig, sheep, goat, coconut and lobsters. No price control for agricultural commodities exists.

St Vincent has been receiving substantial funding in the form of grants and loans from foreign external sources, especially CIDA, USAID, and FAO. This funding has been increasingly augmented by local state revenue. Table 2.8 provides details of the recent experience in this regard. Technical assistance is provided to the agricultural sector of St Vincent and the Grenadines by CARDI, IICA, the French Mission and the Republic of Taiwan.

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In general the subsidy and incentive programme in St Vincent and the Grenadines has remained at a fairly steady level since the mid 1980s. The level of public sector investment has also been maintained from both foreign and domestic sources. During the 1980s the agricultural sector grew at an average annual rate of 8.8% which exceeded the rate of growth of the economy of 6.18%, causing the contribution of agriculture to the economy to increase from 12.61% in 1980 to 18.05% in 1990.

The exceptionally good growth rate of the agricultural sector is no doubt due to the massive expansion of banana production in the 1980s and the good prices that were obtained for this commodity. In addition to reinvestment in the industry itself, the growth in output was facilitated by the subsidy and incentive programme that was in place. The subsidy and incentive programme also helped to support the rapid expansion in root crops which were exported to Trinidad and Tobago during its oil boom period in the earlier part of the 1980s.

It may be concluded that the level of support given to the agricultural sector of St Vincent by its subsidy and incentive programme has been substantial and it could be expected therefore that the NPCs for agricultural commodities should be high. St Vincent is held to have some of the finest conditions for crop production. This natural advantage should allow low costs of production which may have the effect of moderating the values of the NPCs.

TABLE 2.8: INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, ST VINCENT 1994

Category/Description	Value	Remarks
1. Direct Budget Ministry of Agriculture direct support through - Extension - Veterinary service - Plant propagation - Soil conservation	Recurrent Budget in EC \$M 1980/81 1.87 1981/82 2.54 1982/83 2.81 1983/84 3.17 1984/85 2.87	
2. Credit i. Development Bank of St Vincent and the Grenadines supplies agricultural loans at interest rates from 5 -6% to commercial rates.	Agricultural loans: Year No. of loans Value \$ 1984 91 324,511 1985 95 440,875	
3. Non-Governmental Organizations i. National Development Foundation ii. Organization for Rural Development for promotion of agricultural projects	Receives Govt. subvention of \$15,000	Technical assistance and credit to small enterprises Non-functional



Table 2.8 cont'd - St. Vincent

Category/Description	Value	Remarks																																													
<p>4. Fiscal Concessions</p> <p>i. Duty and consumption tax exemption on imports for agriculture:</p> <ul style="list-style-type: none"> - inc. vehicles to the Banana and Arrowroot Associations and the Vet Unit of MOA, - breeding animals/eggs for hatching - beehives/beekeeping accessories - agriculture tools and implements - tractor tubes and tyres for agric. - storage tanks and tubes. - chemicals, insecticides, nematicides, fungicides etc. - soil conditioners - fertilizers and seeds (but they attract a 10% consumption tax) 		<p>As of January 1, 1993, all imports are subject to a 2% levy or service charge on the c.i.f value.</p> <p>The Vet Unit retails to farmers without mark-up.</p>																																													
<p>4. Fiscal Concessions (cont'd)</p> <p>c. Other duty free concessions may be granted by the Industry Department</p> <p>d. Other fiscal incentives offered include:</p> <ul style="list-style-type: none"> - tax holiday - accelerated depreciation - waiver of duty on imported raw material - tax relief on export earnings <p>e. Licenses required for importation of a wide range of goods.</p>	<p>Grants from June 1983 to April 1993:</p> <p style="text-align: center;"><u>Approval</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: center;">#</th> <th style="text-align: right;">EC\$</th> </tr> </thead> <tbody> <tr> <td>Poultry production</td> <td style="text-align: center;">2</td> <td style="text-align: right;">93,258</td> </tr> <tr> <td>Livestock</td> <td></td> <td></td> </tr> <tr> <td>Improvement</td> <td style="text-align: center;">12</td> <td style="text-align: right;">46,195</td> </tr> <tr> <td>Agro- processing</td> <td style="text-align: center;">2</td> <td style="text-align: right;">35,991</td> </tr> <tr> <td>Agriculture</td> <td style="text-align: center;">2</td> <td style="text-align: right;">3,121</td> </tr> <tr> <td>Post Harvest facilities</td> <td style="text-align: center;">2</td> <td style="text-align: right;">15,625</td> </tr> <tr> <td>Soil Testing</td> <td></td> <td></td> </tr> <tr> <td>Equipment</td> <td style="text-align: center;">1</td> <td style="text-align: right;">4,937</td> </tr> <tr> <td>Crop production</td> <td style="text-align: center;">3</td> <td style="text-align: right;">33,885</td> </tr> <tr> <td>Agricultural implement</td> <td style="text-align: center;">1</td> <td style="text-align: right;">20,350</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">EC\$M</td> </tr> <tr> <td>Agro- processing</td> <td style="text-align: center;">2</td> <td style="text-align: right;">2.527</td> </tr> <tr> <td>Poultry processing</td> <td style="text-align: center;">5</td> <td style="text-align: right;">9.818</td> </tr> <tr> <td>Food processing</td> <td style="text-align: center;">3</td> <td style="text-align: right;">1.038</td> </tr> </tbody> </table>	Category	#	EC\$	Poultry production	2	93,258	Livestock			Improvement	12	46,195	Agro- processing	2	35,991	Agriculture	2	3,121	Post Harvest facilities	2	15,625	Soil Testing			Equipment	1	4,937	Crop production	3	33,885	Agricultural implement	1	20,350			EC\$M	Agro- processing	2	2.527	Poultry processing	5	9.818	Food processing	3	1.038	<p>Requests for concessions that are considered "substantial" go through the Industry Department. If they are not categorized as such, the approval process is much less formal, and thus renders any subsequent tracking of concessions granted rather difficult.</p> <p>Licensing requirements not needed for most CARICOM imports except some meats, lobsters and coconuts.</p>
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<p>5. Export Duties : An export tax of 3% of the f.o.b value is charged for bananas, ginger, plantain, and arrowroot exports. Exports of coconut are charged three cents per nut.</p>		<p>Government is in the process of reviewing these levies and has announced that they will remove the levies on agricultural exports to stimulate production, starting with the levy on arrowroot.</p>																																													
<p>5. Marketing Agency</p> <p>The St Vincent Marketing Corporation sells vegetable seeds and irregularly some agricultural inputs at a subsidy of 25% of the market value.</p>		<p>These items are imported free of duty and consumption tax.</p>																																													



Table 2.8 cont'd - St. Vincent

Category/Description	Value			Remarks	
6. Capital Budget Capital budget expenditure for Ministry of Agriculture Trade Industry and Labour.	Capital Expenditure: 1983 - 1991, EC\$M and % of total Govt. Capital Expenditure			Although agriculture was oftentimes part of a Ministry that encompassed other sub-sectors (eg Trade, Industry, and Labour), the overwhelming majority of the capital budget of the Ministry would be earmarked for agricultural projects (including Fisheries and Forestry)	
	<u>Year</u>	<u>EC\$M</u>	<u>% of total</u>		
	1983/84	8.976	15.7		
	1984/85	10.360	19.4		
	1985/86	12.153	18.1		
	1986/87	9.114	12.9		
	1987/88	7.958	11.5		
	1988/89	18.597	18.6		
	1989/90	18.862	16.7		
	1991	10.290	10.5		
	Agricultural capital expenditure was financed as follows:				
	<u>Year</u>	<u>Local Revenue</u>	<u>Foreign Grant</u>		<u>Loan</u>
	1983/84	.01	3.37		5.60
	1984/85		5.74		4.62
	1985/86	.01	1.67		10.47
1986/87	.12	6.53	2.47		
1987/88	.10	6.78	1.08		
1988/89	.71	14.26	3.63		
1989/90	.98	9.26	8.63		
1991	1.3	6.84	2.15		
			Recent Projects given in the year of coming on stream:		
			1989/90 -Plant Pathology & Entomology Lab		
			-Forestry Development (CIDA)		
			-Tree Crop Development		
			1991		
			-Agric. Station -Rabacca Farms		
			1993		
			-Cargo Facility E T Joshua Airport		
			-Japanese Fisheries Dev'l		
			-Orange Hill Development		
			-Lab Facilities Campden Park		
			-Small Holder Crop Improvement & Marketing (IFAD)		
7. Institutional Support					
Local:					
Banana Association Provides Technical support and agricultural. inputs.					
Regional:					
CARDI : Farming System Research					
WINBAN : Banana Research & Development Centre serving the Windwards.					
UWI : Department of Agriculture Extension provides support for extension activities formerly under CAEP and AREP.					
International:					
French Technical Mission (FTC)					
Support of Ministry's development activities.					



Grenada

The subsidy and incentive programme of Grenada includes the features typical of the rest of the OECS. An important additional dimension of support to the agricultural sector of Grenada is the substantial foreign funding for the export commodities, channelled through the commodity associations. The Ministry of Agriculture provides services to farmers mainly in the areas of extension, livestock for breeding, plant propagation and land preparation. In the recent past however, the quality of these services has been impaired because of the lack of funding.

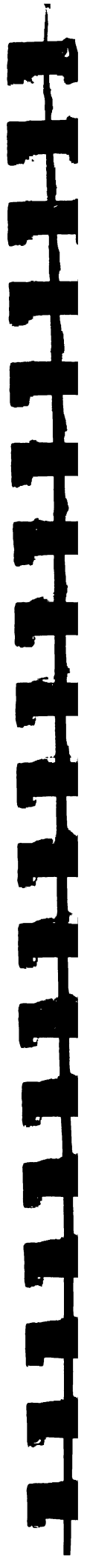
In discussing the situation with respect to the provision of credit to the agricultural sector of Grenada, W. Phillip in "Agricultural Policies and Programmes for Grenada" states in part:

The bulk of credit to the sector comes from commodity associations and the banking system... Poor crop returns have affected the capacity of the commodity boards to provide traditional in-kind credit. In recent years the Grenada Development Bank has emerged as a major lender of agricultural credit. The GDB however faces depleted resources and capability to finance agriculture as its sources of funds for agriculture (notably the CDB) have reduced loans to that bank.

The Grenada Development Bank is still the major source of credit at concessionary interest rates to farmers in Grenada, with interest rates 2-3% below commercial rates.

Fiscal concessions include duty free imports of some agricultural inputs and the provision of some inputs at subsidized prices including breeding stock, planting material and land preparation services. Grenadian agriculture is also supported by quantitative restrictions. A rather substantial list of commodities are subject to licenses for importation. In addition, there are a number of commodities (mainly imports) under price control.

The Grenada Marketing Corporation provides limited purchasing of farmers' produce including some on-farm purchasing. It also operates a retail outlet in the capital.



An important feature of the support to the agricultural sector of Grenada as noted earlier is the foreign funding to the commodity associations. Given the importance to the agricultural sector of Grenada of the export commodities such as nutmeg, cocoa and bananas, this foreign funding represents a substantial source of investment to the sector. In 1986 this funding was in the vicinity of \$24 million annually. These funds allowed the commodity associations to provide a wide range of services to farmers. By 1994, these foreign funds to the commodity boards had been reduced to about \$4 million annually.

While the commodity boards still endeavour to provide the range of services to farmers, in view of the diminished foreign funding, in large measure funding is now provided via deductions from the price received from the sale of the commodity. To that extent therefore, this does not represent true support or subsidy payments. In some cases, however, the State has had to bear the cost of some of these services eg moko control in banana and the cost of extension services to the cocoa industry.

Still Grenada is in receipt in 1994 of around \$6 million in assistance via the STABEX fund of the EEC/ACP Lome Agreement (which includes the \$4 million for commodity support). In addition there is also assistance of \$4 million from EDF, \$1 million from the FAO and about \$.5 million from other sources. While this represents substantial foreign funding of around \$11.6 million, it is still less than the \$32.8 million of 1986.

CARDI, IICA and the UWI's Department of Agricultural Extension all provide technical assistance to Grenada's agriculture.

There has clearly been a substantial reduction in the support to the agricultural sector of Grenada since 1986. This has been accompanied by substantial declines in the prices of the major commodities. These factors have no doubt contributed to the relative stagnation of agricultural output, which grew by an average annual rate of just .3% in the 1980s. Compared to this growth rate the overall economy grew by 4.83%. Thus the contribution of agriculture to the economy declined from 23% in 1980 to 13.6% in 1990 as observed in Chapter 1.



Given the continuing high (though declining) degree of support to the major agricultural commodities and the system of licenses and price controls in place, it could be concluded that agricultural commodities in Grenada are well protected and this should be reflected by high estimates for the NPCs, especially for commodities destined for domestic consumption.

TABLE 2.9: INVENTORY OF INCENTIVE AND SUPPORT SYSTEMS, GRENADA 1994

Category/Description	Value		Remarks	
1. Direct Budget Ministry of Agriculture - Livestock Division - Plant propagation - Farm machinery pool	Animal Stock at subsidized prices Subsidized planting material Ploughing and rotating services (shortage of equipment service not effective) See Appendix for details.			
2. Credit Grenada Development Bank : loans at interest rates between 9.5% and 10.5. Grace period 2 - 4 years	Agric. Lending in \$EC M 1986 - 0.64 1987 - 2.2 1988 - 0.99 1989 - 2.3 1990 - 1.3		Commercial rate around 12.5% 1994. No lending for land purchase. Arrears 1989-1990 \$1.7 million.	
3. Fiscal Concessions				
i. Duty free concessions on agricultural imports.				
ii. Import licensing regime in place for most food imports.				
4. Specially Funded Projects	Foreign Funding EC\$'000,		Total Funding, EC\$'000	
	1986	1994	1986 1994	
a. Cocoa Rehabilitation	15,768	500	19,008 1,800	CIDA
b. Banana Development	960	672	1,511 672	1986 BDD 1994 STABEX
c. Farm Roads	870	5,826	3,728 5,826	EDF/STABEX, 1994 ROC
d. Mirabeau Training School	1,200	0	1,300 0	\$333,000
e. Carriacou Sheep Development	98	0	321 0	EDF/HIVOS
f. Reforestation Programme	450	64	515 64	CDB
g. Banana Regional Input	813	0	924 0	1986 - CDB/BHN
h. Artisinal Fisheries	5,999	0	7,095 0	CDB
i. Market Rehabilitation	389	0	419 10	CIDA
j. Grenada Agricultural Rehabilitation and Crop Diversification Project	5,303	0	7,262 0	1986-BDD: Grenville Market
k. Moko Eradication	514	0	514 300	USAID 1986 - EDF
l. Carriacou Soil and Water Management	189	0	189 0	CDB/BHN
m. Support to Cocoa Association		1,200		1,200 EDF/STABEX
n. Support to Nutmeg Industry		550		550 STABEX 92
o. Minor Spices Project		500		500 STABEX 92
p. Farmer Credit Programme		1,000		1,000 STABEX 92
q. Establishment of Sugar cane nursery		0		5
r. Integrated Agro-Forestry Watershed Management		1,247		WFP/FAO (FAO \$1 million for Watershed Project)
s. Data Collection/Information System		43		49 JAP



Table 2.9 cont'd: Grenada, 1994.

6. Institutional Support	
Regional:	CARDI: Agronomic livestock and farming systems research. UWI : Department of Agriculture Extension provides support to extension activities former under CAEP and AREP.
International:	IFCA Support of Ministry's programmes.

Agro-Processing Sub-Sector

The countries in the OECS have all enacted identical Fiscal Incentives Acts except Montserrat which has fairly similar legislation. The term 'industry' in the Acts encompasses agro-processing, deep sea fishing and shrimping. The incentives common to all OECS countries will be presented followed by individual country presentation of additional incentives and facilities provided in support of agro-processing.

Incentives Common to all OECS Countries:

- | | | |
|----|---|--------------|
| 1. | Profit Tax Holiday: | Years |
| | - if 100% of sales are exported extra-regionally | 15 |
| | - if the local value added exceeds 50% of total sales | 15 |
| | - if local value added is between 25% and 49% | 12 |
| | - if the local value added is between 10% and 24% | 10 |
| | - if the industry is highly capital-intensive | 15 |
| | (Capital intensive is regarded as an initial investment greater than EC \$25 M.) | |
| 2. | Tariff Exemptions - for the duration of the tax holiday: inputs, machinery and spare parts can be imported duty free. | |
| 3. | Export Allowance for extra-regional exports after expiration of the tax holiday. This is based on the value of export profits as percentage of total profits as follows: excess profits in excess of - | |
| | - 61% of total - tax relief (max) of 50% up to five (5) years; | |
| | - 41% but less than 61% of total - tax relief of 45% for up to five (5) years; | |
| | - 21% but less than 41% of total - tax relief of 35% for up to five years; | |
| | - 10% but less than 21% of total - tax relief of 25% for up to five years. | |



4. **Dividend Payments** - shareholder dividends are tax exempt for the duration of the tax holiday.
5. **Loss Carry-Forward** - Losses can be carried forward for up to five years after the tax holiday expires.
6. **Depreciation Allowance** - After the expiration of the tax holiday, a deduction of up to 20% on any capital expenditure incurred.

Antigua and Barbuda

In the Ministry of Agriculture in Antigua and Barbuda, a Chemistry and Food Technology Division has been established. The Division was set up to assist small farmers with preservation methods for produce in order to alleviate the oversupply of agricultural products and the resultant depressed prices. This Division has done work in solar drying and purchases of some excess foodstuff from farmers. It must be pointed out that the Division also carries out work on soils, fertilizers etc in addition to food products.

Montserrat

Montserrat had an Agro-Industrial establishment which purchased surplus material from farmers'. This establishment started as a Produce Lab, and it experimented with the preservation of farmers produce. This establishment now appears to be operated by private concerns. An abattoir facility was also leased to a private operator to encourage processing of home grown meat. The status of this facility is unclear.

St Kitts and Nevis

As was reported for the rest of the OECS, in St Kitts and Nevis, the Fiscal Incentives Act provides the basic enabling legislation for the State's policy on providing incentives to investors. The agro-processing industries targeted have included rum distilling, cut flowers, vegetable and citrus production and mariculture. In Nevis there is support to the cotton industry in terms of seed supply, price support, processing (ginning of cotton and baling of lint) and marketing. The State is an active participant in the West Indian Sea Island Cotton Association (WISICA).



British Virgin Islands

The legislation covering incentives to industry differs somewhat in the BVI. The package of incentives appears to be less comprehensive than that offered in the rest of the OECS and is as follows:

1. Under the Encouragement of Industries Ordinance, manufacturing enterprises are granted for a period of five years, duty free importation of building and other materials, tools, plant, machinery and equipment. Such enterprises are also entitled to a tax holiday of five (5) years.
2. The Pioneer Services and Enterprise Ordinance provides for a ten (10) year exemption from customs duties on building and other materials for the construction and operation of a pioneer enterprise or service.
3. Where an enterprise benefits from 'pioneer status' under the Pioneer Services and Enterprise Ordinance, it may also apply for concessions under the Encouragement to Industries Ordinance.

In addition to fiscal incentives, the BVI government offers a number other supports and inducements to agro-processing. These include provision by the Department of Agriculture of a number of facilities for agro-processing such as:

- (a) facilities for cold storage, grading and packaging for fruits and vegetables provided at Paraquita Bay.
- (b) identification by the Marketing Intelligence Officer of local and overseas markets for local produce.
- (c) technical advice on post harvest handling of produce is provided through personal visits, seminars and workshops.
- (d) sourcing of agro-processing equipment by the Department of Agriculture for use by farmers.

The Development Bank of the British Virgin Islands provides low/moderate financing for agro-processing among other forms of manufacturing.

Dominica

In Dominica, the Fiscal Incentives Act was created in order to promote the establishment of agro-processing enterprises such as timber and coconut products. Agro-industrial enterprises



are also supported by the National Development Corporation (NDC) and the Agricultural and Industrial Development Bank (AIDB). The AIDB administers support through the construction of factory shells and the management of industrial estates. Other major firms and organizations engaged in agro-processing and its support on the island are now described:

Produce Chemist Lab : This unit was established to undertake investigational work for the establishment of agro-industries. The unit which provides technical assistance to farmers, agro-processors and the general public, engages in activities of quality control, standards and the pioneering of new products.

Among its objectives are:

- to disseminate research information and offer advice on quality control and standards for small industries; and
- to advise on the best methods for storage of agricultural produce and manufactured products.

DEXIA : By an Act of Parliament in 1986 the old Agricultural Marketing Board and the External Trade Bureau were merged into DEXIA, Dominica Export Import Agency. DEXIA provides institutional support for marketing of agricultural products by identifying new markets and transmitting market intelligence to entrepreneurs. DEXIA is also responsible for ensuring maintenance of good selection standards and packaging.

Dominica Coconut Products (DCP) Limited: This is a public company incorporated under the Commercial Code of Dominica engaged in the production of raw, edible oil and soap, primarily for export. The DCP is the major purchaser and processor of copra in Dominica.

BELLO: This is a major local agro-processing firm contracted to purchase all marketable coffee from the Coffee Development Projects. Its agro-processing operations are fairly well diversified producing a wide range of products from local produce.

St Lucia

In St Lucia the Produce Chemist Laboratory is involved in analysis of food samples for local industrial enterprises. While government policy favours the primary production of agricultural commodities, there is evidence of the grant of concessions to agro-industry under their Fiscal Incentives Act.



St Vincent

The government's major role in the support of agro-processing has been in the construction of factory shells. The major agro-processing enterprises have been the East Caribbean Group of Companies and Diamond Dairy. Government's most recent Development Plan (1991 - 1995) states that the manufacturing sector:

"... has been given a secondary role, that of supporting the agricultural diversification effort through agro-processing. The linkage of agriculture and manufacturing through agro-processing is seen as an important avenue for encouraging local investment and production."

The Plan also calls for the setting up of an 'agro science facility', since it states:

"The absence of a facility for standardization and quality control means that there is no institution in St Vincent and the Grenadines which can provide services badly needed in the areas of research and development, pilot processing, physical, chemical and microbiological testing, quality control, standardization and training to meet the requirements of competitive export marketing and import substitution." (page 66)

Grenada

In addition to its Fiscal Incentives Act, Grenada has an Investment Code which covers a range of policies in regard to local and foreign investment and the transfer of technology. Agro-processing activity in Grenada is largely associated with its main export crops nutmeg and cocoa, as well as the distilling of rum from sugar cane. Grenada also has a Produce Chemist Lab, which functions as in the rest of the Windward Islands, to provide technical support for the activities of small scale processors.

General Conclusions

The fiscal incentives available for agro-processing in the OECS are very well harmonized across the States. The Fiscal Incentive Acts are all the same, except for the BVI, which has very similar legislation. The facilities provided by government in support of agro-processing, however, vary widely across the States. Most OECS countries have established Produce Chemist Laboratories/Units which provide quality control tests and information on food



preservation and processing to especially, small manufacturers. The countries have also created an organization which is responsible for establishing factory shells and export facilities.

The general trend seems to be toward more support for non-traditional agro-processing in States that are not major producers of historically important export crops, such as sugar, cocoa and nutmeg. Dominica appears to be the country which has made the greatest advances in agro-processing as far as plant, equipment, private sector involvement and state institutional support are concerned.

CHAPTER 3

MICRO-ECONOMIC IMPACT OF FISCAL AND OTHER SUPPORTS IN THE OECS

This analysis was designed to determine the micro-level impact of the subsidy and incentive programmes in the individual member states. In particular, the impact of the programme in the OECS on a number of selected commodities, consumers and producers of these commodities in each country is considered. In this Chapter the terms "subsidy and incentive programmes" refer to the programmes for each country detailed in Chapter 2. The terms "fiscal incentives and other supports" "trade policies" and "trade policy regime" are used interchangeably to mean the subsidy and incentive programme plus the tariff structure for the commodity in the country.

The commodities chosen for this micro-economic assessment were selected because of their acknowledged potential as diversification alternatives to the traditional crops of banana, sugar cane, cocoa and nutmegs (except possibly for the choice of cotton in Nevis, since cotton may be considered as a traditional export crop in the OECS). These alternative crops had already been identified for the OECS, in a previous study done for IICA by Antoine and Simms (1994). The use of these non-traditional alternatives meant that the analysis could address itself to the feasibility of the different crops for implementation in a diversification strategy in the OECS.

As outlined in the introduction, the analysis first assessed competitiveness of each commodity by the calculation of the Nominal Protection Coefficient (NPC), which gave a measure of the total price distortion of the commodity. This was followed by an assessment of the comparative efficiency of the production of the commodity by the calculation of the Effective Protection Coefficient (EPC). The impact of the subsidy and incentive programme on the competitiveness of each commodity was estimated using the Net Tariff Equivalent (NTE). The NTE was calculated as the residual effect after the elimination of tariffs from the NPC. The NTE therefore, gives a measure of the non-tariff contribution to the price distortion of the commodity.

In this study, all of the non-tariff distortion is assumed to result from the subsidy and incentive programme in place for the commodity. Thus it is assumed, for example, that any market imperfections for the commodity that are also measured in the NTE arise because of the impact of the subsidy and incentive programme. These imperfections are therefore included as part of the effects of the subsidy and incentive programme.

The effects of the trade policies for the commodity on consumer and producer welfare were then assessed. In the case of consumers, the contribution of consumers to the welfare of producers was estimated by the Consumer Subsidy Equivalent (CSE%), and the effect on the welfare of consumers of the removal of fiscal and other supports for the commodity was assessed by the percentage increase (or decrease) in consumption of the commodity by consumers that would take place if price distortions were removed and domestic prices were lowered (or raised) to level of border prices.

In the case of producers, the effect of the fiscal and other supports on the welfare of producers of the commodity was calculated by the Producer Subsidy Equivalent (PSE%). Some indication was also given of the likely effects of the removal of fiscal and other supports by examination of the percentage increase (or decrease) in the level of production of the commodity if domestic prices were lowered (or raised) to the level of border prices.

Nominal and Effective Protection Coefficients

The Nominal Protection Coefficient (NPC) gives an indication of the spread between the domestic market price (P_d) and the border price (P_b) of the commodity. The explanation of this spread is one of the most important aspects of price analysis. The NPC is given by:

$$NPC = \frac{P_d}{P_b} \quad (4)$$

If the $NPC > 1$, this indicates that the domestic price of the commodity is being supported above the border price and this is reflected by higher prices being paid by consumers. If the $NPC < 1$, this suggests that the domestic price is below the relevant border price so that the producers are actually subsidizing the consumers.



A measure related to the NPC is the Nominal Rate of Protection (NRP) which gives a measure of the percentage by which the domestic price differs from the border price. The NRP is thus calculated as: $NRP = NPC - 1$

The Effective Protection Coefficient (EPC) is a measure of the combined effects of protection for the product or commodity and the inputs utilized in production and is given by:

$$EPC = \frac{\text{Value added at Domestic Prices}}{\text{Value added at Border Prices}} = \frac{V_d}{V_b} \quad (5)$$

where the value added is the return to both domestic and intermediate factors of production (inputs). The EPC can be measured as follows:

$$EPC = \frac{P_d - C_{id}}{P_b - C_{ib}} \quad (6)$$

where C_i is the cost of tradeable factors of production (to produce one unit of output) priced at domestic prices and C_{ib}^* is the cost of tradeable factors (to produce one unit of output) using border prices.

The Effective Rate of Protection (ERP) which is the proportion (percentage) by which the valued added at domestic prices exceeds the value added at border prices is calculated as:

$$ERP = EPC - 1 \quad (7)$$

where the $EPC > 1$: the V_d (value added at domestic prices) is greater than V_b (the value added at border prices) so that overall producers of the commodity are being supported and benefit from the trade policy in place for the commodity and the inputs utilized in the production of the commodity.

If the $EPC < 1$: the V_d is less than the V_b , so that producers are effectively being taxed by the trade policies for products and inputs and would in fact do better by a removal of these trade policies. If the $EPC < 0$: either V_d is negative or V_b is negative.



In the case where V_d is negative, production is highly inefficient in financial (private) terms, as the price of the commodity, P_d , cannot even cover the actual cost of the tradeable inputs. Since V_b would be positive, it could mean that the inputs (or the products) are being highly taxed. In the case where V_b is negative, production is highly inefficient in economic (social) terms so that the tradeable inputs are not being put to their best economic use (the social value of the product cannot even cover the social cost of the tradeable inputs). Since V_d is positive, subsidies on the inputs or support of output prices allow the domestic price to cover the domestic cost of the tradeable inputs.

Relative Magnitudes of the NPC and the EPC

Because of the algebraic form of the equation for the EPC, it is not possible to give precise interpretations for the relative magnitudes of the NPC and the EPC. The attempt is made here is to give the most probable reasons for the relative magnitudes rather than all the mathematically possible explanations. This particular analysis is restricted to positive values of NPC and EPC.

- (i) $NPC = EPC$: Where the two values are equal, one likely explanation is that the production of the commodity does not involve much use of tradeable inputs so that both C_w and C_w^* are close to zero. Other possible explanations are:
 - : if the $NPC > 1$, the inputs are being taxed, and
 - : if the $NPC < 1$, the inputs are being subsidized.
- (ii) $NPC > 1$ and $EPC > NPC$: Here the likely case is that, both the product price and the cost of the tradeable inputs are receiving support through the trade policy. The effect would be to make the numerator in the EPC equation larger, relative to the denominator, than in the NPC equation.
- (iii) $NPC > 1$ and $EPC < NPC$: Here it is likely that unlike the support to the price of the product, the inputs are being taxed so that their social cost is less than the domestic cost.

Net Tariff Equivalent

The Net Tariff Equivalent (NTE) presents a measure of the protection that is given by non-tariff means to protect the domestic commodity from foreign competition. Such non-tariff



measures for protection include, quantitative restrictions as usually applied by an import licensing regime and quarantine and other border restrictions. Since these are essentially non-tariff measures the amount of protection that they provide for the commodity is difficult to assess. What the NTE attempts to give is the tariff equivalent to the protection of these measures.

The NTE is normally arrived at as a residual when other quantifiable tariff and border protection measures are deducted from the Nominal Rate of Protection (NRP). The NRP, as defined above, gives the percentage of the domestic price above (below) the border price if the NRP is positive (negative). If the tariffs and other quantifiable supports (such as support prices) are subtracted from the NRP, the residual can be taken as a measure of the non-tariff supports and may be represented as a percentage figure (or an equivalent tariff).

This procedure was adopted in this study. In this particular case, the duties and other tariffs (eg consumption taxes, levies etc.) were subtracted from the NRP, and the residual was taken as the NTE. The NTE was assumed to be the total effect of the subsidy and incentive programme on the price of the commodity. This assumption was justified, since in no case were there direct price supports for any commodity and the subsidy and incentive programme consisted of non-tariff measures.

Producer and Consumer Subsidy Equivalents (PSE and CSE)

The Producer Subsidy Equivalent (PSE) measures the proportion of the income of the producer that is made up of support from consumers and as well as the State's direct and indirect support to the agricultural sector. In this study, the PSE measures the sum of the support by consumers and the State for the commodity as a proportion of the border price for the product. The PSE for a commodity can be given as:

$$PSE = \frac{(P_d - P_b) + (s - t)}{P_b} \quad (8)$$

where s and t are the subsidies and the taxes for the particular crop. In this study, as they



probably did not exist, no specific information was available for each crop on s and t so that the PSE (which incidentally is a measure of the Nominal Rate of Protection (NPC -1) was measured as:

$$PSE = \frac{P_d - P_b}{P_b} \quad (9)$$

The Consumer Subsidy Equivalent (CSE) measures the direct support by the consumer for the commodity as a proportion of the price paid for the commodity by him (P_d), where this support is given as the difference between P_d and P_b . The CSE can hence be measured as:

$$CSE = \frac{P_b - P_d}{P_b} \quad (10)$$

Both the PSE and the CSE can be expressed as percentages. If the $PSE\% > 0$, it implies that the producers are receiving positive support or that the price that they receive for the commodity is $PSE\%$ higher than would have been available in a trade regime where producers received the border price for the commodity. If the PSE is negative ($PSE\% < 0$), it implies that producers are effectively being taxed, and the tax has reduced the border price of the commodity by $PSE\%$ in order to arrive at the domestic price P_d .

If the CSE is negative, it means that the consumers are supporting the price of the commodity, P_d , and effectively subsidizing producers. Consumers are therefore being taxed and the tax is being paid to the producers in the form of a subsidy to increase the price of the commodity. Consumers are paying a percentage tax of $CSE\%$ of the domestic price of the commodity P_d . If the CSE is positive, this suggests that the consumers are the beneficiaries of the trade policies in that the domestic price is less than the border price P_b . The amount of the subsidy that the consumers receive is equal to $CSE\%$ of the domestic price.

Effects of Price Distortion on Consumers

The effects on consumers of price distortions as measured by the Nominal Protection Coefficient (NPC) was estimated for each commodity by a determination of the changes in the



consumption of the commodity that would result from a removal of this distortion and a movement of prices to the border levels. These effects would include the results of the subsidy and incentive programme as measured by the NRP and the effects of tariffs (duties and consumption taxes). The differential effect of the subsidy and incentive programme can be gauged by the relative size of the NTE with respect to the NRP.

The assumption is that consumers suffer a loss (or gain) in welfare if their consumption is reduced (or increased). Hence to the extent that the price distortion has caused the prices of commodities to be higher (or lower) this would have resulted in a reduction (or increase) in consumption which would have caused a loss (or gain) in welfare. The calculation of the consumption change was carried out as follows:

The NPC is calculated as:

$$NPC = \frac{P_d}{P_b} \quad (11)$$

The percentage price difference (z) between the border (world) price and the domestic price can be written as follows:

$$z\% = \frac{100 * (P_d - P_b)}{P_b} \quad (12)$$

which can be written as: $z\% = 100 * (NPC - 1) \%$. If P_w is less than P_d , then P_d will have to be reduced by $z\%$ for the domestic price to be reduced to the world price, thus: $z\% < 0$. Given an estimate of the elasticity of demand, E_d , where:

$$E_d = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}} \quad (13)$$

then, % change in quantity demanded (y%) (or the percentage change in consumption) that will result from the change in price (z%) is given by: $y\% = E_d * z\%$ which will be the %change in quantity if the distortion in the market for the commodity was removed. If $z\%$ is negative, $y\%$ is expected to be positive, since E_d is also expected to be negative.



The current level of consumption (or demand) is equal to the domestic production plus imports of the commodity minus exports of the commodity. For the commodities selected however, the quantities of imports and exports were not generally available, so domestic consumption was taken to be equal to domestic production. The data for the analysis were generally obtained from the Statistical Offices in each State. Estimates of the elasticities for the various commodities were not available for the different States or even for the OECS as a whole. The elasticity estimates were therefore obtained from a study by Musgrove (1983)¹.

Effects of the Subsidy and Incentive Programme on Producers

The effects of the subsidy and incentive programme on producers of a commodity was assessed by use of the value of the PSE (discussed above) as well as by examining the change in quantity produced when the price distortion is removed. This assessment is undertaken in a manner identical to the analysis described for consumers. In this case however values (even approximate ones) were not available for the elasticity of supply to perform a calculation similar to the one for given earlier for $y\%$.

The analysis was conducted in this case by assuming that the price elasticity of supply was always equal to one and this therefore provided only a crude approximation of the likely change in production. In fact, the change in production will always be equal to the change in price.

Antigua and Barbuda

In the case of Antigua and Barbuda, the assessment of the micro-economic impact of the subsidy and incentive programme was carried out by the examination of 11 commodities which are listed in Table 3.1. Antigua and Barbuda has since the 1970s diversified from its historically important export crop, sugar cane, with the closure of that industry. The crops selected for

¹ (Philip Musgrove "Household Food Consumption in the Dominican Republic 1976-1977: An Analysis of the effects of Income, Price and Family Size, A Report to the Nutrition Economics Group, Office of International Cooperation and Development, US Department of Agriculture, under Contract 53-319R-1-234 USDA in Association with USAID 31 January 1983)



consideration include some of the root crops and vegetables which are produced in most abundance on the island, as well as some tree crop alternatives such as avocado and mango. The results obtained for these commodities are now discussed.

Nominal and Effective Protection Coefficients

The NPCs estimated for Antigua and Barbuda were generally quite high (Table 3.1). Only for mango and papaya were the NPCs close to unity. For avocado and hot pepper the values were between 2.00 and 2.5; for onion and pumpkin they were between 3.0 and 3.5. For sweet potato, the value was 4.2 and for the other commodities (cucumber, pineapple, watermelon and sweet pepper), the values were above 4.5.

Table 3.1: Nominal & Effective Coefficients of Protection - Antigua

Commodity	NPC	ERP	%		
			EPC	PSE	CSE
Avocado	2.18	119.16	2.19	1.18	-0.54
Cucumber	4.84	689.66	7.90	3.94	-0.79
Hot Pepper	2.09	104.79	2.05	1.09	-0.52
Mango	1.05	99.09	1.99	0.05	-0.05
Onion	3.33	275.99	3.76	2.33	-0.70
Papaya	1.19	2.00	1.02	0.19	-0.16
Pineapple	5.00	483.14	5.83	4.00	-0.80
Pumpkin	3.45	-211.07	-1.11	2.45	-0.71
Sweetpepper	6.32	659.00	7.59	5.32	-0.93
Sweetpotato	4.20	308.60	4.09	3.20	-0.76
Watermelon	5.29	502.00	6.02	4.29	-0.81
AVG	3.54		3.76	2.55	-0.62
STD	1.67		2.71	1.69	0.27

Given the less extensive range of subsidy and incentive measures in operation in Antigua (including the lack of quantitative restrictions), the level of price distortion that is being created by those that are in fact in place is interesting. Some of the commodities that recorded the highest NPCs were also the commodities with the highest level of production eg. sweet potato and cucumber. One possible explanation for the high NPCs (eg. 6.32 for sweet pepper) could be a great degree of inefficiency in the production systems. For this inefficiency to be passed on to consumers will also require a very imperfect marketing system where, for example, consumers are willing to pay exorbitant prices for local produce even in the presence of cheaper



imported sources. It is also possible, for example, that the current distribution system has been unable or unwilling to utilize alternative foreign sources of supply. This could be the result of strong oligopolistic tendencies in the markets for imported food, maintaining prices well above border prices or, the existence of a strong political lobby by domestic producers.

Antigua's onion production has been attracting a lot of regional attention because this is a commodity for which there is a large consumption-production deficit within CARICOM. The NPC of 3.33 suggests that regional needs should probably be met from extra-regional imports. All of the EPCs are greater than one except in the case of pumpkin. This suggests that for all commodities except pumpkin, the producers are being supported and are benefitting from the trade policies in place for the commodities and for their inputs. For avocado, cucumber, mango, onion, pineapple, sweet pepper, and watermelon the EPCs are higher than the NPCs, which is consistent with the fact that both the inputs and the commodities receive support via the subsidy and incentive programme and the tariff system. As discussed earlier there is duty free importation of inputs and the State imposes a minimum 30% duty on agricultural (food) commodity imports.

The negative value for the EPC for pumpkin indicates that producers are being inefficient in the production of this commodity so that price is not covering unit cost of production in either a private or social context. For hot pepper, papaya and sweet potato, the EPC while positive is less than the NPC. The values of the EPC and NPC for each of these commodities (and in the case of avocado) are almost identical. This suggests that production of these commodities does not involve much use of tradeable inputs. The tradeable inputs that are in fact being used are probably being effectively taxed (except of course in the case of avocado).

Net Tariff Equivalents

The NTEs for the commodities for Antigua and Barbuda are given in Table 3.2a. NTEs are negative for mango and papaya, indicating that in the absence of the duty on the imports of these commodities, the price to the consumer would be below the border price. This reflects some efficiency in the production of these two commodities, which is reflected in the low EPC values estimated.



For the other commodities, the NTEs are positive. For avocado, hot pepper, the values are less than one (or 100% equivalent tariff), while for the other commodities the NTE is greater than two (or 200%). The highest value recorded was for sweet pepper which had an equivalent tariff of 500%.

In the absence of quantitative restrictions for the importation of the commodities, the NTEs in the case of Antigua probably give an indication of the productivity of local farmers, as well as the efficiency of the marketing for domestically produced commodities resulting from the subsidy and incentive programme. In all cases except mango and papaya, the non-tariff measures provide more protection than tariffs.

Table 3.2a: Microeconomic Impact of Subsidy and Incentive Programme - Antigua

Commodity	NPC	NRP	Duty (%)	Con. Tax (%)	NTE
Avocado	2.18	1.18	40.00	0.00	0.78
Cucumber	4.84	3.84	30.00	0.00	3.54
Hot Pepper	2.09	1.09	40.00	0.00	0.69
Mango	1.05	0.05	40.00	0.00	-0.35
Onion	3.33	2.33	30.00	0.00	2.03
Papaya	1.19	0.19	40.00	0.00	-0.21
Pineapple	5.00	4.00	40.00	0.00	3.60
Pumpkin	3.45	2.45	30.00	0.00	2.15
Sweet Pepper	6.32	5.32	30.00	0.00	5.02
Sweet Potato	4.20	3.20	35.00	0.00	2.85
Watermelon	5.29	4.29	40.00	0.00	3.89

Effect of the Fiscal and Other Supports on Producers

The PSE values for Antigua and Barbuda are positive in every case. This suggests that for all the commodities, producers are in receipt of positive support, and that support comes from the consumers who pay more for the commodity than the border price.

Removal of all constraints so that commodities are available at border prices are likely to result in the reductions in the levels of production of the commodities (shown by the Price Change column in Table 3.2b), given that supply elasticities are equal to one. Except for mango



and papaya, the figures suggest the cessation of production of the crops, with the removal of all fiscal and other supports and the establishment of border prices.

Table 3.2b: Microeconomic Impact of Fiscal and other Supports - Antigua.

Commodity	Elasticity	Production (tons)	Price Change (%)	Consumption Change (%)
Avocado	-1.17	na	-118	137.47
Cucumber	-1.10	161	-384	422.78
Hot Pepper	-1.10	2	-109	119.90
Mango	-1.17	na	-5	5.83
Onion	-1.10	37	-233	256.53
Papaya	-1.17	2	-19	22.13
Pineapple	-1.17	126	-400	468.00
Pumpkin	-1.10	233	-245	269.50
Sweet Pepper	-1.10	35	-532	585.20
Sweet Potato	-1.10	219	-320	352.00
Watermelon	-1.17	672	-429	501.93

Effects of Fiscal and Other Supports on Consumers

The CSE values are negative in every case for the commodities in Table 3.1. This suggests that in every case, consumers are supporting the income of producers by paying domestic prices for the commodities that are higher than the border prices. Because of the high values of the NPCs, it is seen in Table 3.2b that a reduction of the domestic prices of the commodities to the level of the border prices will result in substantial benefits to consumers. In fact, consumers would likely double their consumption of avocado and hot pepper, and increase their consumption of the other commodities by factors, reaching to nearly six times for sweet pepper.

The results clearly indicate that for the commodities selected for Antigua and Barbuda, the fiscal and other supports have created great distortions in the markets. Consumers are meeting the brunt of these distortions by paying for the commodities domestic prices which are much higher than the border prices. The only commodities that seem to have real potential for diversification are mango and papaya since both their NPC and EPC are close to unity and their NTE is in fact negative. Given the rainfall pattern of Antigua, only papaya seems to possess viable diversification potential.



Montserrat

Nominal and Effective Protection Coefficients

The NPCs for Montserrat are all extremely high and are all above 2.0 (Table 3.3). The root crops have values of 5.00 for sweet potato, 2.46 for white potato and 2.78 for yam. Pineapple has the value of 3.99. The vegetables all have values over 4.0, with the highest being cabbage at 9.09. These results are not unexpected, since as earlier reported, quantitative restrictions are in place in Montserrat for fresh fruit and vegetables. These restrictions in the form of import licenses should afford a high degree of protection and therefore should result in high values for the NPCs for those commodities. These results demonstrate quite well, how effectively a well run system of quantitative restrictions can function to protect the market for domestic commodities.

Table 3.3: Nominal & Effective Coefficients of Protection, Montserrat

Commodity	NPC	ERP	%		
			EPC	PSE	CSE
Cabbage	9.09	1,398.91	27.99	8.09	-0.89
Carrot	4.84	573.30	19.73	3.84	-0.79
Cauliflower	5.66	431.14	18.31	4.66	-0.82
Onion	4.22	344.36	17.44	3.22	-0.76
Pineapple	3.99	407.60	18.08	2.99	-0.75
Sweetpotato	5.00	420.61	18.21	4.00	-0.80
Tomato	7.66	746.68	12.19	6.66	-0.87
Whitepotato	2.46	159.53	15.60	1.46	-0.59
Yam	2.78	87.46	14.87	1.78	-0.64
AVG	5.08		17.43	4.69	-0.77
STD	2.03		5.21	3.21	0.09

The EPCs are all higher than the NPCs, therefore both the product price and the costs of inputs are receiving support from the fiscal and other measures. The values of the EPCs obtained are the highest in the study and they clearly demonstrate, that none of the commodities can be considered as suitable for expansion of agriculture in Montserrat in a competitive environment.



Net Tariff Equivalents

Consistent with the results and the explanation offered for the NPCs, all of the NTEs are greater than 100%, with the highest being 779% and the lowest 136% (Table 3.4a). This implies that the result of the quantitative restrictions that are in place and other non-tariff market imperfections caused by the subsidy and incentive programme is to impose an effective tariff on the commodities of at least 136%. Again, these non-tariff measures have a much greater effect than tariffs on the prices of the commodities.

Table 3.4a: Microeconomic Impact of Subsidy and Incentive Programme- Montserrat

Commodity	NPC	NRP	Duty (%)	Con.Tax (%)	NTE
Cabbage	9.09	8.09	15.00	15.00	7.79
Carrot	4.84	3.84	15.00	15.00	3.54
Cauliflower	5.66	4.66	15.00	15.00	4.36
Onion	4.22	3.22	25.00	10.00	2.87
Pineapple	3.99	2.99	10.00	0.00	2.89
Sweetpotato	5.00	4.00	15.00	15.00	3.70
Tomato	7.66	6.66	15.00	15.00	6.36
Whitepotato	2.46	1.46	10.00	0.00	1.36
Yam	2.78	1.78	15.00	15.00	1.48

Effect of Fiscal and other Support on Producers

The PSEs for all the commodities are positive and all the CSEs are negative in Table 3.3, conforming to the general pattern of support to producers in general and the subsidization of producers by consumers. The percentage change in prices given in Table 3.4b also demonstrate (again with an assumption of unitary supply elasticities) that farming activity in these commodities will cease in the absence of the support for producers indicated by the NPCs. Such a reduction of crop production in Montserrat would mean the virtual collapse of agriculture, since these are, in fact, the main crops in production at this time.



Table 3.4b: Microeconomic Impact of Fiscal and other Supports - Montserrat

Commodity	Elasticity	Production (tons)	Price Change (%)	Consumption Change (%)
Cabbage	-1.10	2.45	809	889.90
Carrot	-1.10	14.30	384	422.40
Cauliflower	-1.10	na	466	512.60
Onion	-1.10	1.10	322	354.40
Pineapple	-1.17	na	299	349.83
Sweetpotato	-1.10	61.07	400	440.00
Tomato	-1.10	4.86	666	732.60
Whitepotato	-1.10	40.40	146	160.60
Yam	-1.10	na	178	195.80

Effect of Fiscal and other Supports on Consumers

Table 3.4b indicates that a removal of all price distortions results in a very large expansion in demand for the commodities, in every case by more than 150%. The results indicate that agriculture in Montserrat is not in a very sound position since all of the commodities examined were uncompetitive and therefore none could be recommended by this study. The study also indicated that production of most of the commodities will be greatly reduced if prices were to be reduced to border levels. In the case of Montserrat, this could have a slightly greater effect on the economy than in the case of the BVI, since agriculture employs 9% of the labour force in Montserrat, compared to 1.4% in the case of the BVI.

St Kitts

Nominal and Effective Protection Coefficients

The crops that were selected for St Kitts are similar to those selected for Montserrat with the exception of cotton. The NPCs for the selected commodities are given in Table 3.5. With the one important exception of cotton, all the NPCs are greater than two. The root crops have values of 4.4 for yam, sweet potato, 2.5 and white potato, 2.46. The vegetables have values ranging from onion 2.94 to tomato 7.64. White potato for St Kitts has the same NPC as obtained for Montserrat, suggesting a similar production and marketing system influenced by a similar subsidy and incentive programme. As in Montserrat, the factor that is most likely to have influenced the high NPCs is the system of quantitative restrictions. This system effectively restricts the competition that the commodities would normally receive from imports.



Table 3.5: Nominal & Effective Coefficients of Protection - St.Kitts

Commodity	%				
	NPC	ERP	EPC	PSE	CSE
Cabbage	5.13	463.00	5.63	4.13	-0.81
Carrot	3.23	184.00	2.84	2.23	-0.69
Cotton	0.88	-18.00	0.82	-0.12	0.13
Onion	2.94	164.00	2.64	1.94	-0.66
Pumpkin	3.75	-235.00	1.35	2.75	-0.73
Sweetpotato	2.50	64.00	1.64	1.50	-0.60
Tomato	7.64	714.00	8.14	6.64	-0.87
Whitepotato	2.46	116.00	2.16	1.46	-0.59
Yam	4.46	186.00	2.86	3.46	-0.64
AVG	3.67		2.82	2.48	-0.61
STD	1.82		2.57	1.82	0.27

The exceptional case in the results for the NPCs, is that of cotton, where the NPC is in fact below one, suggesting that producers are in effect being taxed, rather than being supported by the rest of the economy. Cotton production as has been stated earlier is concentrated on Nevis and is not protected from imports by quantitative restrictions. In fact, production is for export. The results suggest that a serious examination should be made of expansion of cotton production.

On average, the EPCs for St Kitts are less than the NPCs, suggesting that the inputs are being taxed, while the output prices are being supported. All the EPCs are positive except pumpkin, for which the EPC is actually negative. The negative EPC implies that there is inefficiency in the production of pumpkin, most likely in the social context. In the case of cotton the EPC is almost identical to the NPC, implying a minimal use of tradeable inputs in the production of this commodity.

Net Tariff Equivalent

The NTEs for St Kitts are given in Table 3.6a. With the exception of cotton, where the NTE is negative, the NTEs for the commodities are quite high (over 1.0) implying that the quantitative restrictions and other non-tariff measures that are in place for commodities in this country, are providing a high degree of support for the commodities (up to 663% in the case



of tomato). These measures appear to be highly effective. According to Table 3.6a, the tariffs in St Kitts are extremely low.

Effect of Subsidy and Incentive Scheme on Producers

With the exception of cotton, the PSEs (Table 3.5) are all positive therefore that the producers are receiving support for the commodities. In the case of cotton, the negative value for the PSE and the positive value for the CSE suggest that cotton producers are subsidizing consumers, or are in effect being taxed by the trade policy regime. The results in Table 3.6b suggest that (given that all supply elasticities are unitary) production for all commodities (except cotton) would cease if domestic prices were to be reduced to the border levels. In the case of cotton, production would expand by 12%.

Table 3.6a: Microeconomic Impact of Subsidy and Incentive Programme - St.Kitts

Commodity	NPC	NRP	Duty (%)	Con.Tax (%)	NTE
Cabbage	5.13	4.13	1.00	0.00	4.12
Carrot	3.23	2.23	1.00	0.00	2.22
Cotton	0.88	-0.12	0.00	0.00	-0.12
Onion	2.94	1.94	2.00	0.00	1.92
Pumpkin	3.75	2.75	1.00	0.00	2.74
Sweetpotato	2.50	1.50	1.00	0.00	1.49
Tomato	7.64	6.64	1.00	0.00	6.63
Whitepotato	2.46	1.46	2.00	0.00	1.44
Yam	4.46	3.46	1.00	0.00	3.45

Table 3.6b: Microeconomic Impact of Fiscal and other Supports - St.Kitts

Commodity	Elasticity	Production (tons)	Price Change (%)	Consumption Change (%)
Cabbage	-1.10	27.90	-413	454.30
Carrot	-1.10	74.84	-223	245.30
Cotton	na	15.96	12	na
Onion	-1.10	8.16	-194	213.59
Pumpkin	-1.10	43.09	-275	302.50
Sweetpotato	-1.10	72.57	-150	165.00
Tomato	-1.10	81.19	-664	730.40
Whitepotato	-1.10	340.00	-146	160.60
Yam	-1.10	17.50	-346	380.60



Effects of Subsidy and Incentive Programme on Consumers

Negative values for the CSEs, except in the case of cotton, indicate that consumers are subsidizing producers by paying higher prices for a number of commodities. As expected (Table 3.6b) consumers would expand their consumption of vegetables and root crops substantially if all supports to domestic price are removed and border prices exist on the domestic markets.

The percentage increases exceed 150%. For St Kitts, the interesting result is the competitive position of cotton production in Nevis. This situation should be investigated further. White potato, carrot and onion are interesting commodities from a regional diversification and self sufficiency context. The evidence however is that the production of these commodities in St Kitts as in Montserrat is not competitive.

It may be concluded therefore that cotton alone represents a feasible diversification alternative for St Kitts (and perhaps all of the Leeward Islands). The only other commodities in St Kitts and Nevis worthy of any consideration (in terms of this study) are sweet potato, white potato and onion, but improvements would be needed in their competitiveness. As noted earlier, St. Kitts is implementing Diversification Projects funded by FAO/UWP and the World Bank. Feasible diversification alternatives to sugar cane for St. Kitts thus demands serious consideration. This study seems to demonstrate that the efficiencies of production and marketing of a number of the currently favoured alternatives need to be addressed urgently.

British Virgin Islands

Nominal and Effective Protection Coefficients

In the case of the British Virgin Islands, the microeconomic assessment was carried out by an examination of the seven commodities given in Table 3.3. The NPCs estimated for the BVI were quite high (above 5.0) for avocado, cucumber, mango, tomato, and watermelon. For the other two crops eggplant and squash the NPCs were below 2.0 but above 1.4. These high values were expected in view of the high level of support that has been given to agriculture in the BVI through the subsidy and incentive programme and given that the commodities selected for the BVI were most produced.

The EPCs were all negative, except for eggplant, suggesting that except for that commodity, production was inefficient (price not covering unit cost of production) either from the private or social context. Given the nature of the support to the agricultural sector in that State, the inefficiency would seem to exist from the social context, especially since the NPCs were so high. For eggplant, the EPC estimate was 1.50, which was almost the same value as the NPC. This suggests that tradeable inputs are not significant in the production of this commodity.

Table 3.7 Nominal & Effective Coefficients of Protection - BVI

Commodity	NPC	ERP	%		
			EPC	PSE	CSE
Avocado	5.00	-197.38	-0.97	4.00	-0.80
Cucumber	8.71	-204.54	-1.05	7.71	-0.89
Eggplant	1.47	49.93	1.50	0.47	-0.32
Mango	5.57	-143.27	-0.43	4.57	-0.82
Squash	1.96	-168.22	-0.68	0.96	-0.49
Tomato	4.35	-115.88	-0.16	3.35	-0.47
Watermelon	8.71	-314.98	-2.15	7.71	-0.98
AGV	5.11		-0.56	4.11	-0.68
STD	2.67		1.03	2.67	0.23

Net Tariff Equivalent

For all the commodities, the NTEs were positive, and exceeded the tariffs (Table 3.4a), implying that support for the commodities existed apart from duties (which were quite low) and consumption taxes. As noted previously, there were no formal quantitative restrictions in place in the BVI. The figures suggest however, that the subsidy and incentive programme as well as the small size of the market may be creating an oligopolistic marketing system, which may also be supported by a strong political influence. These conditions may be serving to create distorted markets for the commodities. The distortions seem, as the case of Antigua, to amount to voluntary import restrictions on the part of importers.

Table 3.8a: Microeconomic Impact of Subsidy and Incentive Programme - BVI

Commodity	NPC	NRP	Duty (%)	Con.Tax (%)	NTE
Avocado	5.00	4.00	1.00	3.00	3.95
Cucumber	8.71	7.71	1.00	3.00	7.62
Eggplant	1.47	0.47	1.00	3.00	0.46
Mango	5.57	4.57	1.00	3.00	4.51
Squash	1.96	0.96	1.00	3.00	0.94
Tomato	4.35	3.35	1.00	3.00	3.31
Watermelon	8.71	7.71	1.00	3.00	7.62

Effect of Subsidy and Incentive Programme on Producers

The PSE values for the BVI (Table 3.3) are all positive, in line with the NPC values discussed above. This again indicates support of the incomes of producers, by consumers, in the form of domestic prices way above border prices. Similarly, producers would most likely cease their production of all the commodities except eggplant, if domestic prices were reduced to the level of border prices. Eggplant production would likely be reduced by 50%. Such reductions in agricultural output should not have a major effect on the economy of the BVI, since the agricultural sector contributes only about 4.4 % to the GDP and 1.4% to the employment.

Table 3.8b: Microeconomic Impact of Fiscal and other Supports - BVI.

Commodity	Elasticity	Production (tons)	Price Change (%)	Consumption Change (%)
Avocado	-1.17	24.39	400	446
Cucumber	-1.10	7.11	771	848.10
Eggplant	-1.10	2.74	47	51.70
Mango	-1.17	91.44	457	534.69
Squash	-1.10	2.54	96	105.60
Tomato	-1.10	2.54	335	368.50
Watermelon	-1.17	6.91	771	902.07

Effect of Fiscal and Other Supports on Consumers

The CSE values are all negative (Table 3.3), indicating that consumers in the BVI are subsidizing the producers as noted above. Because of the high values of the NPCs, consumers are likely to would benefit by a reduction of domestic prices to the level of the border prices.



Prices for all commodities will fall by more than 47%. This means that consumers would more than double their consumption of all commodities, except eggplant.

Production in the BVI does not appear efficient and competitive for any of the selected commodities. Only eggplant seems to be worthy of any type of consideration, and even for this commodity, production would have to become more efficient before it can be recommended as a crop for production expansion. Since the selected commodities include the major commodities in the State, it is clear that agriculture would remain a marginal activity in the BVI, unless there is radical improvement in production and marketing systems. Fiscal and other supports do not seem to be of adequate assistance in the creation of such systems.

Dominica

Dominica is an important producer of bananas in the OECS. In view of this however, the uncertainties surrounding banana exports to the European Union and the high dependence of the economy on bananas, Dominica has been in the forefront of the search for diversification alternatives. The commodities selected for analysis are presented in Table 3.9.

Nominal and Effective Protection Coefficients

The NPCs for the commodities for Dominica are all very low except for passion fruit at 5.63. (Table 3.9). Golden apple, pink anthurium, papaya and tannia all have NPCs that are less than 1.20. The EPCs are also quite low, in every case less than the corresponding value of the NPC. Since the NPCs are all greater than one, and the EPCs < NPCs, this suggests that inputs are being taxed in Dominica.

Given that there are some supports in place in the form of duty free concessions on most inputs, then the effective taxation is probably derived from the duty on vehicles (only a 50% waiver is in effect) and the operations of an oligopolistic input marketing system. In the cases of anthurium, dasheen, ginger lily, golden apple, papaya, and tannia the EPC values are less than one, indicating that in sum (inputs and outputs), production is effectively being taxed by the trade regime for these commodities.

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Table 3.9: Nominal & Effective Coefficients of Protection - Dominica

Commodity	%				
	NPC	ERP	EPC	PSE	CSE
Anthurium - pink	1.07	-1.77	0.98	0.07	-0.07
Anthurium - red	1.23	-25.79	0.74	0.23	-0.19
Avocado	1.24	20.06	1.20	0.24	-0.19
Breadfruit	1.55	17.45	1.18	0.55	-0.35
Dasheen	1.34	-3.49	0.97	0.34	-0.25
Ginger	1.93	49.19	1.49	0.93	-0.48
Gingerlily - red	1.93	42.19	0.72	0.93	-0.48
Golden apple	1.00	-82.38	0.17	0.00	-0.25
Mango	1.24	19.51	1.19	0.24	-0.19
Passionfruit	5.63	96.99	1.97	4.63	-0.82
Papaya	1.09	-17.97	0.82	0.09	-0.09
Sweetpotato	2.50	94.72	1.95	1.50	-0.60
Tannia	1.10	-24.66	0.75	1.10	-0.09
AVG	1.76		1.09	0.78	-0.27
STD	1.19		0.48	1.18	0.26

Net Tariff Equivalents

The NTEs for the commodities in Dominica are given in Table 3.10a. The values are negative for half of the commodities (anthurium, avocado, golden apple, mango, papaya and tannia) therefore that for these commodities, consumers in the absence of duties and consumption taxes, would be paying prices which are below border prices.

The values of the NTEs for the other commodities are positive, but in each case less than 1.5 (except passion fruit at 4.22). Thus, while the quantitative restrictions and other supports in place do allow for protection of an equivalent tariff of up to 422% for passion fruit, the level of protection they afford are not as high as the "voluntary" restrictions and other supports in place in the BVI and Antigua. For Dominica also, the non-tariff measures provide less support to prices than tariffs, except in the case of passion fruit and sweet potato.

Effect of Subsidy and Incentive Programme on Producers

The PSEs for Dominica in Table 3.9 are all positive but, except in the case of passion fruit, have low values indicating, that while the producers are in receipt of some support, this support is quite low. Very low values were obtained for anthurium, golden apple, papaya, and



tannia. If the prices were to be lowered to border prices, producers would be likely to reduce their output of all crops but especially, passion fruit, ginger, ginger lily and sweet potato. These crops (with the exception of sweet potato) are not produced in large quantities so that it is possible that the level of production efficiency is not as high as the other selected commodities.

Table 3.10a: Microeconomic Impact of Subsidy and Incentive Programme - Dominica

Commodity	NPC	NRP	Duty (%)	Con.Tax (%)	NTE
Anthurium - pink	1.23	0.23	25.00	26.00	-0.28
Anthurium - red	1.24	0.24	15.00	26.00	-0.17
Avocado	1.55	0.55	15.00	26.00	0.14
Breadfruit	1.34	0.34	1.00	26.00	0.07
Ginger	1.93	0.93	1.00	26.00	0.66
Gingerlily - red	1.93	0.93	25.00	26.00	0.42
Goldenapple	1.00	0.00	15.00	26.00	-0.41
Mango	1.24	0.24	15.00	26.00	-0.17
Passionfruit	5.63	4.63	15.00	26.00	4.22
Papaya	1.09	0.09	15.00	26.00	-0.32
Sweetpotato	2.50	1.50	1.00	26.00	1.23
Tannia	1.10	0.10	1.00	26.00	-0.17

Effects of Subsidy and Incentive Programme on Consumers

The CSEs are all negative. The negative values again indicate that the consumers are subsidizing the producers by paying domestic prices which are higher than the border prices for the commodities. For all of the commodities, there would be increases in the consumption if the prices were to be reduced to border prices. (The actual % change in consumption is given in Table 3.10b).

Passion fruit is one of the commodities being promoted in Dominica in its diversification drive. The evidence from this study is that its production is low and its pricing rather distorted. Cut flowers - anthurium and ginger lily - appear to have better potential than passion fruit. The fruits, golden apple and papaya, and the root crop, tannia seem however, to be the best diversification prospects. This is especially true of golden apple.



In general, the commodities for Dominica have lower NPCs and EPCs compared to those of the Leeward Islands. In the case of Dominica, the agricultural sector contributes 28% of the total GDP, employs one third of the labour force and provides 65% of the value of exports. Hence, it would be difficult for the rest of the economy to provide a high degree of support to the agricultural sector. The benefits of this situation may be however, that Dominica's agricultural sector has been able to remain fairly competitive, which may augur well for the economic future of this country.

Table 3.10b: Microeconomic Impact of Fiscal and other Supports- Dominica.

Commodity	Elasticity	Production (tons)	Price Change (%)	Consumption Change (%)
Anthurium - pink	na	na	-23.00	n
Avocado	-1.17	695.00	-24.00	27.96
Breadfruit	-1.10	555.00	-55.00	60.50
Dasheen	-1.10	18,408.00	-34.00	37.40
Ginger	-1.10	195.00	-93.00	102.30
Gingerlily	na	na	-93.00	na
Goldenapple	-1.17	na	0.00	0.00
Mango	-1.17	3,436.00	-24.00	27.96
Passionfruit	-1.17	299.00	-463.00	541.71
Papaya	-1.17	14.00	-9.00	10.49
Sweetpotato	-1.10	1,375.00	-150.00	165.00
Tannia	-1.10	4,148.00	-10.00	11.00

St Lucia

The eleven commodities chosen for St Lucia (Table 3.11) consist of the root crops: dasheen and tannia, tree crops and vegetables, passionfruit, pineapple and papaya. St Lucia is the leading banana producer in the OECS and recent difficulties in its industry have intensified its diversification thrust.

Nominal and Effective Protection Coefficients

The NPCs for the selected commodities for St Lucia are moderately high, with the values for the fruits mango and papaya being less than one and the value for ginger being 1.04 (Table 3.11). The values for the root crops, tannia and dasheen are relatively high at around 1.8, while pineapple is 2.5. Passion fruit continues its pattern in the OECS of high values for the NPC.



For St Lucia, the value is 6.91. With respect to the EPCs, the values for ginger, mango, papaya and soursop are all less than one suggesting producers are being effectively taxed. For the other commodities, the EPCs are greater than one implying support for production.

Another interesting result for St Lucia is that the EPCs are consistently less than the NPCs, again indicating that the inputs are in effect being taxed. St Lucia now has in place a 40% consumption tax and a 3% service charge on the import of agricultural inputs (even though these imports are free of duty). These additional taxes may be a major reason for the lower values for the EPCs. The low NPCs for the fruits, mango, papaya and soursop in St Lucia suggest that they may be good diversification alternatives to banana production. Another good prospect seems to be ginger.

Table 3.11: Nominal & Effective Coefficients of Protection - St.Lucia

Commodity	NPC	ERP	%		
			EPC	PSE	CSE
Avocado	1.51	42.00	1.42	0.51	-0.34
Breadfruit	1.51	34.10	1.34	0.51	-0.34
Dasheen	1.98	88.00	1.88	0.98	-0.49
Ginger	1.04	-24.87	0.75	0.04	-0.04
Hot pepper	1.80	73.10	1.73	0.80	-0.44
Mango	0.88	-51.00	0.49	-0.12	0.14
Passionfruit	6.91	463.00	5.63	5.91	-0.86
Papaya	0.92	-33.12	0.67	-0.08	0.09
Pineapple	2.51	131.00	2.31	1.51	-0.60
Soursop	1.16	-52.96	0.47	0.16	-0.14
Tannia	1.80	-52.96	1.60	0.80	-0.45
AVG	2.00		1.66	1.00	-0.32
STD	1.62		1.38	1.62	0.29

Net Tariff Equivalents

With the marked exception of passion fruit, the NTEs for St Lucia are relatively low (Table 3.12a). In fact in the cases of ginger, mango, papaya and soursop, they are negative, which conforms to earlier results. In the absence of duties and other tariffs, prices for these commodities could be expected to be below the border price in a perfectly competitive marketing system. Only for pineapple and passion fruit did the NTE exceed the tariffs imposed on the



commodities. The results show that the system of quantitative restrictions in place is not as effective in distorting the markets for the commodities, as illustrated in the Islands.

Table 3.12a: Microeconomic Impact of Subsidy and Incentive Programme - St.L

Commodity	NPC	NRP	Duty	Con. Tax	
Avocado	1.51	0.51	40.00	9.00	
Breadfruit	1.51	0.51	40.00	9.00	
Dasheen	1.98	0.982	40.00	9.00	0
Ginger	1.04	0.04	40.00	9.00	-0.
Hot Pepper	1.80	0.80	40.00	9.00	0..
Mango	0.88	-0.12	40.00	9.00	-0.6
Passion Fruit	6.91	5.91	40.00	9.00	5.42
Papaya	0.92	-0.08	40.00	9.00	-0.57
Pineapple	2.51	1.51	40.00	24.00	0.87
Soursop	1.16	0.16	40.00	9.00	-0.33
Tannia	1.80	0.80	40.00	9.00	0.31

Effects of Subsidy and Incentive Programme on Producers

The PSE values for the commodities selected for St Lucia are all positive except for mango and papaya. In similar vein, the CSE for all the commodities are negative except for mango and papaya. These results suggest that producers in St Lucia with the exception of mango and papaya producers, receive support from consumers for their commodities. Reducing prices to their border levels (with the exception of mango and papaya) would be likely to cause production by farmers to be reduced (again assuming constant elasticity of supply equal to one). The reduction will be particularly severe for passion fruit and pineapple, (production of which is likely to cease) and the root crop, dasheen and hot pepper. Production of mango and papaya will increase as prices of these commodities will have to rise to bring them up to border levels.

Effects of Subsidy and Incentive Programme on Consumers

Removal of distortions in prices by reducing domestic prices to border price levels would result in an expansion of consumption by more than 100% for dasheen, passion fruit and pineapple. In the case of mango and papaya, consumption would drop, as prices are in fact increased to border levels. For the other commodities, consumption would rise, but in each case less than 100% (Table 3.12b).

St Lucia appears to have many crops with good potential for its diversification thrust away from bananas. The best appear to be the fruits mango, papaya and soursop and the rhizome ginger. Mango and papaya seem to be very good prospects indeed, judging by both their NPCs and EPCs. St Lucia, like Dominica, appears to have managed to moderate the distortion that its fiscal and other supports have had on their agricultural sector, especially on the non-traditional commodities, so that some of these commodities appear currently to be quite competitive.

Table 3.12b: Microeconomic Impact of Subsidy and Incentive Programme - St Lucia

Commodity	Elasticity	Production (tons)	Price Change (%)	Consumption Change (%)
Avocado	-1.17	288.00	-51	59.42
Breadfruit	-1.10	9275.00	-51	56.10
Dasheen	-1.10	576.00	-98	107.80
Ginger	-1.10	7.30	-4	4.68
Hot Pepper	-1.10	87.30	-80	88.00
Mango	-1.17	5127.00	12	-13.98
Passion Fruit	-1.17	na	-591	691.47
Papaya	-1.17	27.60	8	-9.36
Pineapple	-1.17	na	-151	176.67
Soursop	-1.17	490.00	-16	18.72
Tannia	-1.10	228.00	-80	88.00

St Vincent

St Vincent has traditionally been considered to have a fairly diversified agricultural sector. Recently, there has been the rapid expansion of banana production, as in the case in the rest of the Windward Islands. Concerns about the future of the banana industry, have caused the St Vincent and the Grenadines Development Plan (1991-1995), to call for, inter alia, a policy to promote the "...diversification of the export base and increased import substitution through the introduction of new crops." The selected diversification alternatives examined for St Vincent were similar to those chosen for St Lucia. The difference was the inclusion of eddo, golden apple and anthurium and the exclusion of hot pepper.

Nominal and Effective Protection Coefficients

The NPC values for St. Vincent are all above one and are surprisingly high especially for eddo, ginger and tannia (Table 3.13). St Vincent was the acknowledged leader in the production

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of these commodities in the OECS, and had a major export market in Trinidad and Tobago, especially for eddoes. The high NPC values for these commodities in fact reflect the relative and current uncompetitiveness of production in St. Vincent.

The NPCs for passion fruit and anthurium are quite high suggesting that these may not be good diversification alternatives. In the case of St Vincent, the NPCs for mango and papaya are higher than in the case of St Lucia, but are still reasonably low. This again suggests that fruits are a possible avenue for diversification. Breadfruit also has a relatively low NPC, lower in fact than the NPC for St Lucia and Dominica (but the same value as exists for Grenada).

Table 3.13: Nominal & Effective Coefficients of Protection, St.Vincent

Commodity	NPC	ERP	%		
			EPC	PSE	CSE
Anthurium - pink	1.88	78.73	1.79	0.88	-0.47
Avocado	2.96	-59.16	0.41	1.96	-0.66
Breadfruit	1.21	-99.10	1.93	0.21	-0.18
Dasheen	2.27	-8.74	0.91	1.27	-0.56
Eddo	3.17	121.37	2.21	2.17	-0.68
Ginger	2.59	43.03	0.97	1.59	-0.61
Golden apple	2.19	9.93	1.09	1.19	-0.54
Mango	1.29	-52.90	0.49	0.29	-0.23
Passionfruit	6.25	239.70	3.39	5.25	-0.84
Papaya	1.34	-46.44	0.53	0.34	-0.25
Pineapple	3.16	123.79	2.23	2.16	-0.68
Soursop	3.23	38.34	1.38	2.23	-0.69
Tannia	1.70	-6.39	0.93	0.70	-0.41
AVG	2.56		1.40	1.56	-0.52
STD	1.28		0.38	1.28	0.20

With the exception of breadfruit, the EPCs for this state are all lower than the NPCs. Since the NPCs are all greater than one, a possible explanation (as in the case of St Lucia) is the imposition of a tax on inputs imported into St Vincent. In the case of St Vincent, there is a 2% levy on all imports and a 10% consumption tax on seeds and fertilizer. The higher value of the EPC for breadfruit suggests that breadfruit production is supported both with respect to the product and its inputs. Based on the NPC and EPC estimates, the crops with the best diversification potential appear to be mango and papaya.



Net Tariff Equivalents

With the exception of breadfruit, mango and papaya, all the other NTEs are positive (Table 3.14 a). The positive NTEs reflect the impact of the quantitative restrictions and other non-tariff measures that are in place in St Vincent and the Grenadines. As in the case of St Lucia, the figure for passion fruit is exceedingly high.

The negative values for breadfruit, mango and papaya indicate that for these commodities, in the absence of tariffs, prices could be expected to be below border price levels, even with the quantitative restrictions and other non tariff measures in place. Unlike the rest of the Windward Islands, for most of the commodities, the NTEs are greater than the tariffs, which indicates that the non-tariff measures are providing more protection than the tariffs.

Table 3.14a: Microeconomic Impact of Subsidy and Incentive Programme - St Vincent

Commodity	NPC	NRP	Duty	Con. Tax	NTE
Anthurium	1.88	0.88	40.00	13.00	0.35
Avocado	2.96	1.96	40.00	13.00	1.43
Breadfruit	1.21	0.212	40.00	13.00	-0.32
Dasheen	2.27	1.27	30.00	13.00	0.84
Eddo	3.17	2.17	30.00	13.00	1.74
Ginger	2.59	1.53	30.00	13.00	1.16
Golden Apple	2.19	1.19	40.00	13.00	0.66
Mango	1.29	0.29	40.00	13.00	-0.24
Passion Fruit	6.25	5.25	40.00	13.00	4.72
Papaya	1.34	0.34	40.00	13.00	-0.19
Pineapple	3.16	2.16	40.00	13.00	1.63
Soursop	3.23	2.23	40.00	13.00	1.70
Tannia	1.70	0.70	30.00	13.00	0.27

Effects of Fiscal and Other Supports on Producers

All the PSEs for the commodities selected for St Vincent are positive and all the CSEs are negative, which suggests that the consumers are subsidizing the prices of the producers, who are the net beneficiaries of the trade policy regime. Reducing domestic prices to the level of border prices would severely reduce the level of output of most commodities as is shown by the Price Change column in Table 3.14b (on the assumption of unitary elasticity of supply). In fact, the results suggest that avocado, eddo, dasheen, ginger, golden apple, passion fruit, pineapple

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and soursop production would cease. Breadfruit, mango, and papaya production would drop by less than a third.

Table 3.14b: Microeconomic Impact of Fiscal and Other Supports - St Vincent

Commodity	Elasticity	Production (tons)	Price Change (%)	Consumption Change (%)
Anthurium	na	na	-88	na
Avocado	-1.17	242.67	-196	228.34
Breadfruit	-1.10	na	-21	23.10
Dasheen	-1.10	1542.22	-127	139.70
Eddoe	-1.10	3686.81	-217	238.70
Ginger	-1.10	831.89	-153	174.90
Golden Apple	-1.17	180.53	-119	139.23
Mango	-1.17	2465.74	-29	33.79
Passion Fruit	-1.17	na	-525	614.25
Papaya	-1.17	na	-34	39.78
Pineapple	-1.17	na	-216	252.72
Soursop	-1.17	na	-223	260.91
Tannia	-1.10	576.06	-70	77.00

Effects of Fiscal and Other Supports on Consumers

As expected, the effect of removal of price distortions in the case of St Vincent and the Grenadines will always result in an increase in consumer demand, the highest values again surprisingly being for avocado, eddoe and ginger. These results as well as the results for the CSEs given above confirm that consumers in St Vincent and the Grenadines are subsidizing producers of commodities by paying higher prices for the commodities, than would exist under competitive conditions.

The estimates for St Vincent and the Grenadines indicate that the agricultural sector is heavily supported. The estimates in fact suggest that this support is the highest in the Windward Islands. Quantitative restrictions provide a good shelter for the agricultural sector, but they also tend to promote inefficiency in production and marketing, which may be the case in St Vincent and the Grenadines.



The imposition of a levy and consumption taxes on imports of agricultural imports, has served to reduce the values of the EPCs, and hence, the total protection that producers receive. The basic uncompetitiveness of production however, is still evident. Only mango and papaya appear to be commodities with good diversification prospects in St Vincent and the Grenadines.

Grenada

Nominal and Effective Protection Coefficients

The assessment in the case of Grenada of the microeconomic impact of fiscal and other supports was carried out by the examination of 12 commodities including ornamentals, root and tree crops. The NPCs for Grenada are relatively higher than those for Dominica for similar commodities (Table 3.15). The lowest value obtained was for cashew at 0.31. NPCs of less than 1.5 were also obtained for breadfruit and papaya. Mango and ginger lily had NPCs between 1.5 and 2.0, while the other commodities (anthurium, avocado, soursop, dasheen, tannia and passion fruit) had values above 2.0. Like Dominica, the NPC obtained for passion fruit was very high (4.38).

Table 3.15: Nominal & Effective Coefficients of Protection - Grenada

Commodity	NPC	ERP	%		
			EPC	PSE	CSE
Anthurium - pink	2.19	-196.68	-0.97	1.19	-0.54
Avocado	2.70	-13.29	0.87	1.70	-0.63
Breadfruit	1.21	-96.67	0.03	0.21	-0.18
Cashew	0.31	-167.95	-0.86	-0.69	-2.18
Dasheen	2.27	-13.85	-0.86	1.27	-0.56
Gingerlily - red	1.75	624.45	-7.25	0.75	-0.43
Golden apple	1.85	52.81	1.53	0.85	-0.46
Mango	1.51	-53.50	0.47	0.51	-0.34
Passionfruit	4.38	363.99	4.64	3.37	0.77
Papaya	1.16	-46.69	0.53	0.16	-0.14
Soursop	3.23	38.98	1.39	2.23	-0.69
Tannia	2.20	31.16	1.31	1.20	-0.55
AVG	2.06		0.08	1.06	-0.62
STD	1.01		2.64	1.01	0.50



With respect to the EPCs, the situation of cashew stands out. The EPC for cashew (as also for anthurium, dasheen and ginger lily) is negative. Given the very low value for the NPC this is surprising and must arise, in all probability from a negative value added from the private context (ie, farmers are losing money producing cashew). Why they would choose to do so by selling the crop way below the border price for the commodity is hard to explain. For the other commodities with negative EPCs, since their NPCs are high (over 1.7), they are obviously not good diversification alternatives. Low positive values for the EPCs were obtained for breadfruit, mango and papaya. These commodities, (especially breadfruit and papaya) also had low values for the NPC and suggest themselves as good diversification prospects. Avocado, passion fruit, soursop and tannia had high values for the NPC and the EPC and do not seem to be good diversification prospects.

Net Tariff Equivalent

The estimates of the NTEs for breadfruit, cashew, mango and papaya are negative (Table 3.16a). This implies that in the absence of duty and consumption taxes, consumers should conceivably be paying substantially less than the border price for these commodities.

Table 3.16a: Microeconomic Impact of Subsidy and Incentive Programme - Grenada

Commodity	NPC	NRP	Duty	Con. Tax	NTE
Anthurium	2.19	1.19	40.00	27.50	0.51
Avocado	2.70	1.70	40.00	27.50	1.03
Breadfruit	1.21	0.21	40.00	27.50	-0.47
Cashew	0.31	-0.69	40.00	27.50	-1.37
Dasheen	2.27	1.27	40.00	27.50	0.60
Ginger Lily	1.75	0.75	40.00	27.50	0.08
Golden Apple	1.85	0.85	40.00	27.50	0.18
Mango	1.51	0.51	40.00	27.50	-0.17
Passion Fruit	4.38	3.38	40.00	27.50	2.71
Papaya	1.16	0.16	40.00	27.50	-0.52
Soursop	3.23	2.23	40.00	27.50	1.56
Tannia	2.20	1.20	40.00	27.50	0.53

For the other selected commodities, the NTEs are positive, therefore the import restrictions and other non-tariff market imperfections in Dominica serve to provide a substantial degree of protection to domestic production (up to 271 % in the case of passion fruit). The tariff

structure in Grenada is quite high (especially when compared with the Leeward Islands) and NTEs exceed tariffs only for avocado, passion fruit and soursop.

Table 3.16b: Microeconomic Impact of Fiscal and Other Supports - Grenada

Commodity	Elasticity	Production (tons)	Price Change (%)	Consumption Change (%)
Anthurium	na	na	-119	na
Avocado	-1.17	1676.48	-170	198.05
Breadfruit	-1.10	1453.77	-21	23.10
Cashew	-1.17	na	69	-80.73
Dasheen	-1.10	501.00	-127	139.7
Ginger Lily	na	na	-75	na
Golden Apple	-1.17	357.89	-85	99.45
Mango	-1.17	1759.49	-51	59.42
Passion Fruit	-1.17	na	-338	395.46
Papaya	-1.17	161.93	-16	18.64
Soursop	-1.17	1214.27	-223	260.91
Tannia	-1.10	60.78	-120	132.00

Effect of Fiscal and Other Supports on Producers

The PSE and CSEs for Grenada conform to the general pattern for the other countries being analyzed. The PSEs are all positive except for cashew, indicating support to producers of all commodities except cashew. The negative PSE for cashew indicates that producers of that commodity are being taxed. Since there is no apparent explicit taxation of these producers or tax on the product, the domestic product is probably of an inferior quality in comparison to the imported product, or perhaps producers of cashew have not organized an effective marketing system to derive the benefits of their efficient production systems.

Effects of Fiscal and Other Supports on Consumers

The CSEs are all negative which indicates subsidization of producers by consumers. For the more basic staple foods included with the exception of breadfruit in the selected commodities, tannia, dasheen, removal of price distortion would result in consumers consuming approximately 130% more of the commodities. The value for breadfruit was about 23% reflecting its much lower value for the NPC (1.21). For the other fruits, the change in consumption with removal of trade imperfections varies. Smaller increases in consumption



would result for golden apple (99%) and papaya (19%), while for soursop the increase would be 260% and avocado 198%.

Grenada has an agricultural sector that provides somewhat more support for its non-traditional agricultural crops than Dominica and St Lucia and somewhat less than St Vincent and the Grenadines. The diversification alternatives that appear to have the best potential are breadfruit and papaya, with mango being another crop worthy of serious consideration. The case of cashew is interesting but needs further study. For this crop, the domestic price is quite low compared to the border price, yet the farmers are losing money in its products. It would seem therefore that a problem may exist in regard to the quality of the commodity produced in Grenada.

General Comments

The micro-economic impact of the fiscal and other supports in the OECS has shown a fairly general pattern. For most of the selected commodities the effect has been to cause domestic prices to exceed border prices so that the NPCs for the commodities are greater than one. In fact the few commodities (except for cashew in Grenada) where the NPC is less than one are given in Table 3.15. These commodities represent the best diversification prospects for the OECS. In general it is true that the NPC is much higher for the Leeward than the Windward Islands. In fact the NPCs are so high for the commodities for the BVI and Montserrat, that no crops could be recommended for expansion from those selected for study.

As a consequence of the high values of the NPCs, for most commodities the consumers were paying prices much above border prices and were in effect subsidizing the incomes of producers. In the absence of direct price supports by the States, this consumer subsidy represented the entire price support for the commodities. The values of the NTEs suggested that in the Leeward Islands and St Vincent and the Grenadines, this support resulted largely from the quantitative restrictions and other non-tariff measures. The countries that showed a marked exception to this trend were St Lucia Grenada and Dominica.

一、二、三、四、五、六、七、八、九、十、十一、十二、十三、十四、十五、十六、十七、十八、十九、二十、二十一、二十二、二十三、二十四、二十五、二十六、二十七、二十八、二十九、三十、三十一、三十二、三十三、三十四、三十五、三十六、三十七、三十八、三十九、四十、四十一、四十二、四十三、四十四、四十五、四十六、四十七、四十八、四十九、五十、五十一、五十二、五十三、五十四、五十五、五十六、五十七、五十八、五十九、六十、六十一、六十二、六十三、六十四、六十五、六十六、六十七、六十八、六十九、七十、七十一、七十二、七十三、七十四、七十五、七十六、七十七、七十八、七十九、八十、八十一、八十二、八十三、八十四、八十五、八十六、八十七、八十八、八十九、九十、九十一、九十二、九十三、九十四、九十五、九十六、九十七、九十八、九十九、一百

In general therefore, consumers would increase their consumption of commodities and presumably improve their welfare if prices are reduced to border levels. Producers would reduce their production of the commodities in response to this price reduction. The decrease in the levels of output were perhaps over-estimated by the assumption of a constant unitary elasticity of supply, but they do indicate the general direction of the supply response.

One interesting benefit of the analysis was the identification of a number of commodities which appear to be good diversification prospects for the OECS. These are given in Table 4.17. It can be seen in Table 3.17, that papaya is the crop that appears most often as a good prospect for the countries (in particular for Antigua and Barbuda, Dominica, Grenada, St Lucia and St Vincent and the Grenadines). Mango is the other crop with good prospects as it is favoured in three countries (Antigua and Barbuda, St Lucia and St Vincent). In general, fruits feature most prominently, with the only other commodities on the list being cotton in St Kitts and Nevis, tannia in Dominica, breadfruit in Grenada and ginger in St Lucia. The results also seem to indicate that the Windward Islands have better prospects for diversification and expansion of agricultural production, particularly St Lucia and Dominica.

Table 3.17: Diversification Alternatives for the OECS

Country	Commodity	NPC	EPC	Production
Antigua & Barbuda	mango	1.05	1.99	na
	papaya	1.19	1.02	2.00
St Kitts & Nevis	cotton	0.88	0.82	15.96
Dominica	golden apple	1.00	0.17	na
	papaya	1.09	0.82	14.00
	tannia	1.10	0.75	4148.00
Grenada	breadfruit	1.21	0.03	1453.77
	papaya	1.16	0.53	161.93
St Lucia	mango	0.88	0.49	5127.00
	papaya	0.92	0.67	27.60
	soursop	1.16	0.47	490.00
	ginger	1.04	0.75	7.30
St Vincent	mango	1.29	0.49	2465.74
	papaya	1.34	0.53	na

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CHAPTER 4

ASSESSING THE MACRO-ECONOMIC IMPACT OF INCENTIVES

There has been a rapidly expanding stock of research undertaken over the last decade on the impact of economic incentives on the agricultural sector of developing countries. In CARICOM and the OECS similar research has emphasized 'fiscal incentives' with fairly little attention being accorded to other factors which may have an 'incentive/dis-incentive effect' on the agricultural sector. The majority of the research undertaken to date has proceeded along rudimentary theoretical lines and has been fairly qualitative in nature. While many of the contributions on 'fiscal incentives' in the OECS sub-region have admitted to the obvious limitations of conclusions gleaned from purely qualitative analysis, others have sidestepped this issue.

Since however, non-fiscal incentives are substantially more important to OECS producers, than fiscal incentives, extensive focus on the latter may be somewhat ill-advised. The approach adopted in this section instead assesses the impact of 'fiscal incentives' in the OECS in a more comprehensive manner. Firstly, the impact of the structure of incentives accorded OECS agriculture will be examined without limiting the analysis to policy measures which are only of a 'fiscal' nature. Secondly, the approach used will be quantitative, with the analysis being expanded to an assessment of the impact of various other economic variables on the private demand for credit and on agri-food exports.

Investment and the Demand for Credit: Some Cautionary Remarks.

Within the CARICOM there is concern about the availability of external resources cursory to finance agricultural development. Evidence suggests that the level of external resources has declined and that this has been mirrored by the decline in private capital formation. If this downward trend in private capital formation and external resources continues, attempts to restructure the agricultural sector could be undermined.

The absence of a bench-mark estimate of the stock of capital for the agricultural sector in the OECS precludes the computation of any meaningful measure of investment. Since



however, investment is composed inter alia, external donor financing, the flow of which is largely beyond the control of national governments (exogenous), in assessing the impact of economic incentives on investment, it is prudent to exclude this component. Government borrowing to finance development in the agricultural sector is however an important component and is included in the analysis. Interest in the present study however lies more in assessing the relationship (complementary or competitive) between public investment and private capital formation.

Among OECS countries there are three major sources of investment financing available, commercial banks, development institutions (Development Banks, National Development Foundations), and financing from retained earnings.² The non-existence of reliable data on retained earnings in the agricultural sector places EVEN further limits on the analysis. The primary focus of this analysis is the examination of the effect of various factors, including economic incentives, on the private demand for capital (which constitutes one major component of private capital formation over which economic agents exert influence). Given the interest in assessing the responsiveness of producers to the economic incentive measures offered, the focus on private capital formation is more insightful than focussing on some measure of aggregate sectoral investment.

Among developing countries both monetary and fiscal policies have an impact on the private demand for finance to the agricultural sector. Restrictive monetary and credit policies will raise the real cost of bank credit, thus raising the user cost of capital and leading to a fall in the level of private capital formation. In capital markets characterized by financial repression, Lim (1987) contends that credit policy affects investment directly because credit is allocated to firms with access to borrowing at preferential interest rates.³ Monetary and credit policies may therefore be quite important as a result of their impact on the private demand for capital to the agricultural sector.

² While other minor sources may be available on a country by country basis. The available evidence suggests that generally, the quantum of financing involved is not substantial.

³ Lim, Joseph, Y. "The New Structuralist Critique of the Monetarist Theory of Inflation." *Journal of Development Economics* 25 (1):45-62.

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Fiscal deficits induce an increase in interest rates which in turn reduces the availability of credit to the private sector (potentially crowding out private investments). On the other hand, reducing the fiscal deficit should lead to an expansion in private capital formation. Seven and Solimano (1993) contend that the manner in which the fiscal deficit is corrected is also important. If private capital formation is complementary to public investment, then reductions in the latter could lead to a decline in the former. If on the other hand private capital formation and public investment are competitive, then increases in the level of public investment could lead to crowding out of private capital formation. A priori, whether public investment crowds out or crowds in private capital formation, is essentially an empirical question.

Based on the accelerator theory, investment is a linear proportion of changes in the level of output. The restrictive assumptions of zero expectations, profitability, and capital costs have however, led to various extensions by Jorgenson (1971) of the accelerator model to include the user cost of capital. While there have been other theories of investment advanced, variants of the accelerator model continue to be used, particularly in growth accounting models. In developing countries there exists a fairly large inventory of studies which have applied modifications of the accelerator model.

The importance of using output to determine the level of private capital formation is by no means a constant relationship factor, since if economic agents hold non-zero expectations, transitory fluctuations in the level of output will most likely not result in any appreciable alterations in the level of investment (private capital formation). Whether or not fluctuations in the level of output actually result in corresponding changes in the level of investment will depend on whether economic agents perceive such fluctuations to be long-lasting or transitory. Therefore while economic theory can act as a guide to identifying the possible relationships between these two variables, determining the nature of this relationship is empirical issue.

Krugman (1988), contends that the greater the 'debt overhang' the lower is the level of private capital formation. A high external debt may be viewed as one source of macroeconomic instability, since the level of the debt overhang itself is not known with certainty. This is due to the fact that the international rate of interest and the terms of trade, key determinants of the



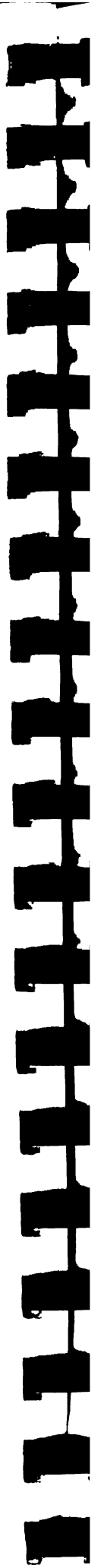
level of the national debt, are beyond the control of national economies. Seven and Solimano (1993) argue that the level of the national debt acts as a tax on private capital formation.

The role of economic incentives in spurring private capital formation, is based on the premise that such incentives induce a switch in spending to domestic goods and raise profitability in the tradeable sector. While production of goods in the tradeable sector will increase however, the extent of this increase will depend inter alia on three major factors - the magnitude of the initial incentive; the importance of the tradeable sector in the economy; and the elasticity of production substitution between exportables and importables. The response of private capital formation to the economic incentives will therefore depend on the net effect of the economic incentives on the aforementioned three factors.

The real exchange rate (RER) plays an important role in providing long-term signals for the allocation of resources among various economic sectors. This real exchange rate may also affect the agricultural sector as a result of its effect on trade policies. No a priori indications of the net impact of the RER on private capital formation are possible however, since the RER affects private capital formation through several variables, which may work in opposite directions (positively through increases in the terms of trade and negatively through capital goods imports). The net effect of these changes in the RER on private capital formation is another empirical issue.

Trade theory suggests that the more open an economy or sector, *ceteris paribus*, the higher will be the level of economic growth. The argument follows that this economic growth will arise from increases in the level of capacity utilization, economies of scale, incentives for technological improvements and private capital formation, stimulated by changes in the pattern of relative prices in the economy/sector. Such changes in relative prices are expected to occur not only in the tradeable goods sector, but also between tradeables, non-tradeables and home goods.

Empirical evidence of the impact of trade openness in developing countries has been somewhat mixed, with the majority of studies suggesting that the relationship is both positive



and significant. In the context of the present study, an identification of the significance of this factor on private capital formation and exports may be of some importance in the formulation of appropriate growth-oriented sectoral policies.

Methodology

The focus in this section lies in determining the impact on the private demand for capital in the agricultural sector of OECS countries, of economic incentives, the external environment and various other economic factors. The investigation will be conducted via econometric analysis. Specifically, a model specified on the demand for capital to the agricultural sector is estimated for eight OECS countries using pooled cross-section time series data.

Based on the review of factors undertaken in the previous section, the private demand for capital (DI) is specified as a function of the real growth rate of output (Q), the real exchange rate (RER), real public investment (PII), the level of external debt (DBT), the degree of macroeconomic uncertainty (σ), a measure of economic incentives (θ) and the degree of openness (Φ) i.e.

$$DI = f(\Delta Q, RER, PII, \frac{DBT}{Q}, \sigma, \theta, \Phi) \quad (14)$$

Where " θ " is a qualitative variable which takes on a value of 1 for low tariff OECS countries (Montserrat, the British Virgin Islands, Antigua, and Montserrat) and 2 for relatively higher tariff OECS countries (Grenada, St. Vincent, St. Lucia and Dominica).^{4 5}

To estimate the model, data for the years 1980-1992 was used. Hence, the sample consisted of 104 observations. The choice of time period was dictated by the availability of the data. A measure of macroeconomic instability, was taken to be the variability in the real exchange rate, while another measure of macroeconomic instability was based on variability in

⁴ The distinction between low and high tariff OECS countries is also convenient in that it separates the countries into the familiar Windward and Leeward islands groupings.

⁵ The terms tariffs are used here in a rather general sense. More specifically it is tariff equivalents which have been computed and used to distinguish between the two groups of countries.



the terms of trade. Since the real exchange rate accounts to some extent for movements in the terms of trade, the measure of macroeconomic variability based on the terms of trade was excluded from the final specification of the model. Trade Dependency Indices (TDI) were computed as a measure of trade openness for each of the eight countries.⁶ The private demand for capital was taken as the sum of loans and advances from development banks, commercial banks and other national development organizations involving in financing agricultural development. Data on the level of national debt was obtained from the East Caribbean Central Bank as well as the Caribbean Development Bank. Where inconsistencies existed between the data from these two sources, individual country estimates were used as a guide. The data on government capital expenditure was obtained from individual OECS member countries.⁷

Estimation

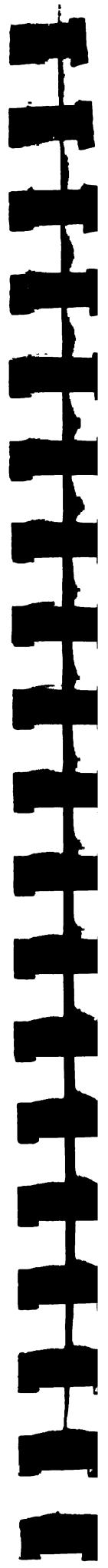
Since the conventional least squares procedure remains applicable for models which combine cross-sectional and time series approaches, conventional tests were used to provide some guidance of the model specification supported by the data. Three models were specified, the unrestricted model which allowed intercepts and slopes to vary across countries, a specification which allowed the slopes to vary and maintained common intercepts and another specification which allowed the intercepts to vary but maintained common slopes. Based on the F test, the hypothesis indicates that the slopes and intercepts were common across the eight countries could not be rejected at the 99% level of confidence. The specification of common slopes and intercepts was therefore adopted as the appropriate specification.

The model was estimated using the generalized least squares estimator, which in the framework of cross-sectional time series models, can be shown to be an efficient combination of the dummy variable estimator (within estimator) and the between estimator.⁸

⁶ The TDI satisfies the mathematical properties of uniqueness and unambiguous upper and lower limits. It can therefore identify a continuous spectrum along which countries may be regarded as autarkic, open, or completely specialized in producing only exports and consuming imports (Johnson, 1992).

⁷ Additional information on the data set may be obtained from the authors upon request.

⁸ While the "within" estimator utilizes variations within cross-sections, the "between" estimator utilizes variations between cross-sections. See Swamy (1971).



The generalized least squares estimator is given as :

$$\hat{\beta}_s = \left[\frac{X_{si}' Q_1 X_{si}}{\sigma_e^2} + \frac{\sum_{i=1}^N X_{si}' D_T X_{si}}{\sigma_1^2} \right]^{-1} \left[\left(\frac{X_{si}' Q_1 X_{si}}{\sigma_1^2} \right) \beta_s^* + \frac{\left(\sum_{i=1}^N X_{si}' D_T X_{si} \right)}{\sigma_e^2} b_s \right] \quad (15)$$

Q_i is an idempotent matrix and β_s^* is the between estimator given by:

$$\beta_s^* = (X', Q_1 X_s)^{-1} X', Q_1 y \quad (16)$$

The within estimator b_s is represented as:

$$b_s = (X', (I_N \otimes D_T) X_s)^{-1} X', (I_N \otimes D_T) y$$

where $Y_i = (Y_{i1}, Y_{i2}, \dots, Y_{iT})'$, X_{si} contains values of the explanatory variables except for the constant term and σ_1^2 and σ_e^2 are the unknown variance estimators, and where D_T is the transformation matrix given by:

$$D_T = I_T - j_T j_T' / T.$$

The empirical estimates are presented in Table 4.1.

Table 4.1: Estimation Results, 1980-1992, Dependant Variable: ln (DI/GDP)

Variable	Result ^a
Qualitative variable (Economic Incentives) (θ)	-2.8722 (0.770)
Change in Real GDP (Q)	0.8305 (0.2497)
Real Exchange Rate (RER)	0.0997 (0.1517)
Real Public Investment (PII)	-0.0104 (0.02904)
External Debt (DBT)	0.0745 (0.0646)
Trade Openness (ϕ)	0.0404 (0.0164)
Macroeconomic Instability (σ)	-0.5987 (0.1404)
R ²	0.987

a. Standard errors are in parentheses

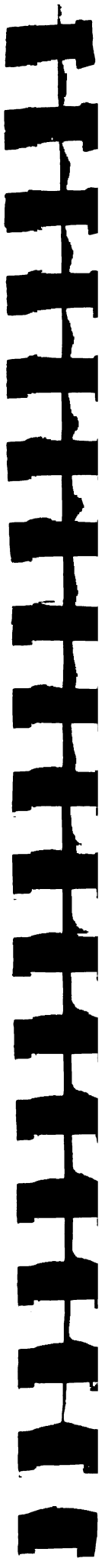


As is evident the results were quite favorable, with the explanatory variables carrying the expected sign in most instances (in instances where some sign convention was possible a priori) and the explanatory power of the model being quite high. In terms of accounting for the impact of individual variables on the private demand for capital, the results indicate that the qualitative variable representing economic incentives was both negative and statistically significant at the 99% level. This result suggests that the direct impact of the economic incentives offered to the agricultural sector did not have a significant positive effect on the decision of economic agents to borrow for investment. The most likely causes of this negative relationship will be discussed later in the section.

Two specifications of growth in the level of output were undertaken (one with the variable lagged one year, for which the results are not shown in Table 4.1) and another measuring changes in the level of output. Both measures of the variable suggested that the level of output exerted a positive and statistically significant impact on the private demand for capital. The real exchange rate was not statistically significant at any meaningful level of confidence. This result is not unusual in empirical studies of this nature, since as previously outlined, the RER is determined by several factors, which often act in opposite directions in terms of their impact on private capital formation. The level of public investment was not statistically significant, since the standard error exceeded the magnitude of the parameter estimate.

The positive relationship between the level of national debt and the demand for capital was somewhat perverse. This may be attributable to the inclusion of data related to the total external debt overhang of individual OECS countries, instead of the more appropriate variable relating to the agricultural sector's contribution to the debt overhang. The relationship was however statistically insignificant at any meaningful level of confidence. This result suggests that the role of the debt overhang on the private demand for capital was not significant. According to the results an increase in trade openness (based on the trade dependency index defined on exports TDI_x) was associated with an increase in the demand for private capital.⁹ Stated

⁹ Specifying the TDI on both imports and exports resulted in the coefficient for openness being negative and statistically significant at the 99% level. The coefficients of the other variables in the model retained the same sign as before, although the magnitudes of the parameter estimates were altered slightly. The result obtained from



alternatively, where the level of agricultural exports are low, the private demand for capital will also be low.

Two measures of macroeconomic instability were included in the initial specification of the model, these are, variability in the terms of trade and variability in the real exchange rate. Initial results indicated that both variables were strongly significant and were of the expected negative sign. Since the terms of trade is one determinant of the real exchange rate, this variable was dropped from the final specification of the model. Exclusion of the variability in the terms of trade resulted in infinitesimal alterations in the magnitude of all variables, but led to no changes in the associated signs. According to Table 4.1 increases in macroeconomic instability was generally associated with lower levels of demand for capital. This relationship was found to be statistically at the 99% level.

According to the result in Table 4.1, the largest effect on the demand for capital was associated with changes in the level of output, followed by the measure of macro-economic instability. A one percent change in the level trade openness index is associated with a fairly small increase in the private demand for private capital.

Potential differences in the economic incentive structure of OECS countries and the somewhat surprising results with respect to the qualitative variable representing economic incentives, led to the estimation of two further models, one each for the Windward and Leeward islands.

The estimation results for these two groups of countries are reported in Table 4.2. According to these results, the qualitative variable representing economic incentives does not play a significant role in explaining the private demand for capital in the Windward Islands. While this variable is statistically significant in the Leeward Islands grouping, the fact that the sign of the parameter estimate is negative is noteworthy. The decline in the private demand for

specifying trade openness in this manner was consistent with a priori expectations, since all OECS countries are net food importers, therefore an increase in the total TDI would result from a proportionally larger increase in agricultural imports vis-a-vis exports, thus reducing the demand for private capital.

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capital over much of the sample period in the BVI, Montserrat and Antigua, in the presence of relatively lower economic incentives than exist in the Windwards may have contributed to the negative nature of this relationship.

In short, while there is broad consensus that the economic incentives offered have not had a positive impact on the decision of economic agents to borrow for investment in agriculture, the negative sign of the parameter estimate may be due to the impact of factors other than economic incentives which the qualitative measure may also be accounting for. It is the dominance of the parameter estimate for the Leewards vis-a-vis the Windwards which accounts for the statistically significant though negative relationship between economic incentives and the private demand for capital in the combined (all countries) estimation reported in Table 4.1.

Table 4.2: Estimation Results, Windward and Leeward Islands, 1980-1992, Dependant Variable:ln (DI/GDP).

Variable	Windwards ^a	Leewards ^a
Qualitative variable (Economic Incentives) (θ)	-.6742 (.5708)	-2.4100 (0.8750)
Changes in Real GDP (Q)	0.0867 (0.5672)	2.0709 (0.4414)
Real Exchange Rate (RER)	0.3300 (0.1460)	-0.4567 (0.0391)
Real Public Investment (PII)	0.1482 (0.0635)	-0.08524 (0.0307)
External Debt (DBT)	-0.01197 (0.008)	0.0329 (0.0488)
Trade Openness (ϕ)	-0.0016 (0.0126)	0.1160 (0.0307)
Macroeconomic Instability (σ)	-0.0095 (0.00562)	-0.5836 (0.3883)
R ²	0.983	0.987

a. Standard errors are in parentheses.

Changes in the level of output have had a positive and statistically significant effect on the private demand for capital in the Leeward Islands. In the Windward Islands however, the impact of changes in the level of output on the private demand for capital was not statistically significant.



The impact of the real exchange rate was statistically significant in both sub-regional groupings. While the real exchange rate played a positive role on the demand for private capital in the Windward Islands however, this variable impacted the demand for capital negatively in the Leewards. The results in Table 4.2 suggest that the exchange rate appreciation in the Windwards will lead to an increase in the private demand for capital, but to a decline in private capital demand in the Leeward Islands. The difference in the responses in the two sub-grouping may be the result of differences in the structure of the economies (tradeable to non-tradeable sector), differences in the composition of the tradeable sector itself and differences in the degree of factor mobility. A more detailed discussion of these issues will be pursued in the final section of this chapter.

The negative and statistically significant impact of public investment in agriculture on the private demand for capital in the Leeward Islands, suggests that private capital may have been 'crowded out' by public sector investment. In the Windward Islands, where the role of public investment was also significant, the results suggest that the relationship between the two variables was a complementary one (i.e. public investment 'crowded in' private capital in the agricultural sector). These results suggest that projects pursued in the agricultural sector of the Leeward Islands group may have acted as a substitute for private capital involvement in the sector, while the projects undertaken in the Windwards were complementary to private capital involvement.

The national debt overhang exhibited the expected negative relationship with the demand for private capital in the Windward Islands group. This variable however, did not play a statistically significant role in determining the demand for capital in the Leeward Islands. Although the estimate for the Windward Islands exhibited the expected sign, the caveat previously iterated about the appropriateness of the national external debt overhang measure used instead of some estimate of the contribution of the agricultural sector to the national debt should be borne in mind.

According to Table 4.2. the degree of trade openness was statistically significant in explaining the demand for capital in the Leeward Islands, this variable was however not a



significant factor in explaining the private demand for capital in the Windward grouping.¹⁰ As expected, the impact of macro-economic instability on the demand for capital across both groups of countries was negative and statistically significant above the 95% level. This indicated that as the degree of macro-economic instability increases the private demand for capital is dampened. Comparing the results across both groups of countries, indicates that the same degree of macro-economic instability would have a substantially larger impact on the private demand for capital in the Leeward Islands than in the Windwards.

Economic Incentives and Exports

The impact of economic incentives accorded the agricultural sector on agricultural exports were also investigated. The export specification was estimated using the generalized least squares estimator, which was applied to pooled cross-sectional time-series data for the eight OECS countries. The relationship specified can be represented by:

$$EXP = F(\theta, GEXP, \sigma, \phi) \quad (16)$$

Where EXP denotes the level of agricultural exports, GEXP the level of government expenditure on agriculture and θ , Φ and σ remains as previously defined.

The data on agricultural exports represents SITC sections 0,1 and 4, for each OECS territory, appropriately adjusted for re-exports. The level of government expenditures on agriculture was obtained from national government budgetary estimates with adjustments made to account for the discrepancy between programmed and actual expenditures.

In the final specification of the model the variables were expressed in terms of logarithmic transformations, and the ratios of agricultural exports to gross domestic product (EXP/GDP) as well as the level of government spending to GDP (GEXP/GDP) substituted in Equation 2. The empirical estimates appear in Table 4.3.

¹⁰ A broader definition of the demand for capital (particularly to include retained earnings) could result in changes to both the degree of trade openness as well as in the degrees to which the level of output exerts a statistically positive impact on private capital formation in the agricultural sector. This broader definition is expected to reinforce the results obtained based on the narrower definition of private capital formation.

According to the results, for the OECS countries on a whole, the effect of the qualitative variable representing economic incentives on the ratio of exports to GDP is positive but statistically insignificant. Real government expenditures as a proportion of GDP were similarly statistically insignificant in terms of their impact on the ratio of exports to GDP.

As expected, trade openness had a strong positive effect on the export ratio.¹¹ While in general this relationship appears plausible, the possibility exists that there may be differences between OECS countries with relatively liberal and protected trade regimes in relation to agriculture.¹²

The measure of macro-economic instability carries a negative sign as expected, and the coefficient is significant above the 5% level. In fact, the estimated coefficient for this variable exerts that most significant impact on the export ratio underscoring the pivotal role of the macro policy environment in determining policies at the sectoral level.

Table 4.3: Estimation Results. 1980-1992, Dependant Variable:ln (EXP/GDP)

Variable	Result ^a
Qualitative variable (Economic Incentives) (θ)	3.094 (2.937)
Real Government Expenditure as a proportion of GDP ln (GEXP/GDP)	-0.080 (0.1502)
Trade Openness (ϕ)	0.0447 (0.020)
Macro-economic Instability (σ)	-1.456 (0.2373)
R ²	0.892

a. Standard errors are in parentheses.

The results of applying the model to the Windwards and Leewards, are presented in Table 4.4. The role of economic incentives across both country sub-groups, continues to be

¹¹ The total TDI was used in all models relating to exports.

¹² It is instructive to note that the inverse of the TDI may be interpreted as a measure of such trade policy restrictions as tariffs and quotas.

insignificant which indicates that the impact of the economic incentives accorded to the agricultural sector, have not been very effective in encouraging exports.

In the Windward Islands sub-group, the impact of real government expenditures on the export ratio was significant. In contrast, the impact of this variable in the Leeward Islands sub-group was negative, and statistically significant at the 95% level of confidence. This negative relationship between exports and real government expenditures in the Leewards, may have been due to the small level of agricultural exports from many of the countries in this grouping. In fact close inspection of the data indicate that of the four countries in this grouping two had little agricultural exports for much of the sample period. In addition, with the exception of fairly consistent levels of sugar exports from St. Kitts and Nevis, the level of agricultural exports from the Leeward Islands has been quite sporadic. The negative relationship indicated by the results may be the result of some of these influences.

Table 4.4: Rstimation results, Windward and Leeward Islands, 1980-1992, Dependant Variable:ln (EXP/GDP)

Variable	Windwards ^a	Leewards ^a
Qualitative variable (Economic Incentives) (θ)	0.0767 (0.4339)	-2.0940 (3.8407)
Real Government Expenditure as a proportion of GDP ln (GEXP/GDP)	0.9896 (0.1435)	-0.2792 (0.1560)
Trade Openness (ϕ)	0.0649 (0.0074)	0.0249 (0.0570)
Macro-economic Instability (σ)	-0.1496 (0.0858)	-0.4032 (0.2636)
R ²	0.89	0.84
a. Standard errors are in parentheses.		

According to the results in Table 4.4 trade openness has a positive and significant impact on exports in the Windwards, this was not the case however in the Leewards where the effect of trade openness on agricultural exports was statistically insignificant. This result is particularly interesting since in terms of the total TDI, the Leewards are more highly open economies than the Windwards. Because the TDI index for countries in the Leeward Islands grouping is

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dominated by imports however, the impact of increased openness on agricultural exports was not expected to be positive.

Recent empirical observations across developing countries tend to support the proposition that the more open the economy the more favorable will be its export growth. This proposition appears to be borne out in the case of the Windward Islands. The difference in the performance of the two groups of countries evidently arises from differences in their economic structures.

The correlation between macro-economic uncertainty and export performance is supported across both groups of countries (Leewards and Windwards) as indicated by the results in Table 4.4. Large fluctuations in the RER index of variability imply greater risks for producers, higher adjustment costs as production switches between the production of tradeable and non-tradeable goods and shorter planning horizons, particularly with regard to investment. The causes of variations in the measure of macro-economic instability are many and varied. In the absence of empirical work on the determinants of the RER in the OECS, very little can be stated in regard to these reasons with any reasonable level of confidence. Based on the results however, it is clear that because the RER is a link between policy and performance (perhaps not the only link as Cottani et al. 1990, are quick to point out), policies that stabilize the RER will enhance agricultural exports.

Conclusion

It is emphasized at this point that caution should be exercised in interpreting the contributions of the different variables to the private demand for credit and to changes in the export ratio in terms of causality, since the variables themselves may not be mutually independent. In addition careful reading of the section would reveal that only the direct impact of each variable on the independent variable (private demand for credit, and the export ratio) is considered in this framework. These issues aside, the models allow the role an examination of various factors on the demand for private capital as well as on agricultural exports.

The results of the econometric analysis for the sample of eight OECS countries indicate that economic incentives did not have a particularly positive impact on the private demand for

capital for investment in agriculture or on the ratio of agricultural exports. Several factors may have accounted for this. The fact however that within the framework of the conventional three sector model of a small economy producing importables, exportables and home goods, a tariff reduces the real income of exportables in the same manner as an export tax, cannot be eliminated as a possible reason. Because the agricultural sector in the OECS has been targeted for the production of tradeables for export, this de facto export tax would have eliminated any incentive effect from being transmitted to domestic producers of exportables. Hence, no positive response will be forthcoming via increases in the private demand for capital to finance investment in the agricultural sector.

In contrast, tariff protection causes the price of home goods and importables to increase relative to the price of exportables, which leads to increased production of these goods. In short, tariff protection discriminates against exports as the relative price of exportables declines, while it favors the production of importables and home goods, since the relative price of these rises. This may assist in accounting for both the insignificant impact which economic incentives have had on the private demand for capital and exports in the Windward and Leeward Islands. While obvious differences do arise in the relative shares of the three sectors (exportable, importable and home goods) across the Windward and Leeward Islands, the net effect on exportables and through this channel on the private demand for capital, as well as on agricultural exports, is the same.

A second though related factor which may have accounted for the negligible role of economic incentives on both exports and the private demand for capital for investment in the sector, is the discrimination caused to agriculture by protection guaranteed to other economic sectors. In this regard, the industrialization policies pursued by the OECS countries since the mid 1970, which favored the manufacturing sector are of particular importance. It is now a well accepted argument in international trade that import-substituting industrialization of the vintage practiced by OECS member countries acts as a tax on agricultural exports, through the

imposition of higher cost for importable inputs used by the agricultural sector.¹³ The industrialization policies would have led to an increase in the profitability of the non-tradeable vis-a-vis the tradeable sector, leading to an appreciation in the real exchange rate and to intersectoral transfers of resources away from the agricultural sector.

The role of domestic policy measures have so far not been emphasized in the attempt to account for the negligible impact of economic incentives on the private demand for capital or on exports. In relative terms the transfers resulting from these policy measures are quite small when compared to the border protection measures from which agri-business firms in the OECS benefit. The BVI was the only OECS territory in which domestic support measures exceeded the value of transfers induced by border intervention measures. With the exception of this country, the support received from border intervention measures, overwhelmed that afforded the agricultural sector via domestic measures. While domestic policy measures could have potentially led to positive incentives for producers, their effect has been dominated by offsetting economic dis-incentives transmitted via the trade policy regime.

Related to the importance of trade policies in the provision of economic incentives to the agricultural sector, is the role of macro-economic uncertainty in the same regard. The results of all the models estimated suggest that this variable was both negative and significant. In terms of differences in the impact of this variable across regional groupings, the results indicated that it was greater for the Leeward Islands than for the Windwards. It is also significant that the influence of the coefficient corresponding to macro-economic instability exceeds the magnitudes of most other variables, with the exception being changes in the level of output. This suggests that macro-economic instability dominates changes in the private demand for capital as well as changes in the agricultural export ratio.

¹³ It is important to note that for most of the sample period, duty concessions were not applied to agricultural inputs. In fact, while many OECS member states have since moved to zero-rate agricultural inputs, in some instances this does not apply to intermediate inputs, such as cartons, labels, spare parts etc. Since 1990 there has however been a steady trend towards zero-rating of these intermediate inputs used by the agricultural sector in many OECS member states, but some.

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Trade openness was statistically significant in both models utilizing data for all the OECS countries. The variable was statistically insignificant however, in at least one country grouping, when estimated for the Windward and Leeward Islands separately. The hypothesis that the more open an economy, the greater the private demand for capital and the agricultural export ratio, was therefore generally supported by the data. The impact of trade openness though, was quite small, with a 1% change in each of the estimations on the private demand for capital or in the agricultural export ratio inducing a 0.04% change in the level of the dependant variables (private demand for capital and the agricultural export ratio).

The effect of the real exchange rate which may be determined by factors such as productivity changes, monetary expansion, exchange rate and trade policies, capital flows, fiscal expansion, changes in the terms of trade and export performance was found to be insignificant. This is largely due to the fact that these variables impact the real exchange rate in different directions, which depend on the composition of tradeables, the importance of the tradeable sector and the degree of factor mobility. Differences in the manner in which the real exchange rate is influenced by its determinants, coupled with differences in the ultimate impact from country to country, usually results in this variable being insignificant in studies of this nature.

The finding that for the OECS as a whole an increase in public investment in agriculture results in 'crowding out' of private capital (as measured) has caught the attention of some and perhaps deserves further comment. The results do not suggest that Government should in the case of the Windward Islands, move to increase investment in agriculture in the hope that this will somehow induce an increase in the demand for capital for investment in agriculture; or in the case of the Leewards that Government should seek to further reduce investment in the sector. What the results do however indicate is that the reaction of private investment (as measured) to changes in public investment will depend critically on whether or not the investment project is complementary or substitutive of private investment.

The results further suggest that insufficient levels of public investment will severely limit the reaction of private capital in the case of the Windward Islands. As in the Leewards Islands, the critical issue is really to determine what constitutes a sufficient level of public investment.



This study does not provide any guidance in this regard, however the fundamental nature of this issue to the determination of appropriate levels of public investment suggests that further research work is necessary.

The same arguments advanced in relation to public investment in agriculture apply to the ratio of real government expenditure in agriculture to gross domestic product in regard to its impact on agricultural exports. Here again, it appears that the critical issue is to determine what constitutes a feasible threshold for this variable. Definitive statements regarding under- or over-expenditure in agriculture without reference to this threshold are virtually meaningless. This too may be considered an area for further research.

Summary

The analysis undertaken in this section has some important implications for the design of support policies for the agricultural sector of OECS economies. The evidence appears to suggest that macro-economic stability as well as trade openness are important in achieving increased private sector investment (as measured). The design of macro-economic and trade policies are therefore of particular significance to the agricultural sector. Faced with an environment of increased macro-economic uncertainty, the results suggest that the agricultural sector will be forced to react submissively. Since the same reaction is expected in instances where the macro-economic policies are perceived as being transitory or piecemeal, what is now referred to in the literature as the 'credibility' of these same macroeconomic policies turns out to be critical.

The results also indicate that even where OECS economies may be characterized by a stable macro-economic policy environment, low levels of public investment in complementary projects could severely restrict the response of private investment in agriculture. In the context of present discussions on structural adjustment, the analysis suggests that caution should be exercised regarding reductions in the level of public investment in the agricultural sector, since this might have a direct impact on private capital demand. Stated alternatively, the defense of public sector investment in areas which 'crowd in' private investment, can play an important role in stimulating the private demand for this private investment.

For the Leeward Islands, the results suggest that there may be a need to focus government investment into activities which are not competitive with private investment. Indeed there may even be a need to re-examine the role of government investment in agriculture to ensure support in complementary areas. Another important feature of these results in regard to the public-private investment nexus, is that they provide clear evidence of the need for external financing (which comprises an important component of public sector investment), particularly during periods when economies may be restructuring. This financing contributes to an easing of the constraints on investment, as well as to raising the confidence of the private sector and hence increasing the demand for capital for agricultural investment.

While measures aimed at alleviating the debt overhang at the national level were not found to be particularly important in their impact on the private demand for capital at the combined OECS country level, reducing the level of the external debt overhang could result in increases in the private demand for capital and lead to a reduction in the dis-incentives facing private capital.

The results of the analysis with respect to exports also underscore the pivotal role of macro-economic instability and trade openness. In addition, the results indicate that real government expenditures affects exports in the same direction as public investment affects private demand for capital. This result is significant for the Windward Islands, since it suggests that government expenditures in well-targeted areas will have a positive impact on the agricultural export ratio. On the basis of this result, it can be argued that in down-sizing the public service which includes the systematic reduction of support to some critical support programmes, serious consideration should be given to reducing expenditures on programmes which support the export thrust.

With regard to the results obtained for the Leeward Islands, the authors continue to be convinced that the arguments advanced earlier in the section relating to the relative size and importance of the tradeable vis-a-vis the non-tradeable and home goods sector remain valid in accounting for the negative response obtained between exports and government expenditures. Under the assumption of profit maximization, the virtual absence of subsidies, and a fixed

exchange rate regime, an enterprise will not engage in exports unless it is profitable to do so in comparison with the alternatives open to it domestically. In short, once the export price is less than the domestic price level available from selling in the domestic market, enterprises will not seek to export.

If the set of assumptions are further relaxed to allow for market uncertainties and for extra investment associated with exporting, enterprises will only consider exporting if the export price is at least marginally higher than the domestic price. While there are very few commodities for which the export price lies above the domestic price in the Leewards, the commodities for which this condition is likely to hold are not necessarily the ones which are being promoted for production and export.

Incentives

This section indicates that economic incentives have not played an important role in stimulating the private demand for capital, nor have they had on the agricultural export ratio. Various explanations can be offered for the apparent failure of the economic incentive measures imposed in the OECS. Firstly, the fact that the measures imposed were tantamount to a tax on the exportable sector is important since the potentially positive impact of these policies operating through changes in the level of output would have been undermined. Second, in the Leeward Islands the downward trend in private capital demand and in exports throughout the decade of the 1980s, despite changes in the regime of economic incentives would have resulted in the estimated negative relationship between economic incentives and exports, as well as economic incentives and the private demand for capital.

For the Windward Islands, the fact that production and exports are dominated by cocoa and bananas (as well as nutmeg in Grenada) and that the economic incentive measures imposed over much of the sample period would have had very little to do with these commodities at all. This basically, accounts for the insignificance of economic incentives on the demand for capital and exports in the Windward Islands grouping. Finally, the agricultural sector may not have been in a position to respond to the economic incentives being transmitted largely through

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relative prices, primarily due to structural and institutional constraints or due to the operational characteristics of domestic, regional and extra-regional commodity markets.¹⁴

It is clear that maintaining an appropriate mix of trade and macro-economic policies will be important if economic incentives are to have a positive impact on private investment (as measured) and on agricultural exports. The results suggest that the impact of incentives on these two variables will also depend on the ability of individual OECS governments to maintain investment and expenditure in well-targeted areas. As such, it appears that there may have been an over-emphasis on the provision of an 'incentive package' to support the agricultural sector to the exclusion of other equally, if not more important factors. In general, the contention that economic incentives alone are unlikely to play a significant role in "crowding in" private capital and in stimulating exports is supported empirically.

¹⁴ See Antoine and Taylor. "Competitiveness of the Non-Traditional Agricultural Sector in the OECS: A Diagnostic Analysis", Study Commissioned by the OECS/ADCU, (1993).

CHAPTER 5

EVALUATION OF INCENTIVES AND OTHER SUPPORT PROGRAMS

The results of the previous section underscore the critical role to be played by the macro-economic environment in regard to private investment (narrowly measured) and agricultural exports among OECS territories. Given this role, the consistency of various policy measures introduced in the OECS with the goal of increased competitiveness will be analyzed in this section. In several previous sections of this study, the analysis has indirectly indicated that the regime of fiscal incentives implemented by OECS countries between 1980 and 1992, has not been entirely pro-agri-business. Further examination of the issues surrounding this will be undertaken in the second part of this section.

Economic Incentives and the Agro-Processing Sub-sector in the OECS

The agro-processing sub-sector in the OECS may be categorized into three types of agri-business firms. In previous studies of the fiscal incentive regime in the OECS treatment of all agri-business firms as synonymous has quite often resulted in incorrect generalizations about the sector. Agri-business firms in the first category (type I firms) are characterized by their large size and their relatively high degree of capitalization. They usually conduct their own R&D activities, have well defined organizational and managerial structures, and employ a well trained cadre of qualified professionals. Agri-business firms such as the East Caribbean Group of Companies (ECGC), Dominica Coconut Products (DCP), the Grenada Flour Mills, and to a certain extent Diamond Dairy fall into this category.

In the second category (type II firms) are firms which are substantially less capitalized than in type I firms. These firms conduct some degree of R&D, but also benefit from R&D functions provided by other national, regional and international organizations. Typically, the organizational and management structures of these firms are not as well defined as in type I firms, with the owner/manager performing several functions. Firms in this second category are also characterized by a shortage of adequately trained (qualified) persons to undertake specific

tasks. While other differences may exist between type I and type II firms on a country-by-country basis, these may not necessarily be representative of the agri-business firms operating across OECS countries, hence their exclusion.

Agri-business firms in the third category (type III firms) are characterized by the wide range of products which they produce relative to their resource base, their low degree of capitalization, limited capacity to undertake R&D, loose organizational and institutional structure, and except for the owner/operator, then employ few other properly trained (qualified) staff.

With the exception of Montserrat (where agriculture is excluded from the Fiscal Incentives Ordinance of 1975) and the British Virgin Islands (where agricultural production and/or processing are not explicitly mentioned in the Pioneer Services and Enterprises Ordinance, No 4. of 1966) most of the OECS countries are covered by fairly similar incentive legislation under the Harmonized Incentives Regime. The OECS incentive framework which has as its basic pillars, tax exemptions (relief) based on value added and duty exemptions on capital equipment and machinery, suffers from a number of shortcomings which affect its operation in relation to the three types of agri-business firms identified.

By acting almost solely through the tax regime, the fiscal incentives programmes inherit many of the weaknesses associated with the deficient tax collection systems of OECS countries. These weaknesses severely undermine the programmes' effectiveness. Consequently, the appeal which these fiscal measures were intended to have in catalyzing the emergence of new agri-business firms, which would not otherwise have been involved in the agri-food sector, has been diminished. In relation to the typologies of agri-business firms developed, there was fairly clear evidence that the fiscal incentives regime acting through the tax system was of greater significance to type I firms, than to either type II or type III firms (which were often unaware of the provisions of the fiscal incentives legislation).

While there exists consistency across countries regarding the tax concessions which could be granted under the applicable fiscal incentives legislation, there is far less consistency in

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relation to the computation of value added on which the duration of concessions granted is based. The differences between firms become much more pronounced when the process of according extensions to the initial period for which the tax concessions were granted are examined. In general, the study found that such extensions were the rule rather than the exception for firms operating in the OECS.

Throughout the OECS countries, the fact that similar fiscal incentives are granted to the manufacturing and tourism sectors as are granted to agri-business firms is also important in examining the efficacy of these policy measures in regard to agri-food sector. In addition, since the incentives are extended to firms during the initial phases of their operation, or expansion of their existing operations, *ceteris paribus*, the lower ratio of profits to value added for agri-business firms *vis-a-vis* manufacturing enterprises would tend to shift investment away from the agri-food sector.

Duty exemptions on machinery and equipment were found to have a positive impact on all agri-business firms. Particularly in St. Vincent and Grenada however, several type II firms indicated that they had experienced problems benefitting from duty exemptions.

In general, income tax concessions did not appear to be a major factor influencing entrance by type II or III agri-business firms. Various interviews with firms drawn from all three typologies indicated though that the duty free facility for importing production inputs, machinery and equipment was adequate.

With the exception of the few type I firms previously mentioned there remains a need to provide agri-business firms with support above and beyond that which is contemplated via tax exemptions and duty-free production inputs. While the need for such services has been recognized by several OECS Governments the support services remain weak and in some cases, non-existent. Recently, concerns by individual OECS Governments with structural adjustment, including down-sizing of the public sector has further complicated this issue, as a great deal of uncertainty now exists regarding the particular areas which should be targeted for institutional reform.

Since developing competitiveness capability among OECS countries is an imperative, it is necessary to assess the extent to which the economic incentives instituted, have been compatible with this goal. In this regard, the income tax concessions extended under the aegis of the various fiscal incentives legislation have resulted in relatively greater gains to type I firms than to either type II or type III firms. As such, the impact of these measures on the competitiveness of either type II or type III firms is not likely to be significant since their export turnover is not likely to be large during the first several years of operation. The provisions for accelerated depreciation in such legislation, while varying slightly between countries, were considered by all agri-business firm types to be quite effective.

The exemption of dividends from taxation was, however, also more important for type I firms than for either type II or type III firms. This was due to the fairly small levels of profits earned by these firms (type II and III) during the first years of operation to which the concessions apply. In general income from dividends is taxable after expiration of the fiscal concessions in most OECS member states.¹⁵

However, in terms of building the competitiveness capacity of individual OECS countries, the fact that the fiscal incentive concessions (tax exemptions, accelerated depreciation and dividends provision) are not directly tied to performance criteria constitutes a major weakness. Efforts made to calibrate the degree of tax relief with the degree of exports does not address this shortcoming entirely, since even with this provision several loopholes continue to persist.

Another factor which is often overlooked in assessing the impact of incentives is that since these incentive measures act through the tax system, their impact hinges critically on whether firms are able to earn profits sufficient to justify the concessions on economic grounds. In this regard, the factors which impact the ability of agri-business firms to earn and sustain levels of profitability are critical. Two factors more than any others (financing facilities and support services) have been identified by agri-business firms as being critical to their viability.

¹⁵ There are proposals in several countries to amend the law so that income earned from dividends would be either non-taxable, or would be subject to a reduced rate of taxation.

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The importance of these two factors in contributing to the viability of agri-business firms will be examined in the following section.

Agri-business Financing and Competitiveness

Long-Term Financing

Credit policy in support of domestic food production (mainly small farmer production) has been implemented primarily through agricultural development banks. A distinguishing feature of these banks was a portfolio consisting almost entirely of agricultural loans and a narrow range of financial services. The uncertainty of agri-food production and prices have hindered efforts by development banks to achieve long-term institutional and financial viability as well as to expand their clientele base. This situation has been compounded by the provision of loans (many of which were not viable) at concessionary rates of interest. Agricultural development banks (as a matter of policy) have typically operated on one side of the market (supplying credit) and have experienced difficulty in attracting savings. Since credit channels are unrelated to savings channels, the contribution of agricultural development banks to the stimulation of savings in the small farm sector has therefore been fairly small.

The development banks have also experienced difficulties in covering administrative costs which often tended to be higher in rural areas and among small borrowers due to higher risk, smaller loans and greater geographic dispersion. Low and unpredictable loan recovery rates which increase liquidity requirements, raise costs and reduce the supply of loanable funds were also factors which contributed to the poor performance of the development banks. Consequently, the credit programs of development banks have remained heavily dependent on continued funding from national governments and the international donor community.

It is now well accepted that the need for investment financing becomes more critical as a country embarks on a strategy of export expansion and diversification. In fact the critical role of public investments both in instilling confidence in the private sector, as well as in undertaking infrastructural investments is clear from the results of the econometric analysis conducted in the previous section.

Despite serious public sector emphasis on diversifying the agri-food sector of OECS economies, the facilities for financing have not kept pace. There are basically three elements to this problem: unavailability of financing (such as with credit squeezes), the high-cost of financing and inadequacies in the provisions for bank collateral. The tendency to view these elements as one, has often times resulted in the formulation of mis-guided programmes, aimed only at alleviating financial constraints.

As expected, type III firms experienced more difficulties accessing financing than either type I or type II firms. The inability to satisfy the collateral requirements and the high cost of financing were the factors which most accounted for the inability of these firms to access financing. Although it was most pronounced for type III firms, the high cost of financing was a problem for all firms involved in the agri-food sector.

The persistent difficulties experienced by the agri-food sector in the OECS in accessing long-term, low-cost financing arises in part from the inability of the financial sector (including commercial banks) to respond to the needs of the agri-food sector. With the exception of a few informal credit institutions and development banks, which have often suffered from inadequate staffing to adequately monitor project financing, the financial services sector continues to be fairly underdeveloped. Consequently, particularly for firms concentrated in agro-processing, commercial banks continue to be a major supplier of credit. The fact that commercial banks in the OECS respond only marginally to market forces, has also mitigated against their development of specialized services for the agri-food sector. This has resulted in continued high-cost financing and often times to unreasonable collateral requirements.¹⁶

Increasingly, exports of agri-food products are being sold on short-term payments conditions with periods of up to 60 days. For the agro-processing sub-sector, while the production cycle itself tends to be short, for more than one reason they have had to carry huge inventories. In addition, the working capital requirements have been great both during pre- and

¹⁶ In the case of two agro-processors, the loans which they held from commercial banks were found to be grossly over-secured. While these cases are unquestionably exceptions, in general collateral requirements were found to be higher in the OECS than in several other CARICOM countries.



post-production stages. Presently, the need for working capital is met partly by borrowing from commercial banks, as well as borrowing from an export financing facility operated by the East Caribbean Central Bank (ECCB).¹⁷ The ECCB facility is used relatively more by Dominica and St. Kitts/Nevis than by the other OECS countries. In fact in Grenada, and to a lesser extent, St. Vincent, several agri-business firms (type II) were totally unaware of the existence of the facility.

While the commercial banks and the ECCB facility have gone some way in filling the gap as regards short-term financing for agri-business firms, fresh produce exporters as well as some type II and III agri-business firms continue to be affected by the under-developed nature of OECS capital and financial markets.

Commercial banks clearly do not consider long-term development financing to be part of their purview, hence they have remained strongly oriented towards earning short-term profits. Two factors have perhaps mitigated against these commercial banks becoming more active in the market for long-term financing; these are the higher risks associated with longer term agri-business projects and, the aforementioned inability of many agri-business firms to satisfy the strict collateral requirements.

In fact in many OECS countries where firms have been able to satisfy the requisite collateral requirements and where adequate insurance against risks could be secured (such as in the case of type I firms), finance has been forthcoming. However, new agri-food firms most in need of finance are the ones which are most unlikely to be able to meet the strict collateral requirements of commercial banks. It therefore appears that alternative modes of providing long-term finance may have to be sought for type II and III agri-food firms operating in the sector.

¹⁷ The ECCB facility operates through commercial banks and provides short-term pre- and post-production working capital to assist manufacturing firms to finance their exports. In general the rate of interest charged for use of the financing facility is computed on the basis of the prime rate plus one percent.

One such alternative might be to extend the present ECCB export facility to include the provision of longer term financing.¹⁸ This will however, require the establishment of various ancillary arrangements, pertaining to such factors as insurance. Based on the experience of other developing countries, such export credit insurance schemes offer guarantees which:

- protect the exporter from the risk of non-payment by the broker/purchaser; and
- cover the banks against repayment default by the exporter.

Because an export credit insurance facility must be self-supporting, its operation will hinge on whether sufficient agri-business firms are able to participate in the programme to make insurance premiums reasonable. At present, the small and undiversified volumes of exports from OECS countries and the apparent lack of a serious core of export-oriented agri-business firms, may make it difficult to reasonably spread risk, which is a necessary condition for the viable operation of the export credit insurance programme.

Despite this, several other options exist for the provision of the required insurance, which is a critical component of any export credit programme, and these options should be explored further in order to identify the scheme best suited for the OECS countries. If the intended export credit insurance programme is well conceived it could also assist in alleviating the collateral problems which exporters confront.

¹⁸In this regard, the Eastern Caribbean Central Bank proposed to establish the East Caribbean Enterprise Fund (ECEP). The ECEP is an attempt by the Central Bank to develop a funding mechanism both in terms of equity and debt finance (from outside the region, as well as from within) to develop the private sector. The ECEP is intended to provide venture capital to productive areas which find it difficult to access investment. It would also promote the concept of portfolio investing in the currency area.

The ECEP would provide both equity and loan capital for all aspects of private sector enterprise development or project-related expenditures including: fixed assets, working capital, research and development and pre-operating costs for new company start-ups, as well as existing companies. As proposed, the Fund would only finance legal entities, such as companies and partnerships, but not individuals, and would invest in the most productive areas of the sub-region in export-led growth and foreign exchange earnings areas, such as Tourism, Manufacturing, Agriculture, and Services. (ECCB, Research Department, 1993).

The impressive record of many of the National Development Foundations (NDFs) in lending to small businesses also raises the possibility that these institutions could be used to channel financing to the agri-food sector.¹⁹ While the portfolio of the NDFs in some instances might suggest a bias toward lending for enterprises other than agri-food production. The extremely high loan recovery rates recorded by virtually all these institutions coupled with their capacity to monitor and in some instances offer technical assistance to small firms, constitutes a strong basis for using them as a possible financing facility.²⁰

Recently, many of the NDFs have begun to experience depletion of their finances for on-lending. In response many have taken the decision to increase interest rates as of 1995. Beyond this, additional financing will be required if these institutions are to continue operations at their historic levels. In this regard, there may exist the possibility for the ECCB or CDB to play a role in securing funding on behalf of these institutions. Even if the ECCB/CDB were to secure funding from institutions such as the Inter-American Development Bank (IADB) however, the aforementioned role of export credit insurance will remain critical. Given the purview of the projects which the NDFs presently finance and the limited collateral generally required to qualify for access to their financing facility, this is likely to result in some minor complications. However it is entirely possible for different qualifying criteria to be established for participation in this newly proposed financing programme.

In conclusion, if it is accepted that the provision to regional agri-business firms of adequate export credit at a cost which is at least comparable to that which is enjoyed by agri-business firms extra-regionally is an imperative, then special attention must be accorded to the provision of facilities for long-term credit. These issues will continue to be central to the efforts of OECS Governments to rationalize the role of economic incentives in sub-regional economic development.

¹⁹NDF's by imposing substantially looser collateral requirements, have been able to offer small firms access to financing, in cases where these firms would have been denied access by traditional commercial banks. Rates of interest charged typically ranges from between 9%-12.5%. Short term credit windows are also available at slightly higher rates (16%-18%).

²⁰ Typically, the default ratio among NDF's ranges from 12-20%, considerably lower than many of the National Development Banks.



Support Services

Research and Development

Agricultural research and development in the Caribbean suffers from a lack of funds relative to that which is available to developed countries. The results of a recently concluded World Bank study²¹ however, suggest that the expenditure on research, development and extension financing in the Caribbean over the last decade has been substantial. In addition, much of the research undertaken is oriented toward traditional agricultural exports while only limited research resources are concentrated on non-traditional export crops [Charles, 1983; Demas, 1987]. This imbalance in the allocation of research resources must be redressed if domestic food production is to be stimulated. There is also a lack of co-ordination at both the national and regional levels and a gap exists between research, development and extension services, all of which result in ineffective technology transfer and poor responsiveness of the research agenda to the needs of the agri-food sector.

OECS Governments have also attempted to compensate the agri-food producing sector for the inherent policy bias against it by providing services through the Ministries of Agriculture. However, institutional weakness in the capacity of the divisions within the Ministry to deliver these services in a timely manner, insufficient financing to execute work programmes and poor monitoring and follow-up of the delivery of extension support, have severely impaired the ability of the Extension Division to adequately respond to the needs of the agri-food producing sub-sector.

In this regard, the superior delivery record of the extension divisions of many of the Commodity Associations suggest that some other type of institutional arrangement should be sought to ensure that farmers are provided with extension services in a timely manner and at a reasonable cost. The research component of the Ministries of Agriculture (where they exist) is also grossly under-funded, with research officers quite often functioning as part of the Ministry's

²¹"Strategies to Improve the Effectiveness of Agricultural Research, Extension and Training in CARICOM; May 5, 1993. World Bank Document.

administrative staff. While final resolution of these issues should emerge after a comprehensive study of research and extension delivery mechanisms has been undertaken, the results of two comprehensive studies on the agricultural sector of OECS countries commissioned by OECS/ADCU, beg the question of whether the Ministry of Agriculture is best suited to undertake agricultural research.

Marketing

Most of the marketing interventions have taken place in the domestic food production sector, where marketing systems and methods were relatively inefficient and marketing infrastructure inadequate. The main form of intervention was effected through marketing boards or corporations. Their major function was the procurement of produce at guaranteed prices. These prices were often much lower than those which would have derived from the interplay of market forces, with the result that marketing boards purchased sub-optimal amounts of the commodities. Farmers have been led therefore to consider the marketing boards as buyers of last resort. The guaranteed prices offered by these boards were often insufficient incentive to increase production. In other situations, marketing boards still offered farmers guaranteed prices despite the absence of domestic marketing opportunities.

An attempt to regionalise the arrangement with marketing boards was made as part of the Agricultural Marketing Protocol (AMP). This was however unsuccessful, and the operational inefficiencies which characterized these institutions led to their reorganization in order to provide primarily a supportive role (marketing intelligence, market research, quality control and packaging assistance) to the marketing process. In a few OECS countries, the Marketing Boards have legally guaranteed monopoly status for the importation of certain basic commodities, in order to underwrite their operational costs.²²

Determining whether this is a reasonable manner in which to develop the agri-food sector quite obviously involves considerations other than those which have been the focus of this study. However, the results of the econometric analysis which warns of "crowding out" of private

²²Grenada, Dominica and Antigua are cases in point.

sector investments as a consequence of government involvement in areas which would otherwise operate efficiently without their participation should be borne in mind.

OECS Governments should carefully analyze the marketing process with the objective of alleviating bottlenecks and expanding the market and marketed output. Some of the more obvious methods of intervention may lie in transportation, access roads, refrigerated transportation and storage equipment, packaging, and market information. However critical issues related specifically to increasing competitiveness and expanding demand are equally important. In both these areas, prices are of considerable importance. Low prices expand demand and stimulate competitiveness-enhancing responses by producers. As indicated, not all producers will survive in this environment, but the adjustment process will lead to the evolution of more efficient enterprises.

As far as food production is concerned, a significant incentive can be derived from the provision of stable regional (sub-regional) markets. Creation of these markets will however require the removal of tariff and non-tariff barriers to regional (sub-regional) trade. Significant progress has already been made in this regard (CET, trade liberalization, rules of origin). Some degree of protection from extra-regional food imports should also be provided given the very low international prices of some subsidized food exports (does not generally include temperate fruits and vegetables) from developed countries. Such protection should be minimized however and should be implemented by a system of low regional tariffs, structured along the lines of the previously outlined theoretical arguments. Well tuned tariffs should be structured to provide some exposure to international competition, while assisting in reducing production and marketing inefficiencies, (thus increasing competitiveness). It should be noted that in the absence of tariffication of the existing non-tariff barriers the probability of the Common External Tariff (CET) encouraging specialization within the OECS, hence enabling the development of a more efficient agricultural sector, will be fairly small.

In relation to the particular deficiency of type III agri-business firms in undertaking their own marketing activities; upgrading them in areas such as quality control, production planning, etc. remains critical. Beyond their familiarization with the operations of extra-regional markets

and market specifications, there are likely to be limits to possibility of training them in the area of export marketing, given the specialized nature of the marketing functions required in these markets (input subsidy schemes; provision of free production inputs; subsidized credit). A more cost-effective alternative appears to be the encouragement of some form of cooperation between these firms.

In general, type III firms have not displayed the capacity to simultaneously undertake marketing with the other management and operations functions. Even in instances where they have been able to undertake these functions with some measure of success, the market was known to exist with certainty, was small and required little in terms of specialized packaging and labelling. Clearly, as the OECS countries seek to further develop the agri-food sector, the assumption of market openings which were valid for small export volumes will not constitute a sound enough basis on which to plan long-term investment.

Emphasis on Support Measures

Many of the domestic incentives schemes in the OECS countries have ended up supporting incomes or have served objectives other than those initially intended. Governments should focus on the provision of support facilities as well as on measures which will encourage domestic competition.

Other roles for these governments may lie in the provision of storage, transportation, market information systems, grades and standards, research and development and technological transfer, agricultural insurance and the design and implementation of appropriate legislation. Where input subsidies are provided, these should be applied selectively to a small number of commodities should be designed to assist new enterprises only and should be phased out after a pre-defined time period.

If fostering competition and the development of competitiveness among firms continues to be the focus of OECS countries, changes in the current pattern of production (farm size, output mix, etc) will be required. Based on the large number of subsistence farm-firms operating across OECS countries, some economic displacement is likely to occur as a result of the



proposed policy changes - a process which will have obvious implications for farm income and income transfers. It will therefore be necessary at some later stage to devise programmes to assist with the adjustment in order to minimize this displacement.

Notwithstanding the considerable opportunities which may exist to increase domestic value added by engaging in agricultural production as opposed to either manufacturing or tourism, the results of the micro-economic analysis suggests that in several instances, producers may be engaging either in inefficient production or in the production of commodities in which they are not export competitive or competitive in the domestic market.

In this study, neither the framework used nor the nature of the data facilitates a clear identification of the dominant factor in this regard, but the limited technical progress which has characterized farm-firms since the early 1970s appears to be at least a closely related factor. In fact a comparison of the technical coefficients of this study with an earlier study on costs and returns for rootcrops by Rankine (1972), suggests that very few differences exist in technical coefficients.²³

Even in instances where production enhancing technologies have been 'validated' by various institutions involved in the technology validation and transferral process in the OECS, producers, for one or more reasons have been tardy to adopt them. One reason for this poor rate of adoption has been the limited consideration accorded to the economic feasibility of these technologies. Indeed, it appears that quite often technologies are being 'validated' which, while being technically feasible given the limited resource base of producers, may not be economically feasible.

In accounting for the poor rate of adoption of technology, this study finds that the inappropriateness of the incentive measures instituted may be a contributing factor. Among OECS countries, there was little relationship between research, extension and technology

²³See Rankine B.L., "Comparative Economics of Root Crop Production in Selected Countries of the Commonwealth Caribbean". Part 1. Costs and Returns for Specified Root Crops., Occasional Series No. 8., UWI (1972).



adoption on one hand and the incentive measures instituted to facilitate this process on the other (where they existed). In other instances it was evident that the incentive measures were formulated and introduced in somewhat of an ad-hoc manner.

The results of this study suggest that for whatever reason or combination of reasons, the potential positive effects of the policy measures introduced in the area of agri-food production have been limited, while indicating that the structure of protection essentially discriminates against high value adding activities. It remains quite possible that this arises from associated production and marketing inadequacies such as the lack of a consistent supply of raw materials for processing.

Should this be the case then addressing the constraints to production and marketing to which the study previously alluded maybe helpful in remedying this situation. As a corollary to such measures however, there is a need to more aggressively promote agro-processing as well as other higher value adding activities. A continuing weakness of the diversification efforts to date continues to be the heavy bias towards fresh produce for exports. If attention is not accorded to developing the infrastructure necessary to exploit opportunities in fresh produce markets in many OECS countries, then a more aggressive pursuit of agro-processing may offer a viable alternative for successful export marketing.

Other Shortcomings of Economic Incentive Programmes

Despite the goal of many OECS countries to develop Industrial Development Cooperations (IDCs) in many OECS countries "one stop shops" only in two countries was this reasonably attained. To benefit from fiscal incentives agri-food firms (including farm-firms) in many of the countries must still deal with at least three Government departments; this has proved to be exasperating, particularly for type II agri-businesses. While significant improvements have been recorded in this area over the last several years, further progress in simplifying the incentive process is still required.

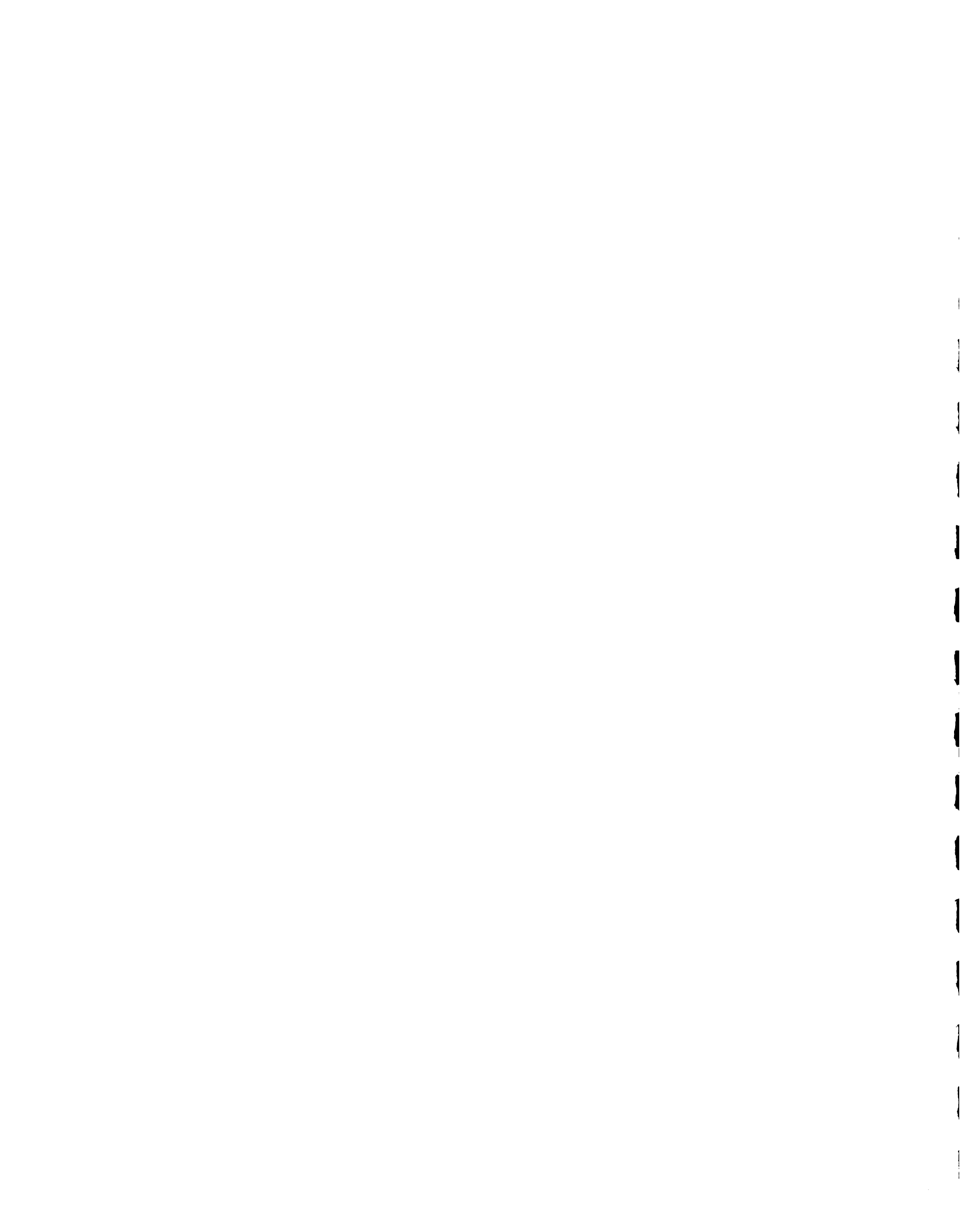


Presently, to access the duty-free facility for intermediate production inputs, pre-approval must first be obtained from one or more governmental departments. This process has proven to be time-consuming, particularly for resource scarce firms (type III and some farm-firms). Instead of requiring pre-approval, blanket approval should be granted and the resources concentrated instead on strengthening the monitoring functions. This will require a change in the orientation of the fiscal incentive programmes from a focus on preventing ex-ante abuse to one which more explicitly fosters the development of agri-business. The emphasis should be placed on post-facto monitoring of compliance and the attainment of pre-determined targets. The fiscal incentives programmes as they are presently structured are in several respects, more difficult for smaller agri-business firms to access, since their resource limitations often slow down the approval process. This was found to be the case particularly where several government departments were involved.

A major failing of the economic incentive measures imposed is that in most instances they have not resulted in the expected expansion in agri-food exports. Some of the factors which account for this have already been mentioned in the previous chapter, however others include poor monitoring of these incentives and the fact that post-facto sanctions have not generally been applied in cases where agri-business firms have benefitted from the concessions without fulfilling performance criteria. In this regard it might be necessary to establish certain interim targets before the expiration of the initial concession period to ensure that there is at least some effort at compliance.²⁴

Most of the successful agri-business firms in the OECS source a substantial portion of their production inputs extra-regionally. Of the eight firms mentioned, only one type I and three type II firms presently source above 60% of their production inputs domestically. This does not auger well for the fostering of backward linkages to agricultural production among the OECS economies. This tendency to backward linkage was strongest in Dominica, followed by St.

²⁴ Beyond the infrequent intra-OECS shipment, many firms have engaged in exports only to a very limited extent. However eight type II firms were able to record export shares in excess of 40%. In this regard, Dominica and St. Lucia stand out, while with the exception of two firms each in Grenada and St. Vincent, the exposure of firms in these countries was somewhat disappointing.



Vincent and Grenada. Paradoxically, with few exceptions, the most successful type II firms exhibited the weakest backward linkages. Horizontal integration was only found to exist in three instances, two in Dominica and the other in Grenada.

Despite the fairly high transportation cost and port charges in several of the OECS countries and the potential loss of "Rules of Origin" status, many OECS agri-business firms purchased third country production and intermediate inputs either because domestic supplies were unavailable, did not meet quality standards or were too high cost. In short therefore, domestic supplies were uncompetitive. In spite of the rhetoric of the last two decades the prognosis for the forging of closer linkages between agriculture and agro-processing therefore appears no closer to being realized than before.

Type III firms have shown the greatest propensity to utilize domestic production inputs and foster backward linkages. In addition many of these firms have shown the willingness to undertake export risk, with virtually all having engaged in extra-regional exports at some point. Given this, one of the many tasks facing the OECS countries in the coming years should be to seek to incorporate these firms into the mainstream of economic activity. Efforts in this regard will not only assist individual agri-business enterprises, but will also go some way in opening up the market for the output of farm-firms. Of particular importance to agri-business firms, in addition to the factors of export financing already mentioned, must be added technology considerations and management skills, both of which continue to be particularly weak.

In general, incentive schemes in agriculture in the Caribbean have been quite broad and cumbersome. The administrative machinery and processes are typically insufficiently coordinated, implemented and monitored (Charles, 1983). This leads to considerable delay and friction in the delivery system for subsidies, credit, problem-solving research and extension services.

Delay and frictions add to transaction costs and increase risk and uncertainty. This has contributed to dis-incentive effects on the agri-food sector, but particularly on the agro-food producing sub-sector. Procedures should therefore emphasize simplicity in order to minimize



delay and reduce transactions costs. Consistency reduces the risk and uncertainty facing producers and may be judged on the basis of intersectoral balance (i.e. by the manner in which they are implemented and objectives attained at the national and regional levels).

The Cost of Economic Incentives

The results of the econometric analysis undertaken in the previous section indicate that the economic incentive measures implemented by OECS countries have not had a significant impact on expanding sub-regional exports. This appears to indicate that the cost of these incentive measures to the national economies have been fairly high relative to the benefits derived. The structure of these measures, which did not necessarily favour the promotion of enterprises in which the OECS countries have had a competitive advantage, or discourage enterprises which were net foreign exchange losers (high domestic resource cost) also contributed to this high cost.²⁵

The results of the micro-economic analysis indicated that while the performance of the agri-production sector, measured in terms of its foreign exchange earning was disappointing, domestic consumers were forced to pay higher prices for several commodities as a consequence of the policy measures (including economic incentive measures) implemented at the sectoral and macro-economic levels. Were consumers allowed to face non-intervention border prices for the commodities examined, the analysis indicates that consumption would have been significantly higher (i.e they would have been better off in a narrow sense).

The expenditures by respective OECS Governments on the various support measures, combined with the tax revenue forgone also contributed to a further increase in the domestic resource cost. To this must also be added the tendency to employ measures other than export-incentives, which result in additional cost (dead-weight losses).

²⁵ See Antoine and Taylor., *Assessing Agricultural Competitiveness in the OECS: A Diagnostic Analysis*, (1993).



The use of non-transparent support measures aimed at fostering import-substitution, has also led to serious resource mis-allocations in the domestic economies and to a further increase in the hidden cost of economic incentive measures. This finding is consistent with the experience of other developing countries whose domestic mis-allocations resulting from high DRC's tended to be less serious under export-oriented policies than under import-substitution policies, since export incentives require visible budgetary expenditures.²⁶

Towards an Agenda for Policy Reform

Generally the system of incentives and support in OECS has been extensive with wide commodity coverage. The fact that these incentives were administered with limited financial and administrative resources however, has contributed to their limited impact. Inefficiencies due to lack of proper coordination given the many agencies involved; conflicting objectives; instability in the delivery of the various programs; and significant bureaucratic delays are features of the incentive system. A major implication of all the above is that uncertainty and risk are increased and incentives to increased production and marketed output are adversely affected. Given limited government budgetary resources and the shortcomings of government intervention, an approach which focusses on a few commodities is likely to be more beneficial.

The economic development process in the OECS will continue to require the promotion of industries in which the countries have a competitive advantage. This need to develop/sustain competitiveness will remain an imperative regardless of whether the domestic or export market is the target. One of the important contributions of the new strategic trade theory, is that it asserts the role of Government in addition to the other well known factors such as factor endowment, learning etc., as being critical in shaping a country's competitive advantage. Governments through the design and implementation of policies can accelerate the learning process in certain specific areas, thus assisting private enterprise to build up capabilities, which on their own, they could not achieve in as short a period of time. This role of governments goes

²⁶ See J. N. Bhagwati., "Foreign Trade and Regimes and Economic Development: Anatomy and Consequences of Exchange Control Regimes"., (1978).



beyond that of intervening in markets to correct market failures or provide missing markets. Government in this framework is an active participant in the formulation of policies and in the creation of the requisite stable macro-economic environment necessary for the emergence of competitive firms and industries. In this regard, government policies can have a profound impact in three main areas which are critical to the evolution of the competitive strengths of OECS agri-business firms and industries, these in no specific order of importance are the areas of human resource development (HRD), technological progress and investments.

On the basis of the framework outlined above, it is necessary to develop a changed role for economic incentives in the context of sub-regional economic development. Given the goals which many of the OECS territories have established for the agri-food sector, the countries need to more directly re-focus existing economic incentive measures toward supporting/promoting exports (export incentives). The econometric analysis undertaken in the previous chapter hinted at both anti-agriculture and anti-export biases as possible explanations for the poor performance of the economic incentive measures implemented in the OECS. In terms of reform, this implies that there are likely to be two options open to the OECS countries as they seek to re-organize the existing regime of incentives.

The first and perhaps the more difficult option involves a reorganization of the entire regime of incentives afforded to all sectors of the economy. This reorganization will seek to eliminate the "blanket favored" status accorded to, for example the manufacturing and distributive trade sectors, and will institute instead a programme which affords firms the opportunity of benefitting from incentives on a more selective basis. In this regard the policy agenda should be guided by the fact that significant export incentives will be required to overcome the anti-agricultural biases should the present regime of policies be left unfettered.

The second option, concerns eliminating the anti-export bias viewed now from a sectoral perspective. The border protection measures (import licenses, tariffs, quantitative restrictions, consumption taxes) imposed by OECS countries have contributed to the concentration by agri-food firms on the domestic market. It is therefore critical that export incentives offset the home market biases which arise from heavy protection in the domestic markets. This is a win-win

proposition as the suggested reorganization (towards more direct export incentives) can also assist in eliminating the anti-export bias which arises in the manufacturing sector as a result of the infant-industry protection instituted since the 1970s.

Industry Targeting

Whether the first or second option is chosen the identification of industries for support will be a critical component of this new reorganization strategy. This had been somewhat controversial in some circles. If it is generally accepted however, that sub-regional governments do not have the capacity or the financial resources to continue with the "generalist-type" approach to technological and institutional support which it will have to play a role in providing for some time to come, then targeting industries, and developing well tailored support programmes will be critical. In any event, faced with the trend toward contraction of external financing for economic development in the OECS, programmes will have to be devised on the basis "of doing a few things well, instead of several things badly". The current practice of doing several things poorly may be a general commentary on the agri-food sector in the OECS, with few exceptions.²⁷ That agri-food firms which concentrate on doing a few things well, generally exhibit superior performance to firms which seek to produce a multiplicity of products with extreme limited resources is borne out by the performance of one agro-processing firm in Grenada and one horticultural farm-firm in St. Vincent.²⁸

Critics of the "industry targeting" approach often argue that what is required instead, is the creation of an "enabling environment" in which firms which have competitive strengths can emerge. The difference between these two approaches really lies in the "unit" of observation; the unit being the firm in the case of the industry targeting approach as compared to the "macro-economy" for the school of thought which asserts the critical role of the "enabling environment".

²⁷Instances were found where type II agri-business firms were carrying as many as 46 different types of products. This practice of spreading resources too thinly is also quite evident among farm-firms producing non-traditional products.

²⁸ While there are a few other successful firms which fit this mould, the performance of these two firms is particularly noteworthy.



Since targeting industries for promotion/support involves the creation of the correct environment for investment, technology development, HRD etc., from a micro-economic (firm) perspective these two approaches are quite consistent. Identifying industries for priority attention is not only necessitated by the present economic environment, it is also an indispensable part of the reorganization strategy being proposed. Industry targeting can contribute significantly to the competitiveness of various industries by correcting of various industries by correcting for market failures and missing markets and through active support aimed at accelerating the acquisition of the requisite capability (production or otherwise).

Industry targeting depends to some extent on the institutional capabilities of governments. Where this capacity is weak therefore, failures in identifying the constraints to targeted industries and difficulties in tailoring support measures to meet the specific needs of the agri-food sector can result. This factor may not be as significant as it appears at first however, since in the initial stages of the development process, the types of interventions required by governments are fairly simple, and are aimed at solving basic constraints to the targeted industries. While the support required from governments will become more sophisticated with progressing development, this would have allowed sufficient time for strengthening of their technical capabilities.

In addition, provision of the requisite support does not necessarily have to come from OECS Government Department/Ministries themselves, (although they should reorganize critical departments such as the extension department and the various research arms) as important roles are also envisaged for the private sector, as well as regional and international organizations. Government capabilities will be most critical in the identification of the industries to be targeted and in the tailoring of support measures to meet the identified sector-specific needs. Technical cooperation institutions such as CARDI, IICA and FAO may also provide assistance in this endeavour. Technical cooperation can also be used to assist with monitoring and implementation of the programmes once they are designed.

The final reason and most compelling reason in favour of the industry targeting strategy and perhaps the most compelling, is that this process is already being undertaken in the sub-region albeit on an ad-hoc basis. Consequently, from the BVI in the north to Grenada in the



south, almost all OECS territories now have a list of priority crops/livestock. The proposed industry targeting strategy therefore places this process of prioritization within the general framework of competitiveness and programmatic support and leads it to the provision of economic incentives. In addition the process of industry targeting is intended to be dynamic, changing with the competitive strengths of the OECS agri-food sector. The final advantage of this strategy is that it is completely transparent, therefore at any point in time the government's support programme will be clear, making it amenable to examination and if necessary, revision.

Under a programme of industry targeting, a basis for the identification of specific downstream supplier industries can be established as a means of providing support to the targeted industry. For the agri-food sector support to packaging and fertilizer suppliers continues to be critical. So too is the aforementioned support for the provision of adequate financing facilities. The fact that many of these services cannot reasonably be provided on a cost-effective basis by individual countries underscores the need for a sub-regional strategy in their provision. In this regard the case of the packaging industry, which is operating with substantial excess capacity, is illustrative of this point. The ever changing requirements for packaging and labelling on international markets and the highly specific nature of the packaging required by various markets, would appear to constitute a fairly good basis for supporting a sub-regional packaging firm.²⁹ A similar argument for a sub-regional approach in the provision of information systems oriented to the key actors in the agri-food sector can also be made.

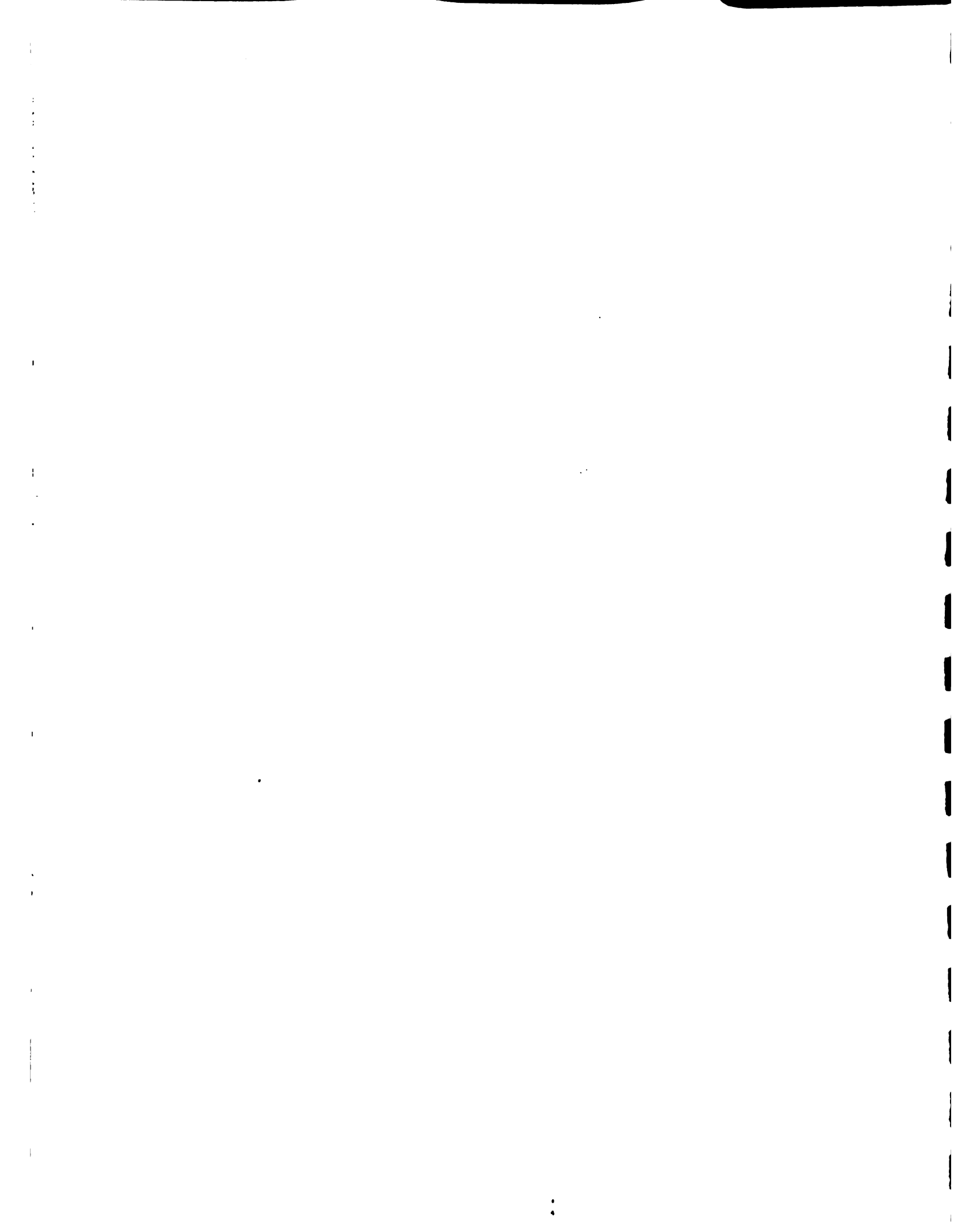
Towards an Alternative Regime of Incentives for the OECS Agri-Food Sector

Perhaps the first issue that should be clarified in proposing a package of incentives for the agri-food sector in the OECS is that the results of this study suggest that OECS Governments should not increase the level of expenditure on programmes geared at subsidizing inputs, or providing inputs free of cost to the agri-food sector. If anything, the indications are that these

²⁹ The fairly small margins which are made on packaging and the fact that economies of scale are critical in achieving cost reductions also suggest that sub-regional support for one packaging provider might be a good strategy for pursuit by OECS countries.

policies, instituted over the last two decades have not worked well, with the exception of the banana industry in the Windward Islands, and should therefore be discontinued. Instead, the results of this study support the development of programmes which are intended to overcome the dis-incentives created by the anti-agriculture and anti-export biases induced by policy interventions in other sectors of the economy and resulting from market failures, missing markets as well as from other macro-economic policy distortions.

In addition, because these same factors have had a differential impact on the agri-food sector across OECS countries, developing "harmonized" policies for all these countries is neither prudent nor is it advisable given their varying supply capacities and competitive advantages. The results of this study suggest instead, a "harmonized policy orientation" centered around competitiveness and efficiency, as an alternative sub-regional strategy. Consequently, while technically economic incentive measures could have the same effect across countries, they most probably will not, since different OECS countries are expected to emphasize different commodities within the context of the sub-regional strategy proposed.

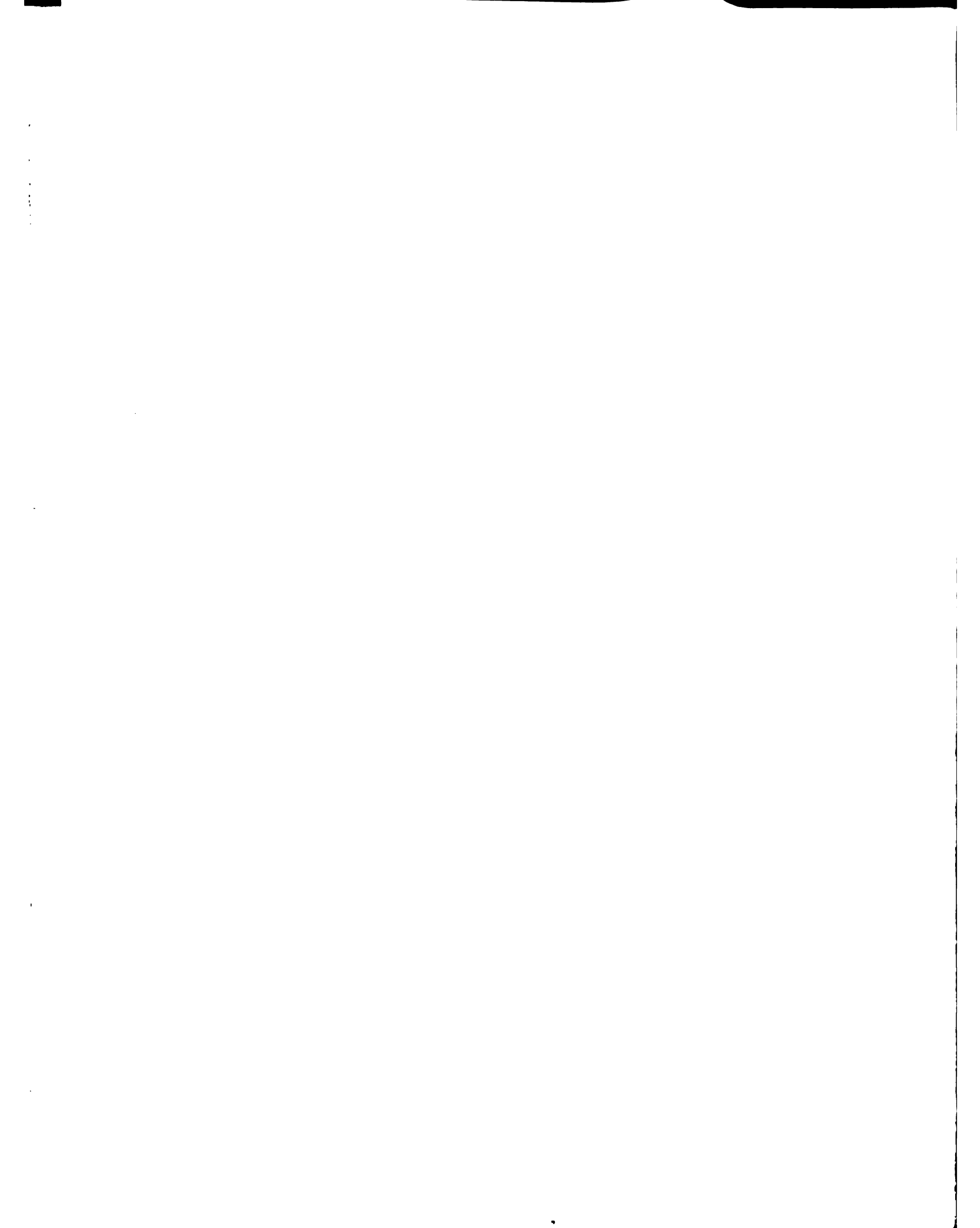


CHAPTER 6

RECOMMENDATIONS

Based on the results of this study the following reforms to the existing regime of incentives are supported for the OECS countries:

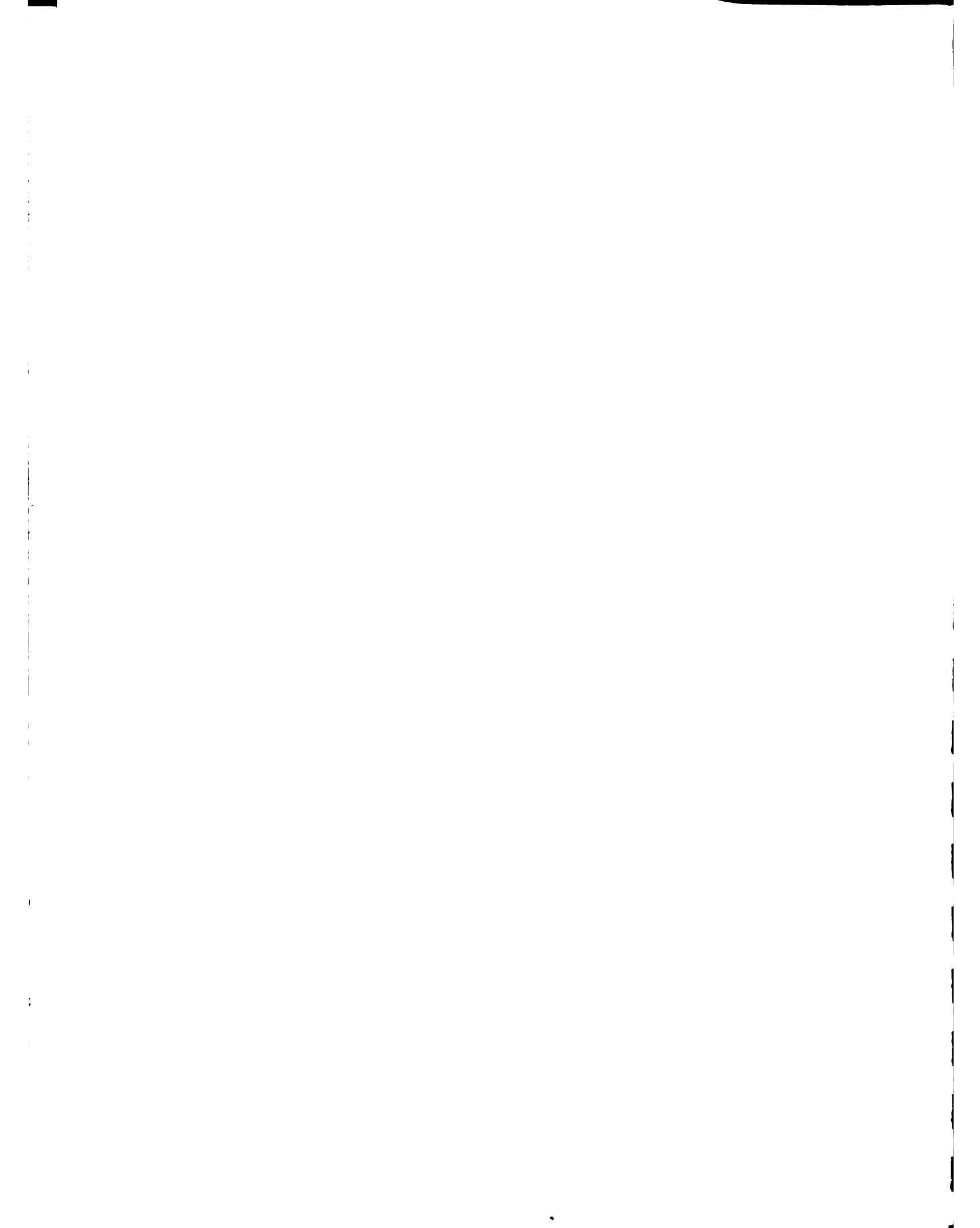
- (i) **Pursuit of Stable Macro-Economic Policies:** since for instance fiscal deficits can contribute to overvaluation of the real effective exchange rate, which adversely affects exports and discourages investment;
- (ii) **Industry Targeting:** in the implementation of a program of incentives, the focus should be placed on a relatively small number of commodities. While the commodities to be promoted will have to be determined, relevant criteria could include contributions to net foreign exchange earnings and to domestic/regional consumption. Non-traditional agricultural produce should be emphasized along with agro-processing. The reasons for this include the prevailing bias in resource use toward the traditional sector (bananas and sugar and manufacturing); the secular decline in the traditional export commodity markets; and the potential of the non-traditional agri-food sector for generating greater linkages within the national/regional economy. Focussing on a small number of commodities could serve to minimize the adverse economic implications of interventions in the macro-economy and would facilitate the achievement of economies of scale in resource use by concentrating the use of scarce resources on fewer initiatives. Potentially, this approach could also lead to greater sector-specific benefits.
- (iii) **Provision of Facilities for Long-Term Development Financing:** the importance of developing facilities for the provision of preferential access to long-term financing in the agri-food sector has already been outlined. This will continue to be an important instrument of industry promotion within the framework of the industry targeting strategy proposed. While the details of the proposed



arrangement or series of arrangements will need to be determined, every effort should be made to support the initiatives planned through organizations such as the ECCB. In addition, there remains the need for closer institutional collaboration in developing the mechanisms needed for proper implementation of the ECCB facility, in whatever form these facilities may take. An important element of the new financing facilities will be the charging of market rates of interest. On the basis of empirical data the findings of this study suggest that among OECS countries, the assumptions that rural people are unable to save and that rural financial liquidity is negligible is difficult to support.

- (iv) **Establishment of an Export Credit Insurance Scheme:** the development of an export credit insurance programme should be considered as an integral part of the industry targeting and export expansion process. Efforts to develop this facility should be pursued simultaneously with efforts to develop the above mentioned long-term financing facilities.
- (v) **Tax Rebates/Credits:** direct taxation of agricultural land and agricultural income, particularly in the non-traditional sector should be reduced and possibly eliminated. Instead prohibitive taxes should be applied on agricultural land not deployed for agricultural production purposes. The means of taxation should shift to indirect taxes. In this way, the dis-incentive effect of non-traditional agricultural production is avoided while at the same time OECS Governments would find it relatively easy to collect tax revenue.

To the extent that taxes are levied on the income of an agricultural enterprise, a progressive tax policy should be implemented. The aim should be to encourage investors in agriculture and agro-industry to re-invest and grow and to strive for greater efficiency. Overall tax levels on income earned from the agri-food sector should be taxed at a lower level than income derived from other economic activity. It is expected that the actual rate of taxation charged will vary among individual OECS countries.

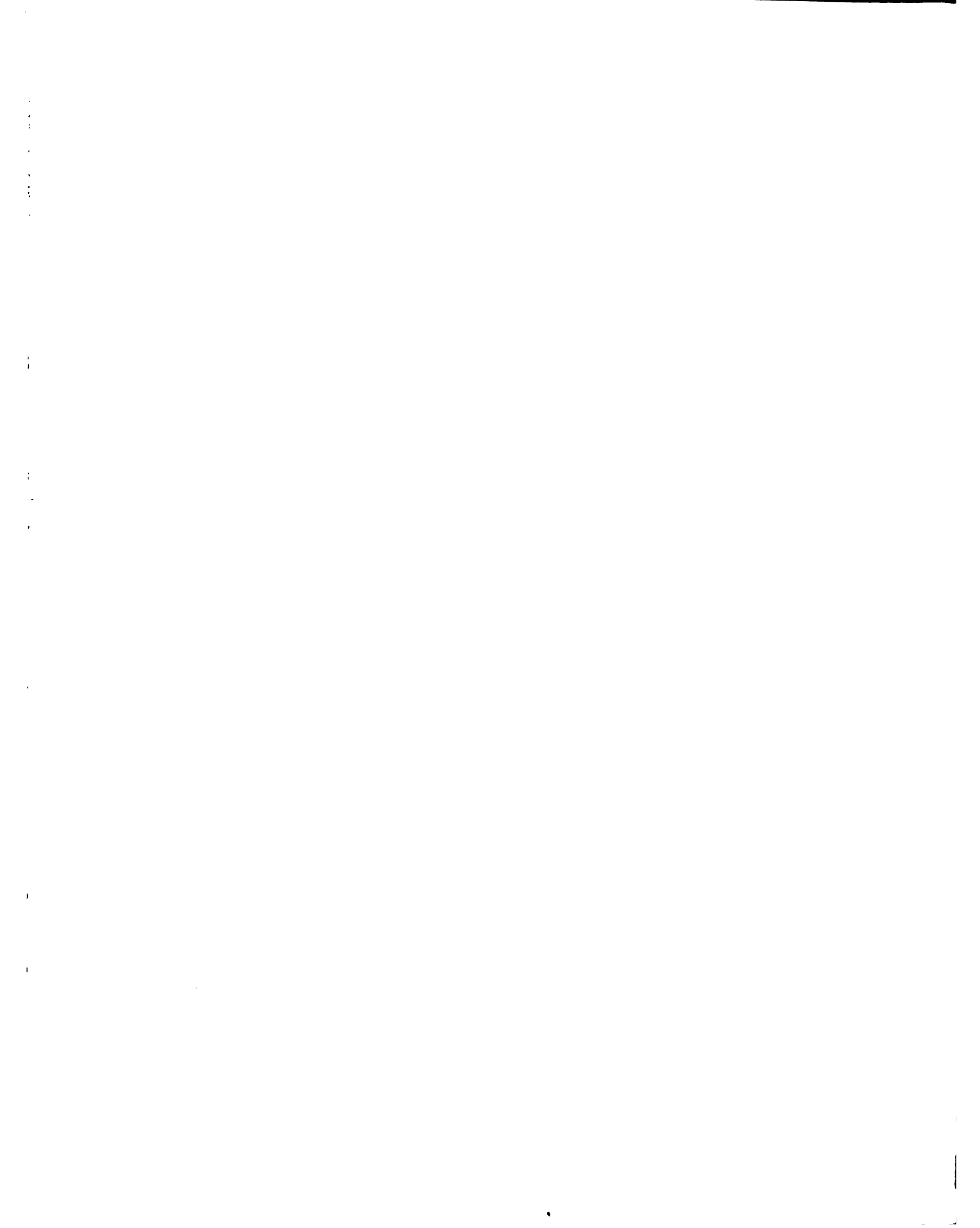


(vi) Establishment of Calibrated Timetables for the Reduction of Support to Enterprises Linked to Strict Export Performance Criteria.

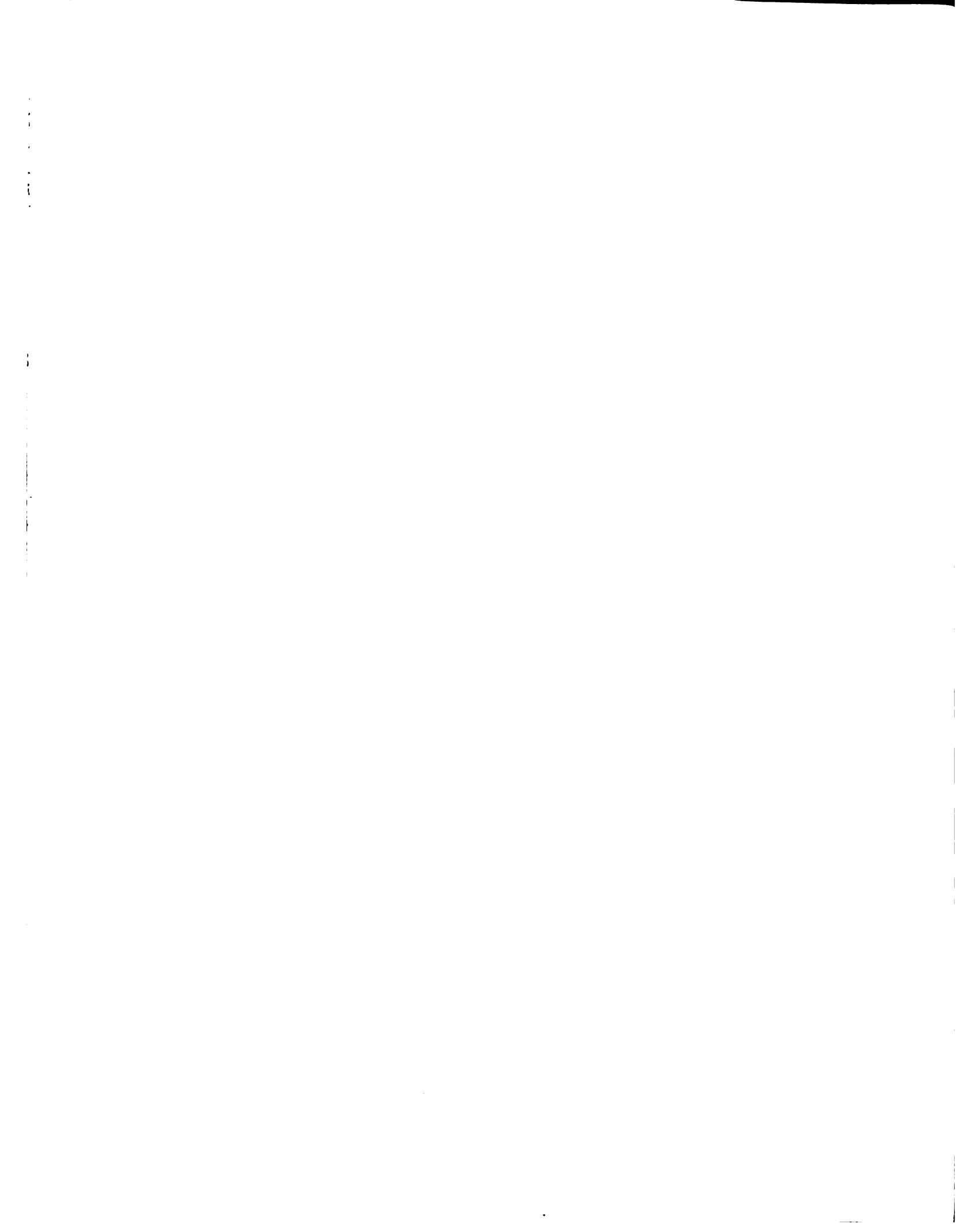
(vii) Research and Development and Technology Transfer: the dominance of small farmers in the agri-food sector of OECS countries, dictates that research and development functions will have to be provided by regional governments for some time, since typically these small farmers do not possess the capacity or the resources to undertake the required research, development or extension activities. While the efforts of regional and international institutions can assist in the provision of these R&D and E services, there remains a need for greater coordination, rationalization and efficiency of resource use in the conduct and delivery of these services. Added to this is the need to encourage, perhaps through the use of incentives, an increased rate of technological adoption among farmers. It is also necessary to ensure better transmission of new technologies to the agri-food producing sector, since there exists a noticeable gap between the confidence of policy makers and that of the farming community regarding the efficacy of new technologies.

One means of bridging this gap is to establish a research fund administered by farmers which will assist in the financing of research and development. The producers of non-traditional commodities, agri-business firms should also be represented on the boards of the farmers' research fund as well as on the boards of other relevant research and development institutions. By so doing it is hoped that a greater degree of accountability to the farming community will be instilled among research institutions and consequently, efforts to ensure the adoption of technology will be made relatively easy.

(viii) Predetermined Timetables for Exposing Domestic Firms to Foreign Competition;



- (ix) Total Duty Free Sourcing of Production and Intermediate Inputs for Agriculture and Agro-processing (including machinery, equipment and vehicles);**
- (x) Post-factor Monitoring of Compliance with Export Targets for Firms Benefitting from Concessions and the Imposition of Penalties for Non-Compliance;**
- (xi) Encouragement of Competition in Domestic Markets by the Elimination with immediate effect of all Service Charges, Licenses and other Non-Tariff Barriers to Intra-OECS Agri-Food Trade;**
- (xii) Institution of a Programme of Tax Credits or Rebates for HRD Activities and R&D Activities financed by Agri-food Enterprises;**
- (xiii) Increased Monitoring of the Fulfillment of Incentives as well as the Domestic Resource Cost of Providing Export Incentives Based on which Existing Support Schemes may be Revised to Improve their Impact;**
- (xiv) Revisiting the Basis on which Tax Concessions are Granted, since by and large the findings of this Study do not suggest that Tax Concessions have been Effective in Expanding Exports;**
- (xv) Provision of Secure Land Tenure Arrangements: the provision of more secure land tenure arrangements, which encourages the adoption of innovations and investment in land improvements, together with an increased supply of land to the small farm sector should provide a major impetus to increased agricultural production. This should be a pivotal element in any agricultural incentive package.**



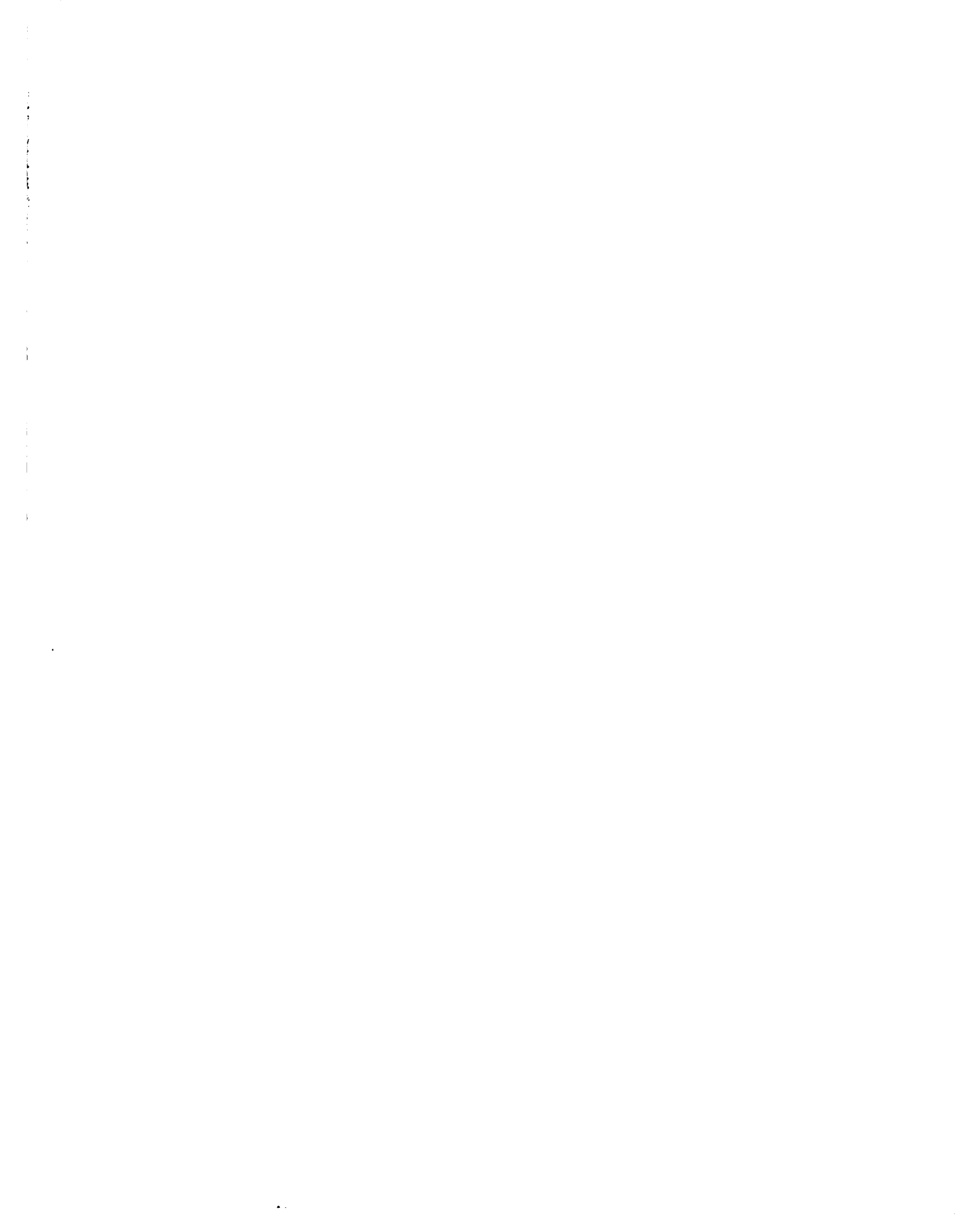
Increased land availability would also help to alleviate some of the other constraints to domestic food production, e.g: credit. On the demand side, since land is an important factor influencing income distribution, land redistribution would be likely to have a positive impact on food demand.

- (xvi) **Need for Technical Monitoring Committee:** OECS countries will have to evaluate on an on-going basis, the benefits and costs of the economic incentive measures afforded to the agri-food sector. The task should be performed by a technical group, sufficiently broad to be sensitive to the various interest groups. The technical group should be sufficiently independent to allow critical and objective analysis of the impact of economic incentives on various economic targets (investment, exports), the feedback from which will assist in the future design of both macro-economic and sectoral policy.

Compatibility with CARICOM Agenda.

The OECS countries with the exception of Montserrat and the BVI have agreed to the implementation of a Common External Tariff as part of their common protective policy toward third countries (see Article 34 of the Treaty of Chaguaramas). Arising out of the Nassau Accord, CARICOM countries have committed themselves to replacing quantitative restriction with tariffs, as the principle trade policy instrument. The decision to eliminate quantitative restrictions was in some respects overturned during deliberation on implementation of the CET, as the CARICOM Council deemed it permissible for individual member countries to implement such quantitative restrictions as might be required to effect high effective protection, thus providing further protection for regional production.

The results of this study indicate that the effective rates of protection were fairly high and non-uniform across industries. The fact that non-tariff barriers have contributed to this (indicated by the high tariff equivalents), suggests that tariff reductions may only be of limited success in reducing inefficiencies in the agri-food sector. This implies that while implementation of a harmonized tariff remains critical to deepening the regional integration process, several other



actions will be necessary "to support the development of internationally competitive production in the Common Market" (Caribbean Affairs, vol. 4., no. 3., (1991) pp.74). In this regard, the importance of factors such as the provision of long-term financing has already been highlighted.

Compliance with GATT Rules

With the completion of the Uruguay Round of GATT, it is critical that the relationship between domestic and international trade policies be recognized when suggesting policy reforms for the agri-food sector. The various recommendations proffered in this study are permissible under GATT, since they are covered under the "Green Policy" category of the Agreement. The areas for which reform is contemplated are therefore non-trade-distorting and will be financed through taxpayer-funded government programmes.

Import Liberalization and Economic Incentives

There exists a considerable amount of interest regarding the impact of the global trend toward import liberalization in developing countries, particularly so, in countries under World Bank and Monetary Fund programmes. Import liberalization usually accompanies structural adjustment programmes and is aimed at reform in the individual countries themselves. Since however, the major component of the protection (support) to the OECS agri-food sector is provided through border measures, import liberalization is closely related to the provision of economic incentive measures in OECS countries. The positive impact which import liberalization has had on investment, economic growth and industry competitiveness in implementing countries suggest that the process of adopting reforms should be gradual, since these reforms have often been associated with reductions in export market shares of these same countries.

For this reason, several OECS economies which are major agricultural producers are likely over the next several years to suffer an erosion in the trade advantage which they hold with several trading partners, if measures to force the pace of adjustment and reform are not devised. By being tardy in implementing the necessary reform measures, these countries are limiting the likelihood that they will benefit from the opportunities which emerge both regionally



and extra-regionally. While extreme caution must be exercised regarding conclusions about the impact of import liberalization on the agri-food sector based on the micro-economic results of this study (which in most cases accounts for only 10-20% of agricultural production in the Windwards and for between 30-70%), a few conclusions arising from the results can be safely rendered.

Establishing a reasonable time-table for the removal of non-quantitative restrictions on agricultural imports, particularly in view of recent initiatives in this direction being contemplated in Trinidad and Tobago, Jamaica and Barbados appears to be an option to which OECS countries should give serious consideration. Analysis undertaken in this study indicates that for several commodities, the impact of import liberalization will be negligible, however, for several more sensitive commodities slower liberalization schedules may be established to curtail the serious negative impacts which may arise.

While additional research will be required to determine the exact phase-out periods required for liberalization, on an industry basis, for several of the commodities examined the significance of the production and marketing inefficiencies suggest that tariff reduction alone may not be a sufficient stimulus to improve efficiency and competitiveness.

The results of this study which indicate problems in regard the supply capacity of the agri-food sector of many OECS economies, coupled with the findings of the recently concluded study on the Competitiveness of the Agricultural Sector in the OECS (Antoine and Taylor, 1993) which highlights poor institutional and infrastructural capabilities as additional constraints, are important since they suggest that as a consequence of these difficulties import liberalization will only be of limited success in sustaining economic growth among OECS economies.

Given these circumstances, an appropriate programme for sequencing import liberalization, would be best implemented along with the necessary support programmes aimed at overcoming the constraints mentioned. Simultaneous reductions being pursued in other sectors, particularly that of manufacturing will need to be incorporated in order to prevent the emergence of further anti-agricultural biases should also be undertaken. The importance of



commitments in this regard may prove more important than sector-specific factors in accounting for the performance of the agri-food sector. Conditioned on the narrow coverage of commodities, the results of the study suggest that import liberalization without the associated improvements in the areas identified as being critical to strengthening supply capabilities in the agri-food sector of OECS countries could have a devastating impact on several of the industries examined.



