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## REFORM AND MODERNIZATION OF POST-COLONIAL AGRICULTURAL MARKETING SYSTEMS: AN ASSESSMENT OF THE JAMAICA AGRICULTURAL MARKETING DEVELOPMENT PROJECT

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### INTRODUCTION

Agriculture contributes to economic development by providing food for a growing population and by augmenting foreign exchange earnings. An expanding agriculture creates more employment and higher incomes, generating increased demand for non-agricultural products. The agricultural sectors in many post-colonial regimes have not performed at levels necessary to sustain general economic development. International agencies, along with national governments, have fashioned a variety of intervention programs. The majority of these have focused on production problems, particularly on production constraints such as credit, water, fertilizers, certified seeds, and other resource inputs. Programs have also been designed to reform outmoded land tenure patterns, as well as to extend technical knowledge to producers.

However, it is increasingly obvious that marketing is part of the problem and, equally, part of the solution. Thus, reform and development of marketing systems have become integral to programs aimed at agricultural development in Third World economies. A variety of approaches have been utilized in these efforts. This paper briefly discusses some of these reform alternatives, focusing in particular on the innovative Jamaica Agricultural Marketing Development project. Funded by USAID and the Government of Jamaica, the project's objective is to reform and develop the marketing system for domestic and non-traditional export food crops, generating potential benefits for producers, consumers and intermediaries. The performance of the project, itself, in meeting its objectives merits analysis since attempts are likely to be made to replicate it elsewhere.

### DEVELOPMENT OF DUALISTIC SYSTEMS

Food marketing in small scale, traditional societies is relatively uncomplicated. Production is closely related to consumption, in that consumption needs are satisfied largely from household production - purchases consisting mainly of a few scarce items. Rarely is there a problem of excess supply. Through experience, households are able to carefully project consumption needs and plan their production accordingly, making allowances for anticipated pre- and post-harvest losses. Production risks are mitigated by cropping patterns such as intercropping and serial-planting; and food

availability is further assured through elemental storage and food preservation methods.

Traditional subsistence economies have undergone large scale transformations over the last few centuries. Conquest and colonization have disrupted traditional patterns of land tenure, land use and consumption. Colonizers often expropriated lands with high productivity potential, appropriating the labour necessary to their cultivation. Production for profit gradually superseded production for subsistence, and exports of a few key cash crops linked colonial agriculture with metropolitan industrial economies. Demographic transformations occurred as townships developed around ports and transportation nodes linking the export crop with world markets. This urbanization fostered the development of a more heterogeneous population with increasingly differentiated sets of consumer tastes and preferences.

Colonial regimes tend to focus their administrative apparatus on maximizing earnings from a few key plantation crops leaving domestic food production largely in the hands of indigenous populations. Agricultural marketing thus develops in a dualistic framework. A modern, capital-intensive marketing structure for a few cash crops - cocoa, bananas, sugar, tea and coffee - coexists with a small scale semi-subsistence marketing system. With access to financing, modern technology and sophisticated management, the export sector is able to respond to increased demand in a dynamic way. On the other hand, inelastic supply schedules characterize the domestic food supply sector. Typical production constraints include access to credit, water shortages, risk averse behaviour, low productivity technologies and a highly fragmented marketing system that, of itself, constrains production. The increased food demand of the non-agricultural labour force is partially met by imports; a dependence on food imports is one of the characteristics of colonial and post-colonial societies.

The need for reform and development of these marketing systems derives essentially from two exigencies. Cyclical and secular decline in the terms of trade have undermined the abilities of these economies to sustain high and growing levels of food imports. Additionally, as the domestic food producing sector's output lags behind, food prices tend to increase. Sizeable increases create hardships and provoke unrest which may destabilize the political, social and economic climate. Thus, reform of food marketing systems has become a priority on the agendas of governments inclined towards modernization and economic development. As an FAO publication on marketing states:

"... an effective marketing sector does not merely link sellers and buyers and react to the current situation of supply and demand. It has a dynamic role in stimulating output and consumption, the essentials of economic development. On the one hand, it creates and activates new demands by improving and transforming farm products and by seeking and stimulating new customers and needs. On the other hand, it guides farmers to new production opportunities and encourages innovation and improvement in response to demand and prices ... It has been described as the most important multiplier of economic development."<sup>1</sup>

1. FAO, Marketing: A Dynamic Force in Agricultural Development. Rome, 1970, p.1.

## MARKETING FUNCTIONS OF COMPLEX MARKETING SYSTEMS

Effective marketing systems, facilitating the exchange of goods throughout the food chain, must perform a range of functions which assume greater significance as consumers and producers become increasingly separated in space and time. One set of functions has to do with price discovery. Others include assembling, sorting and grading, storing, processing, transporting and merchandising products. These functions become more important as the level of urbanization increases and as consumers become more differentiated in their tastes and preferences. The financing of these activities adds additional marketing costs to the food chain. Marketing systems need a flow of information between and among the various sets of decision-makers. Producers need timely and accurate assessments of demand. Information on market prices and volume, buttressed by Situation and Outlook reports, are the principal means through which market prospects are communicated to producers. Likewise intermediaries need information on consumer tastes and preferences.

Generally, market performance improves as the level of coordination between the various components of the system increases. Vertical coordination links the various stages in the production-distribution chain, while horizontal coordination links units within a given segment - for example, retailers or wholesalers. An ideal system is one in which all consumer needs are met at prices that cover factor costs. Markets are cleared, and there is neither excess supply nor excess demand. Market performance deviates from this ideal as the level of coordination decreases. An effective marketing system requires a critical mass of infrastructure consisting of physical facilities, an institutional framework and human resources.

## MODERNIZING AND REFORMING AGRICULTURAL MARKETING SYSTEMS

As indicated, marketing systems in a large number of Third World economies evidence low levels of vertical and horizontal coordination, and low rates of innovation. But while the marketing systems of the domestic food distribution sector remain relatively underdeveloped, those oriented to export crops are often quite effective. As Mittendorf points out:

"... the banana and fresh vegetable export marketing/production system (Central America, Kenya) ... is programmed ahead in detail by the exporter or importer according to expected market demand. Production/marketing operations are fully coordinated and programmed ahead with full consciousness of timing, cost and prices. There is complete awareness of all farm inputs needed to produce a high quality product at a specific time and at a sustained high level until it reaches the consumer."<sup>2</sup>

These export marketing systems provide for product differentiation, branding and sales promotion. Production and quality control are driven by carefully carried-out assessments of consumer

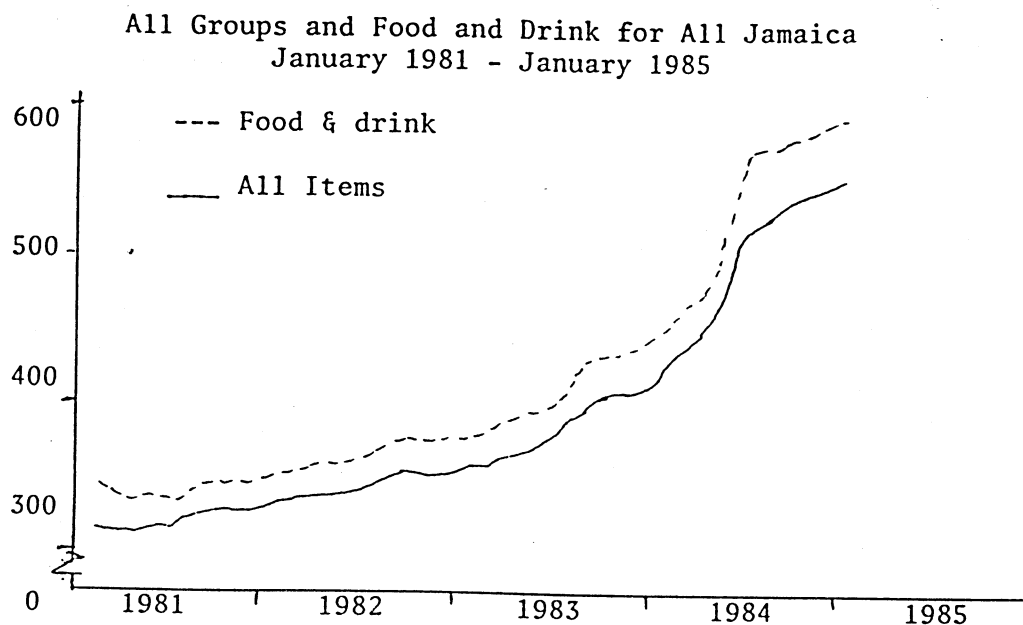
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<sup>2</sup> Hans Joachim Mittendorf: "Facilitating services for agricultural and food marketing in developing countries", In: Dov Izraeli, Dafna N. Izraeli and Frank Meissner (eds.) *Agricultural Marketing for Developing Countries*. New York: John Wiley & Sons, p.6.

demand. And an efficient food marketing chain involving wholesale-retail, distribution, storage, transport and assembly ensures that products reach the consumer on predictable schedules at price and quality levels that optimize revenues. This kind of meticulous coordination of marketing components typifies "contract growing" of perishable agricultural commodities where packing methods, storage time and refrigeration are key factors. Research into marketing methods and decisions on allocation of resources at each stage in the production/marketing process are controlled by the marketing enterprise itself. Such a system greatly enhances the orderly marketing of plantation crops. The fact that bananas, for example, enjoy the highest per capita consumption level of all fruits consumed in the US, is not only a testimony to the inherent characteristics of the fruit, but also to the vertical coordination and dynamism of the marketing system.

#### THE JAMAICA AGRICULTURAL MARKETING PROJECT

Jamaica's agricultural system has demonstrated a relative lack of dynamism in the domestic sector. Food imports account for half of food consumption, diverting foreign exchange from other critical needs. Additionally, rapid escalation of food prices has put a large number of households at nutritional risk. Figure 1 indicates that food prices have risen faster than most other commodities and services in the Consumer Price Index.

FIGURE 1: CONSUMER PRICE INDICES



Source: The Statistical Institute of Jamaica.

Export earnings from the agricultural sector have declined consistently over the last decade. In constant prices the value of agricultural exports declined by 32 per cent between 1974 and 1984, representing a loss of \$11,954,000. Jamaica's market share for bananas in the UK market declined from 22 per cent in 1979 to 8 per cent in 1983 and in recent years the country has not been able to meet its

sugar quotas, resorting to imports on occasion to avoid serious shortages.

Historically, much of the effort to improve the situation has been expended at the production level. More recently, however, attention has been focused on the marketing system which is increasingly perceived as a major constraint to the performance of the agricultural food system.

TABLE 1: Gross Agricultural Domestic Product at Constant Prices

1974-1984

Industry by Sub-Sectors	1974	1976	1978	1980	1982	1984
AGRICULTURE, FORESTRY & FISHING	154,046	157,718	177,956	152,644	143,765	169,611
Export Agriculture	36,479	36,184	33,297	24,609	24,407	24,525
Sugarcane	22,226	20,959	20,804	16,069	14,558	14,003
Other Main Exports	14,253	15,225	12,493	8,540	9,849	10,522
Domestic Agriculture	70,154	60,028	89,986	75,870	69,215	87,037
Root Crops	40,338	36,627	51,270	37,756	31,706	42,355
Other Primary products	29,816	31,401	38,716	38,114	37,509	44,682
Livestock & Hunting	37,161	42,799	45,073	43,460	41,279	47,343
Forestry & Logging	2,703	3,030	1,601	908	956	1,452
Fishing	7,549	7,677	7,999	7,797	7,908	9,254

Source: Statistical Institute of Jamaica: National Income and Product 1984.

#### THE NATURE OF THE PROBLEM

Parallel to the organizational limitations of the market system, the physical and structural characteristics of the production system constrain the performance of the food sector. Food production has traditionally been the responsibility of the small farm sector. More than 90 per cent of Jamaica's farms are less than 10 acres, occupying 25 percent of total farm acreage. Market - rather than subsistence-oriented - Jamaica's small farmers are perceived as typically "risk-averse", i.e. they adopt strategies to minimize risk which militate against efficient marketing. Production patterns emphasize multicropping and intercropping, "maximizing" the yield from small acreages. Some crops are stored in the ground or on the tree and reaped on an as-needed basis rather than at their optimum stages of maturity.

Although there are a number of different marketing channels, the predominant mode of small farmer marketing historically, has been via "higglers" - small retail and wholesale intermediaries whose numbers are estimated at around 20,000. Considering that there are approximately 100,000 small farmers in Jamaica, the number of higgles is substantial. Higgles sometimes operate as independent entrepreneurs, but equally often, they are wives or daughters of small farmers - essentially the marketing arm of the farm household.

Institutional channels for produce marketing have included the Agriculture Marketing Corporation - a state trading company,

supermarkets and parish markets. The AMC never became significant in terms of volume, handling only approximately 5 per cent of all marketed produce before its demise. Supermarkets and green grocers, catering to the middle classes, handle less than 10 per cent of marketed produce, the bulk of which moves through public parish and urban markets, facilitated by higglers who are thought to be responsible for 80 per cent of the output. Ninety-nine parish markets are dispersed throughout 26 parishes. At the centre of all marketing activity is Coronation market in Kingston - an old, congested, inefficient system that nonetheless accommodates and moves 50 per cent of the marketed produce.

One study has described Jamaica's food marketing structure as "... an atomistic market structure servicing an atomistic production sector [that] has resulted in a system that does not allow for growth and expansion in the agricultural sector, either the productive or marketing functions."<sup>3</sup> Some consequences of this food production - marketing structure are waste and spoilage on the farm, as well as intransit and in the market, high consumer prices, low farmgate prices, irregular supplies to urban consumers, and little or no segregation by quality.

At the production level, atomistic units cannot perform the functions of sorting and grading. Regional imbalances in supply and demand occur because of the fragmented and small scale nature of the intermediary sector and the low level of horizontal coordination. Weak vertical coordination is demonstrated by: a lack of current price information in different markets available on a current basis to growers and traders; production patterns dictated more by tradition than by changes in consumer demand; limited production planning information to growers; seasonal gluts and shortages with highly volatile prices; limited storage and preservation facilities; high post-harvest losses; and low volume sales and purchases at farm level. Credit for intermediaries is almost non-existent; and intermediaries, with little resources, purchase small amounts of farmers' crops per trip. Transportation poses a severe constraint for small farmers whose fields often lie two miles or more from a road system. Although there is virtually no product differentiation by grade, markups are seen as high, due to the low scale of operation. Markups from farm-to-retail are cited as evidence of inefficiency, and price variability in different markets are perceived as evidence of geographic immobility. These are illustrated in the following data.

It is important to note that these relationships between farmgate prices and retail prices are not atypical of produce marketing systems in general. In the U.S., for example, where a highly developed produce marketing system exists, farmgate prices represent only 28 per cent of retail prices. Thus, the data in Table 2 do not, in and of themselves, reflect inefficiencies.

#### OBJECTIVES OF MARKETING PROJECT

The Jamaica Agricultural Marketing Development Project was intended to (a) increase farmers' incomes, (b) increase profits for -----

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USAID: Jamaica Agricultural Marketing Development II, AID/LAC/P-065/1. Washington, D.C.: 1982, p.15.

TABLE 2: Comparison of Selected Item Prices in Retail Outlets;  
Kingston, 1980-81

	Cabbage	Red Peas	Yams	Tomatoes
Hi-Lo supermarket	none	\$7.50/qrt.	none	\$1.20/lb.
Lane supermarket	\$1.20	none	none	\$1.60/lb.
AMC retail outlet	.80	\$7.00/qrt.	none	.90/lb.
Parish market	.70	\$6.00/qrt.	.80/lb.	\$1.20/lb.
Street vendor	\$1.00	\$8.00/qrt.	none	\$2.00/lb.

Comparison of Markups - Supermarkets and Parish Markets in Kingston

	Farmgate	Retail	% Markup
<b>Supermarket:</b>			
Cabbage	.40/lb.	\$1.20/lb.	300%
Red peas	\$3.00/qrt.	\$7.50/lb.	250%
Tomatoes	.70/lb.	\$1.60	128%
<b>Parish Market-Higgler:</b>			
Cabbage	.40/lb.	.70/lb.	175%
Red peas	\$3.00/qrt.	\$6.00/qrt.	100%
Yams	.35/lb.	.80/lb.	228%
Tomatoes	.70/lb.	\$1.20/lb.	171%

Comparison of Retail Prices in Rural Markets

	Cabbage	Red Peas	Yams	Tomatoes
Xiana	.40	\$3.00	.35	.70
Porus	.50	\$4.00	.60	\$1.00
May Pen	.60	\$6.00	.60	\$1.30
Old Harbour	.60	\$8.00	.60	\$1.50
Spanish Town	.60	\$8.00	.60	\$1.40

Source: USAID: Jamaica Agricultural Marketing Project, p.14.

intermediaries and (c) increase availability of food products to consumers at lower prices, with increased levels of quality differentiation. These goals appear to be in conflict, but a significant increase in product volume could allow for greater marketing efficiency and lower marketing costs - allowing higher farm-gate prices and lower consumer prices. Given elastic demand schedules, lower consumer prices would increase the quantity demanded and stimulate production.

PROJECT DESIGN

In 1979, the National Agricultural and Food Marketing Policy and Strategy was adopted by the Government. Its intent

"... is to foster the development of an Agricultural and Food Marketing System in Jamaica capable of efficiently distributing required factor inputs to producers capable of stimulating expansion of production of the type, volume and



quality of commodities demanded, and capable of distributing the products of agriculture from the producers to the final consumers in a manner that will achieve the greatest economic and social benefit."4

The Jamaica Agricultural Marketing Project was designed to provide for the development of physical and institutional infrastructure as well as for investment in human capital related to the improved performance of the food marketing system. Phase I, begun in 1981, established a major component of the institutional infrastructure and investment in human capital: the Division of Marketing and Credit within the Ministry of Agriculture. With responsibility for marketing research, extension, market development and information, and quality assurance, the MACD has three branches: Market Information and Research, Marketing Development and Quality Assurance.

Specific functional responsibilities include:

- Development and diffusion of diverse marketing information and research results to producers, intermediaries, consumers, potential agribusiness investors and Jamaica's government decision makers;
- Design and implementation of research analyses as to supply and demand, production costs and margins, crop forecasts, market trends, price, volume and quality monitoring, new crops or new uses for traditional crops, etc.
- Cooperation in the formation, strengthening and support of small farmer organizations, with their operation of the Assembly and Grading Stations, including obtaining financial credit and obtaining and distributing factor inputs;
- Development and implementation of formal and informal training programs for small farmers, producer groups, market intermediaries and MACD staff; and
- Assistance in the acquisition of new markets and facilities, as well as the expansion of existing/facilities, either domestic or foreign.

The project was funded at a level of US\$29,654,000 over a 5-year period. Phase I to cost US\$8,154,000 and Phase II, US\$21,500,000.

To facilitate the performance of the MACD in meeting Phase I objectives, the project provided for 96 technical and support positions. Additionally, it provided for 29.5 person - years of technical assistance, to be supplied through USAID and USDA. Technical advisors were to advise and assist the MACD in its functional responsibilities, including the provision of on-the-job-training for Jamaica counterparts. Six such advisors were specified. Another component of Phase I involved the provision of short- and long-term training of MACD staff, producers, intermediaries and operators of Assembly and Grading Stations and Sub-Terminal Wholesale Markets. Provision was made for 59.6 persons-year of training (a total of 630 people), 20 person-years of which were to be in long-term external training for degrees of 34.6 person-years in short-term, in-country training. Phase I had a commodity support component for the purchase of trucks, office equipment and supplies.

Phase II of the project focuses principally on the provision of physical infrastructure - namely, the construction of 26 Assembly and

Grading Stations in key production areas of the country and four Subterminal Wholesale Distribution Markets. MACD's research unit, along with the market development unit, identifies potential sites for Assembly and Grading Stations, and carries out feasibility studies. The market development unit then organizes Producer Marketing Organizations and/or cooperatives, training their leadership in the management and operation of the AGS, and the Ministry, upon satisfactory completion of specified preconditions, builds the AGS's for the PMO's. The PMO's assume the obligation for discharging the debt related to the AGS.

The Assembly and Grading Stations sites are selected according to specific criteria: level of producer and local intermediary interest in joining the group marketing activity; production capability of producers; volume and density of crop production within a specified radius; access to transportation; and availability of utilities.

Ministry preconditions for an AGS are: (1) that the group be formally and legally constituted; (2) that the group agrees to use the facilities for its intended purpose; (3) that the PMO agrees to a formula for taking over responsibility of operating costs according to a schedule of 0% in the first year; 50% in the 2nd year and 100% in the 3rd; (4) that the PMO agrees to purchase or rent the AGS and its equipment at the end of three years or before; and (5) that the PMO acts as a financial agent for the disbursement of credit to growers.

The 25 AGS's were estimated to cost a total of US\$2.4m based on two designs - 6 large and 19 smaller models. Equipment included for the larger models grading and packing equipment, pre-cooling equipment (hydro and air blast), roller conveyors, push carts, and scales. The construction schedule provided for the erection of 3 AGS's in 1981, 7 in 1982, 5 in 1983, 5 in 1984 and 5 in 1985, for a total of 25 (see Figures 2 and 3).

FIGURE 2: Layout of Assembly and Grading Stations Model

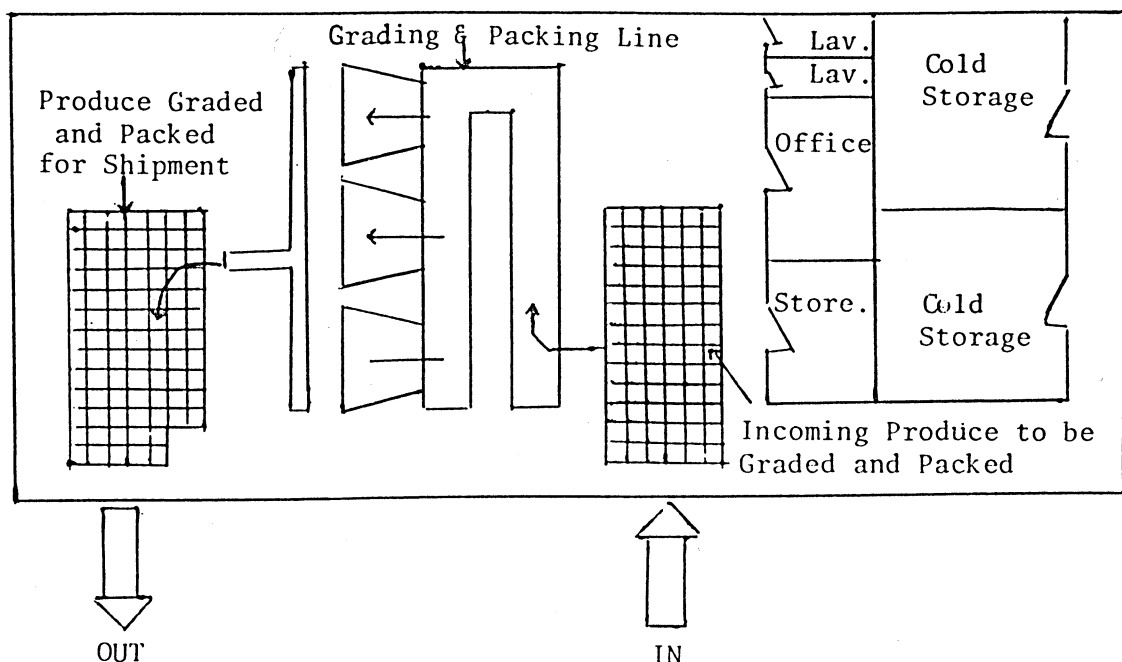


FIGURE 3: Scheduling of Construction for Assembly and Grading Stations

Activity	Year 1	Year 2	Year 3	Year 4	Year 5
Buildings & Equipment (3 stations)	(3)				
Buildings & Equipment (7 stations)		(7)			
Buildings & Equipment (5 stations)			(5)		
Buildings & Equipment (5 stations)				(5)	
Buildings & Equipment (5 stations)					(5)

Source: Jamaica Agricultural Marketing Development II, p.32A.

Potential sites for the location of Subterminal Wholesale Distribution Markets were May Pen, Annotto Bay, Montego Bay and Santa Cruz. Among conditions precedent for the actual allocation of funds to an SWDM was a provision that there should be letters of intent from wholesalers to lease at least 50 per cent of the floor space. SWDM's would be managed by a limited liability company with a board of directors and an on-site manager.

#### PROJECT PERFORMANCE

Project performance has to be measured against intended objectives and projected benefits. The projected time required for the establishment of the physical and institutional infrastructure was 5 years dating from 1981. By the end of 1986, therefore, it was projected that 25 assembly and grading stations and 4 subterminal wholesale markets would be emplaced and operational. Additional, it was envisioned that the Marketing and Credit Division as well as the Producer Marketing Organizations would be performing reasonably well.

Projected benefits derived from these areas: (a) reduced post-harvest losses; (b) increased production; and (c) reduced distribution costs. Post-harvest losses estimated at 35 per cent of the value of marketed output were expected to be reduced to 6 per cent by 1986: 10 per cent by 1988. Distribution costs were to be reduced from 68 per cent to 60 per cent of farmgate value by the seventh year. And agricultural production was expected to grow by 5 per cent over what it would have been in the absence of the project.

The assumptions used in projecting project benefits are as in Table 3 and the dollar value of projected benefits are shown in Table 4.

The schedule of projected benefits described in Table 4 far outweigh the project's costs. In 1985 total benefits are estimated at US\$14,174,000, rising to US\$29,196,000 in 1986 and US\$47,602,000 in 1987 (in constant 1981 US\$). At a cost of \$29,654,000 the benefit-cost ratio is extremely favourable. Projected through 1995 the present value of costs were estimated at US\$39,072,000 with projected benefits

of US\$235,387,000 yielding a benefit-cost ratio of 6.0 and an internal rate of return of 72.0%.

#### ACCOMPLISHMENTS AND CONSTRAINTS

The Marketing and Credit Division is now established in the Ministry of Agriculture. But its performance has been hampered by several factors. The Division shares with the rest of the government a problem of staff recruitment and retention. Civil servants are at a disadvantage with regard to financial remuneration and with few exceptions the private sector is successful in bidding away high quality personnel. Certain incentives which served to attract dynamic young talent such as the opportunity to become part of an innovative development project and possibilities for advanced training did not materialize as foreign exchange and other considerations weakened the perceived ability of the Ministry to afford extended overseas training and as the project became more routinized and less innovative. Intra-institutional politics created communication blocks and weakened support for the MACD in the already established divisions of the Ministry. The bureaucratic inertia has retarded the rate of project implementation.

Nevertheless, there is a functioning division of marketing within the Ministry. Marketing information on prices at retail and wholesale are collected and disseminated routinely. Wholesale prices reflect situations at Coronation, Christiana and Newmarket. Retail prices include markets at Brown's Town, May Pen, Mandeville and Montego Bay. Market news are broadcast on Radio Central. Situation and outlook reports buttress the current price data. Grades and standards for a number of products have been developed and produce inspectors attached to the Quality Assurance Unit work with wholesalers and exporters. The research unit has been forced to devote a great deal of resources to feasibility analyses related to the selection and siting of assembly and grading stations to the detriment of research and analyses related to consumer demand, post-harvest costs, and export markets.

In sum, although the MACD has been successfully established, what it has accomplished in terms of transforming Jamaica's food marketing system is still open to question. By the end of 1985 only one producer marketing organisation was cooperatively marketing members produce. And not one AGS had been constructed. The lone operating PMO is the St. Catherine Vegetable Producers' Association at Bushy Park. In March of 1985 the PMO handled 60,220 pounds of produce at a value of J\$32,415, an increase over February's volume of 31,775 pounds and value of \$J19,406. The PMO had 155 members, 75 of whom regularly sold through the PMO. However, most member-producers still sold through higglers. Many higglers were purchasing from the PMO at Bushy Park which had developed a clientele including green grocers, supermarkets and small shops in Kingston. Using project vans and rented vehicles, the PMO makes daily deliveries.

The PMO management appears to have a fairly good relationship with grower-members and provides some extension services, some seeds and supplies for production. So far, this PMO represents the only glimmer of success for the \$29m Agricultural Marketing Project. Moreover, the relative success of this PMO appears to owe much to a dynamic, non-permanent, technical advisor. Even so, it is still open to question whether the PMO could successfully - that is, economically operate and AGS along the designs of the project. Meeting operating

TABLE 3: ASSUMPTIONS USED IN PROJECTION OF PROJECT BENEFITS

Year	Post-Harvest Losses		Production	Distribution Costs	
	% of Total Marketed Production	% Cumulative Reduction	% Increase in Production	% of Farm gate value of Marketed Production	% Cumulative Reduction
1981	35	-	-	68	-
1982	35	-	-	68	-
1983	35	-	-	68	-
1984	34	1	-	68	-
1985	32	3	-	65	3
1986	29	6	-	62	6
1987	27	8	3	60	8
1988	25	10	4	60	8
1989	25	10	5	60	8
1990	25	10	5	60	8
1991	25	10	5	60	8
1992	25	10	5	60	8
1993	25	10	5	60	8
1994	25	10	5	60	8
1995	25	10	5	60	8

Source: USAID: Jamaica Agricultural Marketing Project, p.56.

costs would represent a serious challenge as would be the amortization of the capital costs.

The operation of the AGS would incur estimated costs of up to \$15,000 per month. This would require a flow-through of up to 200,000 pounds - the equivalent of about 20 harvested acres per month for a break-even level of about 1200 tons of produce per year. The PMO would have to ensure that farmers produce and make available to them this amount of produce either by increasing production or by diverting sales from higgler. So far, the higgler-farmer connection remains a very powerful market channel. Should the PMO develop the capacity to provide incentives such as consistently higher product prices and lower input costs as well as more timely availability of inputs, it might be able to guarantee the requisite flow-through. If not, excess capacity, and higher operating and fixed costs per unit would quickly undermine its economic viability.

As for the Subterminal Wholesale Distribution Markets, none had been built by 1986, although the AMC facilities in Kingston has been refurbished and has been used by a few exporters to grade, pack and store produce.

Domestic food crop production in 1984 was provisionally estimated to be 16 per cent greater than in 1981. And non-traditional exports were reportedly 34,638,000 pounds in 1984 compared with 13,740,000 pounds in 1980-81. However, given the fact that only one PMO was operational by 1985, it is difficult to argue that the project had much impact on increases in output or exports. Food imports declined from US\$218,549,000 in 1982 to US\$195,641,000 in 1984 - a decrease of 10 per cent. However, this abrupt change more likely is reflective of the 1983 devaluation of the Jamaican dollar, and prior to that,

TABLE 4: ESTIMATION OF GROSS BENEFITS ('000 Constant 1981 US\$)

Year	Total Projected Production	Total Projected Production to be Marketed	Reduced Post-Harvest Losses	Increase in Production	Reduction in Distribution Cost	Total Benefits
1981	285,396	214,047	-	-	-	-
1982	291,104	218,328	-	-	-	-
1983	296,929	222,697	-	-	-	-
1984	305,834	229,376	2,294	-	-	2,294
1985	314,957	236,218	7,087	-	7,087	14,174
1986	324,409	243,307	14,598	-	14,598	29,196
1987	334,057	250,543	20,043	7,516	20,043	47,602
1988	344,080	285,060	25,806	10,322	20,048	57,076
1989	354,400	265,800	26,580	13,290	21,264	61,134
1990	365,037	273,778	27,378	13,689	21,902	62,969
1991	375,986	281,990	28,199	14,100	22,560	64,859
1992	387,266	290,450	29,065	14,582	23,226	66,804
1993	398,680	299,109	29,917	14,958	23,933	68,608
1994	410,852	308,139	30,814	15,407	24,651	70,872
1995	423,177	317,383	31,738	15,869	25,391	72,998

Source: USAID: Jamaica Agricultural Marketing Project, p.59.

restrictions on foreign exchange availability. In fact, given the low level of achievement of the project, the original projections of benefits now seem fantastic. How can this inflation of benefits be explained and why have project achievements been so modest?

#### PROJECT DESIGN AND IMPLEMENTATION

The original project design was highly unrealistic in its estimate of the time and effort required to develop and operationalize a PMO. Particular challenges were selecting and developing a cadre of leadership; recruiting sufficient growers for the requisite volume of production; training members and board leadership and building a coherent organisation; and meeting the specified preconditions - a clear title to the site, a completed feasibility study, legal status of the PMO and a signed contract with the Ministry of Agriculture.

Ministry extension staff lacked experience relevant to the development of the PMO's. Moreover, this staff was spread thinly over the region performing a number of functions additional to PMO development. The overdesign of the project merely served to reduce their level of performance. Carleen Gardner's "Social Soundness Analysis" observed that "Producer marketing cooperatives have a high risk of failure in the Jamaican socio-political environment".<sup>5</sup> The analysis further pointed out that the history of these local organizations has been marked by financial [problems], unequal distribution of benefits, political interference, low mobilization capacity, and elite leadership and control. Specific socio-cultural

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USAID: Jamaica Agricultural Marketing Development II, p.80.

constraints included: farmers traditional tendency to depend on government; a lack of understanding of modern marketing; a general unwillingness to participate in cooperative organizations based on fear of elite control and inequities in the distribution of benefits; risk averse behaviour; low level of education; individualism as opposed to cooperativism; and political partisanship and clientelism. Questions remain as to whether a group of small farmers, many of whom are not highly literate can constitute a dynamic, responsible board of management. There has been some management training provided to a few boards by the National Union of Cooperative Societies and the Ministry of Agriculture. Nonetheless, traditional small farmer - government relationships may act as constraint on the development of autonomous, entrepreneurial management groups.

Observations made during the 1983 project evaluation tend to support the constraints identified in the original Social Soundness Analysis. Of the Douglas Castle PMO, problems observed included: dependency on MACD for decision-making and action; poor planning and decision-making; poor analytic skills; unrealistic expectations of access to export market; low mobilization of farmers; difficulties in communication; lack of data on production and marketing costs; and low literacy level of farmers. Among the constraints identified in respect to the Bushy Park PMO were: a poorly defined mission, elite membership to the exclusion of small farmers, poor leadership, unrealistic expectations regarding the role of the MACD and bureaucratic delays in expediting decisions about design and construction of the AGS. Many of the Bushy Park problems have since been solved.

However, in view of the challenge of organizing small farmer cooperatives in Jamaica, the project's original design appears wildly optimistic in programming of 25 PMO's in 5 years. And while this component of the project represented the greatest challenge a small amount of resources was allocated to it - only a few extension personnel and an expatriate technical advisor. And as pointed out earlier, these extension officers had other duties covering wide geographical areas. Bushy Park has achieved its relative level of success by virtue of having a full time technical advisor-organizer who developed a vested interest in the success of the project.

The Assembly and Grading Stations component was also over-designed with respect to structures and equipment. The 1983 evaluation assessment suggested that about \$130,000 could have been saved on Packing Line No.1 - a line intended for pepper, tomato, cucumber and mango. On Packing Line No.2, excess costs were estimated at \$60,000. On only two packing lines related to two of the proposed AGS's, close to \$200,000 was wasted in inappropriate equipment. These are costs that would presumably have been assumed by the PMO's.

Because AGS's must maximize the throughput to reduce operating costs, they need a constant, dependable source of supply. The assembly points in a production area are thus critical to AGS performance. But the project design failed to provide for a collection system, thus overlooking an essential component of a vertically coordinated marketing system. The relative success of the Bushy Park PMO has depended to no small extent on the ability of the PMO to collect produce at farm gate. But this collection adds to cost and no provision was made to (1) absorb these costs in PMO and AGS operations or (2) charge them to farmers. In the case of Bushy Park, they have so

far been subsidized from external sources. To date no concrete provisions have been made to provide PMO's access to sources of operating capital. But without adequate sources, the PMO may never attain the scale of operation necessary for long term viability.

#### CONCLUSION AND IMPLICATIONS

In sum, even if it is granted that some portion of the increase in domestic crop production and non-traditional exports evidenced in 1984 is attributable to the project, it is still obvious that the realized benefit-cost ratio will be radically different from that estimated in Table 4.

Efforts at transformation need not yield to fatalistic notions that the situation cannot be changed; that projects inevitably fail. On the other hand, the probability of success is increased to the extent that project design takes into account serious limitations in the economic, social and political environment which may hamper implementation and performance. To begin with, the administrative apparatus finds it difficult to manage very large scale projects. Bureaucratization, a paucity of experience and a shortage of top-level staff pose serious limitations to expeditious and efficient project implementation. And as the scale of a project increases, it tends to take on greater political significance and becomes more attractive as a potential part of the patronage system.

It would be more appropriate to focus adequate amounts of capital and staff on a smaller, manageable number of 'pilot' schemes, increasing their chances of success and accumulating information that can be transferred to subsequent efforts.

In the Jamaican case, three PMO's in the first 5 years might have been a realistic objective - one at Bushy Park, one at Southfield and one at Douglas Castle. These three could possibly have utilized one AGS at Bushy Park to guarantee maximum levels of utilization and reduce overhead and operating costs. Given the problems inherent in organizing and operating farmers' organizations, considerably more resources should have been allocated to this activity; to training the market development extension agents and to the training of PMO boards, management and staff.

The institutional infrastructure at the Ministry, i.e. the MACD, should have developed incrementally in support of, not in advance of, the PMO-AGS-SWDM system. The close to 100 positions provided for was clearly excessive, particularly during the first five years. The project could have envisioned an initial nucleus of 15-25 professional staff members letting demand dictate the logic for increments.

In summary, if more care is given to project design so as to reflect real constraints and opportunities, market reform and development projects are likely to be more successful. The transformation of dualistic food and agricultural marketing systems remain an urgent necessity. Hopefully, the Jamaican experience will contribute to a better understanding of the performance of alternative intervention approaches.

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