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PRICE POLICY AND AGRICULTURAL
EXPORT PERFORMANCE IN JAMAICA

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ABSTRACT

Jamaica experienced one of the longest uninterrupted periods of negative growth among LDCs in the 1970s. Agricultural exports led this decline with an unusually poor growth performance, exacerbating foreign exchange shortages. Commodity board pricing policies played a strong role in penalizing these exports. Further, board policies appear to be inefficient in either maximizing profits or foreign exchange. Implicit and unstated objectives of board policies are discussed. Supply functions show that farmers do react positively to price changes, contrary to board assumptions. Beneficiaries of this penalizing price policy are identified and an important implication for foreign aid policy is underscored.

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PRICE POLICY AND AGRICULTURAL
EXPORT PERFORMANCE IN JAMAICA

Jamaica represents one of the most extreme development experiences among the lesser developed countries (LDCs) during the past twenty years. Following fairly respectable growth in gross domestic product (GDP) in the 1960's, the country registered growing balance of payments crises, increased inflation, and almost uninterrupted negative rates of growth from 1973 to 1980. Within this scenario the performance of the agricultural sector played an important role. This article is concerned with documenting and evaluating that experience with respect to the treatment and performance of agricultural export activities.^{1/} In particular, we investigate the influence of the major commodity boards' policies on agricultural export production. It is our contention that prices make a difference and failure to recognize this proviso has led to counterproductive policies by the commodity boards with negative consequences for the country's export performance. We also attempt to explain the rationale behind the observed price policies of the boards and determine the beneficiaries of these policies.^{2/}

In the first section of the paper we discuss both the stated and the implicit goals of the commodity boards in Jamaica. Next, trends in economic growth, export output and pricing patterns for selected export crops are presented. We then analyze these trends and the use of price policy to meet stated and/or implicit goals. In so doing we undertake the measurement of nominal protection coefficients for export crops to establish the relative degree of implicit taxation or subsidization; analyze variations in F.O.B. and farmgate prices; estimate the supply

response of selected export crops; and, draw out the implications of these findings for price policies and for foreign aid development strategies in our conclusions.

1. EXPORT CROP PRICING POLICY

Government controlled marketing boards are set up for a variety of reasons: price stability, revenue collection (through explicit taxes) and the maximization of foreign exchange earnings.^{3/} In Jamaica, export crop marketing boards are statutory bodies under the control and supervision of the Ministry of Agriculture. The board membership is a mix of growers and appointed officials. The main responsibilities of these boards are to promote the development of their respective export crops and engage in orderly marketing of the crop.

The boards also are expected to promote price stability and maximize foreign exchange earnings. However, given the important role of private growers as key members of the boards' directorates, it is likely that the boards have other interests or objectives. For example, the board may maximize profits from its selling and buying operations. However these profits are then used to increase board member salaries, to grant concessionary priced loans for privileged growers (i.e., board directorate members), and to finance board owned plantations at the expense of individual farmers. Not surprisingly, these other objectives are rarely explicitly spelled out in board documents, however, the authors sensed the implicit importance of some of these objectives through extensive personal interviews of board officials and sporadic data reported in the annual reports, such as directorate salaries, loan activities and board resources directed to board-run plantations. This

latter activity is an interesting issue. The coffee and cocoa boards argue that they can grow these crops more efficiently in a plantation context than can many small farmers on private plots. This is still open to discussion, however, it is clear that the penalizing price policies (board farmgate purchases at low prices and F.O.B. sales at much higher prices) and resource transfers (from the numerous small farmers to service the board plantations) are clearly not in the short-run interests of the majority of the growers.

Thus pricing policy becomes an important *modus operandi* in achieving various board objectives. For example, if the board wishes to maximize foreign exchange and promote the industry, then the price received at the farm level should be the world price received by the board minus the costs of processing. But, if the board wishes to maximize its profits, then the price set is determined by the following formulation:

The profit equation for the board is:

$$(1) \quad \pi = (P_W \cdot S_E) - (P_F \cdot S_E) - (C \cdot S_E)$$

where P_W is the world price; P_F is the farmgate price; π is board profits; C is the cost of processing; and S_E is the quantity of the export crop supplied (S_E is a function of P_F).

The first order condition is:

$$(2) \quad \frac{\partial \pi}{\partial S_E} = P_W - C - P_F (1 + 1/n) = 0$$

where n is the price elasticity of supply of the export crops.

The price to the farmer is then:

$$(3) \quad P_F = \frac{P_W - C}{(1 + 1/n)}$$

Farmers are then subject to some price discrimination if supply is not perfectly elastic ($n = \infty$). That is, farmers receive a price less than the F.O.B. price minus the cost of processing. Monopsony power of the board then determines both the equilibrium price and the quantity of the export crop. This policy also reduces the potential benefits to society, as less foreign exchange is then earned and available for imports. Furthermore, income distribution may be worsened as only a select few benefit from the revenue collected by the board, and not society as a whole as in the case of a general government tax policy, since board members will use the revenue for their own purposes and not general fiscal programs.

2. JAMAICAN ECONOMIC GROWTH

In Table 1 the sharp shift in growth performance in Jamaica from the 1960's to the 1970's is underscored. Associated with this overall decline in GDP was a steady decline in agricultural growth from the early 1960's onwards (column 5) and, more to our interest here, a rapid decline in export agriculture from the late sixties onwards (column 6).^{4/} Since this data is based on five year moving averages it hides the fact that the period from 1978 through 1980 was also made up of consecutive years of negative growth in agricultural exports.

In Table 2 we present the historical growth rates for output, F.O.B. prices and farmgate prices for the principal export crops in Jamaica.^{5/} Except for coffee (where modest growth occurred), all crops recorded significant declines in the 1970's (Table 2, Panel A). However, it should be pointed out that these output and farmgate price figures are only recording actions by the commodity boards purchasing

Table 1. Real Rates of Growth of the Economy, the Nonagricultural Sector, the Manufacturing Sector, the Mining Sector and the Agricultural Sector in Jamaica, 1961-1979^{a/}

Period ^{b/}	National	Non-Agr.	Manufacturing	Mining	Agr.	Export	Domestic	Livestock
	GDP	GDP	GDP	GDP	GDP	Agr.	Foodcrop	
	(1)	(2)	(3)	(4)	(5)	GDP	GDP	(8)
1962-1967	5.44	5.62	6.10	5.77	2.13	1.19	1.56	6.71
1967-1972	6.28	6.87	4.67	13.30	1.92	-3.14	6.78	0.39
1972-1979	-1.51	-1.67	-2.67	-1.05	1.12	-4.20	3.21	1.96
1961-1979	2.81	3.08	2.28	5.26	1.70	-2.11	3.54	3.03

^{a/} Average annual compounded real rate of growth.

^{b/} Based on 5 year moving averages, for beginning and end points for the years indicated in the table.

Source: National Income and Product Accounts, Department of Statistics, Jamaica, various years.

Table 2. Growth Rates of Output, F.O.B. Prices and Farmgate Prices for Selected Export Crops in Jamaica, 1962-1978.

Panel A. Growth Rates of Output ^{a/} , ^{b/}						
Period	Sugar Cane (1)	Banana (2)	Coconut (3)	Cocoa (4)	Coffee (5)	Citrus (6)
1962-1970	-0.65	-10.3 ^{c/}	0.74	-4.20	0.59	-1.49
1970-1978	-2.90	7.43	-21.0	-0.54	2.02	-5.92

Panel B. Growth Rates of F.O.B. Prices ^{a/}						
Period	Sugar Cane (1)	Banana (2)	Coconut (3)	Cocoa (4)	Coffee (5)	Citrus (6)
1962-1970	-2.75	0.06 ^{c/}	--	- 2.80	3.09	n.a.
1970-1978	4.13	7.77	4.67	14.06	8.34	n.a.

Panel C. Growth Rates of Farmgate Prices ^{a/} , ^{d/}						
Period	Sugar Cane (1)	Banana (2)	Coconut (3)	Cocoa (4)	Coffee (5)	Citrus (6)
1962-70	-5.09	-0.70 ^{c/}	-3.02	-2.51	-0.12	-3.80
1970-1978	-1.25	5.06	7.06	1.64	9.80	-4.07

^{a/} Growth rates are expressed as average annual compounded growth based on three year moving averages.

^{b/} For sugar cane, coffee and cocoa, those figures represent the output of these crops. For coconut, banana and citrus, these figures refer to the output supplied to the board, not actual production.

^{c/} For bananas, the period is 1965-1970.

^{d/} The farmgate price refers to the price offered by the Boards, not the domestic market price.

Source: Annual reports of the Commodity Boards, various years.

these crops for export. Therefore the decline in export sales recorded for bananas, coconuts and citrus are not reflecting a true decline in domestic production, but rather the diversion of local output by farmers to local processing and domestic product markets rather than to exports through the boards. For cocoa, coffee and sugar, however, the figures in Panel A of Table 2 do represent changes in production as the boards are the only marketing channel for both domestic and export sales.

These developments are generally acknowledged in Jamaica. For example, bananas are increasingly used as a form of starch in low income diets in the face of food shortages. This was especially true for the late 1970s. However, Jamaica's foreign exchange constraint was somewhat relaxed in 1981 which led to increased food imports and the apparent demise of the local banana market. The collapse of the local banana market has led to an increase in bananas delivered to the board, but a high rejection rate of this fruit has also occurred since much local output is not fit for the English market (i.e. the principal export market for bananas).

Another example of this diversion of sales to local markets is coconuts. The board price paid to farmers, though recording a positive rate of growth in the 1970's (7.06 percent per year in Table 2, Panel C), was clearly inferior to the informal local market non-board price. Otherwise there would not have been such a precipitous decline in board purchases of coconuts (21.0 percent per year in Table 2, Panel A) in the 1970's. It has been estimated that the Coconut Board only buys ten percent of the total production of coconuts today whereas in the late 1960's they purchased close to ninety percent. Thus there has been a

rapid growth in rudimentary "backyard" private coconut processing facilities preparing admittedly less pure cooking oil and other products but servicing a growing demand enabling these backyard producers to pay coconut farmers prices higher than board prices. Curiously the board has resorted to importing copra (which has varied from 100 to 149 percent of local production in the mid to late 1970s) and purchasing locally produced soybean oil (made from soybean imports) to replace declining local coconut deliveries since they refuse to raise their prices to match the non-board local price.^{6/} True, the board faces price controls on the final products it sells (e.g. cooking oil, soaps, detergents) which compromises its ability to increase prices to farmers, but only a few consumers in higher income supermarkets are able to buy these coconut products at the controlled prices so that the beneficiaries are limited compared to the number of producers.

As is illustrated in Table 2, Panels B and C, for most of the traditional export crops farmgate price increases have been substantially less than the F.O.B. prices. This indicates that the commodity boards have not been passing on world price increases to their local producers in both the 1960's and 1970's. This point will be more fully explored below.

This poor agricultural export performance in Jamaica from the late 1960's onwards contrasts to the generally positive growth record recorded by most other Latin American countries' export sectors. Domestic food crops (and peasant producers) invariably experienced declines in output and acreage in most Latin American countries through the encroachment of expanding export crops, promoted to maximize foreign

exchange earnings.^{7/} Jamaica is an exception to this pattern. As seen in Table 1, domestic foodstuffs expanded in the 1970's while agricultural exports declined. This performance apparently was not due to deteriorating world price trends experienced by Jamaicans for their export crops. Rather it was in large part due to foreign exchange shortages which led to food import restrictions, increased local prices of food and an increased supply of domestic food production.^{8/} Reinforcing this trend was the inefficiency associated with the pricing and marketing policies of the commodity boards themselves. We now turn to an analysis of these pricing policies.

3. ANALYSIS OF PRICE POLICY

(a) Price Variation

One objective frequently mentioned by these boards was their presumed role in stabilizing prices for local producers. As shown in Table 3, except for sugar cane, farmgate prices fluctuated more than F.O.B. prices as measured by the coefficient of variation. Hence, the boards have not stabilized the prices paid to farmers. When this result is combined with the fact that for many products such as sugar cane and cocoa F.O.B. prices were rising faster than farmgate prices, one can conclude that in all likelihood these boards generally did not pass on price increases, but did pass on price decreases to the farmers. Further, the banana, cocoa and coffee boards have set up price stabilization funds, but have never used the money from these funds to stabilize prices. The banana board used these funds to help cover increasing board costs and the coffee and cocoa boards have kept the funds in the

Table 3. Comparison of Price Variation Between Farmgate and F.O.B. Prices for Selected Export Crops in Jamaica, 1960-1979.^{a/}

	Sugar Cane	Banana	Coconut (Percent)	Cocoa	Coffee
F.O.B. Price	31.95	22.34	20.0	(12.0) ^{b/}	33.9
Farmgate Price	21.0	24.6	22.9	(23.8)	36.4

^{a/} Price variation is the coefficient of variation defined as the standard deviation of the selected price divided by the mean price.

^{b/} Number in parentheses is for the years 1960-1977.

Source: Derived from original data in Annual Reports of the Commodity Boards, various years.

form of time deposits in a local bank, rather than using them to stabilize prices^{9/}

(b) Implicit Taxation and Maximization of Foreign Exchange Earnings

The trends in farmgate (i.e. producer) and F.O.B. prices are highlighted more closely through the use of nominal protection coefficients (NPC's) in Table 4. The NPC is defined as the ratio of prices received by local producers to the F.O.B. prices received by the boards minus any processing and marketing costs^{10/} An NPC ratio greater than one indicates subsidization while a ratio less than one indicates that boards are taxing producers for the crop in question. The data indicate that sugar, bananas, cocoa and coffee farmers have been heavily taxed by board action in the 1970's (and the latter three in the 1960's as well). It was not possible due to data limitations to derive NPCs for coconuts and citrus, but a measure of the tax can be derived by comparing local and board prices. For both crops, local prices were approximately twice the board price. On average the rate of taxation (1-NPC) for all export crops has ranged from 11 to 50 percent in the 1970's.

At the same time that individual commodity boards were taxing producers through their pricing policies, an increasingly overvalued exchange rate (Column 5 of Table 4) was introducing an additional implicit tax on exporters by the late 1970's. When one combines the implicit taxation from both sources producers were experiencing a heavy burden from the mid-1970's onwards. This combined taxation (assuming an average overvaluation of 10 percent) has averaged from 21 to 60 percent for the crops in question in the 1970's. Hence, the boards have not followed a policy of maximizing foreign exchange earnings (which would

Table 4. Average Nominal Protection Coefficients for Selected Export Crops and Effective Exchange Rate in Jamaica for Selected Time Periods.^{a/}

Period	Sugar Cane	Bananas	Cocoa	Coffee	Average Effective Exchange Rate (\$J/1US) ^{d/}
1960-1964	1.12	0.68 ^{b/}	n.a.	0.75	1.76
1965-1969	1.03	0.80	0.84	0.78	1.56
1970-1974	0.89	0.84	0.79	0.54	1.20
1975-1979	0.77	0.50 ^{c/}	0.55	0.68	0.74

^{a/} The NPC is defined as the ratio of the farmgate price to the F.O.B. price received in Jamaica minus marketing and processing costs:

$$NPC = P_F / (P_W - C).$$

^{b/} Only the year 1964.

^{c/} Only the year 1975.

^{d/} The nominal exchange rate deflated by the implicit GDP deflator, base year 1974.

Source: Annual Reports of the Commodity Boards, various years.

imply an NPC equal to one). It is instructive to explore the factors accounting for this heavy taxation of export crops in Jamaica.

(c) Price Responsiveness and Monopsony Pricing

A common justification for this implicit taxation is the frequently stated belief by board officials that farmers are unresponsive to prices. Hence boards are allegedly in a position to exploit this taxing power without any effect on output. To test this hypothesis, supply functions for the main export crops were estimated. For cocoa, coffee and sugar, the supply function can be viewed as the output supply function. For coconuts, bananas and citrus, the function estimated is an "export sales" function. This sales function should include the non-board price, but such a series is not available for any of the three crops. The arithmetic form of the supply function is as follows:

$$(4) \quad Q_t = a_0 + a_1 P_{t-1} + \varepsilon_t$$

where Q_t is the quantity supplied to the board; P_{t-1} is the real farm level price (nominal price deflated by the GDP deflator) offered by the board lagged one year (except for sugar where price is lagged two time periods) and ε is the error term. The use of the GDP deflator is to capture price changes of all other sectors in the economy. All "supply" elasticities, which are calculated at the point of means, are shown in Table 5 and are significant at the 5 percent level. Moreover, real prices explain over 50 percent of the variation in output for cocoa, coffee, sugar and citrus. These findings highlight the fact that, contrary to board assumptions, farmers are indeed responsive to price changes.

Table 5. Estimates of "Supply" Elasticities for Selected Export Crops for Selected Periods in Jamaica^{a/}

A. Period -- 1961-1970						
Variable	Sugar Cane	Coconut	Coffee	Cocoa	Citrus	
Constant	1181524 (172967.5) ^{b/}	864710.9 (202518.6)	-28095.1 (224504.3)	92410.4 (43079.38)	61.49 (21.87)	
Price	657.47 (122.09)	77.31 (423.59)	569.76 (492.26)	157.34 (61.94)	.601 (.186)	
R ²	.7838**	.0047	.16	.45**	.60**	
F-Statistic	32.62	.04	1.52	7.36	12.0	
D-W	2.27	1.53	3.01	2.27	2.10	
Short Run Elasticity	.43	n.s.	1.12	.54	.49	
B. Period -- 1971-1979						
Variable	Sugar Cane	Bananas	Coconut	Coffee	Cocoa	Citrus
Constant	1215349.1 (114101.5)	121313 (36611)	1352326 (321556.3)	197574.6 (86639.3)	38878.9 (56624.0)	36.48 (30.74)
Price	634.23 (85.88)	-46.12 (51.08)	-1765.3 (614.6)	126.72 (106.10)	253.25 (106.10)	.675 (.373)
R ²	.8197**	.10	.541	.45**	.45**	.32**
F-Statistic	59.19	.93	9.43	7.36	7.36	3.76
D-W	1.90	.59	1.60	2.07	2.07	2.05
Short Run Elasticity	.403	n.s.	n.s.	.56	.56	.60

^{a/} For bananas, coconuts and citrus, the supply elasticity measures the responsiveness of farmers in supplying their crops to the board vs. the local, domestic market.

^{b/} Number in parentheses is the standard error.

n.s. Not significant

* For sugar cane, the period is 1961-1974.

** Significant at the 5% level.

For example a 10 percent increase in sugar prices would have increased sugar output by 3.5 percent over the period 1961-79. In the case of coffee, cocoa and citrus these output responses are even higher (5 to 6 percent increases in output for a 10 percent price rise). The lack of a significant price response for bananas and an apparently illogical response for coconuts are easily explained. Both products have local markets separate from the commodity board market. Despite real price increases by these two boards, sales to these particular boards have been unresponsive or declining since producers have been selling to non-board local markets that offer prices higher than board prices.

The supply elasticities can also be used to examine if the boards are engaging in monopsony pricing. This is done by manipulating equation (3). It can be seen that $1/(1+n)$ is equal to the NPC $[P_F/(P_W-C)]$ and this result is used to derive the NPC that would have been observed if monopsony pricing has been employed by the boards. These results are presented in Table 6. The pricing behavior of the coffee board during the 1960's comes the closest to following a monopsony pricing pattern. For all other crops (for all periods) we reject the hypothesis that the boards set prices to maximize profits, as the actual NPC is at least twice the derived monopsony NPC.

This rejection of monopsony pricing behavior by the boards implies that board price policy does not fulfill stated or implicit objectives. What criteria, then, determines prices set by the Boards? First, the Boards may not have been forecasting the world market price accurately and the prices paid to farmers reflect these miscalculations. This answer implies long term Board incompetence which does not seem

Table 6. Comparison of Actual and Monopsony Rates
of Nominal Protection

Crop	Period	Average Actual NPC	Monopsony NPC ^{a/}
Sugar	1960-1969	1.10	0.30
	1970-1979	0.83	0.30
Banana	1960-1969	0.78	n.e.
	1970-1979	0.78	n.e.
Coffee	1960-1969	0.77	0.53
	1970-1979	0.61	0.00
Cocoa	1960-1969	0.84	0.35
	1970-1979	0.62	0.32

^{a/} The monopsony NPC was calculated using the equation

$$NPC = 1/(1+n)$$
The estimates of n are from the estimates of
the supply elasticities from Table 5; n.e. is not estimated.

plausible given the accumulated knowledge of world markets by the Boards over time. A more logical explanation could be that the Boards attempt to maximize profits, but the "monopsony" price paid to farmers would be at a level that farmers would not tolerate. Thus, the price that is paid to farmers, neither maximizes the Boards' profits nor the amount of foreign exchange that could be earned. Furthermore, given the Boards' very likely attempt to meet multiple objectives discussed earlier, it is not surprising that no one single objective appears to have been fully met.

4. BENEFICIARIES OF PRICE POLICY

The beneficiaries of these price policies vary among the Boards. In the case of sugar, the revenue collected goes to the government owned sugar mills and local consumers through low, controlled prices. From 1972 to 1979, the government "forced" 25-30% of all sugar produced to be sold on the local market. In 1977 the subsidy amounted to \$J10.6 million dollars (in 1974 constant dollars).^{11/} For bananas, coconuts and citrus, the chief beneficiaries of price policy appear to be the larger farmers who control the industry through their board directorships. The benefits that accrue to these farmers appeared to be in the form of profits from the processing plants (and not their farm operations) in the case of coconuts and citrus, and cheap credit and input subsidies in the case of bananas. (For example, from 1973 to 1975, loans were made approximately totalling \$J4.7 million dollars in 1974 constant dollars) to 15 percent of the banana growers.^{12/} Further, urban consumers who can get coconut products at the controlled prices also benefit. In the case of coffee, local coffee processors have been

satisfied, at the expense of earning additional foreign exchange, since the price paid by processors has been less than the export F.O.B. price and approximately 40% of total sales has been to local firms.^{13/} This led to a subsidization of local processors by coffee farmers. Cocoa has imposed the lowest level of taxation of all the export industries, but has still reduced possible foreign exchange earnings. The benefits of this taxation have accrued to the Board which has used this money to establish its own cocoa plantations competing directly with cocoa farmers ^{14/}

5. CONCLUSIONS

The primary conclusions drawn from this analysis of the Jamaican export crop sector are two. First, export crop farmers have been implicitly taxed by the pricing system of the commodity boards. Second, contrary to the assumptions of board officials, export crop farmers do respond positively to prices. Estimates of nominal protection coefficients reveal that export crop farmers have been taxed an average of twenty to thirty percent in the 1970's. With the exception of sugar which was subsidized in the 1960's, other export crops were taxed at 1970 levels in the 1960's. The estimated supply response functions show that farmers do respond positively to prices. This is in sharp contrast to the statements of commodity board officials stating that farmers do not respond to prices with increased output thus offering farmers higher prices would be a wasted effort.

Furthermore, the Boards state that price stability is an important objective. However, the coefficient of variation for farmgate prices is higher than that for F.O.B. prices with the exception of sugar. Another

important objective of the Boards is the earning of foreign exchange. However, the implicit taxation of farmers by the Boards' pricing policies has seriously reduced the level of potential foreign exchange earnings and has contributed to the growing balance of payments problem in the mid to late 1970's.

Although the Boards have not set prices to maximize their own revenue, they have sacrificed foreign exchange earnings for Board profits. Thus the pricing policy of the Boards is inefficient both in terms of the maximization of their own profits and in the maximization of foreign exchange earnings. Moreover, the loss of foreign exchange earnings compromises Jamaica's capacity to import and impacts all groups in society. Finally, the Boards have not exercised the desired flexibility necessary to take advantage of favorable world market conditions. This appears to be a result of the Boards' desire to satisfy other interests than those mandated by its statutory authority.

The above conclusion also illustrates the danger of combining the prospects of substantial foreign aid capital transfers (such as with the current Caribbean Basin Initiative of the U.S. government) with inappropriate price policies that in effect work against effective maximization of foreign exchange earnings. In the end, without improved pricing policies, foreign capital transfers merely substitute for locally mobilized resources or potentially mobilizable foreign exchange earnings by facilitating the maintenance of inappropriate pricing policies and compromising the additional goal of resource mobilization strategies.

Footnotes

- 1/ The exact share of agricultural exports in total merchandise exports cannot be easily derived. The "true" total foreign earnings of Jamaica cannot be estimated due to the implicit pricing system of bauxite and alumina exports that arises from the vertically integrated nature of this industry. However, after subtracting out the somewhat artificially reported export value of bauxite and alumina, agricultural exports averaged 80 percent of the remaining merchandise exports over the 1960s and declined to an average of 66 percent over the late 1970s.
- 2/ Most studies of price policies document the implicit economic costs and benefits of such policies, but do not engage in exploration of the rationale behind these policies. Lewis, in an extensive search of the literature on price policy, states that economists are very good at documenting price distortions, but not the reasons behind them.
- 3/ For examples see: Hertford, Bovet and Unnevehr, Olayide, et al. and Brown.
- 4/ Over the decade of the 1970's agriculture accounted for approximately one-third of total employment. Also, the share of export agriculture of total agricultural GDP averaged 31 percent over the period 1962-1972, but declined to an average of 20 percent over the late 1970's.
- 5/ The traditional outlets for the two main export crops, sugar and bananas, are protected markets in the United Kingdom. Jamaica has a quota of 150,000 tons for bananas in the U.K. and receives a tariff preference over Latin American banana exports. For sugar, Jamaica has a quota of 135,000 tons in the EEC and a preference under the ACP agreement with the EEC. During the 1960's Jamaica's sugar quota was 235,000 tons with the United Kingdom, and 80,000 tons with the United States from 1960 until 1974 when the United States Sugar Agreement expired.
- 6/ In 1981 the coconut board increased its price paid to farms by 158 percent and the result was an increase in the non-board price to a level of 148 percent above the board price. Moreover, the board has been forced to buy soybean oil locally produced from soybean imports and has not been given foreign exchange to import coconut oil.
- 7/ See de Janvry.
- 8/ See Pollard and Graham.

- 9/ For a detailed breakdown of the use of these funds see: Annual Report of the Banana Board, Kingston, JA, 1967, p. 3 and 1979, Balance Sheet; Annual Reports of the Coffee Industry Board, Kingston, JA, 1960-1980, Balance Sheets; and Annual Reports of the Cocoa Industry Board, 1960-1980, Kingston, JA, Balance Sheets.
- 10/ For the use of nominal protection measures see the following references: Balassa, Bale and Lutz, Bovet and Unnevehr, and Reca.
- 11/ Annual Report of the Sugar Industry Authority, Kingston, JA, 1977, p. 11.
- 12/ Annual Reports of the Banana Board, Kingston, JA, 1975, p. 15; 1974, p. 15.
- 13/ Annual Reports of the Coffee Industry Board, Kingston, JA, 1978, p. 8; 1976, p. 7; 1970, p. 5; 1967, p. 6.
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