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**Liberia Agricultural
Marketing Study**

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LIST OF ACRONYMS

ABP'S	Area-based projects
BCADP	Bong County Agricultural Development Project
CARI	Central Agricultural Research Institute
CDA	Cooperative Development Agency
CIF	Cost, insurance freight
CMA	Clan Marketing Association
EEC	European Economic Community
FAQ	Fair average quality
FDA	Farmer's Development Association
FEDERACAFE	National Federation of Coffee Growers
FIFO	First in, first out
FOB	Free on board
GOL	Government of Liberia
IBC	Brazil Coffee Institute
ICA	International Cocoa Agreement
ICO	International Coffee Organization
LCADP	Lofa County Agricultural Development Project
LCCC	Liberian Coffee and Cocoa Corporation
LMA	Liberian Marketing Association
LPMC	Liberian Produce Marketing Corporation
MOA	Ministry of Agriculture
MOC	Ministry of Commerce
MPEA	Ministry of Planning and Economic Affairs

LIST OF ACRONYMS
(Continued)

NCR	National Rice Committee
NCRDP	Nimba County Rural Development Project
PFP	Partnership for Productivity
SERDP	Southeast Region Development Program
SRSP	Smallholder Rice Seed Project
UCCAO	Arabica Coffee Union
USAID	United States Agency for International Development
USDA	United States Department of Agriculture

EXECUTIVE SUMMARY

This study examines the operations of marketing channels for rice, cocoa, coffee, and the composite category of fresh produce to determine the major factors that are retarding the development and growth of cash crop farming in Liberia. The intent of the study is to provide an analytical base for a policy dialogue between USAID and the Government of Liberia and to provide background information for determining appropriate USAID strategy for improving agricultural marketing in Liberia.

The traditional small-scale farming sector in Liberia is stagnating — it accounts for more than 60 percent of the labor force but only 20 percent of the gross domestic product of the country. Small-scale farming families focus much of their efforts on production of low-yielding but labor-intensive upland rice to satisfy family subsistence requirements. Family labor not needed for rice production is used in growing other crops for home consumption and local sale — root crops, other vegetables, some fruits — and for cash sale for the export market — cocoa and coffee.

Major government policies on agriculture have focused on raising the level of rice self-sufficiency. These policies have failed to meet their objectives: notwithstanding government initiatives to introduce new rice varieties and encourage higher-yielding swamp rice production, average yields for rice have been stagnant over the past decade; most rice consumed in the country must be imported and, at present, such imports are exclusively

provided on a concessional basis by bilateral aid agencies (principally under the U.S. P.L. 480 program) — an import policy that is unacceptably tenuous. The Liberian Produce Marketing Corporation (LPMC) has been the institutional vehicle for implementing cocoa and coffee marketing policies. At present, financial returns on these two crops do not encourage small-scale farmers to rehabilitate existing trees or invest in new plantings. It is surprising, given the focus of government policy and programs on rice, cocoa, and coffee, that the gross value of these crops in 1986 (L\$ 120 million) approximately corresponds to the gross value of root crops, fruits, and vegetables (L\$ 116 million), crops that have received little or no attention and support from the government.

Growers of cocoa and coffee receive only a fraction of the official price posted by the LPMC. Isolated in rural areas linked to market centers by roads and tracks that are all but impassable during the rainy season, the farmer is often the hostage of the buying agent. Any bargaining strength of the farmer is weakened by his or her urgent need for cash income for such things as school fees, weddings, and funerals. The farmer is exploited by private traders, and cooperative and LPMC officials alike. Marketing costs are driven up because of the corrupt practices of public sector officials throughout the marketing system. Deliveries of cocoa and coffee by farmers directly to the LPMC generally offer no real advantages: the LPMC has inadequate collection facilities in rural areas; its cost of collection and first-stage processing are high relative to the private trade; and LPMC officials have a reputation for corrupt practices and fostering their own self-interest. The large debt load of the LPMC ensures that senior management will focus its attention on financial survival rather than on providing marketing services to growers. Even if growers were to receive close to the official posted price level, profits would still be insufficient to encourage significant rehabilitation and expansion of cocoa and coffee production. In real terms, returns to growers of both coffee and cocoa are less than half of what they were in 1975.

The most pragmatic means of resuscitating the coffee and cocoa sectors is to liberalize the marketing of these commodities by allowing private traders to buy and sell coffee and cocoa on domestic and international markets. Competition would erode the LPMC share of the export business very quickly; its demise would be in the better interests of farmers and the nation in general. Concomitantly, the government must change its exchange rate policy so that the official rate of the Liberian dollar in relation to the US dollar (currently 1:1) approximates the parallel market rate (2+:1 in April 1989) thus enabling cocoa and coffee growers to gain fair real returns from the international marketplace.

Liberians are substantial consumers of fresh produce (root crops and other vegetables in particular). The fresh produce production and marketing system works reasonably efficiently, in spite of a poor road network, lack of institutional credit, widespread corruption at road checkpoints (transporters are required to pay substantial bribes to officials to be allowed vehicle passage), an almost complete absence of formal marketing infrastructure, and occasional harassment of traders on spurious profiteering charges by government officials. The fresh produce business is dominated by Liberian women traders; it provides them with an opportunity to take the first step on the entrepreneurial ladder, at a low level of initial investment. The government's contribution to fostering the development of the fresh produce sector should be to improve and maintain the rural road network; to address the endemic problem of corrupt public sector officials who extort money from private sector participants; to abrogate laws and regulations that control prices of fresh produce items; to encourage research and development and subsequent dissemination of results on increasing yields and extending the season for root crops and vegetables; and finally, to allow the marketing system to work, and work well, without interfering in its operations. When system participants want government assistance, leaders in the system will ask for it.

Prior to 1988, the LPMC had a major role in rice marketing in Liberia. At present (April 1989), the organization does not market any rice. Marketing is now undertaken by the private trade; and its marketing performance is substantially better than that of the LPMC. The LPMC should remain out of the rice business and its rice marketing facilities should be sold to the private trade.

The cornerstone of government rice policy has been to attain self-sufficiency in rice production. This policy is inappropriate, and the objectives should be changed to stress increasing rice productivity and, more fundamentally, to increasing overall self-sufficiency in production of the major starch commodities (rice, cassava, yams, sweet potatoes). Current rice pricing policy provides rice consumers with a substantial subsidy at the expense of other starch producers, the government, and the taxpayers of rice-donating countries. The policy encourages reliance on imported rice supplies, and the consumer subsidy element will increase as the real value of the Liberian dollar deteriorates against international currencies. The government should increase rice prices to import parity levels; continue efforts to increase rice productivity; and promote the consumption of starch products other than rice through consumer education programs.

The small-scale farmer in Liberia has been trapped in a vicious circle: satisfying household rice requirements for the year exhausts labor availability that could have been focused on producing higher-value cash crops; however, purchasing imported rice (frequently not available in rural areas anyway) instead of home-grown rice would exhaust scarce cash resources. The profitability of cash crop production is sharply constrained by the low prices received by farmers for crops such as cocoa and coffee, reflecting among other things the lack of adequate major infrastructure (particularly all-weather roads), inefficiencies and endemic corruption in the marketing system, and an exchange rate policy that works to the disadvantage of the producer of

export crops. Given the paucity of profitable cash crop alternatives, the small-scale farmer is forced to accept a subsistence mode of rice farming, with the drudgery of intensive labor and low production, and to obtain the required cash income from family members working on rubber estates, in mines, or in the urban areas.

There is little evidence that the Government of Liberia will intervene to break the vicious circle in which small-scale farm families are caught, unless external government pressure and assistance are brought to bear. Given its importance in providing P.L. 480 rice supplies for sale to politically vociferous urban consumers, USAID is in the sole position to encourage and facilitate the changes in GOL policies needed to engender economic growth in the traditional farming sector. The continuance of P.L. 480 shipments should be tied inextricably to the institution of needed policy changes. Chief among these are introducing a more market-oriented exchange rate policy, adjusting domestic rice prices to reflect border price parity, keeping the LPMC out of rice importing and domestic rice marketing, and liberalizing cocoa and coffee marketing to allow the private trade to compete with the LPMC in buying and selling these commodities.

Past experience has shown the farm family that it has to look after its own food requirements first and only then seek income through growing cash crops. This pervasive view will prevail until the traditional small-scale farm sector gains confidence in government policies and marketing systems for domestic staples and export cash crops. This will take time. The government must take policy actions now to start slowly winning the confidence of the farm family by allowing the domestic and export marketplaces to reward efficient producers of agricultural products.

I. INTRODUCTION

Traditional agriculture in Liberia is stagnating — it accounts for more than 60 percent of the labor force but only 20 percent of the gross domestic product of the country. If small-scale farmers and their families are to move away from bare subsistence, they must seek more profitable cropping alternatives and participate in the commercial agricultural economy, where productivity increases, leading to growth in real incomes, can be realized. One view is that inefficient and costly marketing systems for cash crops are constraining farmers from expanding cash crop production and marketing.

USAID/Liberia commissioned a study in February 1989 to examine marketing channels for selected commodities in Liberia and to determine if they are holding back the development of Liberian agriculture. The stated purpose of this study is to provide the information, analysis, and recommendations needed to improve the productivity of marketing for selected agricultural commodities. The specific commodities selected for marketing analysis are coffee, cocoa, rice and, in aggregate, fruits and vegetables.

This study examines marketing channels for the selected commodities to determine the extent to which government policies affecting the agricultural sector increase, decrease, or stabilize agricultural prices relative to world prices, and whether these policies, inappropriate technology, or inadequate infrastructure are retarding the development and growth of cash crop farming. The results are presented so that they can form the basis for

a policy dialogue with the Government of Liberia (GOL) and provide the necessary background for determining appropriate USAID strategy, including project or nonproject interventions needed to improve agricultural marketing.

The study is presented in three major sections on the production and marketing of (1) coffee and cocoa, (2) rice, and (3) fresh produce. Marketing systems for each major commodity are examined, and major constraints on sectoral development are identified. Special attention is given to the roles of the private sector and the government and its agencies, in particular, the Liberian Produce Marketing Corporation (LPMC), in the marketing of the commodities. Recommendations are made to USAID and the GOL on policy and program initiatives that would foster economic development in the commodity sectors examined.

II. THE MARKETING OF COCOA AND COFFEE IN LIBERIA

World Production, Trade, and Prices

Cocoa

World production of cocoa beans has almost quadrupled since 1945-46. Table 1 contains aggregate data and data for the group of the six leading producers — Brazil, Cameroon, Côte d'Ivoire, Ghana, Malaysia, and Nigeria. As illustrated in Table 2, the data for the six leading producers of cocoa beans conceals considerable change in production shares with large gains being made by Côte d'Ivoire and Malaysia and large losses for Ghana and Nigeria.

The decline in production by Ghana and Nigeria has occurred as a result of aging trees, failure to control pests and diseases, and an arguably insensitive approach to development and marketing. Production of cocoa beans in Côte d'Ivoire has been encouraged (at the expense of coffee) by a somewhat perverse attitude towards pricing, with equivalent prices being paid for coffee and cocoa, notwithstanding the higher cost of coffee production. The result is that Côte d'Ivoire has built up huge cocoa surpluses, which have tended to depress world prices. In order to obtain sufficient funds to pay exporters and growers, the Government of Côte d'Ivoire has sold 400,000 tons of cocoa to a French trading house on the agreement that a proportion of that coffee is to be stored in Europe for two years. Although this cocoa

Table 1. World Production of Cocoa
(Thousands of metric tons)

Year	Total	Leading six producers	
		Volume	percentage
1945-46	600	520	87
1955-56	855	653	76
1965-66	1,226	968	79
1975-76	1,512	1,215	80
1985-86	1,946	1,533	79
1986-87	1,993	1,594	80
1987-88	2,169	1,752	81
1988-89 ^a	2,304	1,875	81

a. Forecast.

Sources: For 1945-46 to 1975-76, Gill and Duffus Cocoa Statistics; for 1985-86 to 1988-89, World Cocoa Situation, USDA, March 1989.

Table 2. Change in Share of Production
(Percent)

Year	1945-46	1965-66	1985-86	1987-88
Brazil	23	14	20	18
Cameroon	6	6	6	6
Côte d'Ivoire	5	9	29	31
Ghana	35	34	11	9
Malaysia	-	-	7	10
Nigeria	18	15	7	7

Note: Minor variations in the addition of percentages are due to rounding.
Sources: As for Table 1.

has been removed from the market temporarily, its existence, together with the buffer stocks maintained by the International Cocoa Agreement (ICA), has added further uncertainty to an already oversupplied market.

Presently, the International Cocoa Agreement (of which Liberia is not a member) is not effective. Funds are not available to purchase additional supplies to add to the buffer stock (which is the method used by the ICA in attempting to control prices) even though market prices are well below the support prices which were in effect during the operative period of the Agreement. It is argued, especially by consumers, that these support prices were set unrealistically high to make the Agreement effective and that a thorough revision of support prices is necessary for an operational Agreement. Although Côte d'Ivoire has adopted a marketing policy which has restricted the flow of cocoa to world markets, it has generally been unsuccessful in raising price levels, not least because of increased supplies from other major cocoa-producing nations. The United States Department of Agriculture (USDA) estimates that world cocoa stocks will increase by about 200,000 tons during the 1988-89 crop season. This increase, which represents approximately 10 percent of total world use, is the latest during a series of five years in which world supply has exceeded world demand. It is estimated that stocks in September 1989 will approximate 900,000 metric tons, or about 43 percent of world demand. This relative oversupply has resulted in prices remaining low (see Table 3).

Many analysts agree that the mid-term prospects for cocoa prices, barring extensive crop failure, are unsatisfactory. The trend of increase in supply is greater than that for demand (see Table 4).¹ Although the growth rate for grindings exceeded that for net production in the first 20 years, the reverse is true for the second 20 years. The strong rates of increase shown

1. Growth rates are calculated by the method of semi-logarithm least squares.

Table 3. Cocoa Bean Prices — New York Market

Year	Price (U.S. cents per pound)	Index of price
1976/77	189.8	100
1977/78	147.7	78
1978/79	154.3	81
1979/80	123.5	65
1980/81	90.6	48
1981/82	80.2	42
1982/83	84.2	44
1983/84	106.6	56
1984/85	98.1	52
1985/86	92.5	49
1986/87	88.1	46
1987/88	74.3	39
1988/89 ^a	64.0	34

a. October 1988 to February 1989.

Note: Prices refer to the average of the daily closing price of the nearest three active futures trading months on the New York Commodity Exchange.

Source: World Cocoa Situation, USDA, March 1989.

Table 4. Growth Rates of Supply and Demand
(Annual percentage increases)

Period	Net production	Grindings
1949-50 to 1988-89	2.65	2.57
1949-50 to 1968-69	3.76	3.92
1969-70 to 1988-89	2.14	1.85

Source: Based on USDA data for net production and grindings. See footnote 1 for method of calculation.

by many Western nations in the 1960s and 1970s has been replaced by a slower rate of growth or even, in some cases, a decline.

Coffee

The exportable production² of coffee has increased by more than 50 percent between 1967-68 and 1987-88, as shown in Table 5.

The Robusta group is composed of those producing countries which produce solely or principally Robusta coffee. Some, such as Cameroon, Uganda, and Zaire, also produce significant quantities of the generally higher priced Arabica coffee. Conversely, some members of the Arabica group, such as Ecuador, India, and Tanzania, produce substantial quantities of Robusta coffee. Very broadly, and with one important exception, there is a moderate balance in favor of Robusta coffee. The exception is Brazil which, although the largest producer of Arabica (and the largest producer of coffee overall), has now begun to produce significant quantities of Robusta coffee. Although production varies, Brazil's production of Robusta almost matches that of Côte d'Ivoire, the second largest Robusta producer, and could conceivably exceed that of Indonesia, the largest producer.

The result is that although the share in exportable production of the traditional Robusta producers has fallen from about a third in 1967-68 to an estimated quarter in 1988-89, the share of the production of Robusta coffee as a whole has decreased by a much smaller amount. In addition, a substantial trade in soluble coffee is now carried out by the two largest Arabica producers, Brazil and Colombia. This situation, together with a trend towards the use of less Robusta in blends (although this trend cannot be entirely separated from the relative prices of Arabica and Robusta and the price overall), has resulted in downward pressure on market prices of Robusta coffee. This pressure forced some reappraisal of the method of

2. Exportable production is total production less domestic consumption and any losses such as the destruction of coffee.

Table 5. Exportable Production of Coffee
(Millions of 60-kilogram bags)

Year	Total	Robusta group	Brazil
1967-68	50.1	16.5	12.8
1972-73	57.1	18.2	13.9
1977-78	54.4	12.9	11.6
1982-83	70.5	18.1	15.8
1987-88	77.0	16.6	24.3
1988-89 ^a	73.6	18.7	17.3

a. Forecast.

Note: Data are shown in 60-kilogram bags — green coffee equivalent; one metric ton equals 16.6667 bags.

Source: International Coffee Organization, Document WP Agreement number 11/88 Rev. 2 (February 1989).

allocating export quotas of coffee. Under the International Coffee Agreement, export quotas are established for each member country as the means to control overall world coffee price levels. Traditionally, quotas had been allocated on the basis of political or quasi-political considerations. This method has been replaced, as a result of representations by consuming countries, by a more transparent procedure that gives weight to previous and current export performance and the levels of stock-holding. In addition, as the differential between the market prices of Arabica and Robusta has become so great, the method of quota distribution has been further amended so that any reallocation (as the result of the price trigger mechanism) during the course of the year takes account of the market prices of the two groups. This has resulted in some losses for large producers of Robusta. Smaller producers, of which Liberia is one, have their quotas fixed at the beginning of each year, and these quotas are not amended as a result of the price trigger.

Consumption by importing members of the International Coffee Agreement has recently been increasing by about 1 percent a year. This overall rate of increase conceals a decline in consumption in the United States and stagnation in consumption in some European countries. Some countries which have shown substantial increases, such as Germany and Japan either are not large direct consumers of Robusta (Germany) or are more inclined to purchase coffee from sources other than Africa (Japan). This is also true of the United States, which now has a considerable trade in Robusta from Asian and Latin American sources.

Market prices for coffee have exhibited more variation than those for cocoa. Table 6 contains data on the ICA composite indicator price (from 1979, the average of mild Arabicas and Robustas), the price for mild Arabicas, and the price for Robustas.

The large increases in price in 1976 and 1977 occurred as a result of the very damaging frost in Brazil in 1975. Additional frosts contributed to maintain high prices until 1981. Noticeably, the differential between other mild Arabicas and Robustas remained low during that period of high prices. The differential increased in 1985 and remained high in 1986 when prices were firm as a result of the Brazilian drought. Prices slumped in 1987 prior to the reintroduction of quotas which had been suspended as a result of the price exceeding the upward limit in February 1986; the differential narrowed in 1987 only to widen again in 1988 when there was a perceived shortage of good quality Arabicas and an oversupply of Robustas. This widening differential forced the reassessment of quota distribution referred to previously.

Table 6. Indicator Prices for Coffee
(U.S. cents per pound)

Year	Composite	Mild Arabica	Robusta
1974	67.95	65.84	58.68
1975	71.73	65.41	61.05
1976	141.96	142.75	127.62
1977	229.21	234.67	233.76
1978	155.15	162.82	147.48
1979	169.50	173.53	165.47
1980	150.67	154.20	147.15
1981	115.42	128.23	102.61
1982	125.00	140.06	109.94
1983	127.98	132.05	123.90
1984	141.19	144.64	137.75
1985	133.10	146.05	120.14
1986	170.93	194.69	147.16
1987	107.81	113.62	101.99
1988	115.96	137.60	94.31

Source: International Coffee Organization; Document WP Agreement No. 15/88 Rev.2.

Liberian Cocoa and Coffee

Liberia is a small producer of both cocoa and coffee. It accounted for less than 0.25 percent of estimated world cocoa production between 1983-84 and 1987-88. During the same period, Liberia averaged 0.14 percent of exportable production of coffee. In view of the amount of unrecorded cross-border trade, these figures are subject to variation; however, such variation will not alter the situation noticeably in terms of the share of world production.

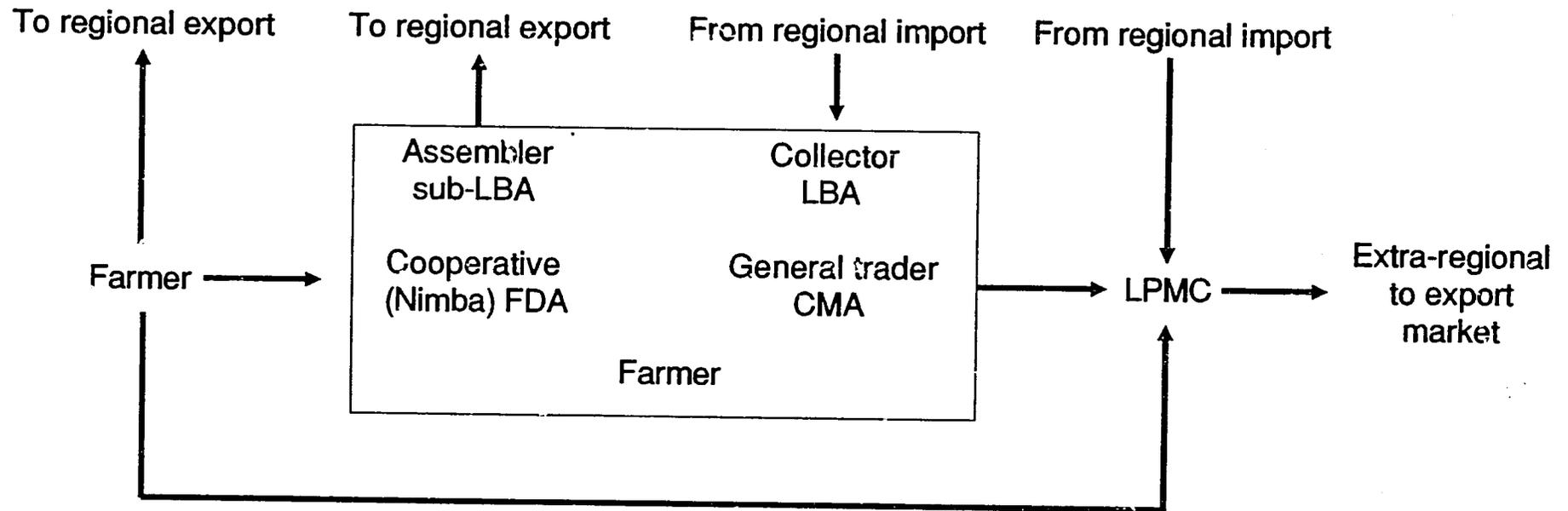
The Marketing System for Coffee and Cocoa

Internal Marketing

The domestic marketing system for coffee and cocoa can be depicted as in Figure 1. The majority of products flow from the farmer through an assembler (sub-licensed buying agent) and collector (licensed buying agent — LBA), or through a cooperative, to the LPMC for sale on the extra-regional market. The product flow can also be through almost any configuration of marketing chain participants, including direct sale by a farmer to the LPMC, sale through a succession of middlemen and, then, to the LPMC or to the regional market, purchase of product from farmers or traders in adjacent countries and then sale to the LPMC, and even importation of products from adjacent countries by the LPMC for subsequent export sale. The export and import flows of coffee and cocoa between Liberia and adjacent countries are determined by more than the prevailing official prices for the commodities in each country. Such factors as terms of payment (cash or note), availability of transport, and competition among buyers serve to obfuscate the trading picture that would be expected if official prices alone dictated product flows. For example, a Guinean farmer may sell coffee to a Liberian buyer to meet immediate family cash needs, even though the posted producer price for coffee in Guinea is higher than the corresponding price in Liberia. Similarly, a Liberian farmer close to the border with Guinea may accept from a Liberian assembler a cash price substantially discounted from the official prices in both countries, in lieu of a note from official buyers, in order to meet immediate needs for cash.

Within marketing systems such as Liberia's which are characterized by considerable imperfections — inefficient government marketing agencies, endemic corruption and marketing malpractice at public and private sector levels, shortage of cash for payment to producers at harvest time, poor road

Figure 1. Marketing Systems for Coffee and Cocoa



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network and shortage of suitable transportation for produce, sellers unused to transactions on a weight basis (i.e., accustomed to selling by volume) — the informal "golden rule" of commerce generally holds sway; that is, the trader with the "gold" (cash) makes the rules. In more formal terms, the individual trader can establish a local monopsony and exploit the seller to his or her advantage. The major internal marketing routes for coffee and cocoa are outlined below:

- Farmers may deliver to an LPMC depot. This presumes that either they are close to the depot or they have access to mechanical transport and the road system is adequate. These farmers should receive the full price for their produce less any deductions for lack of quality or insufficient dryness. There is a history of either arbitrary deductions or incorrect weighing. In addition, there is a possibility that cash is extracted from the farmer at road blocks or at depot gates. Some delay in payment has been experienced.
- Farmers may sell to a cooperative. They should receive the full price and the cooperative should obtain a commission from the LPMC (6 percent). Arbitrary deductions are often made, and there is the strong possibility that payments to farmers may be delayed unnecessarily or even withheld.
- Organized farmers in Nimba county may sell in three ways:
 - Farmer to Farmers' Development Association (FDA) to Clan Marketing Association (CMA) to the LPMC
 - Farmer to FDA to the LPMC
 - Farmer to FDA to other buyers

When farmers are organized, they obtain, on average, a reasonably high proportion of the official selling price (when the produce is sold to the LPMC), with deductions by FDAs and CMAs in line with administrative costs.

- Farmers may sell to traders. Traders may sell to the LPMC or take the coffee and cocoa to adjoining countries. Clearly, the price paid to farmers is unknown, but very large discounts from the official price are extracted. These discounts cover the possibility of doubtful quality and the cost of credit when it has been advanced.

Official prices are announced at the start of the marketing season by the LPMC. "The prices are usually determined on the basis of prevailing conditions and prices in the world markets" (LPMC). The imposed parity of the Liberian dollar with the United States dollar means that, when world prices decline, the freedom to adjust grower prices to reflect the cost of production is lost. The reduction in real grower incomes has been large. Furthermore, there seems to be acceptance of, not to say cynicism about, the inability of some growers, who are not organized and who may be located inconveniently, to obtain a reasonable proportion of the official price. The absence of an effective system of crop credit, in many areas, forces some growers to obtain credit from traders prior to harvest; the only effective credit mechanism which is relatively economic for growers is the system operated by Partnership for Productivity/Liberia (PfP/L) in Nimba county.

When the LPMC receives the produce at one of its processing facilities, it cleans and grades the cocoa and coffee for final export. If coffee is delivered in the form of dry cherry, the complete operation of hulling and grading will be carried out by the LPMC. All coffee and the majority of cocoa are graded into FAQ (fair, average quality), which is produce of mixed bean size containing a limited amount of defects. In essence, FAQ represents the standard quality that can be delivered under the rules of the various markets in importing countries. Unlike Arabica coffee, Robusta deliveries are generally more homogeneous in quality and bean size but sometimes useful premia can be obtained for larger beans. If large beans are extracted, the remaining coffee suffers a reduction in overall size. This need not be a

serious disadvantage, as many final users require a consistency in bean size (for even roasting), which is not necessarily the case for FAQ.

Although it may be possible to make some savings, the current price for cocoa and the current and possible price for coffee (if the ICA is not renewed, prices are likely to fall considerably) is insufficient to allow the LPMC or, indeed, anyone else to do more than cover direct costs (see Marketing Costs subsection and Annex A, Exhibit 4, Tables 3 and 4). There is no margin for administration, overhead, or debt repayment. The LPMC stated that it was aware of this situation, but that the presence of "offshore" funds, which presumably can be exchanged by some means for their real (rather than nominal) value, eased the situation.

The GOL is considering a proposal which would allow large farmers to export coffee directly. Realistically, this would reduce the throughput of the LPMC and, unless accompanied by commensurate staff reductions and an increase in efficiency, would increase the proportion of overhead on each unit of produce sold. Unless the deficit is covered by taxation at large or by the receipt of unrequited and costless funds, a reduction in the extent of, rather than a complete removal of, the LPMC monopoly might worsen the situation as far as the small grower is concerned.

The following observations made during interviews with producers, agents, and other intermediaries, and LPMC officials illustrate some aspects of the performance of the market system.

In Lofa county, the LPMC claims to have no buying agents operating. Many of the LPMC's former agents have become agents and sub-agents for the coops which seem to dominate the coffee and cocoa trade in the county. Sub-agents operating in the Johnnytown weekly market near Voinjama reported paying farmers \$.06 to \$.65 (cash) per pound for clean coffee, transporting the coffee to Voinjama, at approximately \$.01 per pound, and

selling to the coop agent at \$0.65 per pound. The agent reports selling to the LPMC on behalf of the coop for \$0.67 per pound on average and receiving a 1 percent commission. The coop's agent complained that he is caught in a credit trap between the producer and the sub-agent, who are paid in cash, and the LPMC, which is delaying payments (this year by only a few days on average). The LPMC also owes thousands of dollars for paddy rice delivered and never paid for last season.

It became apparent in our interviews that the transaction between traders and farmers is a two-step process. First the price is discussed and agreement on a reasonable amount, such as \$0.65, is reached. Then the produce is weighed and the farmer is informed how much money he will receive. For example, during Voinjama's Friday weekly market, an agent purchased a small bag of clean coffee from a farmer for \$1.00. The bag of coffee weighed 2 pounds on the agent's scale, which was precise to within 10 percent of our own. Although the farmer might have believed he had received a fair price, the \$0.65 the agent reported as his buying price, he had received only \$0.50 per pound. Unfortunately, farmers in need of immediate cash or ignorant of the operation of a scale or the weight of their produce are not in a position to bargain for a better price.

Farmers generally tend to have little idea of the value of their coffee or cocoa crops. They are accustomed to being price-takers, are poorly prepared to argue with buyers using scales, are in need of immediate cash, or are unable to transport their produce to the market or the LPMC. Traders are willing to make an advance cash payment to a farmer for his crop early in the season. Farmers in need of cash will sell their crop at a large discount to the trader. Farmers were generally disappointed in the income generated from their coffee and coca, but nevertheless were resigned to accept the low price offered.

For example, a farmer in Lofa reported having sold his coffee and coca directly to the LPMC at \$35 per 220-pound bag of cherry coffee (\$0.16 per pound) and \$60 per 220-pound bag of cocoa (\$0.27 per pound). In addition he spent \$1.00 per bag to transport the coffee and \$20 to \$30 to transport himself back and forth to collect his cash payment. The fairness of the price received cannot be determined without knowing the quality of the produce, but the farmer is more concerned with meeting his cash requirements than with maximizing his return by arguing over the price or by using improved maintenance or harvesting techniques. He considers that he is forced to continue to give (a minimal amount of) attention to his trees even if he only gets \$1 per bag since it is the only source of cash for his children's education.

Another Lofa farmer reports having sold cocoa to agents for \$50 per 200-pound bag (\$0.23 per pound). He believes that some cheating is involved in the negotiation of deductions made for the quality of his crop. A Bong county clan chief reported having sold cocoa to the LPMC for \$45 per double bag (\$0.20 per pound), with the understanding that deductions of five percent or more were made for defects. He states that he has no choice but to accept these results, but states that when selling to middlemen, no deductions are made.

NCRDP officials cited the practices of middlemen in the coffee and cocoa trade as a major problem. They contend that the low quality of produce is not the fault of the farmer but a result of the trader's practice of buying produce at a low price regardless of quality and then influencing LPMC graders to accept the low quality produce. Because there is no differentiation of quality, the farmer has had no incentive for improvement. Middlemen, many of whom own some means of transportation, have consistently sought out and reached most farmers, many of whom have no other access to a market for their produce. In response to being pushed out of the market by the creation of FDAs and CMAs, these middlemen in Nimba

county have raised to prohibitive levels the amount they charge to transport their competitors' produce.

In Grand Gedeh County, the LPMC operates one pick-up truck to serve the whole of southeastern Liberia. Officials of the EEC Southeastern Liberia Development Project report that middlemen are still very active, partly because of their willingness to offer credit to farmers. These officials report the modal amount of purchases of cocoa are at sub-grade prices, resulting in a lack of incentive for farmers to deliver quality produce.

Examples such as these, illustrating deficiencies in the structure, conduct, and performance of the marketing system, are legion. Clearly, much is wrong with the existing internal marketing system for both cocoa and coffee, and it is the farmer who is consistently disadvantaged in most marketing transactions.

External Marketing

The LPMC conducts all external marketing of cocoa and coffee through its office in Monrovia. The number of overseas buyers is limited, and a large majority of sales are made to produce traders. In view of the poor financial position of the LPMC, a quantity of produce was pre-financed (i.e., paid for before delivery). This type of arrangement is inevitably accompanied by low prices and should be avoided whenever possible.

Opinions vary on whether sales through a limited number of trading houses tend to optimize receipts. The LPMC has limited facilities for monitoring trade. Direct sales to end users — processors or manufacturers — may be more troublesome and may, on occasions, produce sub-optimal trade. These types of sales may be some sort of safety valve when there is a large surplus of commodities, because a certain amount of

"brand loyalty" may be engendered. Large savings could be made in administration if commodity sales were handled through overseas brokers. Brokers are paid a commission, which could be enhanced with a performance bonus. Correct foreign currency returns could be assured by a system of "reintegration."

There are disturbing indications that Liberian coffee ICO stamps may have been sold to a trading firm from another ICO-participating country (see Annex A, Exhibit 1, for details). The implications are that the export quota stamps (which are required to make exports to members of the ICO) were given in exchange for some advantage — pecuniary or otherwise. Meanwhile, the stocks of coffee in Liberia would include some coffee which could have been sold to the ICO member market. The losers were Liberian coffee producers, the GOL, and the nation overall, because, in lieu of being sold to the ICO market, the in-stock coffee would have been sold to the non-quota market at a substantial discount to the prevailing ICO market price.

Marketing Costs

Tables 3 and 4 in Exhibit 4, Annex A contain illustrative marketing costs for cocoa and coffee. The costs given are direct; they exclude any overhead or capital costs. Although an allowance is made for local collection and for rental of premises for substations set up by the LPMC, the final cost of this operation will depend on throughput. If the FOB price of Robusta coffee stabilizes at about US\$ 1 per pound, then the contribution of coffee to LPMC overhead and expenses (and any requirement for debt repayment) will be between 12 and 17 percent. Cocoa, at a realistic price of \$0.60 cents per pound for the current season, will show a loss. Bearing in mind the manifestly high staffing ratio of the LPMC compared with the amount of produce handled, the debt situation (which is said to have worsened since the end of the 1985/86 season, when the LPMC overdraft was in excess of

\$10 million), and the strong possibility that world prices of coffee and cocoa will remain relatively low in the medium term, the returns are probably insufficient for coffee and certainly insufficient for cocoa.

But there is very little possibility of economies being made in marketing costs, given the current situation. Conversations with the LPMC established that, because they were allowed to retain a proportion of their earnings in foreign currency, the squeeze on margins may be more illusory than real. A real exchange rate of in excess of US\$ 1:L\$ 1, compared with the nominal parity, must allow a considerable margin for adjustment.

Local marketing costs are difficult to estimate. Booker Agriculture, in 1986, produced estimates for Grand Gedeh county which included truck hire for a round trip of 54 miles and the cost of labor. The cost of this local collection was calculated at about \$0.017 cents per pound. Clearly, a middleman buying dry cherry coffee would wish to process it to clean coffee in order to be as economical as possible in transportation. A similar estimate was prepared for the cost of operations of an LPMC agent. The cost per pound of produce was exactly \$0.03. To this should be added the cost of transportation to the LPMC depot which would probably add \$0.01 to \$0.02 per pound. If the LPMC set up depots, then the marketing costs per pound of produce could amount to about \$.05.

Export Prices for Liberian Coffee and Cocoa

All cocoa production is of the bulk varieties, so the price received will reflect world market prices without the premia gained by finer-flavored cocoa. The large majority (97 percent) of coffee production is of Robusta; the remainder is Liberica (which finds some favor in Middle Eastern markets) plus a small amount of Arabusta, which is a Robusta/Arabica hybrid. It is doubtful whether the increased cost of production and processing of

Arabusta can be recovered in trade. On international markets, Robusta coffee has recently been discounted heavily compared with Arabica, and the sale of Robusta can be generalized as the marketing of a commodity rather than a unique product, as is the case for some grades of Arabica.

Although there have been occasions (1980-81 and 1981-82) when exports of coffee by Liberia to non-members of the ICA were reasonably substantial (3,000 tons over the two years), the majority of coffee sales were made to importing members of the ICA. Annex Table 1 provides a comparison of the FOB values of exports to ICA members since 1967-68. These aggregate data may reflect the timing and destination of sales and can only be regarded as an approximate guide. If coffee from Côte d'Ivoire is taken as a marker, Liberian coffee, which was sold at a discount until 1976-77, fetched a large premium in that year (the timing of sales was all-important in that year of rapidly moving prices), experienced a mixed performance until 1985/86, sold at a large discount in 1986/87 and a lesser discount in 1987/88. The performance compared with neighboring Guinea and Sierra Leone is more mixed, but in general and in the 1980s especially, Liberian coffee has received a premium. The majority of the Liberian coffee trade (more than 90 percent in recent years) is with the European Economic Community (EEC). Imports by the community and by the four large importers, the Federal Republic of Germany, France, the Netherlands, and Denmark, are summarized in Table 7.

In three of the five years, imports by Denmark are at a discount from the EEC as a whole. In 1987, a year of low prices, the discount approached 10 percent, covering about one-sixth of trade. The discount may reflect special marketing arrangements with buyers in Denmark (in the early history of the LPMC, Danish commercial interests had a minority equity interest in the Corporation and, since the nationalization of the LPMC special trading links have been maintained between the LPMC and its erstwhile partner). Similar data for cocoa imports are provided in Table 8.

Table 7. Coffee Trade with the EEC
(Metric tons and ECUs per kilogram)

Year	EEC	Germany	France	Netherlands	Denmark
<u>Volume</u>					
1983	6,413	1,458	957	2,159	1,753
1984	3,618	1,222	376	1,171	837
1985	8,771	2,377	636	4,287	1,116
1986	5,627	1,582	1,000	1,189	1,120
1987	3,870	1,578	384	901	611
<u>Unit value</u>					
1983	2.88	2.92	2.84	2.89	2.84
1984	3.51	3.65	3.61	3.49	3.31
1985	3.45	3.50	3.66	3.47	3.20
1986	3.31	3.43	3.36	3.05	3.34
1987	2.10	2.07	2.09	2.29	1.93

Note: Unit values are CIF.

Source: EEC Trade Statistics.

Table 8. Cocoa Trade with the EEC
(Metric tons and ECUs per kilogram)

Year	EEC	Germany	Netherlands
<u>Volume</u>			
1983	5,621	2,690	2,931
1984	5,912	3,423	2,639
1985	5,833	2,254	3,329
1986	4,153	1,036	3,117
1987	2,576	50	2,526
<u>Unit value</u>			
1983	1.90	2.06	1.75
1984	2.87	2.96	2.45
1985	3.09	3.03	3.13
1986	2.59	2.91	2.49
1987	1.98	1.76	1.99

Source: EEC Trade Statistics.

Almost all EEC trade (a large proportion of total trade) is with the Federal Republic of Germany and the Netherlands. We recommend that steps be taken to increase the number of outlets.

Prices Paid to Growers

A series of official prices paid to growers for clean coffee and fair average quality (FAQ) cocoa is given in Annex A, Exhibit 4, Table 2. These prices are also deflated by the retail price index (Monrovia) to give an indication of the movement of prices in real terms. Current prices increased in the late 1970s to reflect the advance in world prices of cocoa and coffee. They have since fallen back, with coffee prices in 1988 equivalent to those paid in 1977 and cocoa prices approximating those paid in 1976. In real terms, prices of both commodities are less than half the amount paid in 1975. Clearly, it is arguable that an urban retail price index does not accurately track price movements in rural areas. Presuming that a major part of the proceeds from cash crops in mixed farming systems are used to purchase those goods and services which are "imported" into the rural areas, it is also clear that there has been a serious erosion of the purchasing power of the cocoa and coffee farmer.

In addition, considerable evidence suggests that, for a number of reasons, the majority of small farmers are receiving substantially less than the official price for their produce. Although it is reasonable that a farmer who delivers substandard produce should be penalized in line with the discounts demanded by the commodity markets, farmers and private traders claim that arbitrary penalties have been extracted by the LPMC and its buying agents. Furthermore, the system of local collection and payment is such that the grower may be forced to sell to agents — whether licensed or unlicensed — at a very considerable discount. The LPMC states that it has discontinued the system of using agents and is buying only directly or through

cooperatives. However, some farmers are unable to reach the buying stations and will sell to a local trader. This trader has the option of smuggling produce into neighboring countries or selling to an LPMC depot. An LPMC official admitted that they do not bother to check the origin of cocoa and coffee offered for sale and turn a blind eye to the activities of unlicensed agents. Thus, a system of licensed agents, however imperfect, has been changed into a system with too few buying stations and increased activity by unlicensed agents.

Some experiences of farmers are as follows:

- Bong county: sold cocoa at approximately 7 cents per pound — official buying price 50 cents per pound; sold to Mandingo trader because cash was required prior to harvest in order to pay bills; no method of transport in any case.
- Bong county: sold dry cherry coffee at 15 to 20 cents per pound — official buying price 35 cents per pound; sold to Mandingo trader who offered cash; would prefer to sell direct to the LPMC but cannot afford to wait for payment.
- Bong county: cocoa sold at 30 cents per pound to Mandingo trader who paid spot cash.
- Bong county: very articulate farmer sold cocoa directly to the LPMC and received official buying price (50 cents per pound).
- Bong county: group of farmers sold coffee to traders at a discount; complained that the LPMC does not visit, that it is impossible to deliver produce to depot; this group had learned of the farmers' group activities in Nimba county and wished to emulate them.
- Nimba county (from USAID trip report July 11, 1988): "during the last [1987/88] marketing season, LPMC overcame the farmers' reluctance to sell at half-price by bringing soldiers with them on the buying campaign, telling the farmers or village warehouse

managers that LPMC was the only authorized purchaser, and, when resistance was offered, confiscating the cocoa and coffee." The Nimba County Rural Development Project (NCRDP) representative said that there had been a misunderstanding which would not be repeated this (1988/89) year.

- Lofa county (USAID visit report November 1-6, 1988): LPMC official failed to give direct answer when asked whether the LPMC would be able to buy all the produce in Lofa county if it were delivered; farmers stated that the LPMC did not explain deductions (for coffee and cocoa) to them, that there was a slight delay in payment, but were generally not too critical of the LPMC; farmer stated that the LPMC pays better prices than private buyers when it has money, clean coffee purchased by the LPMC at 54 cents per pound (official posted price 70 cents per pound); produce buyer sells coffee and cocoa to the LPMC although he receives neither commission nor transport allowance.

The quality control sheets issued by the LPMC are reproduced as Annex 1. The deductions made for defects such as excess moisture are not unreasonable and, if fairly administered, would provide the appropriate incentive for good harvesting and processing practices. But, if arbitrary deductions bearing no relation to the intrinsic quality are made, then farmers will not consider it worthwhile to harvest correctly (for instance, avoiding black beans in coffee) or process correctly (achieving dry, sound produce with an absence of "off" flavors).

Relationship Between Grower and Export Price

The relationship between the official price paid to growers and the export (FOB) price is given in Table 9.

Table 9. Export and Grower Prices
(U.S. cents per pound)

Crop year	Cocoa			Coffee		
	Grower	Export	Grower price as a percentage of export price	Grower	Export	Grower price as a percentage of export price
1975/76	28	59	47	38	87	44
1976/77	53	124	43	40	183	22
1977/78	58	161	36	70	156	45
1978/79	78	156	50	78	137	57
1979/80	92	56	164	78	161	48
1980/81	78	99	79	90	106	85
1981/82	75	92	82	55	104	53
1982/83	65	87	75	55	117	47
1983/84	45	98	46	55	114	48
1984/85	45	111	41	60	116	52
1985/86	45	103	44	60	130	46
1986/87	50	106	47	70	111	63
1987/88	45	103	44	70	91	77

Source: Cocoa prices and coffee grower price, LPMC coffee export price, International Coffee Organization.

With the exception of the years 1979/80 to 1982/83, after the slump in world cocoa prices, prices to growers of cocoa have remained at less than half of the export prices. During the last five years, the official grower price averaged 44 percent of export realization. The relationship between coffee prices has generally exhibited a narrower variation, although the price to growers in 1976/77 was only one-fifth of the export price. With the reduction in world prices from 1986/87, the margin has narrowed considerably.

Government Policy

The policy of parity of currency plus the monopoly granted to the LPMC in marketing coffee and cocoa results in unnecessary constraints being placed on the development of those crops. Insofar as growers spend a portion of their income on goods or services produced by the modern sector — which, as far as pricing is concerned, reflect the de facto devaluation of the currency, they are penalized by being able to sell their produce only at the official rate. Liberia is a price taker for both coffee and cocoa; as intermediate costs increase inexorably in line with inflation, the price to growers will be squeezed. This tendency will be exacerbated by a shortage of funds for prompt payment, thus forcing growers to sell at a discount for cash, and by the pronounced rent-seeking behavior of some LPMC staff and other officials who control commerce and traffic.

If growers were to receive the full official price for their produce, there appears to be sufficient margin to allow reasonable maintenance, harvesting, and processing (additional discussion on this point appears below). However, there is little margin for development that would include rehabilitation and replanting bolstered by an effective extension service.

The development of the cocoa and coffee sectors must stem from both national and international government policies. The international prospects for coffee are bound up with the prospects for renewal or extension of the present International Coffee Agreement and the probable change in the rules governing sales to non-members. The more objective method of setting coffee quotas has meant that Liberia, which has had a patchy record in sales, stock retention, and recorded production, has lost quota share. In the past, Liberia was given almost automatic increases in its quota. This culminated in the peak initial quota of 137,000 bags (8,200 metric tons) in the 1984/85 coffee year. The initial quota for the 1988/89 season was 108,000 bags (6,500 metric tons) or a reduction of 21 percent from the peak. Initial quotas

in any one year, for any member of the group of small countries exempt from the price trigger mechanism, may be increased only as a result of shortfalls by any other member. If the current rules continue, Liberia, if it wishes to increase its annual quota allocation, must record at least its full production (avoiding unrecorded cross-border trade), must maintain some policy for stock retention and finance, and must export its full quota each year.

With the exception of two years, Liberia's exports of coffee to the non-members of the ICA have been negligible. This trade is often carried out at a discount. Consuming nations have raised considerable objection to the sale of heavily discounted coffee. It is probable that the existing rules governing this trade will be extended to remove unwarranted discounts. These rules may be honored more in the breach than in the observance. If Liberia wishes to develop its coffee sector, it will almost certainly have to be more consistent in its marketing to non-members. Experience leads to the suggestion that these types of sales are best carried out by the more flexible private sector.

Quantitative restrictions are not in force for the cocoa trade of Liberia. Because Liberia is not a member of the International Cocoa Organization, it is subject to a small levy on its exports to signatories to the Cocoa Agreement. With a more realistic exchange rate and economies in marketing, Liberia should be able to compete profitably and to expand trade.

Production of Coffee and Cocoa

The number of cocoa and coffee trees in Liberia is estimated by the Ministry of Agriculture based on sample surveys. Data for cocoa trees are given in Table 10.

Table 10. Number of Cocoa Trees
(Millions)

Year	Total	Bearing	Year-to-year change in trees bearing	Non- bearing	Year-to-year change in trees bearing
1975	22.2	10.2	-	12.0	-
1976	22.8	9.1	-1.1	13.7	1.7
1977	27.8	9.9	0.8	17.9	4.2
1982	37.0	20.4	10.5	16.6	-1.3
1984	39.7	27.9	7.5	11.8	-4.8
1985	39.7	27.9	0	11.8	0
1986	39.7	28.2	0.3	11.5	-0.3
1987	40.0	29.2	1.0	10.8	-0.7

Source: Ministry of Agriculture.

The area occupied is estimated by assuming that there were 1,500 trees per hectare until 1986 and 1,375 trees per hectare in 1987.

The number of non-bearing trees in 1977 included sufficient immature trees to allow the doubling of productive trees between that year and 1982. This was followed by a considerable increase in productive capacity between 1982 and 1984. Since that year, there has been little change in capacity, which implies that the number of trees that are non-bearing includes a majority of trees that are senile or abandoned. The increase in productive capacity between 1977 and 1982 followed the reasonably satisfactory prices paid to growers (and the high world prices for growers who preferred to sell their produce through unofficial channels) during the late 1970s; whereas the stagnation in productive capacity in recent years and the implicit increase in the number of trees abandoned or allowed to go out of production relates to the poor prices paid to growers.

The Ministry of Agriculture estimated that slightly more than 48,000 agricultural households (26.8 percent of all agricultural households) grew cocoa in 1987. Households may work more than one farm, and the number of cocoa farms was estimated at 52,300. From the data in Table 10, we calculate that an average farm will have 558 cocoa trees in bearing occupying approximately an acre. There is an apparent reduction in the number of households growing cocoa since 1981 when it was estimated (MOA preliminary data - quoted in World Bank, 1984) that 52,000 households grew cocoa. Particularly noticeable is the difference in the number of households growing cocoa in Grand Gedeh county, estimated at 24,000 in 1981 (up from 4,800 in 1978) and at 6,200 in 1987. The 1981 figure appears to contain an error, unless there was considerable migration to Grand Gedeh between 1978 and 1981 and pronounced emigration since. It is probably best to compare the 1987 figure with data from the 1978 survey, which appears consistent with 1976 and 1977 estimates. Table 11 compares households growing cocoa in Liberia and in the main growing counties.

The most dramatic increase has occurred in Nimba county; there has been a decrease in Lofa and an increase less than the national average in Bong — both of which are project areas. Although the data for Grand Gedeh look somewhat doubtful, the impression is that

- Slightly more than one quarter of all farming families grow cocoa.
- The proportion is somewhat higher in "project counties," where growth is maintained by the continuance and acknowledged efficacy of the project.
- The area devoted to cocoa averages about one acre in each unit farmed.

There is an absence of information about the distribution of the size of holdings. In Grand Gedeh county only 15 percent of holdings exceeded

Table 11. Households Growing Cocoa

	1978		1987		Percentage increase
	Number	Percentage of all farming households	Number	Percentage of all farming households	
Liberia	40,000	25	48,090	26.8	20.2
Bong	7,300	26	8,300	28.3	13.7
Grand Gedeh	4,800	46	6,200	45.9	29.2
Lofa	10,400	40	9,800	35.6	-5.8
Nimba	8,100	24	13,500	34.9	66.7
Others	9,400		10,290		9.5

Source: Ministry of Agriculture.

3 acres, with another 15 percent ranging between two and three acres; 29 percent farmed cocoa holdings of less than 1 acre; and the remaining 40 percent had cocoa farms of between 1 and 2 acres (EEC, 1987). Similar data apply in Nimba county, with the exception that a farm size of less than 1 hectare is the most prevalent (CATAD, 1987). Very few farms have cocoa or coffee holdings in excess of 100 acres. The best estimate is that those in excess of 100 acres number no more than 10, of which some are managed by the LPMC subsidiary, the Liberian Coffee and Cocoa Corporation (LCCC).

Data for the number of coffee trees in Liberia, corresponding to that for cocoa, are given in Table 12.

There was a marked increase in productive capacity between 1975 and 1982 as a consequence of the reasonable prices paid during the late 1970s. Although the data show that productive capacity increased by 7 percent between 1986 and 1987, the period since 1982 has been characterized by

Table 12. Number of Coffee Trees

(Millions)

Year	Total	Bearing	Year-to-year change in trees bearing	Non- bearing	Year-to-year change in trees bearing
1975	29.7	19.2	--	10.5	--
1976	31.1	21.2	2.0	9.9	-0.6
1977	39.4	26.8	5.6	12.6	2.7
1982	42.2	29.7	2.9	12.5	-0.1
1984	42.2	30.4	0.7	11.8	-0.7
1985	44.0	30.0	-0.4	14.0	2.2
1986	44.2	30.6	0.6	13.6	-0.4
1987	45.5	32.8	2.2	12.7	-0.9

Source: Ministry of Agriculture.

stagnation. As with cocoa, it is likely that the number of non-bearing trees now includes a majority that are senile or abandoned.

The Ministry of Agriculture estimated that 47,480 households grew coffee in 1987 and that the number of farms was 55,680; so, on average, each household farmed 1.17 units. This shows little change from statistics reported by the Ministry of Agriculture for 1978. A comparison of the 1978 and 1987 breakdowns by county is given in Table 13.

Again, there has been a marked increase in the number of households growing coffee in Nimba county and decreases in the other two project counties. For coffee, Bong county has a considerably poorer performance than Lofa (the reverse of the case for cocoa). About the same proportion of farming families grow coffee as grow cocoa. A major difference between production of coffee and cocoa seems to be the concentration of coffee growing in Lofa and Nimba counties. Another difference is that the average

Table 13. Households Growing Coffee

	1978		1987		Percentage increase
	Number	Percentage of all farming households	Number	Percentage of all farming households	
Liberia	43,100	27	47,480	26.4	10.2
Bong	5,500	20	4,700	16.0	-14.5
Lofa	13,700	54	14,800	53.8	8.0
Nimba	17,600	52	21,200	54.8	20.4
Others	6,300		6,780		7.6

Source: Ministry of Agriculture.

size of holdings of productive trees is less than that for cocoa, 0.7 acres, compared with 1.1 acres. Data for Nimba county (CATAD, 1987) indicate that about 80 percent of holdings are less than 3 acres: about 31 percent are less than 1.1 acres; 26 percent between 1.1 and 2.1 acres; and 23 percent are between 2.1 and 3.1 acres. These data suggest that the average size of holdings in that county, and the production per farm, is somewhat higher than for Liberia as a whole.

The data contained in Tables 10 and 12 suggest that approximately 66 percent of the cocoa trees and about 40 percent of the coffee trees were less than 16 years old in 1987 (the difference between trees bearing between 1975 and 1987, assuming four years of growth prior to bearing). From the same sources, it is estimated that about 30 percent of cocoa trees but less than 10 percent of coffee trees were aged nine years or less. The relative youth of the cocoa stock compared with that of coffee reflects the situation in Côte d'Ivoire; the implication is that relative prices to growers during the 1960s and 1970s favored cocoa production.

The economic life of trees varies according to production and soil conditions. Given an average environment and some maintenance, the economic life of a cocoa tree is about 40 years; however, yields tend to decline after 25 years and the decline will be greater if soil is poor and maintenance cursory (see Wood and Lass). Probably the major reason for the relative decline of cocoa production in Ghana and Nigeria was the very large proportion of elderly trees in the mid-1970s. From the information available for Liberia, it appears that the cocoa orchard is young enough at least to maintain average yields for the next decade, all other things being equal. Further progress, on existing lands, will follow from replacement and rehabilitation.

There is less cause for optimism in the case of coffee. Under a smallholder mode of production, with minimum maintenance, the useful life of a Robusta tree is about 25 years. Yields will probably decline after 15 years, with the rate of decline arrested by a program of regenerative pruning (stumping) quite early in the life of the tree. With an estimated 60 percent of the tree stock being more than 16 years old and, as far as can be established, a marked absence of regenerative pruning, it can be expected that production will decline over the next 10 years unless some program of replacement and rehabilitation takes place. The prerequisite for such a program is a pricing policy that will allow growers to make the necessary investment.

Cost of Production

Annex A, Exhibit 4, Tables 5 to 10 contain estimates of the cost of production of cocoa and coffee prepared by Booker Agriculture (for the EEC project in Grand Gedeh county), the World Bank (1984), and the Technical University of Berlin (for the Nimba county project). The estimates are for

traditional production; tools are the only cash input. Development costs are included by Booker and the World Bank and excluded by the Technical University of Berlin. An allowance for transport has been added and gross returns per person-day have been calculated. The following comparisons exclude transport costs which are, perhaps, unlikely to be incurred when growers sell at a discount to the official price.

The number of person-days used in establishing plantations has not been included in the surveys. This can be quite extensive: Okali (1974), cited in Wood and Lass, estimated that the labor requirement for establishing 1 hectare of smallholder coffee in Ghana amounted to 505 person-days during the four years before cropping. It is notoriously difficult to calculate the cost of production of smallholders, but from the studies that are available (Wood and Lass), it would appear that the World Bank may be somewhat optimistic (even with the low level of yield taken into consideration) in their estimate of person-days required. However, the estimate of the World Bank is similar to estimates of smallholder production in parts of Côte d'Ivoire. One time-saving practice in Côte d'Ivoire is that of selling incompletely dry cocoa to traders. It might be expected, therefore, that the price received under the World Bank scenario would be towards the bottom of the range given. If the full price of 50c per pound is received, smallholders who dry their cocoa completely and deliver it to an LPMC depot would obtain returns of more than L\$ 5 per person-day. The assumption is that the return given in examples 1 and 3 of Table 14 would be reduced to allow for transportation (see Annex A, Exhibit 4, Tables 5 and 7). This return is twice as great as possible earnings in alternative agricultural occupations; however, it seems unlikely that many farmers receive the full price. Even organized farmers in Nimba county can expect to receive only about 83 percent of the official price (NCRDP). This would return about L\$ 4.5 per person-day, which, although well in excess of the assumed agricultural wage of L\$ 2.5 per person-day, may be insufficient to persuade farmers to increase the time spent on maintenance to any marked extent or to allow for replanting.

Table 14. Cost of Traditional Production of Cocoa

Item	Booker Agriculture	The World Bank	Technical University of Berlin
Cash	28	36	8
Tools	8	14	8
Development	20	22	0
Person-days	55	24	54
Maintenance	23	13	
Harvesting/ Processing	32	11	
Output (pounds) dried beans	667	500	618
Return to Person-day (L\$)			
At 15c per pound	1.31	1.63	1.57
At 25c per pound	2.52	3.71	2.71
At 40c per pound	4.24	6.83	4.43
At 50c per pound	5.55	8.92	5.57

Source: Annex Tables 5, 6, and 7.

In areas in which farmers are not organized, the returns may only approximate or, in some cases, be less than the wage for alternative occupations. Although the necessity for cash income may mean the retention of existing plantations, it is clear that not much may be expected in the way of maintenance or adherence to the correct methods of harvesting and processing.

A series of farm budgets (World Bank, 1984) illustrates the difficulties which may be encountered in persuading farmers to upgrade their holdings; a summary of the data is given in Table 15. Gross receipts are calculated by assuming that the average farmer receives 40 cents per pound of dry beans.

Table 15. Farm Budgets for Cocoa
(Hectare)

Item	System 1	System 2	System 3	System 4
Output (pounds)	496	992	1,213	772
Receipts (L\$)	198.4	396.8	485.2	308.8
Cash costs (L\$)	36.3	59.0	217.0	95.0
Net receipts	162.1	337.8	268.2	213.8
Person-day use	27	46	68	47
Return/person-day	6.0	7.3	3.9	4.5

Notes: System 1 = traditional; System 2 = System 1 plus underbrushing and the use of improved planting material; System 3 = System 2 plus fertilizer and chemicals; System 4 = rehabilitated cocoa. Noteworthy is that the addition of fertilizer and chemicals (in Systems 3 and 4) reduces the return per person-day by a considerable amount. Furthermore, System 3, especially, requires a large cash output, which usually will require finance.

Source: Based on World Bank (1984).

Data for costs of coffee production similar to that for cocoa appears in Table 16. Again, the time needed to establish trees has not been included. The number of person-days needed varies but estimates are given in Table 17.

The estimates in Table 16 of the days used for maintenance are very low. Muir (1989) estimated that the requirement for a reasonable standard of husbandry for low-input Robusta was in excess of 100 days per year. De Graff cites estimates of 50 days for Côte d'Ivoire, 67 days for Cameroon, and 88 days for smallholder Robusta grown in Lampung Province, Indonesia. Regenerative pruning may add another 20 to 30 days.

From the illustrations in Table 16, a smallholder receiving 80 percent of the posted price for coffee (in 1987-88, an average organized smallholder in Nimba county received 81.4 percent of the official price for dried cherry and 89.3 percent

Table 16. Cost of Traditional Production of Coffee

Item	Booker Agriculture	The World Bank	Technical University of Berlin
Cash	33	47	8
Tools	8	18	8
Development	25	29	0
Person-days	78	54	55
Maintenance	22	24	
Harvesting/ processing	56	30	55
Output (pounds)	600 ^a	550 ^a	847 ^b
Return to person-day (L\$) at cents per pound			
Clean			
20	1.12	1.17	1.55
40	2.65	3.20	3.07
60	4.19	5.24	4.62
70	4.96	6.26	5.36

a. Pounds of clean coffee.

b. Pounds of dry cherry coffee

Note: Excludes transport costs.

Source: Annex Tables 8, 9, and 10.

of the official price for clean coffee) would return between L\$ 4.19 and L\$ 5.24 per person-day. Again, compared with the wage rate for alternative occupations, the farmer is doing reasonably well, but arguably, there is insufficient margin to provide the funds and incentive for development. Coffee farm budgets given in Table 18 demonstrate this point.

Although there is a narrower spread than for cocoa, it is clear that any use of chemicals and fertilizers in growing coffee is not compensated by increased returns to labor. If there is surplus family labor, then there is a substantial

Table 17. Time Needed to Establish
Robusta Coffee

(Person-days per hectare prior to production)

Country	Days
Côte d'Ivoire	197
Cameroon	277
Indonesia	300
Robusta (low input)	234
Robusta (average input)	383

Sources: De Graff; Muir (1989).

Table 18. Farm Budgets for Coffee
(Hectare)

Item	System 1	System 2	System 3	System 4
Output (pounds)	551	992	1213	882
Receipts (L\$)	331	595	728	529
Cash costs (L\$)	47	61	170	72
Net receipts	284	534	558	457
Person-day use	57	81	113	90
Return/ person-day	5.0	6.6	4.9	5.1

Notes: Produce valued at 60 cents per pound; System 1 - traditional (tools are the only cash inputs); System 2 - traditional with improved planting material; System 3 - System 2 plus fertilizers and chemicals; System 4 - rehabilitated coffee (use of fertilizers and chemicals).

Source: Based on World Bank (1984).

increase in net receipts. The use of improved planting material appears to offer the best return to labor; however, continuing yields of the order

estimated will require fairly careful maintenance and future regenerative pruning.

Agronomic Aspects of Cocoa and Coffee

Cocoa

Liberia has a limited ecological suitability for growing cocoa (World Bank 1984, Booker Agriculture 1987, conversations with farmers 1989). The Ministry of Agriculture is making attempts to identify areas that have the soil and environmental conditions suitable for cocoa and other crops. This is a matter of priority, if expansion is contemplated. Prior to 1979, almost all the seed used for cocoa propagation was of the Amelonado variety. This is a hardy variety of cocoa, although slow to mature, and is typical of production in much of West Africa and Brazil. Improved hybrids, raised from varieties found in the upper Amazon region of Brazil, were made available to farmers by the LPMC and LCCC and latterly by the Nimba and Grand Gedeh projects. These hybrids have greater resistance to some diseases and can provide better yields.

The most serious disease in Liberian cocoa is black pod rot (*Phytophthora*). This is a fungal disease which, in one form or another, is prevalent in most, if not all, cocoa-producing regions. Losses from the disease can be so great that cocoa production in the most severely affected areas can become un-economic. In areas of high humidity, such as Liberia, pod rot is very likely to attack trees; a short dry season before harvest will often lessen its influence. Spraying with copper solution may provide some control, but is expensive and not completely effective. For the majority of smallholders, the best way to reduce the effects of the disease is through the use of proper cultural techniques. The reduction of excessive shade, adequate weed control, and regular harvesting are some of the methods

recommended. In addition, harvested pods, which may carry the spore, should be disposed of as soon as the beans are removed.

In addition to animals which eat the cocoa beans and which can be controlled only by hunting or trapping, the major pests are capsids, whiteflies, and caterpillars. Although capsids can be controlled by the use of insecticides, this method does not seem realistic for the majority of Liberian farmers. Sufficient shade, the maintenance of the cocoa canopy (with additional shade being used if the canopy is broken), and thorough weeding of invested areas are methods of control that can be used before adopting spraying techniques. Cocoa psyllids (whiteflies), although prevalent in West Africa, are not reckoned to be a very serious problem; crop levels are rarely affected to any great extent. No chemical control methods are used. Caterpillars may be more prevalent if the shade is excessive, and careful management of holdings provides the best remedy in the prevailing conditions.

Optimal production and the control of diseases and pests can be achieved best by a system of careful management, which implies an increase in the extension service and the research and development being carried out on farms. Discussions established that the extension service is both rudimentary and fragmentary; some officers are particularly concerned with developing their own business activities. In order to make the best use of the talent and energy available and to ensure that better techniques are propagated as widely as possible, an extension of the system of farmers associations such as those in Nimba county is essential. This matter will be referred to later, but at this point, it is worth stating that improvements in tree crop production can occur only within the context of real conditions and that farmers are almost certainly the best judges of what is feasible for them. It is recommended that Extension Officers be employed directly by farmer groups.

After cocoa is harvested, the pods are broken open and the beans are removed and separated from the husk, fermented, and finally dried. Fermentation can take place in several ways, typically in a heap, box, or basket. The important point is that the beans should be fermented long enough (6 to 8 days) according to method and turned regularly. Low prices paid to growers will cause them to neglect or shorten the process, which will have serious implications for the quality of the cocoa. Regular harvesting, so that only fully ripe beans are fermented, is preferable; regular harvesting also reduces the chance that pod rot may damage the beans as well as the pod.

Drying is equally important, so that

- Moisture is reduced to the level that is safe for storage and shipment.
- Bitterness, acidity and "off-flavors" may be reduced. If drying is too slow, molds may develop and off-flavors arise; if drying is too quick, the oxidative changes may not be completed, leading to excessive acidity.

Beans are normally dried in the sun on drying mats. They are spread out in the morning, turned and cleaned during the day, and heaped at night or in the event of rain. Drying takes between one and two weeks and is accompanied by sorting the beans and removing debris. Again, poor drying has implications for the quality of the cocoa and the safety of storage.

Fermenting and drying are suitable subjects for farm processing; the sale of wet beans is not to be recommended. Clearly, the farmer must be rewarded for good practice (or penalized for bad). That may be carried out most conveniently at the village or town level and will be all the more effective within the framework of group sales by farmer associations.

Coffee

Although Liberica coffee is native, almost all production is of Robusta coffee. Robusta coffee is hardy and is unaffected by the most serious disease of Arabica — coffee rust.

Robusta coffee is self-sterile; thus, the best planting material is obtained from clonal material. However, this is an expensive way of raising coffee, and a more practical way is to use clonal seedlings obtained from special gardens. Many of the coffee trees in Liberia have been raised from unselected material, and a comparatively small proportion comes from seedlings produced in Côte d'Ivoire. The authorities in that country have considerable experience in research and development. At one time, seedlings were distributed by the LCCC either freely or at low cost; seedlings are now distributed by the active projects.

Almost inevitably, the majority of production is low input/low output. This is typical of most smallholder production in Africa (Clark and Macrae; Muir 1987, 1988) and, in terms of the reality of the life of the farmer, is probably optimum. The use of fertilizers or chemical controls is unlikely, and at this stage of development probably inadvisable, for most farmers, but there are techniques of good husbandry that could be adopted. At the outset, sufficient seed gardens should be established, with research and development of new varieties being conducted locally, rather than nationally. This is probably best done through a system of farmer associations. Other considerations are as follows.

Spacing. A survey (Booker Agriculture) found that most farmers in Grand Gedeh county planted at 6 feet by 6 feet and occasionally at 7.5 feet by 7.5 feet. This is almost certainly too close for the available nutrients and for tree management. Although the correct spacing will depend on the

competence of the farmer and the availability of cash and labor inputs, it is suggested that a target spacing should be 3 meters by 2.5 meters (approximately 10 feet by 8 feet).

Shade. If fertilizer is not available, it is best to plant under light shade. A secondary advantage is that the organic matter from the shade trees enriches the soil. Data on the first harvest on a plantation in Madagascar (Snoeck in Clarke and Macrae) showed that for coffee grown without fertilizer, temporary shade gave an increase in yield of 98 percent. Shade trees may also serve as windbreaks if Harmattan winds are a problem.

Intercropping. This may be practiced conveniently (with food crops) during the period between planting and production and if trees (through regenerative pruning) are temporarily taken out of production. Food intercrops will affect yields, and their use must depend upon the circumstances of the farmer. Some good results have been obtained with leguminous plants, which fix nitrogen.

Weeding (underbrushing). Although one annual round of weeding is commonly practiced in Liberia, this is insufficient. Four rounds would probably be sufficient to obtain reasonable yields, which might approach double those obtained on poorly managed holdings. Where labor availability is a constraint, successful and economic results have been obtained with the use of herbicides. With Robusta coffee, the use of herbicides is arguably the most economic use of cash inputs.

Pruning. This is essential if good yields are to be obtained. Berries are formed on new wood and the tree has to be kept in bounds to prevent disease and to assist harvesting. In addition, suckers must be removed every two months. Regenerative pruning is the best practice. It is generally carried out for the first time after the fifth harvest, when branches reach

the height of 2.5 to 3 meters. The normal practice, which is to remove four out of five branches (the remaining branch being removed in the following year) requires a considerable amount of labor and results in extreme crop loss. Some success has been obtained in the Center-West region of Côte d'Ivoire by pruning one branch each year from the fifth year (Muir, 1988).

Harvesting. Low prices received by growers and the irregular methods of marketing almost guarantee poor harvesting. This is because the coffee is "strip picked" with ripe, underripe, and overripe cherries being picked at the same time. This leads to the presence of "black beans" in the final product. An excessive amount of such beans means that the coffee cannot be sold (especially in times of world surplus) or has to be sold at a considerable discount. This discount can be as high as 40 percent. A trader, purchasing dry cherry, has no way of assessing the proportion of black beans. Furthermore, a grower selling directly to the LPMC and who has experienced a degree of arbitrary deduction in the past, has no incentive to harvest correctly.

Processing. The coffee cherry is dried in the sun on cement floors or raised platforms. Drying on earth, although practiced, is not recommended, as coffee picks up "off flavors." If coffee is inadequately dried, musty odors develop, and poorly dried coffee may be unsalable. A farmer will generally sell dry cherry; however, he has the option of selling clean coffee, which requires removing the substances covering the bean. This can be done by simple hand methods, but the best method (which will avoid an undue proportion of broken and damaged beans) is to use a hand huller. A hand huller could be purchased and maintained most conveniently by a small group of farmers. Although broken beans may still be a problem, the advantage of primary processing is that value can be added at the farm level, and the presence of black beans may be detected more easily when the coffee is delivered to the secondary processing plant.

The LPMC facilities at Voinjama, Gbarnga, and Monrovia are more than adequate for the processing and storage of the cocoa and coffee crops of Liberia.

A Review of Marketing Systems for Coffee and Cocoa in Selected Other Producing Countries

Other marketing systems for coffee and cocoa are summarized in the following sections.

Africa

Côte d'Ivoire

Côte d'Ivoire has a "mixed system." Producer prices are announced by the Caisse (the Stabilization Fund) which also fixes allowances for all other internal marketing: local marketing, intermediate marketing, an allowance for facility underutilization, exporters' profit, and so on. An export tax is also levied. If exporters are able to sell at a price greater than a previously agreed FOB price, then the excess receipts are returned to the Caisse; if there is a shortfall, exporters are compensated by the Caisse. The assurance of a fixed profit has enabled exporters to invest heavily in plants and equipment. Processing and grading equipment is of the best quality.

For some years, world prices of cocoa and coffee were sufficient to enable the Caisse to operate at a surplus. It appears that this money was used for purposes other than those which would serve to stabilize cocoa and coffee operations. The recent low world prices means that the Caisse is currently operating at a loss in its cocoa operations and about breaking even in its coffee operations. Sufficient funds have not been retained to pay for the full cocoa and coffee crops, which has resulted in the pre-financed sale

of cocoa to the French trading house referred to earlier. In addition, there is no price differential (as a result of presidential decision) between cocoa and coffee. Large surpluses of cocoa have been built up, whereas the coffee sector shows declining yields and large stocks of black beans. Because smallholders are forbidden to process their coffee and no incentive is paid for quality, growers deliver low quality dry cherry.

The distribution of coffee receipts for the 1987/88 marketing season is illustrated in Table 19.

The explicit export tax has risen from CFAF 57.5 per kilogram in 1982/83 to CFAF 100.5 per kilogram in 1987/88. The government surplus (the addition of the tax and the surplus of the Caisse) amounted to almost CFAF 500 per kilogram in 1984/85, representing 44 percent of the CIF value. Prices paid to growers in real terms have declined over time and in 1987/88 were about two-thirds of those in 1964/65. The result of this policy has been a gradual reduction in yields and a substantial deterioration of the tree stock. Another problem has been the gradually increasing proportion of black beans as a result of poor harvesting; stocks of this undergrade coffee amounted to more than 1 million bags in 1987 (60,000 tons). The production of this coffee (which is purchased at full price but can be sold only at a discount) will have a very serious effect on the profitability of the industry.

Cameroon

In essence, the Marketing Board in Cameroon fulfills the same sort of function as the Caisse in Côte d'Ivoire. There are some exceptions. Although the Marketing Board exports directly (it is somewhat more active in this respect than the Caisse, which exports a limited amount), it also sells coffee to exporters and allows the Arabica Coffee Union (UCCAO) to export directly. The price differential between cocoa and coffee does not engender

Table 19. Distribution of Coffee Receipts
in 1987-88 for Côte d'Ivoire

Item	Percentage
<u>CIF Value</u>	100.0
Carriage	8.9
Port charges	0.5
Exporters' profit	0.4
Balancing item ^a	8.3
Export tax	14.2
Surplus of Caisse (Government receipts)	0.3 (14.5)
Internal marketing	10.4
Local collection	3.9
Price to growers	53.1

a. The balancing item or *Hors Barème* is an allowance for the cost of stockholding, capacity underutilization, and finance charges. It is paid to exporters.

Source: Caisse.

a misallocation of resources. Nevertheless (as with coffee in Côte d'Ivoire), the pricing policy has not encouraged development in either coffee or cocoa production.

Both Cameroon and Côte d'Ivoire have currencies that are fixed in relation to the French franc. Although this system may have some benefits, it reduces the freedom of producers to determine price. Thus, in coffee especially, prices to growers have drifted downward in real terms. Yields, investment in new or replacement plantings, and quality have suffered badly.

Uganda

All external marketing of coffee in Uganda is carried out by the Marketing Board. The need for finance, coupled with poor communication,

has made necessary pre-financed deals and barter arrangements with non-members of the ICA. Uganda is beginning to have a poor reputation for reliability in delivery and quality. Local and regional cooperatives arrange most of the internal marketing. Unfortunately, the lack of funds to pay growers and the regular large-scale devaluations (growers holding coffee in anticipation of the next devaluation) lead to irregular supply for the internal marketing chain. Although growers are harvesting coffee, many are spending little or no time in maintenance and prefer to concentrate on food crop production for family use or for sale in local markets. Any calculation of real producer price is meaningless. A grower who can receive payment just after a price rise and before inflation erodes the return will do substantially better than one who has to wait three months (and there are cases in which producers have waited as long as a year and a half) for payment.

Kenya

Primary marketing is carried out by smallholder cooperatives or directly by the big estates. Final processing is carried by the Kenya Planters Cooperative Union, which delivers the coffee to the Marketing Board, which has a monopoly of all sales. Coffee is auctioned at regular intervals, and the proceeds, less the expenses of the various intermediaries, are returned to growers. The auction system works well and guarantees Kenya optimum export receipts. In general, smallholders have received between 65 and 70 percent of the final export realization; estates have received something in excess of 85 percent. The difference between the receipts of estates and smallholders represents deductions by cooperatives.

Ghana

The Ghana Cocoa Board, which also handles the small coffee crop, controls all stages of marketing. It sometimes delegates internal marketing

operations to licensed agents. It maintains a monopoly of all overseas sales. In general, large surpluses have been built up in the Board's cocoa operations. Past fixed prices to growers were set too low, resulting in a reduction in relative production and grower investment in new and improved stock. The surpluses were used for development purposes both inside and outside the cocoa industry. In reality, the majority of surpluses could not be distinguished from general taxation on the cocoa grower.

Grading has been carried out well with the result that Ghana cocoa may receive premiums; however, the centralized marketing system has led to abuse, with some officials receiving payments over and above their salaries.

Nigeria

Until 1986, the marketing system in Nigeria was essentially similar to that in Ghana. Reportedly, there were more cases of abuse. Because of pressure by the World Bank, cocoa marketing has been privatized. The privatization has coincided with a period of low prices, so early results may not be typical. Cocoa production data for Ghana and Nigeria are presented in Table 20.

Latin America

Brazil

Cocoa marketing in Brazil has always been in private hands. This is simplified by the comparatively small number of farms — about 20,000 farmers working 30 hectares on average. Originally, internal marketing was carried out by two distributors but, in recent years, exporters and processors have established their own buying depots. Prices are offered on the basis of prevailing world conditions, but farmers and exporters can achieve some

Table 20. Cocoa Bean Production by
Ghana and Nigeria

Year	Ghana		Nigeria	
	Metric tons	Index	Metric tons	Index
1978/79	250	100	137	100
1979/80	285	114	172	126
1980/81	258	103	156	114
1981/82	225	90	183	134
1982/83	178	71	156	114
1983/84	159	64	115	84
1984/85	175	70	151	110
1985/86	219	88	110	80
1986/87	228	91	80	58
1987/88	188	75	150	109
1988/89 ^a	305	122	135	99
Percentage reduction from 1985/86-1987/88 to 1978/79-1980/81		19.9		26.9

a. Forecast.

Source: Gill and Duffus Cocoa Statistics.

stability by buying and selling on the futures market. The Brazilian government monitors export transactions so that, to the extent possible, the appropriate currency repatriation is made. This also allows them to publish current trends in price.

Until recently, coffee marketing in Brazil was operated by both the public and private sectors. The Brazilian Coffee Institute (IBC), an autonomous agency within the Ministry of Trade and Industry, was charged with maintaining the balance between production, domestic consumption, and exports. The IBC purchased and sold coffee depending on prevailing conditions, maintained considerable warehousing capacity within and without

Brazil, and operated on a policy of minimum guaranteed prices. When the world price was low, private exporters would only be able to offer less than the guaranteed price; thus sales were made to the IBC. Consequently, the IBC stocks increased and this stock capacity acted as an internal stabilizing mechanism.

During the 1960s, official policy was to eradicate coffee, especially in marginal areas. The incentive program for eradication was managed by the IBC. After damaging frosts, especially that of 1975, the IBC operated on a policy of replanting, managing programs, and supplying incentives.

The taxation system was somewhat complicated, consisting of

- A value-added tax (ICM)
- A rural tax
- A contribution tax, in the form of a fixed levy, which exporters had to pay (in U.S. dollars) from the proceeds of their exports

All sales by private exporters had to be registered with the IBC, which also set a minimum price at which exports of different grades had to be made. The breakdown of marketing costs for 1980, a year in which prices were similar to current levels, is given in Table 21.

The proportion of the final price paid to growers has varied considerably throughout the years; it averaged 62 percent in 1974 and 45 percent in 1979. It is estimated that in 1984/85, the proportion was about 60 percent. Pressure by external agencies, political reasons, and the unpopularity of the IBC among many exporters resulted in its abolition.

Table 21. Marketing Costs for Coffee in 1980 for Brazil

Item	U.S. cents per pound	Percent
Export value (FOB)	124.29	100.0
Costs and margins	81.20	65.3
Contribution tax	65.32	52.5
Handling/transport/ port charges	2.72	2.2
Exporter's margin	2.72	2.2
ICM	7.71	6.2
Rural tax	0.91	0.7
Processing charges	0.91	0.7
Materials	0.91	0.7
Price to grower	43.09	34.7

Source: International Coffee Organization.

Colombia

Colombia operates a National Coffee Fund, which gains its revenue from taxes on coffee and spends its income on activities devoted to the coffee sector. The Fund is controlled by the National Federation of Coffee Growers (FEDERACAFE), which is a private, non-profit association of coffee producers. Producers can sell either to FEDERACAFE (the "buyer of last resort," which publishes minimum prices) or to any one of a number of private exporters.

There is a somewhat complicated system of taxation and currency control:

- To ensure that foreign exchange receipts generally correspond with the export earnings of coffee, a *reintegro* is fixed, which is adjusted regularly in line with world market prices.

- Prior to export, an *ad valorem* tax based on the *reintegró* is paid; it changes quite frequently, and part of the proceeds go to the National Coffee Fund and part to the Treasury.
- A retention tax, calculated to prevent too much coffee from entering the market, is paid in parchment coffee by exporters to FEDERACAFE prior to export; this is also the major source of FEDERACAFE'S funds.
- A *pasilla* and *ripio* tax is paid, which means that exporters have to deliver a certain amount of low grade coffee (at a fraction of the price) to FEDERACAFE; this coffee may be used for domestic purposes.

The proportion of the final price paid to growers has varied throughout the years; between 1975 and 1983 it averaged just under 50 percent, with a high of 59 percent and a low of 34 percent.

FEDERACAFE controls extension, research, and development services. It arranges the provision of credit through a subsidiary, promotes and maintains a diversification program, arranges the provision of inputs, and stimulates the development of farmer cooperatives. In general, it is agreed that the activities of FEDERACAFE have benefited the Colombian coffee farmer and, for a country which at one time relied on coffee for more than 70 percent of foreign exchange earnings, have managed the necessary transition reasonably well. Although there is a modern sector within Colombia, most farmers have small holdings of less than one hectare and produce high-grade coffee by traditional methods.

Asia and Oceania

Cocoa operations in Malaysia, cocoa and coffee operations in Indonesia, and coffee operations in the Philippines and Thailand are all controlled by

the private sector. Although production has increased substantially in each of these countries, the smallholder does rather poorly. Certainly, this is the case in Indonesia, where local credit arrangements may prevent the grower from obtaining a fair price.

Papua New Guinea

Papua New Guinea grows both coffee and cocoa. Production is mixed, with a number of large estates and many smallholdings. In general, exports are carried out by the private sector; a comment of a senior officer of the Coffee Board was "they can get better prices than us." Industry Boards exist for both cocoa and coffee. These are basically farmers' associations with government participation limited to one member of each Board. The interests of smallholders are protected by limiting the number of seats (a minority) that large growers may hold.

Both boards are managed economically; professional staff number six for cocoa and seven for coffee. Levies are collected from exporters; the management levy is less than US\$.01 per pound with a development levy of about US\$.05 per pound for coffee and less for cocoa. Both boards have the power to register exporters and to license processing plants and dealers. Part of the Coffee Board's function is to monitor prices received for export sales and to make recommendations accordingly. A stabilization fund is operated by both entities. Considerable reserves have accrued, which can be used for price support or the cost of stockholding.

Some Conclusions on Alternative Marketing Strategies

Production (including the supply of inputs, research, and extension services) and marketing cannot be treated in isolation from each other. This

is especially true if inefficient or unfair marketing has a direct effect, through the price system, on production and the future development of production.

With very few exceptions, successful producers and exporters of cocoa and coffee have not adopted the system in which government, either directly or through a parastatal, controls internal and external marketing. Marketing boards, which set grower prices and conduct internal marketing either directly or through licensed agents and external marketing directly, have almost always failed. Countries which operate a stabilization fund system (e.g., Côte d'Ivoire, Cameroon) have fared little better. Success in cocoa in Côte d'Ivoire has been achieved through a perverse price system and a consequent misallocation of resources.

Failure has not come entirely through the activities of parastatals. Internal conflicts, artificial exchange rates, the collapse of world prices, and the deterioration of the position of Robusta coffee in world markets have played their parts. Both coffee and cocoa go through periods of "boom and bust." It was the coffee "bust" in the late 1950s which encouraged the formation of the International Coffee Agreement. Commodity agreements have, to some extent, prevented the extreme troughs and peaks without avoiding moderate to large fluctuations. One reason for fluctuation is that "soft" commodity agreements have avoided any discipline in either production levels or stock retention. Thus, a "boom," generally caused by extreme crop failure and amplified by market reaction combined with short-term considerations by producers, is followed by a "bust," because the production plateau is greatly in excess of demand, which in most instances is reduced by previous high prices.

What is true of the cocoa and coffee communities as a whole also applies to individual producing countries. Most of them are price takers; that is, the price that they can sell at is determined by external forces. They may be constrained in terms of quantity, as with the ICA, or, especially if

they maintain an artificial exchange rate, may be unable to compete in terms of price and reliability of quality and delivery.

Cocoa and coffee are tree crops that require several years before planting and maturity. A period of relatively high yields (which is strongly affected by the level of husbandry) followed by a fairly sharp decline, may be mitigated, for a time, by what farmers perceive as costly regeneration. This means that the choice of production incentives and marketing systems is crucial and is amplified by the need for careful harvesting and good processing.

The free market system of marketing (which implies a "free" system of production, unless incentives and the cost of research and development are paid from general taxation or donor grants) has several advantages. Not least of them is that the costs of the system are not normally a burden on public funds because staffing levels are usually commensurate with efficiency. Another advantage may be that the realities of the market can be communicated more quickly to growers. Perhaps one of the greatest disadvantages is that the free market system is not entirely suited to small growers, acting individually, who, through lack of information, restricted information, and poor access to buying centers, may fail to receive a justified price for their produce. Another disadvantage is that, when the production of cocoa and coffee is necessary for national, regional, or sectoral development, the system may neither guarantee nor encourage that development.

The system of marketing boards or stabilization funds offers the advantage that, if pricing policy is correct, if there is an absence of rent-seeking behavior by officials, and if the correct incentives and the necessary research and extension activities are provided, then controlled development may follow. Experience has indicated, however, that whatever the good

intentions initially, the absence of commercial disciplines and the distancing of administrators from growers has almost always led to failure.

Conclusions and Recommendations for the Coffee and Cocoa Sectors in Liberia

Liberia is a small producer of both cocoa and coffee — accounting for less than one-quarter of 1 percent of world exports of these commodities. For Liberian coffee, an increase in exports to the higher-priced International Coffee Organization (ICO) importing member countries will be constrained by limited access to ICO quota stamps. Under the existing marketing agreements, Liberia does not fill its annual ICO quota and has held little or no coffee stocks over the 1986-88 period. This is a high risk stock policy and could contribute to Liberia losing a portion of its coffee export quota if its coffee production and monetary performance do not improve.

Most growers of cocoa and coffee in Liberia receive only a fraction of the "official" producer prices for those commodities. The organization charged with marketing the produce of growers, the LPMC, does not operate in their interests: it has inadequate collection facilities in rural areas; its costs of collection and first-stage processing are high relative to the private trade; LPMC officials have a reputation for corrupt practices and fostering their own self-interest; and the large debt load of the LPMC ensures that one major focus of senior management's attention is on financial survival rather than on providing marketing services to growers. (One manifestation of this is that, frequently, the LPMC has no cash with which to pay growers for their coffee and cocoa.) In the stead of the LPMC, the private traders undertake primary marketing services for coffee and cocoa growers. As a result of high transport costs (reflecting the poor state of the road network, extortion by officials operating road checkpoints, and lack of transport carriers), too few buyers, corrupt, and spurious practices by existing traders, and lack of grower market information, cocoa and coffee producers often

receive less than one-third of the "official" price for their produce. Even if growers were to receive close to the "official" price, it would still be insufficient to encourage significant rehabilitation and expansion of cocoa and coffee production. In real terms, returns to growers of both coffee and cocoa are less than half what they were in 1975.

A mixed marketing system, in which the LMPC handles the majority of exports and a very few large growers export directly is not an attractive marketing option:

- Unit costs will be increased.
- Large growers, presumably with political influence, may obtain excessive quota share, at the expense of small growers and the community generally.

Yet, large and progressive growers can have a powerful and positive influence on production and marketing. Clearly, the present marketing system is unsatisfactory, offering expense without efficiency. The major stated advantage of a marketing board — that it assures stabilized and remunerative prices to growers with additional receipts for the benefit of the country — is absent. Analysis of available data (Annex A, Exhibit 3) shows that coffee producers respond strongly to prevailing price levels. Declining recorded production, whether a direct effect of poor prices or a result of inadequate marketing, implies a failure of commercial activity. External marketing has been passive, as reflected in the lack of energy and of commitment to progress.

Through poor LMPC marketing performance, in conjunction with difficult world market conditions for both cocoa and coffee and a current GOL exchange rate policy that has severely disadvantaged export crop farmers, the coffee and cocoa sectors in Liberia are at a point of crisis. Substantial changes must be made, and made quickly and efficiently, if these

export sectors are to survive and make their contribution to national economic growth (and real growth in rural incomes, in particular) over the next decade. The most pragmatic means of resuscitating these sectors is to take a leaf out of the Liberian rubber sector's book and allow open competition in the marketing of Liberian coffee and cocoa. Arbitrarily selecting current large-scale growers as the force to engender greater competition in marketing is no solution. The trading mentality is relatively well developed in Liberia, and there are entrepreneurs willing and able to seek profits in the export trade of coffee and cocoa. We recommend that they be given every opportunity to do so. Through force of competition, the LMPC share of the export business will be eroded very quickly; its demise will be in the better interests of farmers and the nation in general.

Opening up the marketing system for cocoa and coffee will require the GOL, concurrently, to remove the "official" grower price for both these commodities. For most growers, the "official" price is purely hypothetical anyway; the interaction between buyers and sellers will determine price to the growers — as it does, to a limited extent, at the moment. Further, the GOL must change its exchange rate policy so that the official rate is consonant with the international market value of the currency. Only by doing so will the producer gain sufficient financial reward from growing and marketing cocoa and coffee that he will invest in these commodities for the long term to the mutual benefit of the farmer and the nation.

It has been argued that lack of knowledge in the Liberian private sector about the dynamics of the international coffee market would place it at a serious disadvantage in international trading. This is not so. The identification and consummation of commercial transactions for coffee and cocoa could be conducted by brokers who could be paid commission and a performance bonus. International brokers could provide market research and analytical capability for the private trade in Liberia.

A further argument in favor of maintaining the status quo revolves around the potentially high leakage of foreign exchange that would accompany an open market trading policy for coffee and cocoa. However, the GOL has already come to terms with this issue for rubber exports; the policing of foreign exchange retention should be within its ambit, experience and capability.

The issue of allocation of ICO stamps to potential exporters initially will present a problem to the GOL with which it is not familiar. In the immediate term, the problem should be more an administrative one than one of rationing a scarce resource, as the challenge will be to fulfill the Liberian coffee quota allotment and, thereby maintain its present ICO share. In the longer term, if international administrative marketing arrangements are to be a continuing feature for coffee and cocoa and producers are given sufficient financial incentives, who will get the ICO stamps and when will become an issue.

Maintenance of Liberian coffee and cocoa stocks at levels that will ensure that Liberia can satisfy its quota and, thereby, expand its export volume, if market conditions warrant, will be important for the GOL and the private trade. ICO quota export stamps could be issued quarterly, their allocation, in part, being based on the amount of stocks held by each exporter at the end of the previous quarter. The stamps issued could correspond to the proportion of such stocks to the total stocks held in Liberia. The advantage is that exporters would be forced to purchase coffee to retain stocks; the price would edge towards the sales price less exporters' costs and normal profit margins. An additional advantage is that the government, by stocking some coffee on its own account, will have leverage in adopting a national policy of optimum stockholding.

Many economists and members of the private trade would argue that the best way to allocate ICO export quota stamps is simply by auctioning

them to the highest bidder. In Liberia, it would be problematic (for the foreseeable future) to control abuses of any administered system in which one agency has the authority to distribute export marketing "rights" for commodities such as coffee and cocoa. If there is a surplus of coffee over the quota, then, part of the allocation of stamps to individual exporters could be made contingent upon satisfactory performance in the (less profitable) non-quota market. Because one priority for cocoa is to increase the number of export customers, permission to export could be made contingent upon the exporter instituting a policy of sales development.

Although quality assurance can be obtained more readily through regular trade between private entities, it is important for the sake of Liberian produce as a whole that export quality be maintained. Permission to export could be contingent upon a satisfactory certificate of inspection and grading. Which agency should give the certificate is moot; however, those with a strong self-interest in the profitable continuance of the export trade should all have a say. Certainly, the LPMC should not undertake the quality assurance function. It would be better if an independent quality control agency, representing the GOL, private trade, and farmers' interests, were established to minimize the opportunity for bribery and corruption in export quality control practices.

In the longer term, if coffee and cocoa farmers perceive that they are disadvantaged because of a lack of bargaining power with the private sector exporters, a grass-roots farmer marketing organization could surface to represent their specific commercial interests. A cocoa and coffee producers' association similar in scope to those in Colombia and Papua New Guinea could be launched (notwithstanding that farmer organizations in Liberia have not been successful in the past). An outline of the form and scope of such an organization is provided in Annex A, Exhibit 4.

Changing the marketing system in and of itself will not make the coffee and cocoa sector prosper. One urgent requirement is research at the farm level and dissemination of the results of that research in a patient and understandable way. Large farmers are often the leaders in innovation, and their participation should be encouraged. The identification and use of innovative farmers should be a priority of the extension officers. Even without the use of cash inputs, improvements in productivity are possible; they can be explained only by extension officers, preferably working with concerned farmers. Finally, transcending any initiatives at the farm level, the GOL has a responsibility to provide a macroeconomic policy milieu that is conducive to private sector growth — not least an exchange rate policy that provides export farmers with an opportunity to gain returns from the international marketplace — and a basic rural infrastructure that enables farmers and other marketing participants to take advantage of domestic and international market opportunities.

III. RICE PRODUCTION AND MARKETING IN LIBERIA

Consumption Patterns for Rice in Liberia

Rice consumption patterns are key determinants of the effectiveness of GOL rice policies. The tastes and preferences of the farm household are decisive in the acceptance of improved cultivars by farmers; the tastes and preferences of urban consumers will determine whether the government can successfully displace imports with locally produced rice.

Taste and Preferences

The types of rice on the market in Liberia can be divided into the following broad categories:

- Imported rice
 - Parboiled
 - Non-parboiled
- Local rice (sometimes called country rice)
 - Upland rice
 - Swamp rice

These categories are further divided into a number of sub-categories that comprise specific rice varieties.

Imported rice is distinguished by whether it is parboiled or not. These two types of rice are two products, and Liberian consumers do make a distinction between the two. Liberians have a preference for parboiled rice, and this preference is translated into the premium paid for imported parboiled rice. In April 1989, the typical retail price on imported parboiled rice was L\$ 36 per 100 pounds, while imported non-parboiled rice was being sold at about L\$ 23 per 100 pounds.

The reasons for Liberians' preference for parboiled rice are related partly to its palatability and partly to history. The history of importation of parboiled rice is a long one. The first type of rice and, for a long time, the only form of rice imported was parboiled rice from the United States. Many second- and third-generation urban dwellers have been weaned on imported parboiled rice, which they have come to accept as the normal type of rice.

Urban Liberians also prefer parboiled rice because it comes out crisp when it is cooked and it can be prepared easily. Parboiled rice stores well and has a longer shelf-life than non-parboiled rice. Imported parboiled rice does not have the odor associated with some of the non-parboiled varieties. Finally, parboiled rice has a higher nutritional value than non-parboiled rice because, in the parboiling process, the nutrients from the husk are retained in the milled rice. This last characteristic may not be a factor in the preference of Liberians, but it may have implications for GOL's nutritional policies.

The two broad categories of locally produced rice are upland and swamp rice. A further distinction is made between traditional varieties. Consumers of rice distinguish these different cultivars and indicate preferences. The rice most preferred among farm households is traditional upland rice. In general, farmers prefer traditional varieties because of the

perceived superior taste and ease of cooking. Farm families prefer upland rice because of the ease of milling relative to swamp rice.

In a survey conducted by the Zwedru Coffee, Cocoa and Rice Project on the palatability of improved swamp rice varieties (EEC, Zwedru Palatability Survey 1987), it was observed that the two rice varieties that were most preferred had properties similar to the traditional rice varieties and the imported parboiled rice. BG-90-2 was the most preferred variety; it has a large grain size that resembles the traditional varieties. Suakoko - 8 & 10 were the next most preferred, both being small grains like U.S parboiled rice but tasting like traditional varieties.

In interviews conducted by the study team with retailers and farmers, a marked preference was expressed for locally produced rice over imported rice in most rural areas. At the time the team was conducting the study, however, the market had an abundance of non-parboiled rice which has a low preference rating. This preference for locally produced rice in rural areas was not substantiated in terms of higher prices of local rice at the wholesale/retail level (i.e., L\$ per 100-pound bag), although at the retail level, local rice prices were on average slightly higher than those of imported rice (see Table 22).

This preference structure for rice in Liberia has important implications for government policies. The preference for imported parboiled rice by urban consumers means that if the government aims to displace imports, it would need to train and equip small private mills or equip the LPMC mills with parboiling equipment. Currently, none of the mills have parboiling equipment.

The preference structure could enable the government to specify different prices for the different types of rice. Imported parboiled rice could be priced higher. Similarly, local rice processed by the LPMC could

Table 22. Market Prices for Rice,
by Urban Area, April 1989

(Cents per pound)

	Imported rice	Country rice
Gbarnga	29.28	29.09
Ganta	28.64	30.00
Voinjama	30.00	31.04
Saclepea	33.12	33.33
Ave	30.25	30.86

be priced higher than other types of rice. These pricing measures would reduce the high cost of government subsidies. At the moment, the official price of imported rice is the same for all types. Furthermore, the official price of locally produced rice processed by the LPMC is less than that of imported rice.

Finally, the preference structure of farm families determines the acceptance or rejection of new, improved rice varieties. There was no evidence that palatability surveys had been widely conducted by the relevant authorities. This factor is largely responsible for the very low penetration of the swamp rice varieties that are being distributed by the Smallholder Rice Seed Project (SRSP).

Expenditure and Consumption Levels and Trends

Liberia's national rice consumption per capita, 280 pounds per annum (Bonnard, 1987 and Warder, 1981), is the highest in West Africa. This estimate

is the average from the two studies, although estimates from other studies range between 240 and 300 pounds per capita.

In terms of budget shares, rice accounts for 14.14 percent of total household income (*Urban Consumption Patterns in Liberia, Survey Phase II, Part B*, September 1986, USAID/Liberia, Dr. J. A. Kuehn, *et al.*) (see Table 23). The consumption levels vary significantly by region and by sector; the county with the highest consumption level is Lofa. Lofa also reported the highest preference for rice relative to other starchy foods (Hiemstra and Svadogo, October 1986).

The level of rice consumption per capita is, in part, a function of income levels in Liberia. At all but the highest income levels, an increase in income generates an increase in rice purchases, but at a declining rate for the higher income groups. It is only at the highest income levels that the income elasticity becomes negative — i.e., expenditure on rice declines with an increase in income, (Hiemstra and Savadogo, October 1986) (see Table 24).

Results from the study cited above reveal an interesting set of price relationships.

Typical urban consumers are so demanding of rice that, given price increases, they will not reduce their demand for rice, rather they would reduce their demand for other products to maintain their high consumption of this staple. Consumers respond to changes in the price of local rice (i.e., demand is price elastic). An increase in the price of imported rice would lead to reductions in the quantities consumed of country rice, cassava, cereals, starch, fish, and vegetables; an increase in the price of country rice would lead to an increase in the consumption of imported rice; a decrease in the price of imported rice would prompt consumers to purchase more country rice and local starches.

Table 23. Average Percent of Rice in Household Budget Shares by City

	Country rice	Imported rice	Concession rice
Monrovia	.26	12.72	
Buchanan	.47	17.06	
Gbarnga	.67	20.49	
Ganta	.67	9.85	
Saniquellie	1.45	21.93	
Zorzor	3.42	28.19	
Voinjama	4.98	11.89	.01
Tubmanburg	5.26	6.11	5.38
Zwedru	17.80	1.45	
Harper	4.43	14.11	
All cities	1.03	12.99	.12

Source: *Urban Consumption Patterns in Liberia, Survey Phase II, Part A*, USAID/Liberia and MOA, Consultancy report No. 6, Dr. J. A. Kuehn, Tarnue D. Koiwou, David D. Newman, September 1988, Table 40.

These unusual elasticity relationships reflect the significant role that rice plays in the Liberian diet and the overwhelming preference that urban Liberians have for imported rice. Given the constraints on rice production and marketing in Liberia, an increase in national income would result in increases in rice imports, except where all of the additional income accrues to the highest income groups.

The high national per capita consumption of rice means that the GOL's objective of increasing rice production must be augmented by policies aimed at increasing the consumption of other basic foodstuffs. The high variability in regional per capita consumption of rice suggests that the GOL's policies

Table 24. Income Elasticity of Demand for Rice,
by Income Group, Urban Areas in Liberia
March 1986

Income group	Country rice	Imported rice	Total rice
Mean L\$.21	.12	.16
0- 99	.70	.64	.67
100- 199	.63	.50	.56
200- 299	.46	.34	.39
300- 399	.43	.15	.28
400- 499	.31	.03	.16
500- 599	.12	.14	.13
600- 699	-1.27	.17	-.08
700- 899	-.43	-.46	-.45
900-1,099	-1.65	-.20	-.50
1,100-1,499	-2.16	-.91	-1.24
1,500+	-2.93	-1.42	-1.82

Source: *Urban Consumption Patterns and National Food Policy in Liberia. Report 2, Part 2, Statistical Analysis*, S. T. Hiemstra and K. Savadogo, USDA, October 1986, page 28.

should not be identical for all counties. For example, counties with particularly high per capita rice consumption would need intensive programs to diversify their diets to use more local starchy foodstuffs.

At prevailing government-established rice prices and at the parallel market valuation of the Liberian dollar, consumers are receiving a substantial subsidy on rice purchases. Increasing rice prices to parity levels, however, will have a negative impact on the national diet. Survey results indicate that the cross elasticities are such that an increase in the price of imported rice would force consumers to reduce consumption of nutritious foodstuffs like vegetables. Furthermore, imported rice is consumed by the politically active urban households and the issue of the absolute levels of rice prices can be

politically explosive. If such a price increase is not handled properly, a repeat of the 1979 rice riots could result.

The observations made about cross elasticities for imported rice relative to locally produced rice present a dilemma for the government. According to survey findings, increases in imported rice prices actually would result in decreased demand for local rice.

Rice Production — Constraints and Potential

Agro-climatic Conditions

There are some favorable agro-climatic conditions for rice cultivation in Liberia as well some debilitating factors. These agro-climatic conditions help to explain the rice supply situation.

Rice-producing areas require adequate rainfall within the range of 80-90 inches per annum for upland production. As an alternative, the land can be irrigated. In the case of swamp land, the rainfall requirement is lower because of the high level of soil moisture. Temperatures must be at tropical or sub-tropical levels during cultivation. The soil must have a pH level of 4-5, and the ideal soil type is sandy loam. These conditions exist in Liberia. The average rainfall for all counties in Liberia exceeds the minimum level required for upland rice production (i.e., 80 inches). There is a substantial acreage of swamp land with sandy loam soils. Temperatures are at or above the level required in all counties throughout the year.

The debilitating factors in Liberia include the high toxicity of the soil in most upland areas, the low level of humus in the soil, and the sharp drop in the water table during the dry season. The soil condition of upland areas is such that the nutrients become depleted after just one season of

production. This condition is caused partly by the intensity of the rainfall, which is concentrated in a few months. This rainfall intensity precludes the mechanical cultivation of large tracts of land, because the top soil gets washed away easily and the soil deteriorates to a hard laterite crust with very high acidity. Furthermore, the unimodal rainfall pattern prevalent in the major rice-growing regions precludes double-cropping except on certain swamp lands. Efforts at establishing permanent swamp rice with levees deprive the swamp of vital nutrients; consequently, yields decline after a relatively short period of time.

These debilitating physical conditions are exacerbated by pest and weed problems. The major pest problem is the groundhog (*Thryonomys Swinderianus*), which has been estimated to consume up to 50 percent of the farmer's crop prior to harvest (Food Security Scheme, FAO, ES: GCPS/LIR/009/NOR, Terminal Report, Rome, 1984). The severity of the groundhog problem increases with an increase in population density. Groundhogs are more numerous in areas where there is a preponderance of "young bush," that is in areas where population pressures force farmers to use short fallow periods. The problem with weeds arises partly because of the ease of plant germination, but, ironically, the nutrients in the soil are capable of supporting plants other than rice, and these other plants tend to be weeds.

Farming Systems

The overwhelming majority (92 percent) of farmers produce rice in upland areas using the slash-and-burn shifting cultivation practice (*Production Estimates of Major Crops*, MOA, June 1988, p. 2). Typically, farmers sow a number of varieties of rice for food security reasons. The traditional form of production has certain advantages for the farm family but poses serious problems for policymakers. Upland rice cultivation allows the farm

household to produce rice and an assortment of foodstuffs to augment the farm household's diet and income. Shifting cultivation is practiced because of the rapid deterioration of the soil and because of the weed problem. The slash-and-burn technique reduces the labor requirements for land clearance and minimizes the weed problem.

The critical problem of upland rice production is that it has very low productivity. Rice cultivation using this traditional method requires very high levels of labor input, estimated at 375 person-days per hectare. The average upland rice yield for this high labor input is only 1,100 kilograms per hectare.

Efforts at improving the yields of upland farms have included providing farmers with improved seed rice varieties (e.g., LAC 23). These improved varieties have not been adopted widely by farmers, and even when adopted, by farms without fertilizers and other inputs, the increase in yields has not been very dramatic. Moreover, farmers prefer to sow both early- and late-maturing (traditional) varieties to ensure food security.

Swamp rice cultivation accounted for only 8 percent of the total number of rice farms in 1987 (MOA, June 1988) and an even smaller proportion of acreage under rice production. Swamps possess the ideal soil conditions for rice cultivation, and some are amenable to double-cropping because of the availability of a year-round water supply.

The greatest potential for increasing rice output is the development of swamp rice production. The yields for improved swamp rice farms are substantially higher than those for upland farms, with improved swamp rice farms yielding between two and three times as much as upland rice farms. Efforts have been directed in various area-based projects to develop permanent swamp rice farms; these farms have the advantage that, when they are developed, the labor input (particularly for land clearance) is sharply reduced.

Swamp rice cultivation is not widespread, despite the efforts of area-based projects, for the following reasons: it is perceived as a "woman's" activity; there are disease problems (e.g., *bilharziasis*); some farm families do not like the taste of swamp rice; swamp rice farming does not allow the farm family to practice mixed cropping; and the farmer can only cultivate vegetables in the dry season and not when he is planting rice, as he is used to doing.

These technical constraints on increasing rice production have important implications for the government policy of self-sufficiency in rice production. First, they raise serious questions about the policy of maintaining relatively high prices for paddy to stimulate production. The supply response appears to be very low because of technical constraints, although the marketed supply may be relatively high. High paddy prices in the face of the GOL's relatively low prices for milled and imported rice may result merely in transfers of income to rice producers. Second, the farm family's strategy of averting risk through the cultivation of late-maturing traditional varieties and mixed cropping needs to be incorporated in any policy. Third, the risk aversion strategy of farm families through the cultivation of a number of varieties of rice results in rice processing and grading problems, with attendant increased costs to the LPMC. Finally, these technical problems and the high labor requirements for rice farming explain the fact that for most Liberian farmers the crucial decision is one of providing adequate food for the farm family. The marketed output is only secondary.

Given these technical constraints, policy makers need to ask the following questions: will farm households market more of their limited supply in response to price increases? what is the volume of marketed surplus? what price would induce farmers to sell that marketed surplus? and what would be the cost to the government in terms of efficiency gains and losses and income transfers?

Geographical Distribution of Rice Production

Rice production is not distributed evenly across the country; there are both surplus and deficit areas. This phenomenon was most recently analyzed by P. Bonnard (*Rice Self-Sufficiency and the Origin of Rice Supplies in Liberia*, MOA, March 1987). In the study, Bonnard estimated marketed surplus for rice-producing households in each county or region and the ability of each county or region to meet consumption needs for all households. The study examined the question of rice self-sufficiency for the entire country.

Using published population statistics (1985), MOA 1985 rice production estimates, and a range of assumptions on post-harvest losses and milling conversion rates (see Table 25), Bonnard drew several conclusions, using the 15 percent post-harvest loss scenario: the county with the highest self-sufficiency was Grand Gedeh; the northwest counties of Bomi, Montserrado, and Margibi recorded the lowest rate, producing only 12 percent of rice consumed. The results for the northwest counties are not unexpected since these counties are where a large proportion of non-rice producers farm. None of the counties were self-sufficient in rice production, although Grand Gedeh was virtually self-sufficient (99 percent). If the 10 percent post-harvest loss scenario is used, the results are still alarming. The only county with a surplus is Grand Gedeh; the northwest counties still supply only 13 percent of total rice consumed in the region.

The situation analyzed above poses important policy implications for the government's objective of self-sufficiency. In some of the counties with low self-sufficiency levels and a favorable land/person ratio, efforts can be directed at increasing acreage allotted to rice production. In some other counties with high population densities, such as Bong, Nimba, and Lofa,

Table 25. Rice Production Estimates
By County, 1985

County Region	Area 1,000 acres	Produce million pounds	Yield per acre	Available clean rice scenarios Thousands of pounds		
				10 percent loss	12 percent loss	15 percent loss
Bong	97	124	1,280	66,957	65,469	63,237
Grand Bassa Rivercess ^a	52	46	880	24,838	24,286	23,458
Grand Cape Mountain	24	26	1,100	14,039	13,127	13,259
Grand Gedeh	52	55	1,060	29,698	29,038	28,048
Lofa	90	99	1,100	53,457	52,269	50,487
Nimba	143	154	1,080	83,155	81,307	78,535
Northwest	46	48	1,047	25,918	25,342	24,478
Bomi Montser Margibi						
Southwest w/Grand Kru Maryland Sinoe	66	84	1,284	45,358	44,350	42,838
Liberia	569	636	1,118	343,421	335,789	324,341

a. Low yields in Bassa/Rivercess indicate that land is over-used, depleting soil productivity and/or there is extensive inter-cropping practiced.

Note: Clean rice available equal to production less stated loss, allowance for seed retention, and converted to clean rice using a conversion factor of 60 percent.

Source: Bonnard, P., *Rice Self-Sufficiency and the Origin of Rice Supplies in Liberia*, MOA, March 1987.

efforts should be directed at encouraging more intensive farm practices (e.g., improved swamp rice production). In some counties, namely those in the northwest, the problem is more intractable. Alternative activities such as public sector jobs, mining, and rubber cultivation make rice production a very poor option. This area will continue to be served by rice imports for the foreseeable future, unless there is a major breakthrough in rice production technology.

Trends in Rice Production

Rice production is an integral part of farming in Liberia, and rice is produced by the overwhelming majority of farmers. In 1987, the Statistics Division of the Ministry of Agriculture reported that 86 percent of farm

households produce rice (see Table 26). The importance of rice production is widespread. Only two counties report that less than 79 percent of farm households produce rice. The typical farm family produces rice for subsistence consumption, and marketed supplies are a secondary consideration. For the farm family, rice production up to household consumption needs is not a decision influenced by complex economic principles. In various interviews, it was revealed that the farm family did not trust the market as a supplier of rice. In any case, limited cash income precluded large purchases.

Rice production is not a very profitable enterprise. As revealed earlier, it has very low yields. The financial returns for rice compare very unfavorably with other agricultural activities (see Table 27). Therefore, the only reason that there is still widespread production of rice is that farm families view self-sufficiency in rice production as the lowest risk way to ensure family survival.

Other reasons why there has not been a total switch to other crops include unfavorable agro-climatic conditions, lack of seedlings, inaccessibility of markets, and low prices (certainly below those used by the World Bank to calculate net returns shown in Table 27). Adverse agro-climatic conditions, compounded by rudimentary farming practices, explain why rice yields are so low and have remained so low.

These disappointing production statistics, combined with high and increasing consumption of rice, have resulted in a declining rice self-sufficiency level. The decline has continued in spite of the GOL's efforts and pronouncements on increasing local rice production. Indeed, the self-sufficiency level has been even lower than the official estimates because of informal cross-border trade (P. Bonnard, 1987). The level of self-sufficiency was estimated at 55 percent of total consumption in 1985, with 11 percent of rice imports derived from the informal cross-border trade.

Table 26. Rice-Producing Households by County, 1987

County	Household	
	Number	As percentage of agricultural households
Grand Bassa	13,330	83
Bomi	5,100	79
Bong	26,100	89
Cape Mount	5,900	80
Grand Gedeh	13,100	97
Grand Kru	4,600	96
Lofa	23,900	87
Cape Mount	5,900	80
Maryland	6,100	89
Margibi	6,700	62
Montserrado	4,100	53
Nimba	35,600	92
Rivercess	3,500	90
Sinoe	6,400	95
Liberia	154,400	86

Table 28 shows that the level of self-sufficiency in rice declined from 69 percent of total consumption in 1975 to 55 percent of total consumption in 1985.

Rice yields per acre remained almost constant between 1974 and 1987 (see Table 29). The increased production observed between 1974 and 1987 came from an increase in acreage allotted to rice (85,500 acres or about 17 percent). Increases in acreage allotment, in turn, reflect changes in the agricultural population (see Table 29).

The indication is that the rice production growth rate is relatively high when the rural population growth rate is high (see Table 30). This

Table 27. Financial Net Returns to Family Labor,
for Five Major Agricultural Commodities in Liberia

Commodity	Financial net returns to family labor (dollars per person-day)
Oil palm (moderate yields without fertilizer, in a moderately suitable ecological zone of Liberia)	11.50
Cocoa (traditional cultivation)	7.24
Coffee (traditional cultivation)	4.13
Rubber (replanting, fair management, improved planting material, reduced frequency tapping)	4.01
Rice (traditional upland)	1.92

Source: *Liberia Agricultural Sector Review*, Volume 1, Main Report, page 22, World Bank Report No. 4200-LBR, April 20, 1984.

conclusion supports the results of earlier, more rigorous analysis (McCourtie, FAO/University of Liberia, 1970) that showed conclusively that incremental labor input was the most significant variable in increasing rice production.

The relative unprofitability of rice compared with other crops implies that for the GOL's self-sufficiency objective to be met, there would have to be a major breakthrough in productivity of rice production and concomitantly, domestic paddy prices would have to be considerably higher than the \$0.15 per pound offered now. Alternatively, if the government's ancillary objectives outlined in the second development plan (1981-85) are to be achieved — i.e., to increase farmers' incomes and diversify the production base — then increased efforts should be directed at encouraging production of other,

Table 28. Sources of Liberia's Rice Supply, 1975-85

Year	Production 1000 metric tons	Imports 1000 metric tons	Population 1000	Rice consumption 1000 metric tons	Local surplus/ deficit 1000 metric tons	Local + import supply 1000 metric tons	Border flow 1000 metric tons	Supply local percentage	Supply imports percentage	Supply border percentage
1975	137.9	31.0	1,552	198	-60.1	168.9	-29.1	69	16	15
1976	128.7	37.5	1,603	204	-75.3	166.2	-37.8	63	18	19
1977	138.1	55.8	1,656	211	-72.9	193.9	-17.1	65	26	9
1978	145.3	61.0	1,711	218	-72.7	206.3	-11.7	66	28	6
1979	161.1	74.0	1,767	225	-87.7	211.8	-13.2	61	33	-6
1980	169.2	80.0	1,826	232	-70.9	241.1	-9.1	69	34	-3
1981	137.0	90.0	1,892	241	-71.8	259.2	-18.2	70	37	-7
1982	144.7	98.0	1,960	249	-112.0	235.0	-14.0	54	39	-7
1983	144.7	93.0	2,031	258	-113.3	237.7	-20.3	56	36	8
1984	148.0	83.0	2,104	268	-120.0	231.0	-37.0	55	31	14
1985	152.4	91.3	2,178	277	-124.6	243.7	-33.3	55	34	11

Notes: Production is defined as available clean rice using 10 percent losses and a conversion factor of 60 percent paddy to clean rice. Annual rice consumption per capita is estimated at 280 pounds. Local surplus/deficit is defined as production minus consumption. Border flow is defined as production plus imports minus consumption. Positive border flows means rice moved from Liberia to a neighboring country. Negative border flows mean rice moved from a neighboring country to Liberia.

Source: *Rice Self-sufficiency and the Origin of Rice Supplies in Liberia*, P. Bonnard, MOA, March 1987.

Table 29. Rough Rice Production, Acreage and Yield, 1974-87

Year	Acres	Yield/acre (pounds)	Production (pounds)
1974	497,000	1,100	546,700,000
1975	472,000	1,070	505,040,000
1976	495,000	1,090	539,550,000
1977	509,500	1,100	560,450,000
1978	479,000	1,099	526,421,000
1981	532,000	1,140	606,480,000
1982	553,000	1,130	624,890,000
1983	584,000	1,098	641,232,000
1984	579,000	1,133	656,007,000
1985	569,000	1,118	636,142,000
1986	576,000	1,102	634,752,000
1987	582,500	1,125	655,312,500

Source: Heagler and Latham, *Analysis of Trends of Rice Production in Liberia*, USAID, 1988.

Table 30. Change in Agricultural Population and Rice Production, 1982-86

Year	Agricultural population		Rice production	
	Thousands	Percent change	Thousands of pounds	Percent change
1982	918	—	624,890	—
1983	954	3.9	641,232	2.6
1984	991	3.9	656,007	2.3
1985	1,015	2.4	636,142	-3.1
1986	1,050	3.4	634,752	-0.003

Sources: Heagler and Latham, 1988; *Statistical Bulletin*, MPEA, October 1987.

of other, more profitable crops. Such efforts include providing seedlings, improving access to markets, raising prices for these crops, and ensuring that farmers receive gazetted prices.

The low and stagnant rice yields suggest that the GOL's agricultural policies for rice have failed. The fact that labor availability or the agricultural population is the most important variable in rice production suggests that unless the rural to urban migration is stemmed, the rice deficit will continue to increase.

Government Policies on Rice

The Government of Liberia (GOL) has initiated policies to affect rice production and marketing practices and has established agencies to implement these policies. Agencies associated with implementing GOL rice policies include

- The Ministry of Agriculture (MOA)
- The Ministry of Commerce (MOC)
- The Ministry of Planning and Economic Affairs (MPEA)
- The Liberian Produce Marketing Corporation (LPMC)
- The National Rice Committee (NRC)
- Area-based projects (ABPs)
- The Smallholder Rice Seed Project (SRSP)

The cornerstone of the GOL's rice policy has been that of self-sufficiency in rice production. Replacing rice imports with domestically produced rice has been an explicit policy of the GOL since it was first announced by President Tubman in 1963, when his administration initiated the "Operation Priority Number One" program. Although the GOL's pronouncements have all emphasized the objective of self-sufficiency in rice production, not all policies and programs have worked to that end. In the following sections of this report, the policies and programs of only the most important ministries and agencies are analyzed as they relate to rice production and marketing.

Rice Production Policies

Ministry of Agriculture

The establishment of the Ministry of Agriculture (the Department of Agriculture) was the first step taken by the Liberian government to intervene in the agricultural sector. The MOA is mandated to provide extension services to rice farmers and to discharge its responsibilities for national and regional development. Extension services to be provided include teaching farmers new methods of rice cultivation, the application of inputs, and

improved post-harvest techniques. The objective is to increase rice production and productivity and thereby increase the income of the farmer.

The Ministry has also delegated some programs to various institutions created under its auspices. They have been mandated to provide extension services and inputs to farmers. The Ministry also has under its umbrella the Central Agricultural Research Institute (CARI), which conducts research into farming practices of rice farmers.

A brief history of the GOL's policies on rice farming practices indicates that during the Tubman era (1949-71) there was little focus, much rhetoric, and a plethora of *ad hoc* policies. The major practical effort in influencing farming practices of rice farmers was the establishment of CARI in 1951. The Extension Services Division of the MOA was established, and the first concerted effort was made to train agricultural technicians.

The Tolbert era (1971-80) witnessed a more interventionist approach to affecting farming practices. There was a substantial increase in the agricultural budget, from \$2.6 million (4 percent of total budget) in 1971-72 to \$29.5 million (9.3 percent of total budget) in 1979-80.

During this era, the GOL embarked on a major land clearing exercise for rice production. This exercise entailed mechanical land clearing. The program was doomed to fail, in part because of unfavorable agro-climatic conditions and, in part because of the unsustainable use of high capital inputs. The soil structure, topography, and rainfall pattern meant that these large tracts were easily eroded and drained of nutrients. The use of capital-intensive methods in a capital-poor country meant that this policy was unsustainable.

The Tolbert era also witnessed the initiation of Area Development Projects (ADPs). Three of these projects were started in Lofa (1976), Bong

(1978), and Nimba (1978) counties. The projects were funded by the GOL, A.I.D., the Federal Republic of Germany, and the World Bank and were designed to influence production and marketing practices of farmers. The GOL also embarked on the reorganization of the MOA, with the objective of strengthening its planning and extension capabilities. A special rice division was established to provide extension services to farmers.

Since 1980, the MOA and donor agencies have continued and expanded the area-based projects. An area-based project was started in the southeastern counties with funding from the European Economic Community. Paradoxically, this period witnessed the decline of project activities in Lofa and Bong. These projects have now declined to the point where they are unable to provide any services or inputs to farmers. The cause of this decline is lack of GOL funding because of massive reductions in the overall budget of the GOL, and a corresponding huge increase in the GOL's expenditures. The inability of the GOL to fund the area-based projects resulted in a reduction in funding from donor agencies such as the World Bank.

The major new policy statement of the GOL since 1980 has been the Green Revolution policy. This policy, in its original form, envisaged the establishment of nuclei estates for middle- to large-scale farmers. Farmers and potential farmers with a high school and a college education were to be selected and settled in designated areas. Each farmer was to be given 50 acres and provided with farm tools and machinery. Service centers were to be established that would provide tools, machinery, extension services, and marketing outlets for selected farmers. The rationale for this program was that serious and modern farming can only be practiced by farmers qualified in modern techniques and possessing adequate resources. This policy was a marked departure from previous policies, and critics said that it was not practical and that the logistics were too daunting. It was also in direct

conflict with the objectives of the GOL as spelled out in the second national plan (1981-85), which stated the following objectives:

- To increase the involvement of the large mass of Liberian farm families in the development of the agricultural sector
- To promote equitable access to means of production, and corresponding widespread and equitable distribution of benefits from agricultural development

At the time of the writing of this report, an FAO consultant was in the process of rewriting the Green Revolution policy statement.

Central Agricultural Research Institute

This institution conducts research on rice farming practices with the aim of gradually changing the farm management practices of the farmer. The Institute breeds a variety of rice types and selects the most promising variety for propagation. It investigates plant diseases and seeks appropriate solutions to production problems. The Institute works with church groups and area-based projects. At present, CARI is conducting research with NCRDP on rice and cassava. The Institute has also provided traction animals to the SERDP. It provides improved seeds to SRSP to be propagated and distributed to farmers.

In discussions with the director of the Institute, the team was informed that one of the major problems was the lack of an effective extension machinery within the MOA to utilize research results. Other problems noted were the fast turnover of researchers because of the low salaries offered and problems in communicating with the MOA and USAID. The director opined that some donor agencies had shown a heavy-handed approach to the Institute and were too receptive to fashionable but inappropriate methods.

He observed that the large reduction in funding from USAID since 1984 had caused serious problems in the operations of the Institute. The funding problems had an adverse impact on the most crucial aspect of research, namely on-farm trials.

Area-based Projects

These projects have been operated in all but 2 of the 13 counties. Only 2 of these projects are now functioning, NCRDP and SERDP. These projects were intended to be independent GOL institutions with considerable autonomy in financial, personnel, and procurement procedures. Their major objective was to increase and sustain farm incomes. The projects provide extension services and inputs to farmers on credit. Other support services include the construction of farm-to-market roads, farmer training, project revolving credit, schistosomiasis monitoring and testing, and assistance in establishing farmer cooperatives. These activities were carried out by BCADP, LCADP, and the first phase of NCRDP (then called NIRDEP). The second phase of NCRDP adopted a lower key, less costly, less target-oriented approach. It has been described as a "bottom-up, participatory and relaxed approach" (World Bank Report #4200-LBR, April 20, 1984). This phase promotes the self-help approach and does not provide fertilizer or herbicides; however, seasonal credit is provided for inputs.

A review of ADPs by the Ministry of Planning and Economic Affairs in 1988 concluded that the projects had "reached a considerable number of producers" and demonstrated that farmers were interested in increasing their incomes ("Inter-Ministerial Evaluation and Proposal for the Reorganization of the Bong and Lofa Counties Agricultural Development Projects," January 1988). "Producers," the report stated, "were not risk averse in maximizing their incomes," a view not consonant with findings of this study.

The report blamed external forces for problems, noting that very ambitious targets were set without consideration for the logistic requirements. Other government institutions had not provided the support specified for the projects on time. It was concluded that the projects failed to shed labor when resources declined, resulting in underemployment of labor. The project designs did not specify a course of action in the event of breakdowns in the delivery of resources. The report suggested a reorganization of the project and recommended that there be a systematic absorption of ABP activities into the MOA structure.

In discussions with GOL officials and foreign experts, it became clear that LCADP, BCADP, and Phase 1 of NCRDP emphasized setting targets. This emphasis resulted in less time being spent on the farmer. Furthermore, the monitoring mechanism was weak. The two functioning projects are less target-oriented, and emphasis is placed on staying with the farmer for as long as it takes to train and assist him/her. It was noted by government officials and a member of a foreign mission that the lack of targets in the functioning ADPs makes it hard to determine their effectiveness.

All ADPs have been designed to have discrete life-spans, and it was envisaged that they would be absorbed by the MOA. This concept is difficult to put in practice because the MOA already faces huge organizational and logistical problems. Moreover, salary scales for ADPs are substantially higher than those at MOA.

Smallholder Rice Seed Project

This project was designed with the objective of providing seed rice to small-scale farmers to improve rice yields. The project produces improved seed rice acquired from CARI on its own estate and on farmers' plots under project supervision. The seeds produced are then distributed to farmers

who provide the project with the same quantity of paddy from their own output. Recently, because of financial problems, the emphasis has been on outright sales to farmers. The project operates throughout the country.

In discussions with the project manager, it was revealed that most farmers who used improved seed wanted repeat applications; however, these same farmers were unwilling to pay for the seed rice. The project manager cited problems in logistics as a major constraint.

The yields of "improved" upland rice varieties are very low; however, this is the preferred form of rice production. A major breakthrough must occur in upland rice yields if the objectives of the project are to be met. The yield for upland rice, using improved seed, is claimed to be 2.5 metric tons per hectare; for improved swamp rice it is 3.5 to 4 metric tons per hectare. In discussions with the USAID mission staff, however, it was stated that the yields provided by SRSP staff were normally inflated. Trials by NCRDP staff indicate that there is a 40 percent yield reduction over a five-year period. The yields usually cited by SRSP staff were those for the first year, under the very best conditions.

The initial estimate of swamp rice production using improved seed rice was grossly overestimated; consequently, the project was left with large quantities of swamp seed rice which it has tried to sell, largely unsuccessfully, to the LPMC. Lack of adequate GOL support has been a major constraint on the operation of this project.

Rice Marketing Policies

In addition to policies that are designed to improve farming practices, the GOL has also adopted policies that are designed to improve the marketing system for rice. These policies relate to both locally produced

rice and imported rice. Marketing policies include the creation and promotion of certain marketing channels as well as pricing policies. Current pricing policies entail subsidies for producers and consumers.

Liberia Produce Marketing Corporation

The GOL created the LPMC in 1961 (Section 1000 of Executive Law Section 2000). Initially, the LPMC's mandate was that of promoting export crops. This mandate was extended to include paddy purchases from farmers. Purchased paddy is milled at LPMC mills and sold to private traders (wholesalers/retailers) and cooperatives.

The LPMC announces prices prior to the beginning of the buying season and it is mandated to procure all paddy delivered to its branches. The LPMC, therefore, is the vehicle for implementing GOL rice pricing policy as well as providing an outlet for farmers' paddy. The LPMC has also been used as a conduit for rice imports for the P.L. 480 program. It also can import rice on a commercial basis. As such, the LMPC has been instrumental in effecting food security programs for the government, particularly for the urban sector. At present, the LPMC is not active in either the locally produced or the imported rice business in Liberia (see section on marketing channels).

Cooperatives

Cooperatives have been promoted by the GOL as a preferred marketing channel for farmers' produce. The GOL's policy of promoting cooperatives is seen as a means of eliminating the activities of middlemen, who are labelled as "exploitative" and have been charged by the GOL with "not performing any productive function." This claim is typical of canards that many governments have put about, condemning these essential marketing

system participants, but, in Liberia, it also reflects an ethnic gibe aimed at the Mandingo trader.

The preferred form of cooperatives for all counties, and also for Nimba county until the second phase of NCRDP, is that of district or regional cooperatives. This structure is still the most common type in all counties where cooperatives exist, apart from Nimba county. In Nimba county, there has been a move to much smaller, village-level cooperatives at the bottom tier and clan-level cooperatives at the top level. The history of the cooperative has not been one of success and will be covered in more detail in a later section.

The National Rice Committee

The National Rice Committee (NRC) was created in 1968 to regulate rice imports. Later, particularly in the 1980s, this mandate was extended to include locally produced rice; however, the emphasis is still on imported rice.

The NRC, headed by the Minister of Commerce, monitors rice imports and regulates the supply of imported rice in the country. The NRC licenses dealers of imported rice at both the importer/distributor level and the wholesale/retail level and grants import licenses for commercial purchases of rice. The Ministry of Commerce, acting upon the authority of the NRC, sets rice margins for importers and wholesalers. Ministry of Commerce inspectors also attempt to regulate retail prices of rice.

The NRC operated a rice stabilization fund that was financed by a variable levy tax. This fund grew to \$5 million by 1977. It was designed to protect consumers from the volatility in world market prices for rice; however, when world market prices rose in the 1978-81 period, the fund was wiped out by consumer subsidies. Furthermore, after 1980, the variable levy

system degenerated into an excise tax, and decreases in world market prices were not accompanied by similar increases in tax paid to the fund.

P.L. 480

In 1980, the U.S. government, in response to a critical gap in food availability in Liberia, began P.L. 480 Title I rice program shipments to Liberia. This program allowed the Liberian government to import rice from the United States on a loan-financed basis. The loan had soft terms, and a proportion of the imported rice was given as a grant. Under this program, rice imports valued at US\$ 92 million (with a grant equivalency portion of 60 percent, i.e., US\$ 55.2 million) were procured between 1980 and 1987.

The P.L. 480 program provided balance-of-payment support and generated local counterpart funds. The proceeds from sales of P.L. 480 rice were deposited in a special fund to be used as part of the GOL's development budget; currently, the funds generated by such sales form the overwhelming majority of this budget. In 1987, the P.L. 480 program funded the LPMC local rice program. Other direct and indirect effects on the local rice program have included funding for Area Development Projects and for the Smallholder Rice Seed Project.

There have been problems during the implementation of the P.L. 480 program. In particular, the LPMC (which acted as the conduit for P.L. 480 rice imports) was unable or unwilling to deposit proceeds of P.L. 480 rice sales in the P.L. 480 fund. This situation caused USAID to change the program to P.L. 480 Title II, thereby enabling USAID to exclude the LPMC from the program and to use private distributors to handle the rice.

Macroeconomic Policies

The primary macroeconomic policy that is having an impact on rice production and marketing practices is the current exchange rate policy of the GOL. In short, as a result of the *de facto* devaluation of the Liberian dollar, the consumer subsidy on imported rice has the effect of reducing substantially the price of locally produced rice. Furthermore, rice prices in neighboring countries are well above the official price of rice in Liberia. As a result, some (locally produced and imported) rice is being marketed across the Liberian border through the informal trade.

The Market Structure for Rice

The market structure for rice in Liberia is made up of three separate but intertwined channels:

- The market for locally produced rice handled by the private trade
- The market for locally produced rice handled by the LPMC
- The market for imported rice

Private Sector Marketing Channels for Locally Produced Rice

Market participants in this channel are farmers, wholesalers, wholesalers/retailers/cooperatives, retailers, private rice mill operators, and consumers. During the course of this study, the LPMC was not marketing local rice and had not been doing so for about nine months. Marketing of locally produced rice was being undertaken primarily in the informal private sector with minimal participation by cooperatives.

Farmers

In the informal market, farmers sell to consumers or to any of the intermediaries indicated above. Sales are made on the farm to wholesalers and other farmers and consumers. The farm household also takes rice to market towns, where it is usually milled at private rice mills and then sold at the mill site or taken to the market. In a study conducted by the Ministry of Agriculture in June and September 1985, the volumes presented in Table 31. were observed to be handled by the various intermediaries.

Farmers typically sell their rice because of cash flow requirements. Sales are made to pay school fees, to purchase other foodstuffs, and to pay for cultural activities such as weddings and funerals. In interviews conducted by the study team, farmers said they did not, as a rule, know what prices to expect in a market prior to arriving there. In one instance, a farmer stated that he makes a crude estimate of the supply situation in the nearest market town by observing the number of farmers passing through his village en route to the market town.

Sales of rice to traders and consumers are usually in cash, while sales to farmers and consumers in the home village are often in the form of barter. Some wholesalers provide cash advances to farmers prior to the harvest season with an agreement specifying the quantity and price of rice to be sold by the farmer to the wholesaler at harvest time. None of the traders interviewed made non-cash advances in the form of inputs or consumer items. A small minority of farmers interviewed stated that they provided rice on credit to consumers. Most farmers said that the irregularity of rice sales and the impersonal nature of sales to consumers in market towns precluded any credit arrangements. Sales made to retailers and wholesalers in markets are also primarily in cash.

Table 31. Rice Purchases from Farmers

	Bong		Lofa		Nimba		Bassa		Total	
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent
<u>June 1985</u>										
Product/										
consumer	1557.5	74.9	0	0	846.44	37.9	700	75.9	2,647	65.7
Private										
wholesale	0	0	0	0	326.00	31.7	0	0	326	8.1
Private										
retail	371.88	17.9	0	0	312.38	30.4	202	21.9	886	22.0
Urban										
consumer	150.38	7.2	0	0	0	0	20	2.2	170	4.2
Total	2,079.75		0		1,027.88		922		4,030	
<u>September 1985</u>										
Product/										
consumer	629	70	0	0	846.44	56.7	885	96.7	2,360	71.44
Private										
wholesale	0	0	0	0	156.5	10.5	0	0	156	4.7
Private										
retail	270	0	0	0	489.69	32.8	30	3.3	789	0
Total	899		0	0	1,492.63		915		3,307	

Source: P. Bonnard, *Liberian Rice Families, Rice Marketing in Bassa, Bong, Lofa, and Nimba counties*, MOA, September, 1986, Tables 6 and 7, p. 15.

Half of the farmers interviewed by the team walked to the market and the other half rode in public transport. Farmers walk to the market either because there is no road or because the transport charge is prohibitive given the small volume they take to market. A frequent complaint was that the traffic flow is very light and sometimes the public transport does not arrive in time to get to the market for a full market day. It is axiomatic that when farmers walk to the market, the amount of produce they can take with them is severely limited.

Farmers sell milled rice to consumers and retailers in the markets and sell paddy rice to wholesalers and other farm families.

Private Wholesaler/Retailer

The rice wholesaler purchases paddy from farmers on the farm or in market towns, stores it and mills it for sale to consumers and retailers. A wholesaler/retailer is best defined for the purpose of the study as a business person who assembles paddy from farmers to sell in milled form in 100-pound bags. In the market towns visited, a relatively small proportion of consumers — usually salaried government workers — have adequate cash to buy rice in 100-pound bags. Some retailers assemble paddy and distribute milled rice to other retailers, as well as sell milled rice in small amounts (cups or kenke) to consumers; however, such participants do so sporadically and that activity is only a small part of their function.

Wholesalers make purchases from farmers and also use the services of relatives who go to market towns and farms to assemble paddy from farmers. These assemblers usually work on commission when purchases are financed by the wholesaler. Assemblers also finance purchases independently and sell paddy to wholesalers at a markup. Some wholesalers merely provide the cash to assemblers, specifying the quantity that will be delivered to them (the wholesalers); the implication is that the assembler's income is the difference between what the wholesaler pays and the lower, but unspecified, price the wholesaler expects the assembler to pay the farmer. Wholesalers operating in the informal rice market do not, as a rule, have hired staff either as office workers or laborers. The wholesaler operates as administrator and accountant, and labor for handling rice is hired on a temporary basis.

The wholesaler and assembler transport the paddy from the farm or market town to the store and store the paddy for two to four months before milling it for sale. The wholesaler mills the paddy at his or her own expense, if the wholesaler does not own a rice mill. Wholesalers stated that

most sales to retailers are made in cash. Some do extend credit for one or two days to retailers who have regular business with them. The loose commercial relationship between wholesalers and most retailers restrains wholesalers from extending credit to retailers in any sizable amount, but this is probably for good reason, as wholesalers stated that retailers are notorious for not paying debts or for doing so only after long delays.

Wholesalers buy paddy during or immediately after harvest, when prices are low, and store most of the grains to sell in the off-season when prices are high. They also purchase paddy from surplus areas and sell in deficit areas. Hence, they perform spatial and temporal arbitrage activities. Their market intelligence operations are crude but effective, and rely on their links with transport owners or on their own participation in the transport business.

Among the wholesalers interviewed, a significant proportion owned and operated rice mills or had close relatives with rice mills. Similarly, a significant proportion of wholesalers owned their own vehicles or had close relatives who owned vehicles. All wholesalers interviewed owned or rented warehouses to store their produce. (These assets mentioned are all instrumental in defining whether an individual is operating as a wholesaler). These close links with transport owners and millers ensure that wholesalers have access to and priority over other marketing participants in the milling and transportation of paddy. They also result in substantial discounts for wholesalers in milling and transport charges.

Wholesalers operating in the informal rice market tend to pursue other activities. The most common activity is as an LPMC agent, sub-agent, or sub-sub-agent to procure coffee, cocoa, and rice (when the LPMC is buying paddy). Some wholesalers also sell imported rice, and others operate private rice mills. It is not possible to enumerate all the business interests of

wholesalers, largely because of the fears of the interviewees that such information may be used by government officials to levy extra taxes.

Wholesalers obtained their initial and working capital from diverse sources such as family, mining, and driving. When loans are procured from family, the principal is repaid, and if it is working capital, the profit from that single operation is shared with the family member(s) providing the loan. Most of the informal rice wholesalers interviewed were Moslems and, because their religion forbids charging interest on loans, operators seek other means of rewarding their benefactor, such as splitting the profit.

The formal banking system has a very small or no role in the financing of operations of private wholesalers involved in the informal rice sector. Only one person interviewed had obtained a loan from a government scheme designed to assist small businesses. This individual — a rice mill owner — did not operate as a wholesaler. Banks in Liberia undertake very little lending for agricultural or agribusiness activities. Most of these wholesalers do not possess assets that the banks would consider appropriate collateral. Agricultural marketing is an activity that the government would like to transfer to cooperatives and the LPMC, so it is unlikely that informal rice wholesalers could procure loans from government banks. Finally, most of these wholesalers belong to the Mandingo ethnic group which is often regarded by government officials as foreign; hence, schemes to fund Liberian businesses are not directed at these operators. The lack of working capital was cited as one of the major constraints preventing wholesalers and millers from expanding their local rice activity in the informal sector.

Cooperatives

These institutions play a very minor role in informal rice marketing. In general, cooperatives do not participate in this market directly, but buy paddy

from their sub-agents. The few cooperatives involved in the informal rice market mill paddy mostly from their members. In a rice marketing assessment study financed by USAID in 1985, one cooperative manager from Gbarnga revealed that business principles were not applied in decision making regarding the location of the plant (in a paddy deficit area) or selling methods. Other cooperatives have adopted similarly uncommercial methods of operation.

Retailers

This group of market participants are traders who purchase rice from wholesalers and farmers to sell to consumers. They buy primarily milled rice in 100-pound bags and sell it in cups (and kenkes) to consumers. The scale of operation is small, and such retailers exist only because many Liberian households cannot afford to buy rice by the bag.

Rice is procured from the farmer at the market or mill and from the wholesaler at the store. When rice is purchased from the store it is transported by wheelbarrow or on the head to the market. Retailing activities are not limited to the market alone, but are conducted on in the homes of retailers as well. Retailers store rice at home and in cabinets at the market. The retailer is usually a woman working to augment the household income. Retailers are often farmers, and sell an assortment of foodstuffs and consumer items. The retailer purchases the milled rice in cash and sells it for cash to consumers.

Most retailers obtain their initial and working capital from family members or savings clubs. Their operations are conducted on the most rudimentary basis, making regular adjustments to the cup size to reflect changes in the price of rice purchased from the wholesaler.

Marketing Channels for LPMC Milled Rice

The market for LPMC milled rice was not operating at the time of this study, and this short analysis relates to the market as it was last season when the LPMC handled rice. The actors in this market include the LPMC, cooperatives, private licensed agents (now called collectors), and their sub-agents and farmers.

The Liberian Produce Marketing Corporation (LPMC)

The LPMC procures paddy from farmers, cooperatives, and licensed buying agents. Paddy is also procured from the SRSP (that is, surplus seed rice that the SRSP is unable to distribute to farmers). Paddy procured from these sources is milled at LPMC rice mills and then sold to wholesaler/retailers.

Rice is delivered to LPMC warehouses, where it is graded and documentation is prepared for payment. The actual payment of cash is rarely done on the same day that produce is delivered. The team was informed in April 1989 that payment had not been made for paddy delivered in June 1988!

Other interviewees stated that they ended up spending more money on transport costs than they eventually received in payment for the rice. In the rice assessment project of 1985, it was revealed that cooperatives which took marketing loans ended up paying interest charges that exceeded the commission that the LPMC paid them.

Most paddy purchases are from cooperatives or private agents (collectors). Since 1987, the LPMC has increased efforts to purchase directly from farmers. However, because of delays in payment by the LPMC for

produce delivered, farmers still prefer selling to private agents who pay cash on delivery. It was also reported that the much larger resources and better contacts of private agents enabled them to get higher grades and lower deductions for paddy from the LPMC. Finally, it was observed that the LPMC had problems in mobilizing resources to reach farmers; for example, at the time of the team's visit, there was only one pick-up truck to serve the large southeastern region.

The volume of rice processed and sold by the LPMC is a very small proportion of total farm output and an even smaller proportion of total rice consumption in the country. In 1988, a year of relatively high rice intake, the LPMC purchased only 3 percent of production. In 1984, the best year for intake, LPMC's intake of paddy, 19,815 metric tons, was only 6.7 percent of total production. Therefore, it can be said that the LPMC's activities in the domestic rice market are very limited. The limited penetration of the LPMC is partly caused by the small size of the marketed supply, limited access of the farmer to the LPMC, and the lack of GOL support for LPMC's local rice program. The LPMC is also bedeviled with management problems that have been documented by a number of analysts. The Coopers and Lybrand report (*LPMC -The Future*, December 18, 1986) described these problems as institutional, financial, and operational. The institutional problem was characterized as the undefined role of the LPMC, the unclear LPMC/GOL relationship, and the use of the LPMC as a quasi-fiscal agency to finance rural development and the GOL budget. Financial problems resulted from the subsidy that LPMC has to absorb for rice (both imported and local), the debt burden, insufficient working capital, and weak financial controls. Operational problems result from the lack of clear definitions of activities. Resources are not applied in a coordinated manner, effective control is not exercised over agents and their abuses, and the processing of rice is not centralized.

Cooperatives

Cooperatives purchase paddy from farmers and sub-agents to sell to the LPMC when that corporation is purchasing paddy. Farmers deliver paddy to the cooperative warehouse or to the LPMC in the name of cooperatives. Cooperatives also allow their designated sub-agents to receive produce from farmers and subsequently deliver it to the cooperative warehouse or to the LPMC warehouse.

The dominant channel used is that of procurement by sub-agents for delivery to the LPMC under the name of the cooperative. In an interview with the manager of a cooperative, it was revealed that 70 percent of its intake was from sub-agents and 30 percent was purchased directly from farmers. This pattern was corroborated by sub-agents and farmers interviewed. However, NCRDP personnel claimed that the effectiveness of cooperatives in Nimba county made direct cooperative purchases from farmers the dominant channel.

Cooperatives in Liberia are made up of either groups of farmers or, more often, groups of traders. They are the preferred channel through which the LPMC procures rice and they act as licensed buying agents of the LPMC. In turn, cooperatives designate sub-agents to procure produce on their behalf. As agents of the LPMC, cooperatives receive a commission of 6 percent on turnover. Cooperatives pay sub-agents between 1 and 2 percent of total turnover value.

Cooperatives are organized at village, clan, and district levels. In Nimba county, the villages grouped under clan-level cooperatives are the channels promoted by the NCRDP. In other counties clan- and district-level cooperatives have been promoted by the ADPs and the Cooperative Development Agency. The CDA is also attempting to organize county cooperative unions.

In discussions with officials, the team could not identify functions to be performed by cooperative unions.

Cooperatives pay 1.5 percent commission on their turnover to the CDA for auditing and lobbying services performed by that agency. Cooperative officials complained about this commission and did not appear to appreciate the services of the agency. In Nimba county, cooperatives have refused to register with the CDA, largely to avoid paying this commission.

Cooperatives have had a bad history in Liberia. They have been used by political authorities to procure loans that are not paid back. There have been serious cases of fraud, and the capability of management in simple accounting skills has been low. Consequently the effectiveness of cooperatives in rice marketing has been seriously constrained.

Marketing Channels for Imported Rice

Over the past 20 years, there have been considerable changes in the structure of the market for imported rice, partly as a result of GOL policies, and partly as a result of external forces such as world market prices for rice. The market for imported rice primarily serves the needs of urban consumers, with 75 percent of imported rice consumed in Monrovia.

Although the market for imported rice consists primarily of rice imported through the sea ports of Liberia, there is significant unrecorded cross-border trade in rice with a market structure akin to the market for locally produced rice (P. Bonnard, *Rice Self-sufficiency and the Origin of Rice Supplies in Liberia*, MOA). If that analysis is accepted, at the time the report was written, the volume and proportion of imports consumed in the market outside Monrovia would have been higher than the 25 percent estimated by the World Bank as going to non-Monrovia consumers. At the time of the

writing of this report in 1987, the much higher price for rice in neighboring countries — L\$ 80 per 100 pounds in Guinea and L\$ 75 per 100 pounds in Sierra Leone, compared with about L\$ 30 in Liberia — has resulted in the smuggling of imported rice to these countries; a similar export situation would occur for locally produced rice in rice surplus areas adjacent to the borders of these countries.

The fact that the primary customer for imported rice is the urban consumer has important implications for the government. Urban consumers have a disproportionately high level of political leverage, consequently the GOL is very sensitive to the availability and domestic price of imported rice. In March and April 1989, there was a consumer subsidy on imported rice amounting to L\$ 15 per 100-pound bag (USAID/Liberia Evaluation of P.L. 480 Title 11 Section 206 Transfer authorization # 669-8601-03, July 1, 1988). This subsidy has been largely caused by the *de facto* devaluation of the Liberian dollar, which is only 50 percent of the official rate *vis a vis* the U.S. dollar. This foreign exchange situation not only has financial implications, but has also caused changes in the rice market structure in the country.

Although technical constraints are important causes for limiting the level of self-sufficiency in rice production, the geographical distribution of rice production in Liberia effects rice supplies for the major market — the Monrovia conurbation. Monrovia is more than 100 miles from major rice-producing areas, thus the high transportation rate, estimated at between L\$ 1.43 to 4.00 per 100 pounds, must be a deterrent to the flow of locally produced rice to Monrovia.

The major participants in the market for imported rice are the LPMC, private importers/distributors, foreign concessions, private wholesalers, cooperatives, and retailers.

LPMC

The LPMC is a wholly-owned corporation of the GOL and has been used to implement GOL rice policies among other things. It has been used by the government to import rice on a commercial basis, and as a conduit for the P.L. 480 program of rice imports. The LPMC's prominence in rice importing activities started in 1979, when world market prices for rice were so high that it was unprofitable for private importers to import and sell rice when the GOL was maintaining an artificially low domestic price. Throughout the 1980s, the LPMC has imported a large proportion of total rice. LPMC rice imports ranged from 33 to 61 percent of total rice imports between 1983 and 1988. The bulk of LPMC rice imports for the period covered was made up of P.L. 480 shipments.

When the LPMC was importing rice, it sold the rice to distributors/importers located at the seaport in Monrovia and to wholesalers located elsewhere. Rice sold to distributors/importers was provided on credit, and the proceeds were paid to the LPMC upon sale of the rice. The rice in such a case was sold from the ship. The main reason for this arrangement was that the LPMC lacked (and still lacks) adequate storage space; therefore, it was cost effective for the LPMC to allow the distributor to take delivery of the rice from the ship.

The LPMC has also sold rice to wholesalers located in Monrovia and other towns. Sales to these wholesalers usually have been on a cash basis, either on all or part of the consignment. When sales were made to wholesalers on credit, the terms of credit were spelled out clearly in terms of the timing of payment. The LPMC used to operate outlets where it sold rice to consumers and wholesalers. These outlets handled only a small fraction of total sales and such commercial operations have now been discontinued.

The LPMC provided rice to its employees on credit, with payment made in the form of monthly deductions. The amount of rice sold through this channel was small relative to total sales, but still significant, mainly because some employees were reported to have procured rice for commercial purposes (to sell to consumers and retailers).

As explained earlier, problems relating to funds from P.L. 480 sales led to the removal of the LPMC from the P.L. 480 rice import business in 1988. Since then, the LPMC has not brought in any rice from abroad. It is widely speculated, however, that given the high cost of rice in the world market relative to the GOL-mandated domestic price for imported rice (using the *de facto* exchange rate) the GOL is considering allowing the LPMC to import non-P.L. 480 rice, since private importers are unwilling to import rice on a commercial basis when the GOL is holding domestic rice prices below prevailing world prices.

The LPMC, as a government parastatal, is not a profit maximizer. Furthermore, political interference and a weak board of directors have ensured that efficiency levels in the rice department have been very low. There have been high losses for imported rice, partly caused by improper initial inspection of rice imports and partly by improper storage management. For example, the LPMC did not properly fumigate warehouses and employed last in, first out (LIFO) inventory practices. Furthermore, there have been serious cases of fraud in the department.

Since 1985, largely as a result of USAID pressure, some of the LPMC's management problems have been addressed. First in, first out (FIFO) storage procedures were implemented, and more efforts were directed at fumigating warehouses. However, there have still been recent cases of fraud, and efficiency levels are still abysmally low. A comparison of the LPMC with private rice importers indicates that private rice importers are three times

more productive than the LPMC as measured by the ratio of workers to throughput. When productivity is measured in monetary terms, the disparity in efficiency levels between private traders and the LPMC is even more glaring. Study team members observed that although the LPMC had not procured any rice imports for months and had not purchased any local paddy for months, it still was maintaining a large workforce specifically for rice.

Private Importers/Distributors

Private importers/distributors are defined here as commercial importers of rice who also function as distributors or wholesalers for the LPMC when that corporation imports rice. This group is distinguished from wholesaler/retailers because the latter do not import rice but are categorized as wholesalers because they (wholesalers/retailers) perform wholesaling activities when they sell rice to retailers by the bag.

There are nine registered importers/distributors, with all but one based at the port of Monrovia. The importer/distributor resident outside the port of Monrovia is based in Buchanan, and his registration is in line with a new policy of registering regional importers/distributors outside Monrovia. To register as a distributor, an individual or corporation has to meet the following requirements:

- Register with the Ministry of Commerce as a business entity
- Rent a warehouse at the seaport with a minimum capacity of 3,500 metric tons of rice
- Have access to financing to acquire minimum purchases of 3,500 metric tons of rice
- Have a platform scale capable of weighing 1,000 metric tons or more

These conditions were established by the National Rice Committee, which is chaired by the Minister of Commerce (MOC). The MOC executes the decisions of the NRC and therefore registers distributors.

Although there are nine registered distributors, discussions with distributors indicated that only five were active last year. Furthermore, there is evidence that there is a high level of concentration; the Rice Assessment Study (1985) revealed that the top two importers handled 89 percent of commercial imports. In the season prior to this study, aid imports of rice formed the overwhelming majority of rice imports, and administrative market-sharing arrangements reduced the level of concentration of rice imports.

Rice distributors, when engaged in importation of rice, procure rice from abroad, store it, and sell it to wholesalers/retailers. Most transactions with wholesalers/retailers are on a cash basis. In the case of importers with subsidiaries, a simple transfer occurs. Most transactions take place at the seaport where the wholesaler/retailer takes physical possession and title of the rice. This study team received complaints from wholesalers that in computing their cost estimates, importers/distributors claim that they offer credit to wholesalers/retailers when this is not the case.

Importers/distributors are corporate entities, which is a prerequisite for operation, given the high start-up capital required. As profit-seeking entities, their objectives, management structure, and operations are very different from those of the LPMC and the concessions. In the case of the latter, rice importation is only a minor part of their operation, with the objective being to provide rice at subsidized prices to their workforce. One major distinction between private importers and other participants in the market for imported rice is the size and financial requirements to start-up and operate. The financial requirements for participation in the P.L. 480 program include a

bank guaranty of L\$ 1,000,000. Such a financial prerequisite acts as a substantial barrier for firms who may want to enter the importing trade.

Wholesalers/Retailers

Wholesaler/retailers purchase rice from distributors to sell to consumers and retailers. In upcountry towns, there is usually a wholesaler/retailer who purchases rice from distributors to sell to other wholesaler/retailers. In this case, the wholesaler/retailer sells in bulk (50 bags or more), as well as single bags. Wholesaler/retailers procure, transport, store, and sell rice. They are registered with the MOC and must satisfy the following requirements:

- Register with the MOC as a business entity
- Own or rent a warehouse with a minimum storage capacity of 200 bags of rice
- Have a bank account with a minimum deposit of L\$ 200
- Have a cash bond of L\$ 5000

These conditions were made to reduce the number of wholesalers operating in the imported rice trade and to enable the MOC to monitor rice marketing in Liberia. The NRC was particularly concerned about the ease with which unregistered rice wholesaler/retailers could smuggle rice out of the country. Nevertheless, the study team was informed by reliable sources that imported rice was still being smuggled out of the country.

These requirements pose significant barriers to entry for individuals and firms wanting to enter the trade. This team received numerous complaints that the bureaucratic impediments to engaging in the imported rice market were daunting. Despite these complaints the team observed that

there were many wholesaler/retailers in all the towns visited, presumably the returns are high enough to attract traders. Another explanation is that some of these traders are not actually registered with the MOC as rice dealers.

Most wholesaler/retailers are sole proprietors, although the team did identify a significant number of corporations. As private operators, these traders are profit-seekers and their activities reflect this objective. They employ only one or two full-time employees, because most traders use family labor and casual labor for handling, loading, and unloading rice. Most wholesaler/retailers of rice operated other businesses such as the retailing of general groceries, retailing local rice, or acting as an agent or sub-agent for coffee and cocoa. For most traders, sales of imported rice accounted for only a minor portion of their turnover.

Wholesaler/retailers purchase rice in cash and most sales are made in cash as well. Some wholesaler/retailers provide rice to regular retailers on credit for up to one week. When credit is provided, traders claim they do not charge any interest. The initial capital for operation is obtained from the family or from other businesses. None of the wholesaler/retailers interviewed by the team had received bank loans for initial investment or working capital. All wholesaler/retailers own or rent their own stores/warehouses but only a small proportion of traders own their own vehicles.

Retailers

Retailers are the last link in the marketing chain before the rice reaches the consumer. Retailers are defined here as individuals who purchase rice in 100-pound bags to sell to consumers in smaller units. Retailers procure, transport, store, and sell rice to consumers. Most purchases and sales are made in cash. However, some credit is received

from wholesaler/retailers, and some retailers sell rice to regular customers on credit.

The commercial operations of retailers are very small and they sell an assortment of other consumer items. Many retailers are also farmers, and many only retail for one or two days per week. Retailers have very small assets, usually they own only the pans that they use. The initial capital for most of the individuals comes from other family members.

Marketing Costs and Margins for Rice

In this section, estimates have been made of the costs and margins associated with rice marketing for the various market participants. In addition, an estimate has been made of the costs associated with the GOL's pricing policies for rice.

Marketing Costs and Margins for Locally Produced Rice for Informal Traders

Wholesalers and retailers incur costs in undertaking the activities outlined earlier in this section. The margins that accrue to them are gross profits, and no deductions have been made for management or for interest on borrowed money.

Costs and Margins for Retailers

The items in the cost structure of retailers are specified in Table 32. The major cost item is that of the rice purchased from the wholesaler or farmer. Retailers have very little lump sum cash, and the cost of the produce represents to them a large investment. Retailers do not have much in the way of equipment, just the pans in which they display the rice and the cups used for measurement.

Table 32. Marketing Margins for Locally Produced Rice in the Informal Market
(Hundreds of dollars)

	Lofa Int.1 Voinjama	Bong Int. 1 Gbarnga	Nimba Int.1 Saclepea	Int.2 Ganta	National average	Average income low	Average income high
Retailer							
Retail price	31.04	29.09	33.33	30.00	30.86	3,086.40	4,629.60
Handling and transportation	0.56	0.56	0.56	0.50	0.55	54.50	81.75
Market fee	0.08	0.08	0.08	0.15	0.09	9.38	14.06
Equipment (pans)	0.01	0.01	0.01	0.01	0.01	0.63	0.95
Purchase price	25.00	24.00	27.67	27.25	26.23	2,622.92	3,934.38
Profit	5.40	3.45	5.02	2.09	3.99	398.98	598.46
Wholesaler							
Wholesale price	25.00	25.00	27.66	27.25	26.23	11,356.51	
Handling				2.00	0.50	216.51	
Transportation	1.00	1.50	2.00	2.00	1.63	703.63	
Milling	3.50	3.00	3.00	3.50	3.25	1,407.25	
Storage	0.50	0.50	0.50		0.38	162.38	
Purchase price	16.60	16.60	14.40	14.40	15.50	6,711.50	
Tips	0.50		0.50		0.25	108.25	
Overheads	0.14	0.56	0.38		0.27	116.10	
Loss (shrinkage)	1.50	1.50	1.35	1.35	1.43	617.03	
Profit	1.27	1.34	5.54	4.00	3.03	1,313.88	

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The margins accruing to retailers at L\$ 398 per annum are based on an average of 2 bags of rice sold per week. This was the turnover reported to the team and amounts to L\$ 1.33 per day. This is considerably less than the minimum wage of L\$ 2 per day. But, of course, the retailer will sell items other than rice, and the daily return will exceed L\$ 1.33 but still be modest by any standard.

Clearly, retailers of locally produced rice are not making excessive profit. Indeed, this low level of profit would be expected, because the minimal capital and other requirements make entry into and exit from this retail sector easy. Although the daily return may be low, it is still likely to be above any alternative source of cash income.

Costs and Margins of Wholesalers

Wholesalers have a much wider range of cost items than retailers and also carry much higher overheads, and may possess assets of considerable value. The value of the paddy or milled rice stocks of wholesalers at any time does not represent as high a proportion of total investment as with retailers.

Wholesalers of informal rice markets make, on average, L\$ 3.03 per 100-pound bag. On average, they make L\$ 1,313 per annum by selling local rice in the informal market. Care should be taken when drawing any inference from this figure, because this study was conducted during an unusual period, when the LPMC was not operating in the rice market. When the LPMC is operating and if it pays for paddy promptly and uses these traders as agents, wholesalers sell a significant proportion of their output directly to the LPMC.

Other factors to be considered when drawing inferences are that most of the wholesalers interviewed by the team operated other enterprises and,

hence, this income from wholesale business is income from locally produced rice. Furthermore, caution must be exercised in using the prices given by the wholesalers because (and justifiably so) they tend to be skeptical of officials, particularly because some members of the study team were GOL employees. The normal attitude of wholesalers is that officials are biased against middlemen and want to increase taxes or solicit bribes, and, of course, this is generally the case in Liberia.

The income of a wholesaler, assuming 300 working days per year, is L\$ 4.38 per day, which is significantly more than the minimum wage. It must be noted that this figure represents gross income. This activity requires considerable managerial capability and the minimum wage is not an appropriate or comparable source of income. The more likely comparable source would be a middle-level management position in the private sector.

The considerable outlay in equipment and working capital required for wholesaling is made in an environment that is characterized by lack of formal credit. The business also entails considerable risks, which include

- Risk involved in purchasing paddy of poor quality, such as that which is infested, has foreign matter in it, or is improperly dried
- Risk in terms of the selling price being below the cost of paddy plus handling and processing costs, (for example, if the LPMC decides to enter the market and sells milled rice at low, subsidized prices)
- Risk of spoilage and theft while the rice is in the warehouse of the wholesaler

In light of these management demands, outlays, and risks involved in wholesaling locally produced rice, the wholesaler is patently not making excessive profit. Even though the outlays are relatively high, they are not at levels that would constitute very high barriers to entry. Some of the millers

said that lack of capital prevented them from entering the market as wholesalers; however, such statements can be treated with some skepticism, because their response most likely reflected self-interest rather than the objective truth.

The Cost of LPMC Milled Rice

The financial costs to the LPMC of purchasing, handling, storing, and milling rice are presented in Table 33. The highest cost item is for the paddy. The price which the LPMC pays for paddy is not only much higher than that which private traders pay, but is also higher than that at which it sells the milled rice. The cost differences between private traders and the LPMC occur partly because of the much lower price traders pay for paddy rice and partly because of the better conversion from paddy to milled rice obtained by the private traders.

Another factor explaining the differential is the much higher price that private traders charge for milled rice, L\$ 26.23 per 100-pound bag, compared with L\$ 20.85, which the LPMC charges for milled rice. Although the low price which the LPMC charges for milled rice has no economic logic, it has some political logic. For example, it complies with the GOL's rice pricing policy. The situation is even more confusing because the LPMC, when it has rice to sell, also sells milled rice at the same price in Monrovia, without adding the cost of transporting the rice from its branches located up-country to Monrovia.

The other costs are not comparable, strictly speaking, because of different accounting principles adopted by the LPMC and private traders. The total cost to the LPMC for a 100-pound bag of milled rice is L\$ 35.96, yet it sells the rice at the GOL-established price of L\$ 20.85 — resulting in a

Table 33. Marketing Costs and Margins for LPMC Milled Rice

	LPMC
Selling price 3	20.85
Handling and commission	0.49
Warehousing and storage	7.40
Packing	0.69
Purchase price 1	27.78
Profit	-15.50

loss of L\$ 15.11 per 100-pound bag. It is perhaps not surprising that the LPMC is not in the local rice business and is not concerned about that.

There are four ways that the LPMC can reduce, or remove, the negative margin it makes on local milled rice:

- Reduce the price it pays for paddy. This would be counter to the GOL policy of encouraging local rice self-sufficiency and is also manifestly unfair to the rice producer, who is already receiving a price that is well below the real parity price.
- Increase the price to consumers, specifically, sell it at the same price as imported rice, or price it competitively with the private trade.
- Reduce processing and marketing costs. There is evidence that there is considerable scope for the LPMC to reduce its cost. The milling yield could be improved substantially from the present rate of 54 percent to more than 60 percent as reported by some private millers. The LPMC's milling yield has been known to be as low as 35 percent, which implies that there may be serious cases of fraud that are being covered up as milling losses. Warehousing and out-station costs also could be reduced.

- Stay out of the rice business and sell the milling facilities to members of the private sector.

Economic Cost of the LPMC Local Rice Program

The subsidy to the rice producer was L\$ 22 per metric ton in 1984 and L\$ 88 per metric ton in 1982 and 1983. Transfers to all rice producers as a result of the GOL's pricing policy ranged from L\$ 203,100 in 1984 to L\$ 1,516,160 in 1983. The gains to producers (producers' surplus) ranged from L\$ 186,600 in 1984 to a high of L\$ 1,023,410 in 1983. The cost of the subsidies in terms of production losses were between L\$ 0.09 and L\$ 0.48 for every L\$ 2.00 gain to producers.

Other costs included excess resource cost and waste caused by the high intake which resulted from the high prices offered for paddy. Society as a whole lost between L\$ 1.86 and L\$ 4.00 for every L\$ 1 gain to producers. In effect, it would have been more efficient to give a cash gift to producers, which at least would have eliminated the waste associated with the large intake that the LPMC was incapable of handling.

The situation now is radically different from the situation in the 1982-84 period. At that time the Liberian dollar was at par with the U.S. dollar, and part of the problem was that the Liberian currency was so strong relative to the currencies of neighboring countries that a large portion of LPMC rice intake came from neighboring countries. Therefore, a large part of the subsidy went to farmers in neighboring countries. The situation now is that of a weak Liberian dollar, and with prices much higher in neighboring countries, an outflow would occur to those countries. Currently, the LPMC is not buying paddy, so the costs presented in the analysis above do not hold for the 1988-89 season.

Marketing Costs and Margins for Imported Rice

Marketing Costs and Margins for Retailers

In Table 34, the marketing costs and margins for imported rice for retailers are presented. These costs are similar, if not identical, for retailers selling locally produced rice. The major differences relate to the prices at which the rice is purchased and sold.

The profit margins were lower for imported rice retailers, averaging L\$ 2.8 per 100-pound bag. For the low turnover scenario of two bags a week, annual income was L\$ 280.37; annual income was L\$ 420.55 for the high volume scenario of four bags a week. This translates to L\$ 0.93 to L\$ 1.40 per person-day.

Retailers of imported rice face the same competitive situation as those of country rice, i.e., low cash requirements and hence ease of entry into the market. Retailers of imported rice tend to be professional retail persons and they combine sales of imported rice with sales of locally produced rice and other consumer items. The income estimates, therefore, will understate total annual incomes.

Economic Cost of Government Pricing Policies for Imported Rice

The current situation is a repeat of the situation in the 1978-81 period when world market prices were such that commercial importers found it unprofitable to import rice. In the current situation, the causes of this problem are the *de facto* devaluation of the Liberian dollar and the government-regulated price for imported rice at wholesale and retail. Consumers are now subsidized to the tune of L\$ 15 per 100 pounds of

Table 34. Marketing Margins for Imported Rice

	Lofa Int.1 Voinjama	Bong Int. 1 Gbarnga	Nimba Int.1 Saclepea	Int.2 Ganta	Maryland Int.1 Pleebo	National average	Average income low	Average income high
Retailer								
Retail price	30.00	29.28	33.12	28.64		30.26	3,026.00	4,539.00
Handling and transportation	0.25	0.25	0.25	0.25		0.25	25.00	37.50
Equipment	0.01	0.01	0.01	0.01		0.01	0.63	0.95
Market fee	0.08	0.08	0.08	0.08		0.08	7.50	11.25
Purchase price	28.00	25.50	28.00	27.00		27.13	2,712.50	4,068.75
Loss (shrinkage)	0.56	0.51	0.56	0.54		0.54	54.25	81.38
Profit	1.67	3.45	4.79	1.31		2.80	280.37	420.55
Wholesaler								
Wholesale price	28.00	25.50	28.00	27.00	29.00	27.13	434,000.00	
Handling	0.10	0.14	0.05	0.10	0.50	0.10	1,571.43	
Transportation	4.00	1.43	2.50	2.00	0.63	2.48	29,714.29	
Shipping					2.50	0.00	0.00	
Storage	0.50	0.50	0.50	0.50	0.03	0.50	8,000.00	
Tips	0.10	0.05	0.08	0.08	0.50	0.08	1,200.00	
Overheads	0.05	0.04	0.05	0.06	0.05	0.05	785.12	
Loss (shrinkage)					0.01	0.00	0.00	
Purchase price	22.30	22.30	22.30	22.30	22.30	22.30	356,800.00	
Profit	0.95	1.03	2.52	1.97	2.48	1.62	25,929.17	

Over the period 1982-84, GOL rice pricing policy was such that domestic rice prices were considerably above world parity levels. Tweeton and Rogers estimate that there was a policy tax on consumers ranging between L\$45 to L\$71 per par, which resulted in national annual rice consumption declining by up to 10,000 tons (see Annex B for details). There were large losses in imported rice stocks due to GOL's improper scheduling of imports, allowing commercial imports to enter and generate windfall profits for the private trade.

imported rice. As a result, commercial imports are zero, and the consuming population is reliant on aid-financed imports of the nation's staple food.

Conclusions and Recommendations — The Rice Sector

One serendipitous effect of current GOL pricing policy for locally produced rice is that it has driven the LPMC out of the local rice business. This perverse pricing policy has required the LPMC to purchase local rice from farmers at a milled equivalent price that is greater than the official selling price; unable to carry this loss, the LPMC has withdrawn from the market. In its stead, the private sector trade has taken over. Private traders pay substantially less than the "official" price to producers and sell for more than the regulated retail price. Analysis shows that, although the private trade is operating at a profit, the profit margins taken on rice marketing are modest by any measure. This is not surprising, given the level of competition in the trade and the ease of entry into and exit from rice marketing. Private sector rice marketing costs are significantly lower than LPMC rice marketing costs. In addition, the private sector provides farmers and consumers with a better use of marketing services than the LPMC.

In general, farmers prefer to deal with the private trade rather than with the LPMC. The private trade pays cash, and there is less aggravation (e.g., "tipping" LPMC officials to receive their rice, unforeseen deductions reflecting quality discounts) than when dealing with the LPMC. Of course, the private traders are no paragons of virtue. Given half an opportunity, they will exploit a farmer's relatively weak bargaining position by tampering with weigh scales, discounting spuriously for quality, and paying a low cash price to farmers in isolated locations, but they do it less than the LPMC does, and private traders also offer better services. Farmers and traders decry the poor rural road network and inadequate transportation which have

caused transportation costs to increase sharply; rates on unpaved feeder roads are double those on paved roads.

Prices for rice in the adjacent countries of Sierra Leone and Guinea are as much as four times higher than prices in Liberia. There is a significant, albeit unquantified, flow of locally produced and imported rice into these higher-priced export markets. The relative cash shortage in both these adjacent markets is one factor that is constraining the export flow from reaching major proportions. The overall market volume for locally produced rice is lower this year than last, reflecting lower domestic production and that, with the exit of the LPMC from the trade, there is no opportunity for farmers to sell their rice to the LPMC at the relatively high official producer price and buy it back at the relatively low official retail price. The landed cost of imported rice (converting U.S. dollars to Liberian dollars at a rate of 1:2) is approximately L\$ 0.36 per pound, which is more than double the average milled equivalent price received by Liberian rice producers (L\$ 0.15 per pound). The producers' complaints that prices for rice are too low are well founded. GOL domestic rice policy is regressive, transferring income from relatively very low income farmers to relatively higher income town dwellers.

The GOL-regulated retail price for imported rice in Monrovia is L\$ 0.23 per pound, well below the real landed cost of the imported product (L\$ 0.36). As a result, there are no commercial imports of rice — the entire trade is in P.L. 480 rice and other rice aid shipments. The GOL could not afford the present level of consumer subsidy on rice if it were to purchase rice on commercial terms. The private trade, under an administered margin regime, distributes imported rice in an efficient manner and in stark contrast to the poor marketing performance of the LPMC, which has been excluded from this trade.

One implication of GOL rice pricing policy is that per capita rice consumption is being held at its current very high level, at the expense of producers of locally produced starch commodities such as country rice, cassava, and yams. In addition, urban consumers' preference for relatively expensive parboiled rice is being maintained at unrealistically high levels. The effect of rice import policy has been to hoist the GOL by its own petard: retail prices for imported rice have remained at the same level for the past five years. When the Liberian dollar was relatively strong (i.e., at par with the U.S. dollar and with no parallel market) and world market prices for rice were relatively low, the administered rice price represented an income transfer from rice consumers to the GOL and domestic rice producers; subsequently, world market prices for rice have strengthened, and the Liberian dollar has declined sharply against the U.S. dollar, resulting in a *de facto* subsidy to rice consumers. Now, the GOL faces the prospect of political unrest, particularly in the politically vociferous Monrovia conurbation, if it adjusts the administered retail price to reflect the reality of national economic conditions and world rice market conditions.

It is axiomatic that the GOL must come to terms with its present and, likely, future economic circumstances: present per capita consumption of imported rice cannot be sustained when the only affordable source of supply is aid shipments. There is an urgent need to adjust imported and locally produced rice prices upward. Making the adjustment to a parity price level at one jump could provoke political and social unrest; however, the GOL should be prepared to raise price levels over time, by steps, until it reaches a level that reflects the international value of the Liberian dollar and the parity price for imported rice. The need to take such action is particularly acute, given the lack of success in increasing the productivity of rice production in Liberia — rice self-sufficiency is not an attainable objective. (Per acre, cassava yields are five times that of rice, although cassava is not a preferred starch.) Raising rice prices would reduce cassava subsidies, contribute to reducing (or at least not accelerating) GOL indebtedness, and

transfer income to the rural sector, where it is much needed. Such action should be accompanied by an educational and promotional campaign to increase consumption of locally produced root crops.

In short, the GOL must reassess its long-term objective of reaching self-sufficiency in rice (perhaps for political reasons), de-emphasizing its importance, and casting the objective as one of increasing self-sufficiency in consumption of starchy foods. This is not to say that it should not continue to strive to increase the productivity of the preferred staple, rice, through continued research and development, extension, and other means. The GOL's intent should be to "soften" the rice consumption habit, particularly that of urban consumers, and to give a clear signal to the rural sector that there is an alternative to the hard slog, for very modest returns, of growing rice (i.e., growing less rice and focusing more on cash crops, and then using some of the cash income to purchase imported rice or switch to other local starches). For this to become a reality, the GOL must ensure that

- Through improvements in the marketing systems for cash crops (particularly deregulation of the coffee and cocoa marketing systems), the farmer firmly believes that there are long-term sustainable benefits in investing in cash crops.
- Domestic pricing policy enhances marketing opportunities for other local starchy foods that have higher yields and require less labor input than rice.
- Through its rice import policy, it convinces the farmers that rice imports will be made available on a sustainable basis. One component of this signal will be to keep the LPMC out of the market for locally produced and imported rice.

Directions in which the U.S. government may wish to head include the following:

- Continue P.L. 480 rice shipments at current levels for the immediate term and, gradually, reduce the level over time, contingent upon the GOL doing the following:
 - Increasing retail rice prices at an agreed-upon rate over time until they approximate parity price levels
 - Keeping the LPMC out of the rice marketing business
 - Deregulating the marketing of coffee and cocoa
 - Removing price controls on domestically produced agricultural products
- Continue to support research and development on increasing the productivity of rice production
- Provide technical assistance and some financial support to assist the GOL in deregulating cash crop marketing systems (such as market development assistance for new exports of coffee and cocoa, and advice and financial assistance in establishing a coffee and cocoa export quality monitoring agency — see Chapter II)
- Support GOL initiatives to rehabilitate and extend the road network in Liberia

IV. THE MARKETING OF FRESH PRODUCE IN LIBERIA

An Overview of Demand for Food in Liberia

Food Expenditures and Consumption

Cross-sectional food expenditure and consumption surveys, particularly those undertaken in developing countries, should not be viewed as providing definitive quantitative estimates; rather, their results are merely indicative. Nonetheless, they provide, in broad terms, the best possible overview of the national food expenditure and consumption picture.

In 1986, expenditures on food items accounted for the largest portion of the household budget in urban households in Liberia (ranging between 45 and 55 percent, depending on survey results, see Table 35), with substantial variations in expenditures existing by city (for example, the proportion is lowest in Monrovia — reflecting, in part, the relatively high per capita income of the capital city — and highest in Zorzor — an urban area with relatively low per capita income). More than half of all expenditures on food and beverages were for rice, fish, other meats, and vegetables, with rice alone accounting for 20 percent or more of the food budget.

There is wide variation in actual food expenditures between different income groups, with the relatively better-off groups spending four or more times as much on food purchases each week as the lowest income group

Table 35. Proportion of Monthly Food and Beverage Expenditures Spent on Major Food Categories in Urban Areas in Liberia, March 1986 and September 1986

(Percentage)

	March 1986	September 1986
Rice	19.4	23.6
Fish	13.2	12.7
Other meat	12.0	11.9
Vegetables ^a	10.6	12.7
Vegetable oil ^b	9.1	8.7
Other food and beverages	6.8	5.5
Other cereals ^c	5.7	4.7
Cassava	4.4	4.4
Other starchy foods	4.1	3.6
Alcoholic beverages	3.9	2.9
Food away from home	3.3	3.5
Milk	2.9	2.1
Eggs	1.6	1.2
Fruit ^d	1.5	1.2
Pulses	1.5	1.2

a. Mainly Maggi cubes, onions, bitter ball, peppers, vegetable leaves, tomatoes, and okra.

b. Mainly palm oil.

c. Mainly bread and/or flour.

d. Mainly citrus, banana, pineapple.

Sources: S.J. Hiemstra and K. Savadogo, *Urban Food Consumption Patterns and National Food Policy in Liberia, Report 2, Part 1, Results of the Household Survey*; prepared for USDA and USAID/Liberia by Purdue University, October 1986. J.A. Kuehn, T.D. Koiwou, and D.N. Newman, *Urban Food Consumption Patterns in Liberia, Survey Phase II, Parts A and B*, September 1986, prepared for USAID/Liberia and the GOL by MIAC.

(reflecting not simply the availability of more income, but also that low income rural dwellers are more likely to "make farm" and produce a greater proportion of their food requirements). The income elasticity of demand for food provides an estimate of the change in demand for food occasioned by a

change in the level of income. Income elasticity estimates for major food groups are presented in Table 36.

The income elasticity of demand for food items in aggregate is 0.67, declining from 0.80 for the low income group to 0.40 for the highest income group. Economists interpret these figures to mean that, given a 10 percent increase in their income, low income families would increase food expenditures by 8 percent and high income families by 4 percent.

A review of the income elasticity coefficients shown in Table 36 is interesting but not surprising. All income groups would increase food expenditures with an increase in their incomes; households with relatively high income levels would actually decrease rice and fish expenditures given additional income (presumably switching to "superior" foods such as meats and wheat flour bread or locally processed starchy products). Bread and other flour products are seen as luxury goods by all income groups, as are meats and fish; for most income groups, vegetables (along with rice, cassava, fish, and vegetable oils) are necessities, i.e., actual quantities of these items will increase as income increases but at a declining rate.

Table 37 presents monthly per capita consumption of selected food groups (for March and September, 1986) for urban areas. Perhaps surprisingly, the pattern in the dry season month of March is similar to the rainy season month of September. Consumption of rice dominates, and cassava and other local starchy products are ancillary but still significant. Vegetable and pulse (mainly dried beans) consumption is very high and supports the conclusion that vegetables are a staple in the diet of Liberians. Fruit consumption is relatively low, reflecting that fruits are not accompaniments to the main meal (as vegetables are) but more of 'snack in-season' products.

Table 36. Elasticity of Demand for Selected Food Groups,
by Income Group, Urban Areas in Liberia, March 1986

Income group	All rice	All cassava	Other cereal	Other starchy	Fish	Animal products	Vegetable oils	Fish	Vegetable	Total food and beverage
Mean	0.16	0.41	1.13	1.10	0.49	1.25	0.55	1.08	0.59	0.67
\$0-99	0.67	0.59	1.16	1.08	0.70	1.42	0.78	1.14	0.77	0.80
200-299	0.39	0.52	1.16	1.11	0.63	1.27	0.64	1.09	0.69	0.73
400-499	0.16	0.29	1.12	1.07	0.53	1.21	0.58	1.08	0.59	0.70
600-699	-0.08	0.51	1.07	1.10	1.38	1.22	0.45	1.08	0.58	0.69
900-1,099	-0.50	0.29	1.11	1.10	0.22	1.25	0.40	1.11	0.36	0.57
1,500+	-1.82	-0.33	1.17	1.21	-0.43	1.24	0.01	1.09	0.14	0.40

Source: Ibid, Page 28, Table 2.

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Table 37. Monthly Per Capita Consumption of Selected Food Categories,
Urban Areas in Liberia, March and September 1986

(Pounds per capita per month)

	Rice	Cassava	Local other starchy products ^a	Other cereals	Fish	Other meat ^b	Vegetable oil	Vegetable and pulses ^c	Fruit	Other foods
March	21.5	9.9	7.1	N.A.	5.4	2.6	4.3	13.5	1.8	N.A.
September	20.5	7.8	3.9	2.2	4.8	2.2	5.3	12.9	1.3	3.4

a. Excluding imported Irish potatoes, including plantains.

b. Beef, pork and pig feet, bush meet.

c. Includes pumpkin, bitter ball, vegetable leaves, cabbage, okra, tomatoes, peppers, lettuce, onions.

d. Includes citrus, pineapples, bananas, papaw, plums (mangoes).

Source: Ibid, Report 2, Part 1, derived from Table 62, page 97 and Import Trade Statistics (1986).

In Liberia, the meat protein staple is fish, and palm oil predominates in the edible oil category. Food consumption patterns vary by geographical area (not shown in Table 37), reflecting local dietary preferences and proximity to sources of supply. For example, per capita consumption of plantain and cassava in the Ganta area is significantly higher than anywhere else in the country, reflecting the local preference for boiled plantain and for "gegba." Similarly, Ganta consumers are relatively high consumers of bitter ball, and they are close to local and Guinean supplies of this vegetable. A combination of the relatively high per capita income in Monrovia and proximity to the major port explains the relatively high consumption of meat items and imported foodstuffs in the area.

Food Imports into Liberia

Imports of selected food items during 1985-37 are shown in Table 38. (These statistics reflect import volume in the "formal" trade and do not include fruit and vegetable produce, meat "on the hoof," and other products that enter Liberian markets from adjacent countries.) Rice imports dominate the import trade, and discussion of this pivotal staple in the diet of Liberians is included in Chapter III. In the composite category for vegetables, first onions and then Irish potatoes dominate. Fresh fruit imports are largely temperate climate items such as apples, grapes, and plums destined for the "up market" supermarkets patronized by expatriates and the highest income Liberians. Tomato paste is an important import item, providing consumers with a relatively inexpensive, storable, transportable tomato base for the stewed main meal of the day. Processed fruits, largely composed of jams and juices, again are destined for the tables of higher income consumers and for the hotel and restaurant trade. Meat and meat products and fish are two important import categories and account for as much as 20 percent of per capita consumption of these items in the Liberian diet (see Tables 37 and

Table 38. Imports of Selected Food Items,
1985-87

(Tonnes)

	1985	1986	1987
Vegetables: fresh, frozen or simply prepared:	5,735	5,715	4,266
Potatoes	1,529	1,304	825
Dried pulses	191	308	103
Fresh tomatoes	35	149	132
Onions and garlic	3,176	3,283	2,968
Other fresh vegetables	572	521	157
Preserved vegetables, roots, and tubers:	873	969	974
Tomato paste	502	741	763
Fresh fruit:	621	580	550
Apples	164	104	47
Grapes	109	72	--
Other fresh fruit	156	307	475
Preserved fruits:	412	284	158
Jams	119	77	68
Citrus juice	82	40	7
Other juice	153	138	65
Meats and prepared meat products:	5,295	4,928	6,753
Chilled meat	213	394	339
Salted meat (mainly pigs' feet)	4,508	4,159	5,858
Prepared meats (spam, etc.)	574	375	556
Milk and cream	3,440	2,917	3,834
Butter and cheese	289	219	175
Fish			
Frozen, salted, smoked, dried	7,812	11,070	8,379
Canned (sardines, etc.)	2,572	2,199	2,208
Cereal flours and products	5,060	4,336	13,833
Sugar and honey	6,389	9,232	9,083

Note: Rice imports not included (see Chapter 3, Table 28).

Source: Trade Statistics for 1985-87, GOL.

38). Pigs' feet are the main meat item, and frozen fish and canned sardines are the key imported fish products. Canned evaporated milk and dried milk make up the bulk of the milk and cream imports — both products being in a form convenient for transportation and storage. Almost all the country's sugar requirements are imported. Flour imports and processed cereal products (including malt, a key ingredient in beer) jumped substantially in 1987, but have always been a major imported food category.

The import picture for Liberia is characteristic of many developing countries that have relatively low trade barriers to food market entry (for example, the relative proportions of the major imported items in Liberia are very similar to those in any of the English-speaking Caribbean nations). It identifies a developing economy which has very little agro-industrial base (outside the export crop sectors) and a very modest market infrastructure (reflected in strong consumer demand for products such as canned sardines, salted pork products, and canned milk which have a low unit price and can be transported and stored with ease and small risk of spoilage. In absence of real per capita growth in income and with a continuing deterioration in the real value of the Liberian dollar, retail prices for basic imported food items that are traded commercially will escalate sharply and will have a concomitant depressing influence on demand. It should be expected that the volume of commercial food imports will decline over the next few years, and that the squeeze will be particularly marked on processed cereals and on meat products with a higher unit value.

Overall Market Size for Fresh Produce Items

Table 39 shows the relative importance (as measured by the proportion each item accounts for in total food expenditure) of selected fresh produce items (excluding rice, onions, and Irish potatoes). The wide range of items

Table 39. Relative Importance of Selected Fresh Produce Items in the Food Expenditure of Urban Households in Liberia, March and September 1986

<u>March 1986</u>		<u>September 1986</u>	
Rank	Items	Rank	Items
1.	Cassava (fresh and processed)	1.	Cassava (fresh and processed)
2.	Sweet potatoes, yams, eddoes	2.	Vegetable leaves
3.	Pepper	3.	Pepper
4.	Vegetable leaves	4.	Plantain
5.	Plantain	5.	Sweet potatoes, yams, eddoes
6.	Pulses (dried beans)	6.	Bitter ball
7.	Bitter ball	7.	Pulses (dried beans)
8.	Tomatoes	8.	Okra
9.	Citrus	9.	Citrus
10.	Okra	10.	Bananas
11.	Bananas	11.	Egg plant
12.	Pineapples	12.	Pineapples
13.	Pumpkin	13.	Tomatoes
14.	Cucumber	14.	Avocado
15.	Cabbage	15.	Cucumber
16.	Avocado	16.	Cabbage

Source: Derived from food expenditure and consumption survey estimates (Ibid).

underscores the importance of local starchy foods and vegetables in the Liberian diet.

Estimates of the market size (volume and value) for vegetables and pulses, fruits, and local starchy foods (excluding rice) are presented in Table 40. In rural areas, a significant proportion of the fresh produce that is consumed is grown on the farm and does not enter commercial market channels (as such, it has an imputed rather than an actual market value). The greater Monrovia area represents approximately one-half of the total urban population, and Monrovia have a higher per capita income than other Liberian nationals. As a result, the Monrovia market may represent as much as one-half of the total national fresh produce volume entering commercial channels. These estimates are no more than indicative and are based on heroic assumptions and on expenditure and consumption survey data that can be notoriously wayward. Notwithstanding these caveats, it is clear that, at more than L\$ 120 million, the estimated retail market value (imputed and actual) of Liberian fresh produce has made and is making a very important contribution to the economy of Liberia (independently compiled MPEA statistics place the gross output value of fresh produce at L\$ 117 million). To place its importance in perspective, exports of coffee and cocoa combined were L\$ 25 million and exports of rubber were L\$ 81 million in 1986. Of course, the export crops earned foreign exchange and had a "shadow" value in excess of L\$ 120 million; yet, the local fresh produce items could be characterized as emanating from a "Cinderella" subsector — receiving little direct support from government programs, yet providing a significant proportion of disposable income for many farmers, transporters, and traders.

Production estimates for fresh produce provided by the MOA are significantly lower than the market size estimates derived above. In household surveys, production estimates for non-export crops are often notoriously inaccurate.

Table 40. Estimation of Fresh Produce Domestic Market Size in Liberia, 1986

Starchy products other than rice (cassava, plantain, eddoe, sweet potato, yam, etc.) (thousand tonnes)	
Domestic ^a	144
Extra-regional imports	1.3
Total	145.3
1986 dollar retail value	L\$ 22 million ^b
Vegetables and pulses (thousand tonnes)	
Domestic ^a	152
Extra-regional imports	6
Total	158
1986 dollar retail value	L\$ 87 million ^b
Fruit (thousand tonnes)	
Domestic ^a	18
Extra-regional imports	0.6
Total	18.6
1986 dollar retail value	L\$ 8 million

a. This category represents Liberian-grown produce and produce that may have been imported from adjacent countries.

b. Assuming an average retail price per pound of \$0.25 for vegetables, \$0.20 for fruit, and \$0.10 for starchy products.

Source: Derived from food expenditures and consumption survey estimates (Ibid), import statistics, and consultant estimates.

Production Analysis

Of the 218,000 rural households in Liberia, the MOA estimates that 82 percent, representing 86 percent of the rural population, are engaged in agriculture. Seventy percent of the agricultural population is working and 30 percent is dependent, and 52 percent of those working on the farm are women. About 75 percent of the heads of agricultural households have no formal education, and 5 percent have a 10th grade education or higher. In

1983, the FAO estimated that 80 percent of the rural population of Liberia was entirely dependent on subsistence agriculture.

Table 41 summarizes the MOA's estimates of the percentages of agricultural households growing the most common crops. After rice and ssava, plantain and banana are the most commonly grown crops. They are more prevalent among households in southeastern Liberia, where more than 50 percent of agricultural households grow both. Nimba county accounts for 20 percent of the total banana- and plantain-producing households, while another 45 percent are located in Lofa, Grand Bassa, Bong, and Grand Gedeh counties. There are an estimated 862,100 citrus trees (64 percent bearing), of which 81 percent are orange trees, 11 percent are tangerine and 8 percent are grapefruit trees. One-fourth of these trees are located in Bong county, 18 percent in Nimba county, and 12 percent in Lofa and Grand Bassa counties. Peanuts are grown primarily in Nimba, Lofa, and Bong counties, which together represent 83 percent of the total number of households cultivating the crop.

Only 32,300 households are reportedly growing or selling vegetables, although urban food consumption survey data (see Table 37) would suggest that commercial production of vegetables is more prevalent. The conventional view is that most farmers grow vegetables in mixed cropping or in gardens, primarily for family consumption; any small surpluses are sold in the market. The major portion of vegetables is grown upland during the rainy season. There is little cultivation in the dry season, when swamp soils must be used. Fertilizers and insecticides are rarely used, even if available. Varieties of vegetables grown are usually low yielding, late-maturing, and susceptible to disease and pests. Greens, pepper, and okra are the most commonly grown vegetables, according to MOA estimates presented in Table 42. These estimates indicate that most of the households that grow vegetables sell a portion of them.

Table 41. Percentage of Agricultural Households Growing Specific Crops

Crop	Percentage
Rice	86
Cassava	56
Plantain	38
Banana	35
Cocoa	27
Coffee	26
Citrus	22
Vegetables	18
Peanuts	9

Source: MOA, 1987 Production Estimates of Major Crops, June 1988.

Table 42. Percentage of Agricultural Households Reported Growing and/or Selling Vegetables

Crop	Percent growing	Percent selling
Greens	18	11
Pepper	16	10
Okra	14	6
Cucumber	11	5
Bitterball	10	5
Eggplant	10	5
Tomato	9	4
Cabbage	1	1

Source: MOA, 1987 Production Estimates of Major Crops, June 1988, p. 14.

The Marketing System for Fruits and Vegetables

Organization

The marketing system for fruits and vegetables can be divided into two relatively distinct sectors: a traditional sector and a modern sector. The modern sector includes the supermarkets as well as the hotel and restaurant trade. This sector is basically restricted to the Monrovia area. The traditional sector includes the weekly rural and daily urban markets located throughout the country.

The modern sector share of the total market for fruits and vegetables is estimated at about 1 percent. Virtually all of the imported fruits and vegetables (excluding potatoes and onions) are distributed through these channels. In addition, locally produced fruits and vegetables are marketed through the modern sector by a number of entrepreneurial farmers specifically producing year-round, and buying local produce from rainy season surpluses, for distribution in this sector.

Selling to the Supermarkets

An enterprising Liberian farmer is the contract supplier of fresh produce to two major Monrovia supermarkets. He learned the trade while working for one of the two vegetable farms managed by Chinese nationals outside Monrovia and as the produce manager at a supermarket. He guarantees a supply of all locally produced vegetables to the supermarkets, occasionally buying and reselling his competitor's produce or chartering a truck to purchase rainy season surplus produce from suppliers up-country. He focuses on cabbage, tomatoes, cucumbers, and spring onions, which give the best return but also require the most work. With the help of brothers and contract labor, he also raises radishes, peppers, Indian varieties of

squash and cucumber, and watermelons, alternating production by season between his 15 acres of swamps and fields a few miles from Monrovia.

Even on his short journey to Monrovia with his LMA photo ID in hand, delays at the hands of security officers on the road are common. This farmer sometimes pays \$1.00 per bag of produce in order to avoid delays of more than an hour. The farmer sees the unavailability and high price of fertilizer and a shortage of funds to invest in a pump for irrigation and a motor-tiller as the greatest constraints on his operation.

The traditional sector is characterized by open-air, rural, periodic markets which serve primarily as assembling points for produce destined for urban markets. Most of these markets are scheduled such that each rural market within a region occurs on a different day of the week to maximize the number of produce assemblers and transport vehicles able to attend. Although some produce is sold at these markets at the retail level, by marketers or producers themselves, large proportions are purchased by market women assembling larger lots to transport to urban markets. Urban markets occur daily, although most of those outside Monrovia have a peak market day similar to the rural periodic market. For example, Voinjama and Ganta both have daily (largely retail) markets to serve the local population but also have one "market day" each week characterized by greater attendance and substantial purchases by assemblers. Virtually all of the regional imports and those locally produced fruits and vegetables which are sold, as well as most of the imported onions, are marketed through the traditional sector.

Major Supply Areas and Major Markets

In addition to produce flowing within each region from rural areas to urban centers, there are significant flows between regions. The largest of

these is the flow of produce from Bong, Lofa, and Nimba counties to Monrovia. Limited interviews with market sellers revealed smaller flows from Cape Mount and Lower Lofa counties to Monrovia. Because of its distance from Monrovia, the Voinjama area sends less fresh produce and more non-perishable produce such as dried pepper, pulses, and palm oil. Of the several markets visited in Liberia (see Annex C.1), Voinjama had the largest diversity of produce, while Nimba appeared to have the greatest surplus. Fresh produce was observed flowing from Nimba and Sinoe counties to Zwedru. Significant amounts of produce are imported from Guinea, as observed at the weekly Ganta market. Most of the peanut and dried pepper in urban markets appeared to originate there. Pulses, cassava flour, dried corn, dried okra, sesame seeds, bitterball, and ginger are also imported. Onions (originally imported from Europe) were the only produce observed being exported from the Ganta market to Guinea. Maryland county is also a deficit area for fresh produce.

Participants

Trade in fruits and vegetables in the traditional sector is handled exclusively by women. Large-scale and year-round traditional markets in Liberia have a short history relative to other West African countries. Liberian women have entered marketing relatively recently, driven by increasing needs to generate cash income for the household. Studies suggest that as a result of male migration to urban and concession areas, or in response to insufficient or irregular wage income earned by the head of the household, women have turned to marketing in order to provide supplementary, relatively stable income for the household. Most Liberian women enter marketing by selling their own produce, and thus women dominate trade in fresh produce.

The 1982 USAID/GOL-sponsored study, *Liberian Women in the Marketplace*, found that a Liberian market woman is more likely

- To be married (76 percent) than not
- To have received no formal western type of education, but to be striving for some type of western education for both male and female children (it follows that proceeds from marketing are an important source of funds for education)
- To be almost exclusively confined to the sale of perishable food commodities (71 percent)
- To be specializing increasingly in marketing at the expense of the dual career of farmer and marketer

The study further showed that for most Liberians, especially those outside Monrovia, marketing represents one of the most important avenues to entering the modern cash economy, while moving out of the subsistence economy.

There are four categories of participants in the traditional marketing system for fruits and vegetables: producers, retailers, assemblers, and wholesalers. These classes describe the primary activity of each participant (production, retail, assembly, wholesale), although most participants engage in more than one activity. Another important group of participants in the system are the operators of the vehicles that transport the market sellers and their produce. Although they rarely engage directly in buying and selling produce, they are an essential link between the rural and urban markets.

Producers are most common in periodic markets, selling surplus produce in small lots at retail or in larger lots to assemblers. Proceeds from these sales are typically used to make essential purchases for the household (salt, Maggi cubes, kerosene, and so on), or to meet other expenses such as school fees. Most Liberian participants in the traditional marketing system began as producers. Farming is considered harder work than marketing, so

many producers will leave production when they accumulate enough capital to support full-time marketing.

Full-time retailing can be described as the next step up in the marketing hierarchy. It is easier to get into retailing, since it demands less capital and less knowledge of the market and has less risk and lower turnover than assembling or wholesaling. Retailers of fruits and vegetables operate in urban markets or, occasionally, along roadsides, or as near to Monrovia supermarkets as they are allowed, and they tend to specialize in a limited number of commodities. As marketers accumulate capital, many begin to market imported goods such as sugar, salt, rice, or bouillon. Retailers such as these often travel to rural markets to sell these products and also purchase bulk produce to be sold in the urban markets.

The next level of sophistication in the marketing chain occurs with the addition of middlemen between the producer and retailer. Assemblers purchase produce from farmers, bulk it, and transport it to be sold in an urban market, either at wholesale or retail. The destination of the large majority of assemblers is the Monrovia market, where most of them are based. Most assembly appears to take place at the periodic markets, although some assemblers travel to the farm to purchase produce, sometimes paying the farmer a portion in advance for later delivery. Some transactions take place on the way to market as assemblers purchase produce from farmers on the road before they reach the market site. Assemblers purchase complete bags or small lots which they consolidate to complete bags. Most purchases are made during the early hours of the market, often before the produce can be off-loaded from arriving transport vehicles. Many assemblers buy regularly from the same producers, their "customers," and will not buy much produce if their "customers" did not attend. Payment is made in cash to the producer, but the assembler usually has to offer credit to buyers in the urban market, receiving payment one or two days later, after the retailer has had an opportunity to sell the produce.

Some of the fruit and vegetable produce bound for Monrovia passes through an additional step. Some assemblers and large producers sell to wholesalers in Monrovia who then sell to retailers from various markets in the city. Most wholesale activity takes place in the very early hours of the morning. The highest volume of wholesale trade takes place at the Waterside General Market beginning about 3:00 AM, when assemblers arrive with their produce. Before daybreak, wholesalers will have sold much of the produce. Wholesalers, like assemblers, are expected to provide credit to purchasers. During the day, many wholesalers also make their own retail sales.

Infrastructure

Marketplaces

Most urban markets and a few rural markets have buildings which are intended to house the marketers. Most of these are under-utilized as a result of relatively high fees charged by the market authority, their poor design, and the general preference of traders to be as close to the approaching buyer as possible. The design of even the "improved" market houses is characterized by poor traffic flow through narrow aisles, a lack of ramps for easy access by the wheelbarrows which are used to deliver most goods, and a general failure to create an architectural space rational for the purpose. Space for overnight storage of goods is not available so that most traders carry their produce home at the end of each day. Cold storage facilities are available in several urban markets, operated by private enterprises selling imported fish. If cold storage facilities for fresh produce were appropriate and economically feasible, it is reasonable to expect that the demand for such storage space would be satisfied initially through sharing these facilities.

Despite often inadequate facilities, most markets somehow manage to function reasonably well. The typical market spills out of its structure to fill the surrounding open spaces, with many sellers sitting on the ground with their produce. During the rainy season, activity in these open-air markets is often disrupted by rainfall and mud. Improvements such as provision of secure storage space, creation of areas set aside for wholesalers, inclusion of better unloading areas to reduce damage to produce, and application of more user-friendly architecture are often recommended and would be useful, but such changes are only cosmetic and peripheral if the key constraints hindering the development of the marketing system are not also addressed.

Roads and Transport

Liberia has a little more than 300 miles of paved roads, representing less than 10 percent of the total system of primary and secondary roads. The longest (162 miles) and most heavily traveled of the paved roads extends from Monrovia northeast through Bong county to terminate in Ganta, Nimba county. The rest of the country is served by laterite roads of variable quality. These roads, referred to as secondary roads, total more than 3,000 miles. Portions of these roads become impassable at times during the rainy season. A third type of roads consist of little more than pathways connecting rural villages to larger towns and cities. These "farm-to-market" roads are negotiable with difficulty during the dry season and often become impassable during the rainy season.

The overwhelming majority of owners and operators of transport vehicles are men. Marketers and their goods are usually transported in vans ("buses"), small and large pick-up trucks, and taxis. Different types of vehicles are more prevalent on certain types of roads. For example, most vans travel between cities and large towns on the paved roads and better

secondary roads. Taxis are used more often for shorter distances and do not accommodate passengers with large loads. Pick-ups are more often found on the secondary and tertiary roads. Transport vehicles are characteristically loaded with the maximum density of passengers and goods possible. Produce is usually tied on top of the vehicle, packed behind the rear seat of a van, or squeezed under the feet and seats of passengers riding in the back of pick-up trucks. Passenger fares are "fixed" by the Ministry of Commerce and Transportation, but charges for goods appear to be set at the discretion of the driver. Both charges vary considerably depending on the condition of the road.

Regulatory and Support Policies and Institutions

Liberian Marketing Association (LMA)

The Liberian Marketing Association (LMA) is the official association for marketers and has chapters throughout Liberia. The administration of the association is dominated by men, although market women are represented to a limited extent. Monrovia-based market women pay \$5 per month in membership fees. One of the current activities of the association in Monrovia is wholesaling imported products (e.g., pigs' feet, used clothing), ostensibly to improve margins for the market sellers. The association attempts to enforce specialization among market sellers by registering them according to commodity. Each market in Monrovia has designated "commodity leaders" for each type of produce. Commodity leaders either assemble that produce themselves or purchase it from assemblers and then distribute it at wholesale to retailers. The LMA states that these women are responsible for ensuring a regular supply of their commodity in the market. A commonly held view is that the LMA functions more as a vehicle for the Government of Liberia to exercise control over market women than as a bona fide trade association.

Ministry of Commerce

In 1971/72, the President of Liberia issued an Executive Order giving the GOL substantial regulatory powers over the pricing of a wide range of imported and domestically produced goods (including agricultural products). The intent of the order was to restrain the rampant inflation characteristic of not only the Liberian economy but also the world economy in general. The Executive Order, in law, was effective for only one year, and it has not been renewed; however, the government's role in controlling prices has become embedded in the standing regulations administered by the Ministry of Commerce and Industry, even though these regulatory powers have no legislative basis. Ministry of Commerce officials indicate that the Ministry of Justice has been requested to prepare formal price control legislation for approval by the two houses of the legislature and the Head of State; as yet, such legislation has not been forthcoming.

The practical impact of the price control Executive Order on domestic fresh produce trade (apart from rice) has been minimal in recent years. The Ministry of Commerce has 59 items on its fresh produce "list," but there is no current official price list for these items. Ministry of Commerce inspectors are assigned to most major markets. Occasionally, one of these officials will charge some unfortunate trader for "market exploitation" and will confiscate the trader's produce, fine the trader, or both. Sixty percent of the traders interviewed during the 1982 USAID/GOL study of market women reported having had problems with price inspectors and considered them an important constraint on their marketing.

Other Government Authorities

In addition to membership fees collected by the marketing association, local government authorities collect daily tolls, usually of \$.05-.10 cents, from

traders. A third method of "revenue raising" by government officials occurs at security checkpoints. The Price Analysis Division of the Ministry of Commerce set up a task force that included government officials, marketers' representatives, and officials of the Federation of Transport Drivers. It determined in 1981 that fees collected or extorted from marketers and transport operators at marketplaces and at checkpoints represented a major constraint on the development of the sector. Nevertheless, the practice has become embedded in the culture, and marketers and drivers seem to be resigned to the fact that it will not change. The task force reported that the average "tip" at a checkpoint in 1981 was \$5. The average "tip" today on the Monrovia-Ganta Highway is reported to be \$15 per vehicle per checkpoint. For the typical van carrying 15 passengers and 20 bags of produce from Ganta to Monrovia, the total of the fares paid to the operator is roughly \$140. Passing through a minimum of three checkpoints en route, the driver will pay \$45, losing about one-third of his revenue. To the extent that passenger fares are regulated by the Transport and Drivers' Union, these added costs would tend to inflate the more flexible charges for transporting goods — in this case, domestically produced foodstuffs destined for Monrovia.

Credit Institutions

Market women suffer from the fact that credit and loan facilities from the nation's financial institutions are generally inaccessible to them. Partnership for Productivity (PfP) of Nimba county is unique among financial entities in offering credit and savings facilities to market women. PfP extends working capital loans ranging from \$50 to \$500 to market women, repayable over five months at 15 percent interest per annum. The value of these loans reportedly represents 10 to 20 percent of PfP's total loan portfolio, and loans have a repayment rate of 86 percent. Most of these loans have been used to increase sales volumes and turnovers. No loans have yet been made by PfP to market women for investment in transport or

storage facilities. PfP officers believe that market women need and will be helped by even more capital injection. Additional funds, to be provided by a UNDP/UNICEF/UNIFEM Rural Income Generation Project and administered by PfP, are expected to be made available to market women.

Performance of the Marketing System

Practices and Strategies of Participants

The capital possessed by Liberian market women is relatively small. Spot checks during field visits indicate that an average produce assembler operates with working capital of \$100 to \$150, which she would turn over two to three times per week. Such an assembler would typically need only 20 to 30 rice bags to operate. An average retailer of produce, on the other hand, operates with a fraction of that working capital, between \$20 and \$30. Assembling demands better knowledge of the market (e.g., prices prevailing in the distant urban market), requires more capital to meet transport expenses and to purchase larger quantities, and involves greater risk because of price fluctuations and provision of credit to buyers. Given that most farmers are not able to reach larger markets because of high transport costs and poor road conditions, produce prices at a rural market will vary according to the limited number of assemblers who are buying. Possessing more buying power than smaller-scale local assemblers/retailers, assemblers can become the price-setters in a rural market.

Sample bulk prices solicited during the field study give some indication of the profit margins prevailing in the produce trade. Table 43 summarizes average prices reported by assemblers of fresh pepper and bitterball. In March 1989, an assembler earned 10 percent profit on a bag of fresh pepper purchased in Nimba county for \$18 and sold in Monrovia for \$25. After paying transport and handling costs of \$4.50, the market woman nets \$2.50 per

Table 43. Gross Margins for Produce Assemblers
(Liberian dollars)

Fresh pepper (bag)	March 1989	July 1988
Average selling price (Monrovia)	25.00	10.00
Average purchase price (Saclepea, Nimba)	(18.00)	(5.00)
Gross margin	7.00	5.00
Transport: produce	2.00	3.00
Market (round trip prorated)	2.00	1.00
Total transport	(4.00)	(4.00)
Portering of bag to/from markets	(.50)	(.50)
Net	2.50	.50
Profit margin (percentage)	10.00	5.00
Bitterball (bag)	March 1989	1989 Dry season high
Average selling price (Monrovia)	9.75	15.00
Average purchasing price (Ganta, Nimba)	(6.00)	(12.00)
Gross margin	3.75	3.00
Transport		
Produce	1.50	1.50
Market (round trip prorated)	1.00	1.50
Total transport	(2.50)	(3.00)
Portering of bag	(1.50)	(.50)
Net	.75	-.50
Profit margin (percentage)	8.00	-3.00

bag. If the assembler operates with \$150 working capital and makes a similar return on all her produce, her gross proceeds will be \$15 for two days' work, before incidental expenses (e.g., meals). The operation will require at least two days turnaround: travelling up-country to buy, transporting to Monrovia, selling, and awaiting payment. During the rainy season, produce prices fall and transport prices off the main highway increase such that the net margin for fresh pepper is reduced to \$0.50, a 5 percent margin. Prices for bitterball in March 1989 show a profit margin of 8 percent. The highest price reported for the 1989 dry season for bitterball, however, yielded a 3 percent loss for the trader. (Transport costs increase as the marketer's fare is divided over fewer bags of produce.) One might guess that middlemen receive a higher margin during periods of scarcity, but in this case, assemblers bid up the buying price to the breakeven (or loss) point.

These figures are not necessarily representative, but can be considered indicative of the small margins prevailing in produce trade. Considering that assemblers have an important influence over the buying price, have greater buying power, and generally have more experience in marketing, one can assume that their returns represent an upper limit in the produce trade. These returns are for the marketers' capital and labor, in addition to including some allowance for risk. Negative returns are not infrequent given relatively volatile prices and generally unreliable transport. The 1987 Liberia Road Maintenance Project Socioeconomic Baseline Survey found that two-thirds of market women claimed to be making between \$4 and \$9 per day.

The traditional produce trade is characterized by small volumes and specialization. Because of volatile prices and limited amounts of working capital, assemblers are forced to concentrate on one or two similar commodities (e.g., bananas and plantain, pepper and bitterball). Retailers tend to diversify when their working capital increases, usually adding less perishable imported items. As a result of a lack of grading and

standardization of produce, the requirement of paying and negotiating in person, and the unreliability of transport, the assembler must escort her goods from the farmer to the purchaser, spending most of her time in transit. Marketers rarely differentiate produce according to quality, except in response to consumer demand for quality differentiation of pineapple, watermelon, or papaya, the more expensive fruits. Rates of spoilage are high because of poor packing, transport, and storage methods. For example, much of the produce, especially in rural markets, is exposed to the sun throughout the day, significantly accelerating its deterioration.

Cooperation among marketers is common. A market woman will make a sale or announce the price for the produce of a temporarily absent neighbor. Retailers and assemblers of the same commodities will often be found next to each other in the market. Marketers usually work alone. The 1982 USAID/GOL study found that only 45 percent of market women receive help from their children. Collaboration is not uncommon, however, usually in the form of efforts toward vertical integration. Relatives can be found working together, one acting as assembler and another as retailer. Other market retailers reported occasionally sharing with a friend the task of travelling to make assembly purchases. Less formal linkages with regular "customers" — buyers or suppliers — are more common.

Credit and Savings

As mentioned above, most marketers have no access to formal credit facilities. The 1982 USAID/GOL study found that 87 percent of Monrovia market women received their initial capital from husbands, boyfriends, or relatives. Most of the remainder obtained their first funds from proceeds from their farms. Many market women participate in a *suu-suu*, where several persons pay a fixed amount into a fund each month, the sum of which is given to each single member in turn. This provides a means of

savings and working capital replenishment. A smaller number of market women are members of informal savings clubs. These are more complicated in their organization. Each member contributes varying amounts each week. Funds can be loaned back to members who pay an interest charge. One club reported that it required repayment in two months at 20 percent interest (200 percent interest per annum). At the end of the year, the fund is divided among the club members proportional to the amount each paid in. Another vehicle for savings is real estate — investing proceeds from marketing in constructing or improving a house.

Marketing Information

The lack of systematic dissemination of marketing information to producers and marketers contributes to the risk and uncertainty inherent in the produce trade in Liberia. Price expectations of farmers and marketers are determined largely by historical price levels. Although marketing information does travel to some extent by word of mouth, the lag and inefficiency of such communication ensures that many participants in the marketing system must complete their transactions without up-to-date information on prevailing prices. Marketers with access to knowledge of Monrovia prices will always have an advantage in their transaction. Those consistently lacking such information, namely farmers and small traders, will suffer losses. Farmers lack not only marketing information but also information and assistance for improving production, which the weak agricultural extension system fails to deliver. Any sharing of market information would be expected to occur among producers or among marketers, but rarely between the two groups. Although the Liberia Rural Communication Network now broadcasts in local languages to a large percentage of the rural population, the Ministries of Agriculture and Commerce have failed to implement recommended initiatives for disseminating marketing information.

System Response to Shifts in Supply and Demand

Even up-to-the-minute price information would only reduce, not eliminate, the uncertainty in the produce market. A lack of stocks, and irregular inflow of produce because of unreliable transport and poor roads, ensures that the quantity of produce will vary significantly from day to day, resulting in volatile prices. Because the market must clear everyday, prices will vary directly according to how many bags of produce reach the market on a given day. During the day, prices also vary as sellers lower them to avoid having unsold produce at the end of the day.

Produce prices vary significantly according to the season. For example, the price of a bag of fresh pepper in Monrovia reportedly peaked at \$50 in the 1988/89 dry season. The average price reported for the 1988 rainy season was \$5, one-tenth of that price. Palm oil prices reportedly increase 50 to 100 percent in the rainy season. Prices vary considerably according to the distance from their source. Dried "Guinea" pepper was recorded selling for \$3.50 per pound in Ganta, \$8 per pound in Zwedru, and \$9.40 per pound in Harper in March 1989.

Table 44 analyzes the representative cost data of Table 43 for the producer's, transporter's, and assembler's shares of the final wholesale value of the bag of produce in Monrovia. As prices vary during the year, the producer consistently receives the largest fraction of the total value while the assembler consistently receives the smallest fraction. The producer's share is lowest during times of surplus and highest during times of scarcity. The transporter's share is higher during the rainy season and lower during times of scarcity. The farmers, who invest by far the most time of the three groups, clearly receive the lowest return for their labor. Although the marketer may seem to be making a good return on her labor, she will

Table 44. Producer, Transporter, and Assembler Shares
of the Monrovia Wholesale Value of Fresh Produce

Item	Producer		Transporter		Assembler	
	Percent	US\$	Percent	US\$	Percent	US\$
Fresh pepper (rainy)	50	\$5.00	40	\$4.00	5	\$0.50
Fresh pepper (dry)	72	\$18.00	16	\$4.00	10	\$2.50
Bitterball (dry)	61	\$6.00	26	\$2.50	8	\$0.75
Bitterball (high)	80	\$12.00	17	\$3.00	-3	-\$0.50
Total		\$41.00		\$12.00		\$4.25

Note: Percentages do not sum to 100 for each product due to the exclusion of portering.

usually suffer significant losses several times during the year. Thus, the marketer's returns should be discounted for the risk undertaken.

Transport

The availability and cost of transport, which is directly related to quality of the roads, is the most critical constraint on the marketing system for fresh produce. Delays in transit and rough handling and packing of produce contribute to high rates of spoilage. From farm-gate in Nimba to markets in Monrovia, Zwedru, Greenville, or Harper, losses because of spoilage reportedly average 20 percent during the rainy season. A farmer may lose his week's harvest or an assembler may lose all her capital waiting for transportation, even on main roads. A Monrovia-based assembler of bananas and plantains reported that four times a year, on average, all of her goods spoil while she waits two to three days on the Ganta-Zwedru highway for a transport car to carry her load from Saclepea to Ganta, a distance of 27 miles.

Transport prices tend to vary according to the condition of the road, which depends on the season and the type of road travelled. Transport fees reported in interviews of marketers show that

- A bag of produce costs twice as much per mile to transport from Ganta to Zwedru (a laterite road) than from Ganta to Monrovia (paved).
- The cost of transporting a bag of produce from Saclepea to Ganta doubles during the rainy season.
- A \$3 charge to transport 5 gallons of palm oil from Voinjama to Monrovia during the dry season increases to \$5 in the rainy season.
- The passenger fare on the feeder road from Kpademai to Johnnytown in Lofa increases from \$2 to \$3.50 in the rainy season.

Feeder roads tend to have the highest fares per mile, discouraging farmers from reaching larger markets where they might receive better prices. Not surprisingly, most assemblers and farmers cited the high cost and unreliability of transport (and the poor condition of roads) as major constraints on marketing.

The transporter's shares of the value of the produce reported in Table 44 are consistently higher than the marketer's. Although the transporter has a relatively high capital investment on which he must make a return, his labor input and risk are relatively minimal. It is not surprising that in a less developed market the owner of capital (the transporter) makes a better return than the contributor of labor (the farmer) or the principal bearer of the risk (the marketer).

Processing

The processing of locally produced foodstuffs in Liberia is mainly a cottage-based industry. Such small-scale processing is extensive and represents an important source of income for rural households. One of the most extensive processing activities is the making of palm oil. Liberians consume almost 5 pounds of vegetable oil per person per month (see Table 37). If we assume that 90 percent of the vegetable oil consumed is palm oil (as per MOA consumption survey results) and that it has an average retail price of \$6 per gallon, then we can estimate the total value of all palm oil consumed in Liberia to be on the order of \$89 million per year. If we assume that just one-third of that is commercially traded and not produced in one of the few industrial mills in the country, then we can approximate the total value of "country oil" made and sold in Liberia to be nearly \$30 million, shared among tens of thousands of producers.

The processing of cassava into farina, fufu, flour, and starch is another important cottage-based activity. Especially for producers located far from markets, this is an important means of adding value to their cassava (and delaying spoilage) before transporting it to market. Other processing activities include the drying of pepper, okra, palava sauce (greens), and beans, and the grinding of pepper, cassava leaf, and peanuts.

Industrial food processing in Liberia is limited. The Moldaco company has for many years been manufacturing farina, instant fufu, and cassava starch and freezing vegetable greens for distribution through supermarkets. The Liberia Group of Industries is packaging and distributing "Sun-top" and "Disco" fruit drinks made from imported juice concentrates. This popular local product might have potential for eventually using Liberian produce as inputs.

A View from the Farm: the Kpatuguo Vegetable Farmers' Association

The experiences of a farmers' association in Nimba county, which has been active in the production and marketing of fruits and vegetables since 1977, illustrate some of the constraints farmers face. The association includes farmers in the villages of Kpatuguo, Nyao, and Gbwompa who cultivate 28 acres of vegetables. Among their principal crops are cabbage, cucumber, eggplant, hot pepper, bitterball, string bean, and plantain. They also produce sweet bell pepper, tomato, parsley, mint, spring onion, oranges, mangoes, and tangerines. These farmers are unique among FDAs in Nimba county because most of their income comes from marketing vegetables, not coffee or cocoa. Each farmer also cultivates swamp rice for home consumption, and several raise cassava.

Despite being located on the main road between Saclepea and Tappita, the greatest difficulty these farmers face is transporting their produce to market. During July 1988, for example, the farms produced approximately 75 bags of vegetables per week, with production falling off to 50 per week in October and 30 per week in November. Vegetables often spoil when the farmer has to wait for days at the roadside for transportation to Tappita, Ganta, or Saclepea, or preferably Monrovia or Zwedru. Twenty percent or more of the produce reportedly spoils in transit. When transport is available, the farmers prefer carrying the produce to Monrovia, where they sell to wholesalers in the Waterside General Market. They report that assemblers reach their farms, but they do not buy large enough quantities and they offer prices which are too low. The farmers report receiving good prices in Greenville, Harper, Pieebo, and Zwedru when they can reach these markets. Farmers have not succeeded in establishing direct contacts with Monrovia supermarkets, although they have sold to middlemen who do so.

The farmers find that chartering their own transportation is too expensive relative to the rainy season prices for their goods, so the farmers rely on passing public transportation cars which are often infrequent. During last year's rainy season, the NCRDP assisted the farmers a few times by providing a truck to transport their produce to Monrovia. Encouraged by this development, the farmers report that they will double their production this year.

The farmers cultivate vegetables in the rice swamps during the dry season, but the bulk of their production occurs in the rainy season from upland fields. Although higher prices and more regular transport are available in the dry season, production is more difficult because of significant losses to insects and the unavailability of insecticide.

Some Elements of a Modern Sector Fresh Produce Production and Marketing System

In countries that have a well-developed, modern sector, fresh produce production and marketing system, the farmers, middlemen, service people, processors, consumers, and government all have distinct roles to play in ensuring the efficient and equitable operation of the system; their combined actions produce a result, as measured by the conduct and performance of the system, that is greater than the sum of its individual parts. Indeed, it is often that very synergy that has propelled the system from its traditional to its modern state.

Government

A macroeconomic policy environment that encourages investment in the fresh and processed food business includes

- A widely held public sector ethos that one critical role for government is to participate in national economic development by facilitating the growth of the private sector
- Monetary and fiscal policies that have a benign and supportive impact on private sector development
- An exchange rate policy that minimizes the differential between the official and parallel market rates

Infrastructural development and maintenance policies and programs that ensure the adequacy of the transport system (roads, etc.), utilities (electricity, water), and the communication system (enabling fresh produce trade participants to communicate with each other within and outside the country) are also necessary.

Microeconomic policies and programs should focus on

- Monitoring and regulating the conduct of system participants to ensure the safety and quality of food delivered to consumers and to safeguard participants against illegal activities by other system members (e.g. non-payment to growers, tampering with weight scales, fraud, and acts of bribery)
- Fostering the development of domestic and export production and marketing through the provision of services to system participants (e.g., information services on domestic and export market conditions, research and development on new and existing crop varieties, extension services to farmers and other food system members, development of grades and standards for fresh produce that reflect market requirements, collection and dissemination of information on production, exports)

The government role in accelerating the development of fresh produce production and marketing systems in developing countries has been successful

(e.g., Kenya, Zimbabwe, Chile) when the focus has been on protecting consumers and other system participants against the abuse of market power and against fraud; safeguarding food quality and safety; and providing needed services to help system members (farmers, traders, etc.) expand the scale of their business activities. Invariably, if the macroeconomic policy environment is inappropriate, the result is that consumer demand for items such as fresh produce is constrained. For example, if official exchange rates are overvalued, then they discourage foreign investors and encourage indigenous exporters to keep earnings off-shore. There are few, if any, examples of success in controlling fresh produce market prices by government dictates. Direct government involvement in fresh produce trade has invariably been commercially disastrous.

Consumers

- Households with rising real incomes and disposable income available to spend on fresh produce
- With increasing education and income, an increasing consumer predilection to purchase an expanding range of fresh produce items
- Consumer ability to differentiate between different levels of fresh produce quality and a willingness to pay a premium for higher quality

Farmers

- Commercial-scale growers using modern farming practices and yield-enhancing inputs
- Year-round production on a significant proportion of fresh produce farms, using irrigation systems, to take advantage of domestic market opportunities in the dry season and export market opportunities year-round

- Contract growers on a satellite grower/mother farm basis and/or direct contract with assemblers/exporters
- Farmer groups/associations/cooperatives established to increase farmers' bargaining power for inputs and with produce buyers, transporters, etc. and to represent their interests with government

Wholesalers, Brokers, Transporters, and Exporters — The "Middlemen"

- Established businesses specializing in serving the fresh produce needs of a differentiated market, viz. domestic and export, consumer via retail (supermarkets, green grocers, market stalls), hotel and restaurant sub-sector, etc.
- Businesses with significant capital investment in marketing facilities (e.g., warehouses, cool/cold storage, vehicles, packing houses)
- A strong cool chain in place between farm and point of final sale

Retailers

- Established businesses serving differentiated markets (e.g., higher-income/lower-income clientele, ethnic sub-markets, country/urban consumers, etc.)
- Wide range of quality fresh produce available on a consistent basis with price movements through the year that reflect seasonal demand and supply factors
- Price structure that reflects quality differentials for fresh produce, with prices posted and on a weight (not value) basis

Processors

- Active processing sector purchasing raw material on contract for canning/drying/freezing/preserving etc. and processing ad hoc surpluses

Service Subsector

- Firms providing farmers and middlemen with required inputs (e.g., farm chemicals, field boxes, packaging materials)
- Banks and insurance companies providing working capital and term finance and risk reduction policies
- Government ministries and agencies providing domestic and export market information, extension advice, monitoring grades and standards, consumer education, research and development on new varieties, wholesale market facilities for lease to the private sector, etc.

National Infrastructure

- Year-round, country-wide road/rail/air network
- Country-wide access to dependable utilities (telephone/cable, water, electricity, etc.)
- Education system in place and widespread at primary, secondary, and tertiary levels

Conclusions and Recommendations for the Fresh Produce Sector in Liberia

The Liberian fresh produce production and marketing system detailed in this chapter clearly has very few of the elements of the modern sector model. Yet, as has been shown, it has a vibrancy and importance in the

overall food system that is perhaps surprising given the limited support and status that it is accorded. For many indigenous Liberians, it provides the first opportunity to step onto the commercial ladder. One striking characteristic is that it is operating, and with some success, on a shoestring. Working capital requirements apart, the business is fueled with the minimum of capital investment and, in many cases, elements of the marketing infrastructure (e.g., the wholesale market in Monrovia, many markets in rural centers) are at best rudimentary, but nevertheless, they are remarkably effective.

Certainly, there is no simple means of accelerating the transformation of the fresh produce production and marketing system from the traditional to the modern. To a large extent, its development is tied inextricably to the overall economic development of the country, and this will take a long time. Rising real income per capita will provide the demand pull to ignite sectoral development. Outside the domestic environs, regional and extra-regional export market developments for fresh produce items potentially offer a means of accelerating development without being tied to per capita growth in real income at home. However, the extra-regional markets, particularly, for tropical and "off-season" produce, are exacting in their quality requirements and highly competitive (e.g., more than 20 countries supply the U.K. with mangoes through the year), and Liberia has no past, or present, position in the export market upon which to build.

Initial developments in the fresh produce production and marketing system will likely be domestic market-based. Government initiatives to facilitate development must focus on the short and longer term. It is instructive to review the major constraints identified by marketing participants during the fieldwork component of this study. Typically, these constraints focus on the immediate and shorter-term problems that trade members are facing.

- Lack of adequate access to transportation at a reasonable cost. Delays experienced awaiting transportation increase the incidence of spoilage and the resultant financial losses. High costs of transportation inhibit access by farmers to markets, increase the operating costs (and risk) of marketers, and increase produce prices.
- Poor condition of the road network: feeder roads are not maintained, if they even exist; secondary roads regularly become difficult to negotiate during the rainy season because of poor maintenance, raising costs to both users and operators of transport.
- Small margins and high operating costs (namely transportation) prevailing in marketing which combine with a high level of risk to cause frequent losses for traders. Low levels of available working capital mean that the possibility of an assembler's business failing is never remote.
- Lack of storage facilities which would reduce spoilage and increase stocks, decreasing losses and price fluctuations.
- Harassment and extortion by government officials. While these costs are often directly paid by the transporter, market women understand that these costs are passed on to them. Delays caused by these needless interventions are an important constraint in themselves. More than any other group of Liberians, market women understand the view that "time is money."

The cumulative impact of these constraints is to raise product prices to the consumer and, thereby, reduce market volume — to what extent is unknown, but it surely must be significant, as for example, escalating transport costs (reflecting the poor state of the road system, local transport monopolies, extortion at check-points, etc.) become built into the marketing cost structure.

Three areas require immediate attention if development of the fresh produce production and marketing system is to be given any impetus:

- Improvement of the road network in Liberia, particularly extending and improving the feeder road system, is mandatory. In the immediate term, this may not bring about a significant decrease in unit transport costs but it will facilitate farm input delivery and fresh produce pick-up and delivery, and in the medium term, it will provide an environment that is more conducive to encouraging competition among transport carriers.
- The endemic practice of extorting money from traders and transport carriers at check-points on the major transport routes is time-wasting, illegal, unconscionable, and bad business for the GOL - it constrains development. Its removal as a practice when it has become entrenched in the national culture will be extraordinarily difficult, but mandatory for fostering economic development.
- Price control regulations for fresh produce items, although not on the legislative books, are a continuing specter for the Liberian fresh produce trade, even though in practice the enforcement has been minimal for some years. Price controls for fresh produce items have never worked in any country that has tried to enforce them. Price regulations, however, have served to obfuscate market signals and, invariably, work to the detriment of the development of the fresh produce production and marketing system. Yet some GOL officials harbor a belief that such price regulatory policies and programs can even out supply and demand and ensure "fair" prices to farmers and consumers. Generally, the reverse is the case. In the interests of system development, the fresh produce price control functions of the Ministry of Commerce should be removed now, while they have only modest support, before price control legislation is promulgated to meet populist but misguided political purposes.

After these principal constraints have been addressed, it will be timely to address other areas.

- Arguably, the key participant in the fresh produce production and marketing system is the assembler. For all intents and purposes, this group of women "pull" the produce out of the rural areas and "push" the produce into the urban markets. They are the "channel captains" that stimulate and sustain product movement through the system. Perhaps the principal constraint for these women is access to working capital at reasonable interest rates to expand their produce purchases, although they also need frequent, dependable, competitive-rated transportation which, in turn, is dependent on a much-improved road network. These women are typically not at a stage of commercial development where they seek access to formal institutional sources of credit. Apart from anything else, they have little, if any, collateral to offer a banker even if bank credit were available. At present, they get financing from family members, *suu-suu* groups, informal savings and loan groups, and under the limited, but successful, PfP small-scale business loan program. If more loan financing were available through PfP and over a wider geographical area, it could directly benefit assemblers and would be an essential element in system development. Notwithstanding the success of the PfP program, however, adding loan finance to the existing fund without investing the money and time in PfP institutional development would be detrimental in the longer term to all concerned.
- Beyond the short term, significant opportunities exist for stimulating more year-round production of vegetables through increased cultivation of swampy soils. Year-round production would contribute to more regular supply flows, smaller price fluctuations, and more consistent income for the producer. This will require development of the moribund agricultural extension and education systems.

For the medium and longer terms, government and interested development agencies can take multifarious initiatives to facilitate the development of the fresh produce production and marketing system. The first step is for the government to recognize that the fresh produce business is a system comprising inter-linking participants that, in the longer term, have a symbiotic relationship. For simplicity's sake, the system can be characterized as having the farmer at one end and the consumer at the other end of a continuum, with a wide range of other essential direct commercial and service participants in between (see "Some Elements of a Modern Sector Fresh Produce Production and Marketing System"). The great difficulty of upgrading the system, and thereby fostering development, is that any break in the production and marketing chain can cause system failure, or at least unacceptably slow development. Frequently, many elements in the fresh produce production and marketing systems of developing countries are extremely fragile. Other popular government initiatives launched in other developing countries to foster the development of such a system which have been worthwhile when timed correctly and implemented effectively, are presented in the following sections.

Farm Level

Initiatives focused on improving the efficiency of agricultural production, the flow of produce to the market, and the bargaining position of the farmer relative to other system participants include applied research and development programs on new and existing varieties; rehabilitation of agricultural extension services; farm credit programs involving short- and longer-term finance or farm input packages in lieu of credit; production and marketing information programs; and farmer group and cooperative development programs.

Middlemen Level

Governments in developing countries gradually have been coming to terms with the fact that the middleman (middlewoman in Liberia) is an integral part of the production and marketing system and not a parasite feasting on its farmer host. That is not to say that middlemen will not exploit other system participants given half a chance; after all, their profit motive is self-interest, not national economic development. Programs focused on the middleman have included education and training on post-harvest practices, business management for small-scale businesses, and domestic and export market development; assistance in planning and selecting appropriate storage facilities, packing houses, and grading equipment; short- and longer-term credit programs through commercial banks and not-for-profit NGOs for working capital and investment in fixed equipment.

Consumer Level

Programs focused at consumers have generally had an educational emphasis on diet and nutrition improvement, for example, explaining to school children and women's groups the importance of fresh produce in the overall diet, and means of cooking and preserving fresh produce to ensure household supplies during high-priced periods.

The fresh produce production and marketing system in Liberia, a sector of substantial size employing scores of thousands of small-scale participants, operates despite the adversity of the infrastructure and the lack of institutional support. One would not predict success in the face of such constraints, but the system for the most part successfully distributes the nation's foodstuffs and provides significant income to rural producers, as well as to urban dwellers with few employment alternatives. Those interested in encouraging development will be inclined to intervene with assistance such as

the types of programs identified above. The issue is not whether but when such initiatives should be undertaken. One recommendation of this study is that this is not the time for such initiatives. For example, if cool storage facilities are constructed and they are not used, then such premature action gives well-intentioned but mis-timed initiatives a bad name and makes it more difficult to do "the right thing" when the time is right.

In short, government and associated agencies should be market-led in identifying the support services and initiatives they should offer to facilitate development of the fresh produce production and marketing system. The state of the fresh produce market in Liberia dictates that above all else, the road system must be improved. At the same time, what progress the system is able to achieve on its own should not be hindered by the endemic extortive practices of government officials or the threat of further government interference and aggrandizement through price controls. Once the institutional obstacles have been addressed, opportunities for developing institutional support systems, beginning with effective agricultural extension and provision of credit facilities, can then be pursued and will be more likely to succeed.

ANNEX A. EXHIBITS AND TABLES

Exhibit 1 Sale of Liberian ICO Coffee Quota Stamps

Verified (by the ICO) stocks of coffee on October 1, 1985 amounted to 65,000 bags (almost 4,000 tons). It is presumed that this coffee had been paid for, and costs in processing and stockholding were incurred. It is strange, therefore, to read the following, which appeared in ICO document number EB 2506/84 (December 10, 1984) entitled, "Issue of certificates of origin in form 0 to cover fictitious exports and their use to import into importing member countries coffee originally covered by certificates of origin in form X". (Note: form 0 certificates are used for exports to members of the ICO, form X certificates are used for exports to non-members). The appropriate text is as follows:

- 42. In August 1984 Liberia issued Certificates of Origin in Form 0 numbers 107-01-90135 to 90144 to cover the export of 24,992 bags of green coffee to Spain on the M.V. "Masa".
- 43. It appears from enquiries made on behalf of the Spanish authorities that no coffee was loaded on the "Masa" when it called at Monrovia from 19 to 20 August 1984. However, the vessel was carrying 24,992 bags of coffee which it had loaded in Hamburg prior to its call at Monrovia. The coffee had been trans-shipped in Hamburg from the vessel "Paraguay Carrier" which had loaded the coffee in Asuncion, Paraguay, in unmarked bags. In Hamburg the bags were marked to give the impression that the coffee

was the produce of Liberia. The "Masa" sailed from Monrovia to Cartagena in Spain where it discharged the coffee on 30 August 1984. The Spanish Customs refused entry to the coffee pending further investigations.

- 44. Liberia and Paraguay were informed of this matter in November 1984. No reply has been received from either country.

Further documentation is not available, but it is understood that the facts of the case have not been challenged. Presumably, the export quota stamps (which are required to make exports to members of the ICA) were given in exchange for some advantage -- pecuniary or otherwise. Meanwhile, the stocks of coffee in Liberia would include some coffee which could have been sold to the ICO member market.

STATION: Annex A, Exhibit 2

INITIAL _____

The Liberian Produce Marketing Corporation

INSPECTORATE DEPT.

Cocoa Quality Analysis

COCNO 005094

Name of Agent/Supplier _____ Date _____

Truck/Carrier No. _____ Way-Bill No. _____ Origin _____

Specifications for grades I, and II which will carry on deduction are as follows:

	Grade I	F.A.Q.
Acceptable moisture content	7.5%	7.5%
Slaty beans-poor fermentation	3%	4%
Mould	3%	4%
Insect damage and living insects	3%	4%
Germinated and flat beans	0%	0%
Smoky beans	0%	0%
Black beans	0%	0%
Foreign matter/shell dirt etc.	0%	0%
Foreign Odor	0%	0%

Deduction From F.A.Q. Price

A. Deductions for mouldy beans:

Total Defects	Deductions	Actual
Up to 4%	No deductions	_____ %
4 - 6%	1%	_____ %
6 - 8%	3%	_____ %
Above 8%	Rejection/Subgrade	_____ %

B. Deductions for Slaty Beans:

Total Defects	Deduction	Actual
Up to 10%	No deduction	_____ %
10 - 20%	1.5%	_____ %
20 - 30%	2.5%	_____ %
30 - 35%	3%	_____ %
35 - 40%	4%	_____ %
40 - 45%	5%	_____ %
45 - 70%	Subgrade	_____ %
Above 70%	Subject to Rejection	_____ %
Total percentage deduction "A" + "B"		_____ %

C. Deduction for excessive moisture content

Moisture content	Deduction	Actual
7 1/4 %	NIL	_____ %
8 %	1/4 %	_____ %
9 %	1 1/4 %	_____ %
10 %	2 1/4 %	_____ %
11 %	3 1/4 %	_____ %
12 %	4 1/4 %	_____ %
13 %	5 1/4 %	_____ %

Above 13% to be returned to customer for reconditioning.

Sample Retained and Marked: _____

Signed _____ Chief Inspector Approved _____ Manager

Analysis applied to warehouse receipt No. _____

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STATION: _____

INITIAL _____

The Liberian Produce Marketing Corporation

Quality Control Division

COFFEE QUALITY ANALYSIS

006051

Name of Agent/Supplier: _____ DATE: _____

Truck, Carrier No: _____ Way Bill No: _____ Origin _____

A. Color & smell test from 20 ounces

	<u>% deduction</u>	<u>Actual</u>
A. Healthy Fresh Green, Bluish Green or Soild Color	No deduction	
2. Fading, Bleached yellowish of uneven colors	25 of 1%	_____ %
3. Clean smell	No deduction	
4. Spicy or earthy smell	25 of 1%	_____ %
5. Musty or mouldy	1%	_____ %
6. Sticks (bad smell)	2%	_____ %
7. Stones or extraneous matters (r) total % deduction should not be less than 1% of total consignment		_____ % _____ %

B.

Actual count test from 1/4 of 20 ounces sample actual equivalent defects

1. Black Beans	10 = 1 defect		
2. Broken beans	10 = 1 defect		
3. Blamish, withered or malformed beans	10 = 1 defect		
4. Insect damage beans or pin holes	5 = 1 defect		
5. Pod cherry or unhulled coffee	2 = 1 defect		
Total defects			

Equivalent percentage deduction as per table _____ %

Total percentage deduction "A" + "B" _____ %

C.

Actual count defects, deductions shall be as follows:-

0 to 5 defects in sample	No deduction
5 to 10 defects in sample	1% deduction
10 to 14 defects in sample	2% deduction
15 to 18 defects in sample	3% deduction
17 to 18 defects in sample	4% deduction
19 to 20 defects in sample	5% deduction
21 to 25 defects in sample	8% deduction
25 to 30 defects in sample	10% deduction
30 to 35 defects in sample	15% deduction
35 to 40 defects in sample	33 1/3% deduction

Sample Retained and Marked _____

Signed _____
Chief Inspector _____ Manager _____

Analysis applied to warehouse receipt No: _____

Warehouse Keeper

Date: _____

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STATION: _____

INITIAL _____

The Liberian Produce Marketing Corporation

Quality Control Division

CHERRY COFFEE ANALYSIS CHART

No 6701

SUPPLIER: _____

ORIGIN: _____

TRUCK/CARRIER NO. _____

WAYBILL NO. _____

DATE: _____ NO. OF BAGS: _____ WEIGHT: _____

NO. OF BAGS IN (WORDS): _____

A. DEDUCTION FOR EXCESSIVE MOISTURE CONTENTS:

<u>MOISTURE CONTENTS:</u>	<u>DEDUCTIONS</u>	<u>ACTUAL</u>
Up to 6%	No. Deduction	_____%
Up to 8%	1%	_____%
Up to 10%	2%	_____%
Up to 12%	3%	_____%
Up to 18%	4%	_____%
Up to 20%	5%	_____%

B. DEDUCTION FOR EXCESSIVE DEFECTS:

ACTUAL COUNT TEST FROM 1/4 OF 20 OUNCES SAMPLE ACTUAL EQUIVALENT DEFECTS

Black Beans	10 = 1 Defect
Blemish Beans	10 = 1 Defect
Insect Damage	5 = 1 Defect
<u>TOTAL DEFECTS</u> _____	

C. TOTAL: MOISTURE DEDUCTION: _____ DEFECTS: _____

0 - 10 Defects in sample	No. Deduction
10 - 15 " " "	1%
16 - 20 " " "	2%
21 - 25 " " "	3%
26 - 30 " " "	4%
31 - 35 " " "	5%
36 - 40 " " "	6%

If the black exceeds 120 beans by count: taken as subgrade or recondition or rejection.
SAMPLE RETAINED AND MARKED: _____

SIGNED: _____
FIELD SUPERVISOR

WAREHOUSE

ANALYSIS APPLIED TO WAREHOUSE RECEIPT NO. _____

SUPPLIER

ORIGIN:

SIGNED: _____
WAREHOUSE KEEPER

WAYBILL NO.

Exhibit 3 Production, Yield, and Price Relationships for Coffee and Cocoa

Production data is imperfect. The amount of cross-boarder trade prevents an accurate assessment. Exhibit 3, Table 1 must, therefore, be an approximation. Nevertheless, production (see also Figure 1) has drifted downwards. This is despite an increase in the number of bearing trees. Yields have declined (the derived yield for coffee in 1984-85 is almost certainly enhanced by the attribution of coffee loaded in Hamburg — see Annex A, Exhibit 1). Even if the declining yields owe much to Liberian produce emigrating to neighboring countries, this is an indictment of the system of incentives and internal marketing.

Exhibit 3, Table 2 and Figures 2 and 3 compare yields with real price. There is a very clear relationship in the case of coffee. With cocoa, the picture may be obscured by the larger number of younger trees in the orchard. Reasonable yields may be obtained as a function of relative youth of trees — the declining yields over time may add credence to this.

A pricing policy combined with adequate input supply (and this, in the case of Liberia, is almost certainly a supply of human input — effective extension officers, and crop credit) and adequate internal marketing, should

- Provide for the maintenance of trees in order that appropriate yields may be obtained during the useful life of the stock.
- Enable the replacement and rehabilitation of trees in order that the profile of the orchard is such as to meet production targets. These targets will follow from the energy that is put into external marketing.

Table 1. Production, Bearing Trees and Yields

Year	Cocoa			Coffee		
	Bearing Production metric tons (1)	Trees millions (2)	Bearing Yield kilogram/tree (3)	Production metric tons (4)	Trees millions (5)	Yield kilogram/tree (6)
1978/79	3971	12000	0.33	9480	27300	0.35
1979/80	3438	14100	0.24	9720	27900	0.35
1980/81	3856	16200	0.24	8820	28500	0.31
1981/82	5629	18300	0.31	9420	29100	0.32
1982/83	5174	20400	0.25	8880	29700	0.30
1983/84	5949	25000	0.24	5340	30000	0.18
1984/85	6283	27900	0.23	13020	20400	0.43
1985/86	4324	27900	0.15	3720	30000	0.12
1986/87	2300	28200	0.08	4260	30600	0.14
1987/88	3500	29200	0.12	3600	32800	0.11
1988/89	4000			4200		

Sources and Notes:

Column (1) - 1978/79 and 1981/82, Coopers and Lybrand report on (Turnover data); 1979/80 and 1980/81, MOA (Sales data); 1986/87 to 1988/89, USDA (1988 forecast).

Column (2) - Table 10 with interpolations.

Column (4) - ICO derived data.

Column (5) - Table 12 with interpolations.

Table 2. Yields and Real Price

Year	Cocoa		Coffee	
	Yield kilogram/tree (1)	Real Price cents per pound (2)	Yield kilogram/tree (3)	Real Price cents per pound (4)
1978/79	.33	37.0	.35	7.0
1979/80	.24	33.2	.35	39.2
1980/81	.24	32.7	.31	28.3
1981/82	.31	18.9	.32	25.7
1982/83	.25	17.7	.30	20.9
1983/84	.24	17.3	.18	14.2
1984/85	.23	18.8	.43	14.1
1985/86	.15	19.2	.12	14.4
1986/87	.08	20.5	.14	14.6
1987/88	.12	20.1	.11	12.9

Sources:

Column (1) and (3) — Annex Table 1.

Column (2) and (4) Annex Table 2.

Figure 1

Coffee and Cocoa Yields

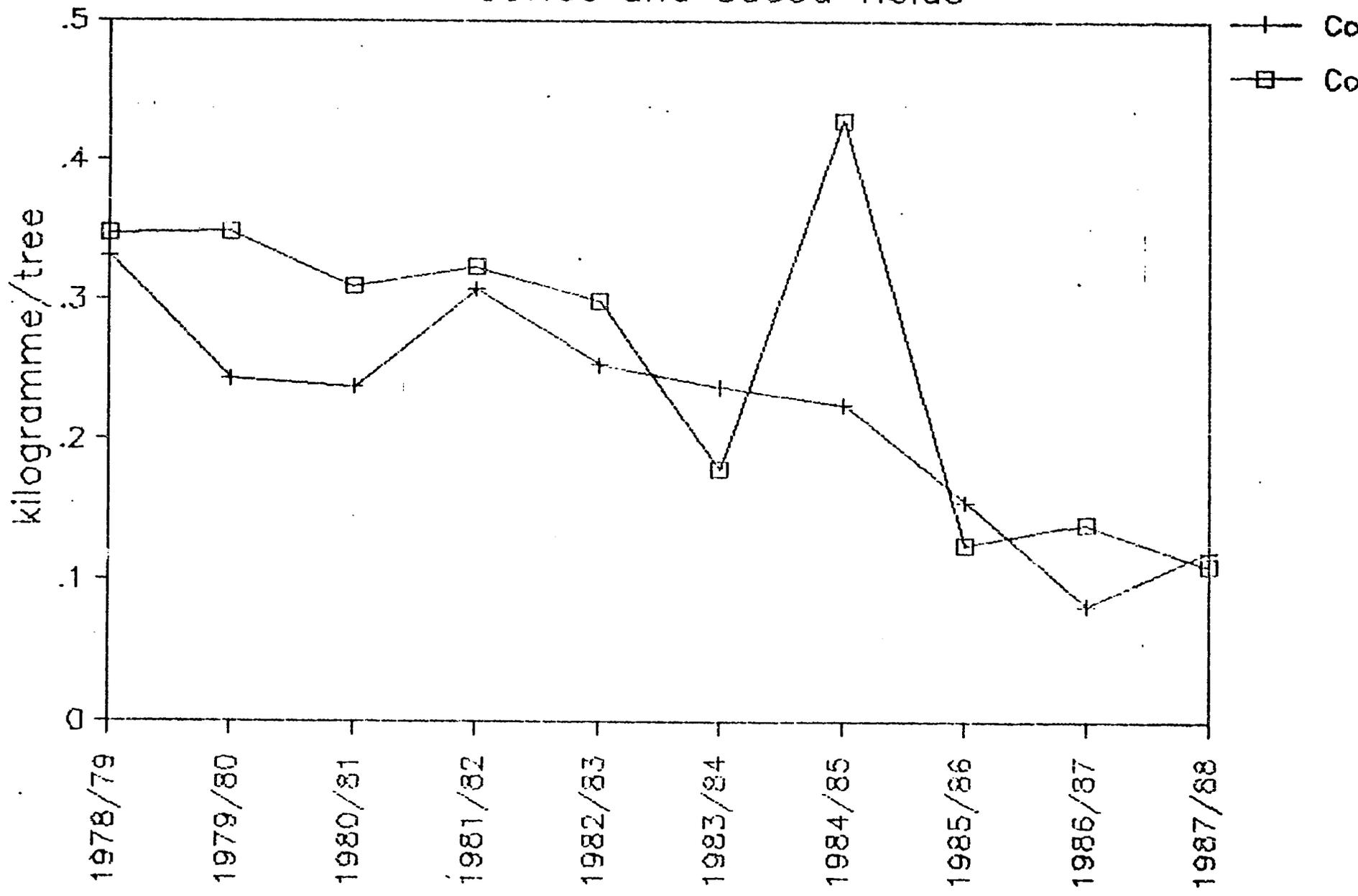


Figure 2

2/1

Cocoa - Yields vs Real price

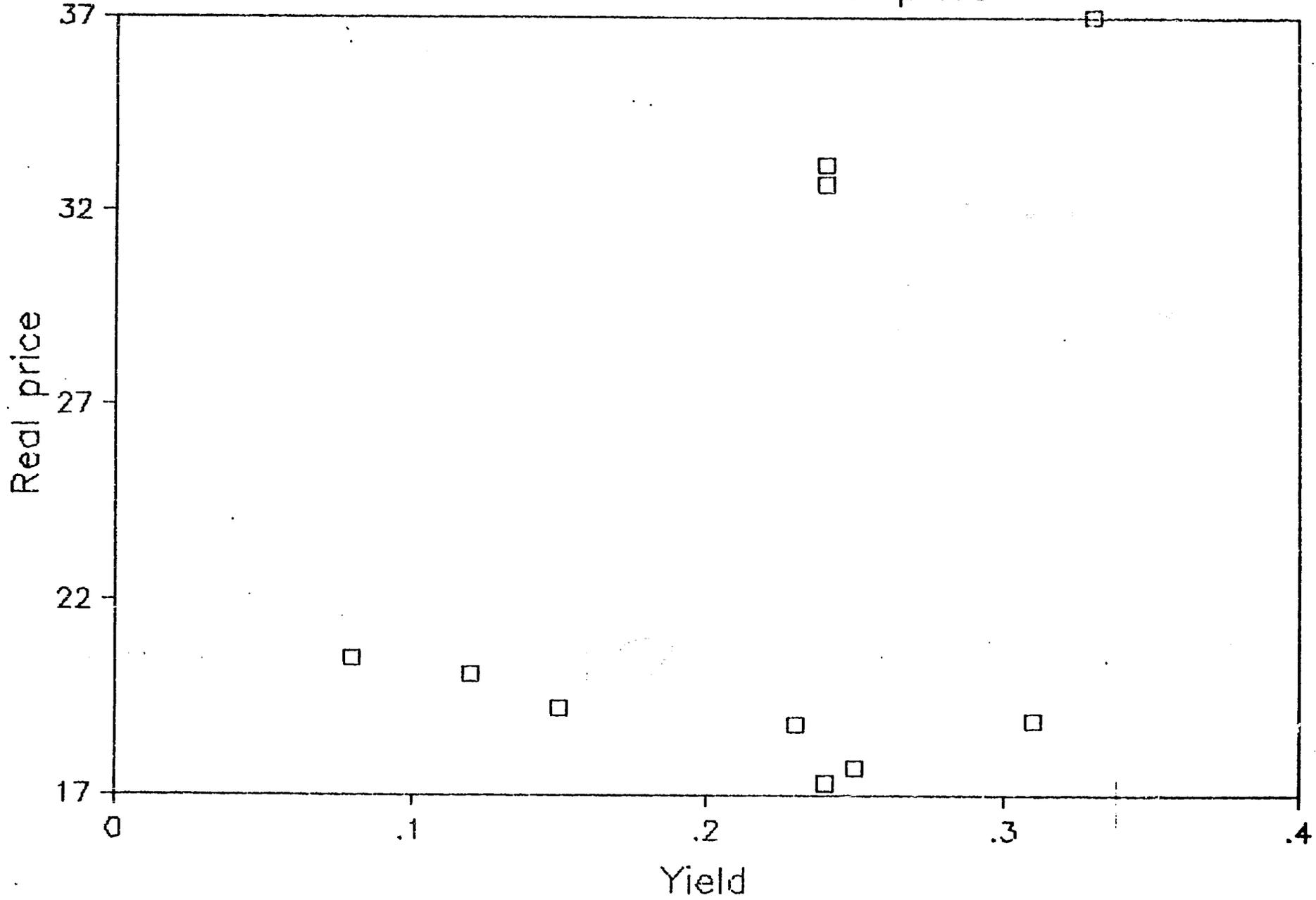


Figure 3

'92.1

Coffee - Yields vs Real price

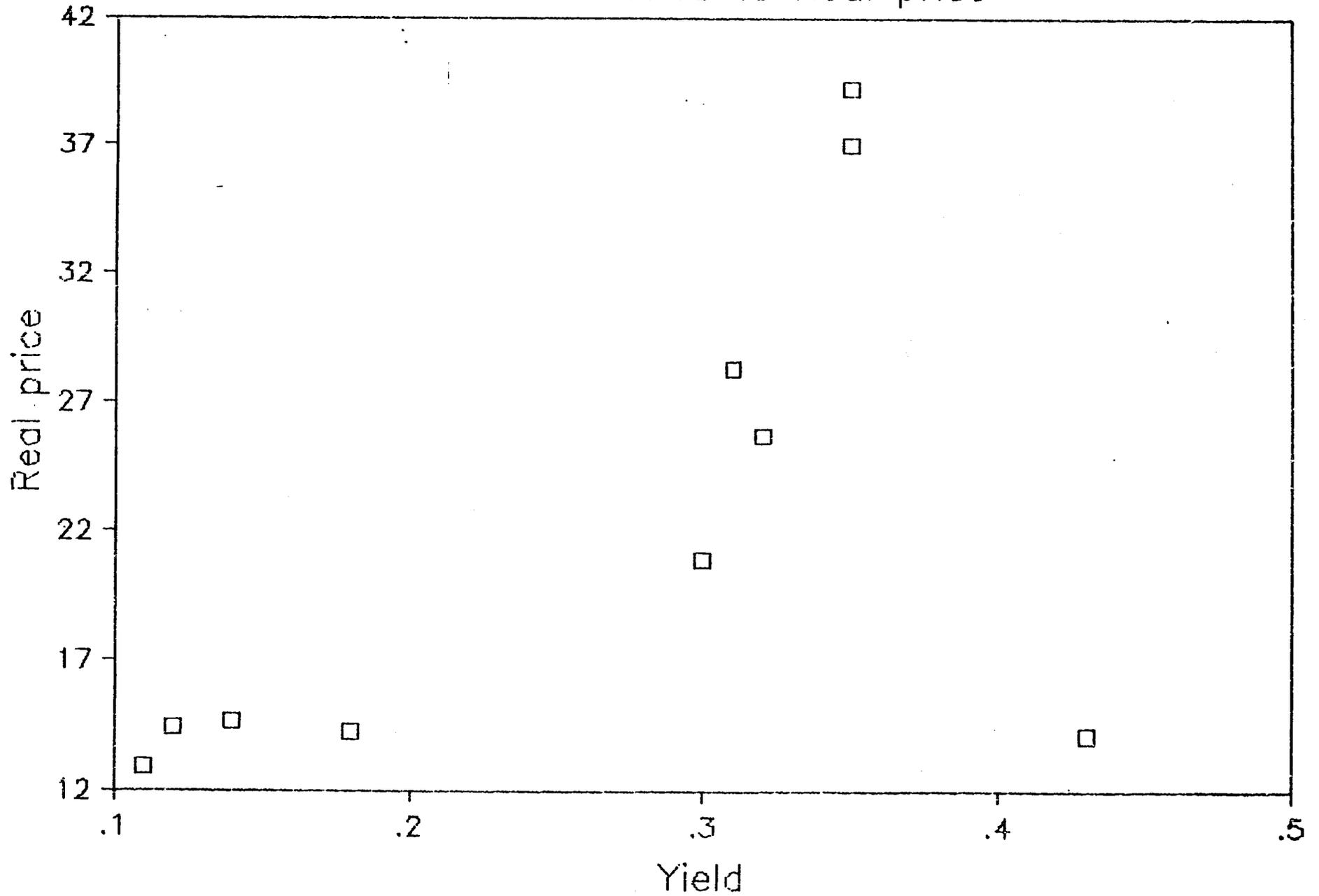


Exhibit 4 Outline of a Cocoa and Coffee Growers' Marketing Association

In the larger term, if cocoa and coffee growers, at the grass root level, sought to gain more control over the marketing of their produce, then a Cocoa and Coffee Board, similar in scope to those in Colombia and Papua New Guinea, should be established. This Board would be controlled by farmers, with a majority of smallholders, with only one government representative. The Board would form the apex of a pyramid; the lower levels would be County Associations, Clan Marketing Associations, Farmers' Development Associations, and, finally, farmers. Directors would represent County Associations (Directors of County Associations would be elected by CMAs and so on) with two seats reserved for large farmers. The term of directors would be limited to three years, with a break of two years prior to re-election.

The Board would maintain a small permanent staff:

- A manager/secretary
- An export documentation officer
- An internal auditor
- A research/extension coordinator
- A transport officer

The auditor, coordinator, and transport officer would be expected to spend the majority of their time in the field.

Exports would be conducted by brokers who would be paid commission and a performance bonus. Brokers, who would be required to be capable of research and analysis, would also be directed to develop additional and specialized trade in conjunction with potential production.

The costs of headquarters staff and of the equally limited staff of the County Association would be met by a levy on exports. A levy of a cent per pound would provide, on a turnover of 14,000 tons, a sum in excess of 300,000 dollars. The cost of administration of CMAs and FDAs, salaries and equipment of extension officers, the hire of warehouse space, the cost of processing, and local and regional collection of produce would be met by a levy on the turnover of County Associations. Plant and equipment could be owned by the board, or processing services could be rented from other members of the private sector.

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Table 1. Unit Value of Coffee Exports to
Members of the ICA

(U.S. cents per pound FOB)

Coffee Year	Liberia	Côte d'Ivoire	Togo	Sierra Leone	Guinea
1967-68	29.0	31.73	32.49	24.75	27.49
1968-69	27.6	30.88	31.52	30.03	25.03
1969-70	31.21	35.5	34.4	34.51	36.76
1970-71	36.38	39.31	36.85	38.96	35.7
1971-72	36.24	40.81	41.06	40.15	30.7
1972-73	41.63	48.37	53.52	46.56	41.42
1973-74	50.62	53.45	50.98	51.41	44.19
1974-75	48.82	57.37	58.27	50.88	58.97
1975-76	68.3	84.12	77.4	68.67	65.86
1976-77	208.01	185.75	180.62	190.74	261.39
1977-78	141.1	148.53	131.62	169.09	---
1978-79	146.92	142.2	136.14	120.55	181.44
1979-80	159.73	164.5	153.28	121.84	153.98
1980-81	105.6	108.93	97.15	84.27	108.14
1981-82	102.03	93.22	88.61	86.51	96.67
1982-83	111.44	95.3	84.78	95.26	112.6
1983-84	119.12	112.92	110.12	108.02	118.37
1984-85	116.25	116.41	116.38	118.59	---
1985-86	128.81	136.03	132.43	121.95	112.69
1986-87	110.51	131.13	114.36	97.02	91.53
1987-88	91.4	100.62	84.57	85.73	80.99

Source: International Coffee Organization — Document WP/Agreement 15/88
Rev. 2.

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Table 2. Official LPMC Purchase Price for
Cocoa and Coffee

(U.S. cents per pound)

Year	Clean coffee		FAQ cocoa	
	Current	Real (1975)	Current	Real (1975)
1975	38	38.00	28	28.00
1976	40	21.57	53	28.59
1977	70	35.61	58	29.50
1978	78	37.04	78	37.04
1979	78	33.21	92	39.17
1980	90	32.69	78	28.33
1981	55	18.86	75	25.72
1982	55	17.65	65	20.86
1983	55	17.31	45	14.16
1984	60	18.75	45	14.06
1985	60	19.18	45	14.39
1986	70	20.51	50	14.65
1987	70	20.09	45	12.92
1988	70	17.95	50	12.82

Source: Current prices LPMC

Deflator = Retail price index - Monrovia

Note: Years refer to crop years beginning in the year shown.

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Table 3. Illustrative Direct Marketing Costs for LPMC
(U.S. cents per pound FAQ)

	Cocoa, Dry Beans	
	Direct	Via Cooperative
Purchase price	50.0	53.0
Processing	1.0	1.0
Weight/quality loss (five percent)	2.6	2.7
Local transport	1.5	--
Subtotal	55.1	56.7
Bagging for export	1.0	1.0
Transport to Monrovia	1.8	1.8
Warehousing and final preparation for export	0.4	0.4
Cost: exwarehouse Monrovia	58.3	59.9
Port taxes	0.4	0.4
Loading	0.3	0.3
Cost FOB	59.0	60.6

Source: Mission estimates based on several sources and conversations.

Table 4. Illustrative Direct Marketing Costs for LPMC
(U.S. cents per pound)

	Coffee, Dry Cherry	
	Direct	Via Cooperative
Purchasing price	35.0	37.1
Processing	3.0	3.0
Weight/quality loss (five percent)	2.0	2.1
Local transport	5.0	--
Subtotal	45.0	42.2
Cost for green equivalent at 53 percent recovery	84.3	79.6
Bagging for export	1.0	1.0
Transport to Monrovia	1.8	1.8
Warehousing and final preparation for export	0.4	0.4
Cost: exwarehouse Monrovia	88.1	82.8
Port taxes	0.3	0.3
Loading	0.3	0.3
Cost FOB	88.7	83.4

Source: Mission estimates based on several sources and conversations.

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Table 5. Cocoa - Traditional [1]
Current Cost of Production

(Per hectare)

Costs		
Labor (person-days)	60	
Maintenance	23	
Harvesting and processing	32	
Transport	5	
Cash (Liberian dollars)	28	
Tools	8	
Development	20	
Output (dried beans) - pounds	667	
Revenue (Liberian dollars)		
at \$0.15 per pound	100.05	
at \$0.25 per pound	166.75	
at \$0.40 per pound	266.80	
at \$0.50 per pound	333.50	
Revenue less cash costs (Liberian dollars)		
at \$0.15 per pound	72.05	
at \$0.25 per pound	138.75	
at \$0.40 per pound	238.80	
at \$0.50 per pound	305.50	
Gross return on person-day (Liberian dollars)	With transport	Without transport
at \$0.15 per pound	1.20	1.31
at \$0.25 per pound	2.31	2.52
at \$0.40 per pound	3.98	4.24
at \$0.50 per pound	5.09	5.55

Source: Based on data contained in a study prepared for the EEC by Booker Agriculture International, July 1987.

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Table 6. Cocoa - Traditional [2]
Current Cost of Production

(Per hectare)

Costs		
Labor (person-days)	27	
Maintenance	13	
Harvesting and processing	11	
Transport	3	
Cash (Liberian dollars)	36	
Tools	14	
Development	22	
Output (dried beans) - pounds	500	
Revenue (Liberian dollars)		
at \$0.15 per pound	75.00	
at \$0.25 per pound	125.00	
at \$0.40 per pound	200.00	
at \$0.50 per pound	250.00	
Revenue less cash costs (Liberian dollars)		
at \$0.15 per pound	39.00	
at \$0.25 per pound	89.00	
at \$0.40 per pound	164.00	
at \$0.50 per pound	214.00	
Gross return on person-day (Liberian dollars)	With transport	Without transport
at \$0.15 per pound	1.44	1.63
at \$0.25 per pound	3.30	3.71
at \$0.40 per pound	6.07	6.83
at \$0.50 per pound	7.93	8.92

Source: Based on data contained in Liberia, Agricultural Sector Review, World Bank, April 20, 1984 to July 1987.

Table 7. Cocoa - Traditional [3]
Current Cost of Production

(Per hectare)

Costs		
Labor (person-days)	58	
Maintenance, harvesting, and processing	54	
Transport	4	
Cash (Liberian dollars)	8	
Tools	8	
Development	0	
Output (dried beans) - pounds	618	
Revenue (Liberian dollars)		
at \$0.15 per pound	92.70	
at \$0.25 per pound	154.50	
at \$0.40 per pound	247.20	
at \$0.50 per pound	309.00	
Revenue less cash costs (Liberian dollars)		
at \$0.15 per pound	84.70	
at \$0.25 per pound	146.50	
at \$0.40 per pound	239.20	
at \$0.50 per pound	301.00	
Gross return on person-day (Liberian dollars)	With transport	Without transport
at \$0.15 per pound	1.46	1.57
at \$0.25 per pound	2.53	2.71
at \$0.40 per pound	4.12	4.43
at \$0.50 per pound	5.19	5.57

Source: Based on data contained in Baseline Survey on Smallholders in Nimba County, Technical University, Berlin 1987.

Table 8. Coffee - Traditional [1]
Current Cost of Production

(Per hectare)

Costs		
Labor (person-days)	83	
Maintenance	22	
Harvesting and processing	56	
Transport	5	
Cash (Liberian dollars)	33	
Tools	8	
Development	25	
Output (clean coffee) - pounds	600	
Revenue (Liberian dollars)		
at \$0.20 per pound	120	
at \$0.40 per pound	240	
at \$0.60 per pound	360	
at \$0.70 per pound	420	
Revenue less cash costs (Liberian dollars)		
at \$0.20 per pound	87	
at \$0.40 per pound	207	
at \$0.60 per pound	327	
at \$0.70 per pound	387	
Gross return on person-day (Liberian dollars)	With transport	Without transport
at \$0.20 per pound	1.05	1.12
at \$0.40 per pound	2.49	2.65
at \$0.60 per pound	3.94	4.19
at \$0.70 per pound	4.66	4.96

Source: Based on data contained in a study prepared for the EEC by Booker Agriculture International, July 1987.

Table 9. Coffee - Traditional [2]
Current Cost of Production

(Per hectare)

Costs		
Labor (person-days)	57	
Maintenance	24	
Harvesting and processing	30	
Transport	3	
Cash (Liberian dollars)	47	
Tools	18	
Development	29	
Output (clean coffee) - pounds	550	
Revenue (Liberian dollars)		
at \$0.20 per pound	110	
at \$0.40 per pound	220	
at \$0.60 per pound	330	
at \$0.70 per pound	385	
Revenue less cash costs (Liberian dollars)		
at \$0.20 per pound	63	
at \$0.40 per pound	173	
at \$0.60 per pound	283	
at \$0.70 per pound	338	
Gross return on person-day (Liberian dollars)	With transport	Without transport
at \$0.20 per pound	1.11	1.17
at \$0.40 per pound	3.04	3.20
at \$0.60 per pound	4.96	5.24
at \$0.70 per pound	5.93	6.26

Source: Based on data contained in Liberia, Agricultural Sector Review, World Bank, April 20, 1984.

Table 10. Coffee - Traditional [3]
Current Cost of Production

(Per hectare)

Costs			
Labor (person-days)		61	
Maintenance, harvesting and processing		55	
Transport		6	
Cash (Liberian dollars)		8	
Tools		8	
Development		0	
Output (clean coffee) - pounds		847	
Revenue (Liberian dollars)			
at \$0.10 per pound		85	
at \$0.20 per pound		169	
at \$0.30 per pound		254	
at \$0.35 per pound		295	
Revenue less cash costs (Liberian dollars)			
at \$0.10 per pound		77	
at \$0.20 per pound		161	
at \$0.30 per pound		246	
at \$0.35 per pound		287	
Gross return on person-day (Liberian dollars)			
		With transport	Without transport
at \$0.10 per pound		1.26	1.55
at \$0.20 per pound		2.64	3.07
at \$0.30 per pound		4.03	4.62
at \$0.35 per pound		4.70	5.36

Source: Based on data contained in a baseline survey on smallholders in Nimba County, Technical University, Berlin, 1987.

ANNEX B.

Gains and Losses from Government Policies,
Liberian Rice Economy

Producers (Farm Level) P				
Items and Notation	Units	1982	1983	1984
1) Domestic production sold to LPMC	1,000 mt paddy	10.00	17.19	9.25
2) Guaranteed producer price	\$/mt (18c/lb.)	396.90	396.90	396.9
3) Effective producer price	\$/mt	264.60	264.60	198.4
4) Producer receipts (1)x(3)	\$1,000	2,646.00	4,548.47	1,834.8
5) Normal market price, farm level	\$/mt (8c/lb.)	176.40	176.40	176.4
6) Producer subsidy (3)-(5)	\$/mt	88.20	88.20	21.9
7) Policy transfer to producers (1)x(6)	\$1,000	882.00	1,516.16	203.1
8) Proportional subsidy (6/5)x100	Percent	50.00	50.00	12.9
9) Direct price elasticity of market surplus	Percent	1.30	1.30	1.3
10) Quantity generated by production subsidy (1)x(8)x(9)/100	1,000 mt	6.50	11.17	1.5
11) Production value loss .5(6)x(10)	1,000	286.65	492.75	16.4
12) Gain to producers (addition to producers surplus) (7)-(11)	\$1,000	595.35	1,023.41	186.6
13) Production value loss per unit of gain to producers (11)/(12)	\$.48	.48	
14) LPMC quantity sold from local production	1,000 mt	4.00	5.35	5.1

(continued)

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Gains and Losses from Government Policies (continued)

Items and Notation	Producers (Farm Level) P			
	Units	1982	1983	1984
15) LPMC marketing cost of local production sold	\$/mt	205.06	205.06	205.0
16) Normal marketing cost for competitive sector	\$/mt	132.30	132.30	132.3
17) Excess resource cost of marketing (15-16)x(14)	\$1,000	291.04	389.27	374.7
18) LPMC purchases less sales (1)-(14)	1,000 mt	6.00	11.84	4.1
19) Value lost from waste .5(5)x(18) (assume half loss)	\$1,000	529.20	1,044.29	361.6
20) Sum of social costs (11)+(17)+(19)	\$1,000	1,106.89	1,926.31	752.7
21) Social cost per unit gain to producers (20)/(12)	\$	1.86	1.88	4.6

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Producers (Farm Level) P

Items and Notation	Units	1982	1983	1984
(1) Total quality marketed and consumed	1,000 mt	95.40	102.40	102.40
(2) Support price, wholesale	\$/mt	465.00	440.00	474.00
(3) Consumption cost (1)x(2)	\$1,000	44,361.00	45,056.00	48,537.60
(4) Computed cif world wholesale price	\$/mt	419.50	391.10	403.00
(5) Consumption tax (2)-(4)	\$/mt	45.50	48.90	71.00
(6) Policy tax on consumers (1)x(5)	\$1,000	4,304.70	5,007.36	7,270.40
(7) Proportional tax (5/4)x100	Percent	10.85	12.50	17.62
(8) Commercial importers	\$1,000 mt	50.00	55.00	55.00
(9) Prescribed import margin .03(4)	\$/mt	12.59	11.73	12.09
(10) Planned commercial tax revenue (5-9)x(8)	\$1,000	1,645.75	2,044.18	3,240.05
(11) LPMC a) P.L. 480	1,000 mt	43.00	45.00	46.00
b) In-country purchases	1,000 mt	2.40	2.94	2.68
c) Total	1,000 mt	45.40	47.94	49.08
(12) Policy tax transfer to GOL (5)x(11c)+(10)	\$1,000	3,711.45	4,388.45	6,724.73
(13) Direct price elasticity of demand	Percent	-60	-60	-60
(14) Consumption lost by tax (1x7x13)/-100	1,000 mt	6.21	7.68	10.82
(15) Consumption value loss .5x(5)x(14)	\$1,000	141.24	187.82	384.27
(16) Loss to consumers (6)+(15)	\$1,000	4,481.94	5,195.18	7,654.67

(continued)

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Producers (Farm Level) P

Items and Notation	Units	1982	1983	1984
17) Consumption value lost per unit of tax (15)(12) \$.04	.04		.06
18) Spoilage and waste above normal 1.50	1,000 mt	1.50	1.50	
19) Cost of spoilage (4)x(18) 50450	\$1,000	629.25	586.65	
20) Gain to commercial importers (6)-(12) 54567	\$1,000	629.25	618.19	

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Society Gains and Losses from Market Intervention*

	Source	Units (dollars)	1982	1983	1984
<u>Private sector</u>					
Plus gain to producers	(12P)	1,000	595.35	1,023.41	186.69
Minus loss to consumers	(16C)	1,000	4,481.94	5,195.18	7,654.67
Plus gain to commercial importers	(20C)	1,000	629.25	618.91	545.67
Net		1,000	-3,257.34	-3,552.87	-6,922.30
<u>Public sector</u>					
Minus policy transfer to producers	(7P)	1,000	882.20	1,516.16	203.13
Minus excess cost of country marketing	(17P)	1,000	291.04	389.27	374.71
Minus value lost from country waste	(19P)	1,000	529.20	1,044.29	361.62
Plus policy transfer from consumers to GOL	(12C)	1,000	3,711.45	4,388.45	6,724.73
Minus spoilage and waste	(19C)	1,000	629.25	586.65	604.50
Net		1,000	1,379.96	852.09	5,180.77
Net cost of public intervention to society (Loss to private sector less gain to public sector)		1,000	1,877.38	2,700.78	1,741.54

Note: Omitted from analysis: net cost and benefits of P.L. 480 imports — could be established as separate account; the subsistence rice production — consumption sector.

Source: L. Tweeten and J. Boima Rogers, *Cost, Benefits and Income Redistribution from Liberian Rice Policies*, Proceeding of the Liberian Agricultural Policy Seminar, Yekepa, Nimba County, Liberia, 1985

ANNEX C. TRADITIONAL MARKETS VISITED

Urban Daily Markets

Waterside, Monrovia
Rally Time, Monrovia
Jorkpentown, Monrovia
Zwedru, Grand Gedeh
Harper, Maryland

Urban Markets on "Market Day"

Voinjama, Lofa County
Ganta, Nimba County

Rural Weekly Markets

Totota, Bong County
Gbonota, Bong County
Johnnytown, Lofa County
Saclepea, Nimba County

ANNEX D. ORGANIZATIONS AND PERSONS CONTACTED DURING STUDY PERIOD

CARI — Central Agricultural Research Institute

Dr. Charles E. Campbell, Mid-America International Agricultural Consortium (MIAC) Team Leader
David Y. Kenkpen, Post-harvest Technologist
Maran J. Sherman, Research Assistant, Tree Crops Division
Dr. Walter T. Wiles, Director

Coffee and Coca Brokers and Traders — London, United Kingdom

Gills and Duffus
J. M. Gotthold
Phillips Brothers

EEC — European Economic Community

Michael Dale, Agricultural Officer

FAO — Food and Agriculture Organization

Dr. L. A. Odero-Ogwel, Resident Representative
Lodean Omeja, Program Assistant
Dr. Justin Sanwo, Tree Crops Adviser/CARI

House of Senators

Senator Keikura Bayoh Kpoto, Senior Senator, Lofa County

International Coffee Organization

Various staff members

International Cocoa Organization

Various staff members

Kpatuguo Vegetable Farmers' Association

Tado Jackson, Business Manager
John Tarpeh, Vice Chairman
Myer Zehum, Chairman

Liberian Counterparts

Joe Moniba

LMA — Liberia Marketing Association

Timothy Hinneh, Vice President, Administration
Musu Massaquoi, President
Stephen Wilson, General Coordinator

LPMC — Liberia Produce Marketing Corporation

Jonathan Baker, Operations Coordinator
James Blama, Marketing Manager
Jones Gaye, Acting Manager — Zwedru
Yanquay Howard, Planning Manager
J. Quito Junius, Assistant Manager — Gbarnga
Matthew Noah, — Gbarnga
George Smith, Assistant Manager — Ganta
Walter Tate, Assistant Manager — Voinjama
Dr. J. Chris Toe, Deputy Managing Director for Operations
Clarence Wiefue, Coordinator — LOFA/Cape Mount

LCADP — Lofa County Agricultural Development Project

Peter J. Flomie, Deputy Project Manager for Extension
Alfred K. Worzi, Deputy Project Manager for Administration

MOA — Ministry of Agriculture

Edward Gweh, Tree Crops Division
Tarnue Koinwou, Marketing Analyst
Honorable James W. Mehn, Deputy Minister for Planning
Joseph Musa, Senior Economist
Sarah Nylander, Director of Quarantine and Plant Protection
Honorable Rudy Wilkins, Assistant Minister for Planning
D. Wilkins, Tree Crops Division

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MOC — Ministry of Commerce and Industry

Galimah Baysah, Director of Price Analysis, Bureau of Commerce
Roel Dempster, Principal Staff Analyst/Principal Director for Planning
and Research
Honorable Henry K. Jones, Assistant Minister, Bureau of Commerce

MPEA — Ministry of Planning and Economic Affairs

Honorable Mr. Collins, Deputy Minister
Honorable Estelle Liberty, Assistant Minister

Ministry of Public Works

Honorable James Wallace, Assistant Minister

NCRDP — Nimba County Rural Development Project

Dr. Hans Hafner, Senior Adviser
Karl P. Kirsch, Adviser
Peter K. Mah, Senior Self-help Promotion and Marketing Officer
Patrick Odinkah, Technician
James Tiabia, Assistant Self-help and Marketing Officer
Clan chiefs, Paramount Chiefs and CMA
Chairmen and business managers of Bahn District (attending workshop
in Bahn)

Papua New Guinea Coffee Board

M. J. Wheeler, Manager

PfP — Partnership for Productivity

J. Charles Nyema, Deputy General Manager
Mohammed Waritay, Extension Coordinator

Quardu Gboni Cooperative (Voinjama)

Mr. Kromah, Acting Manager

SRSP — Smallholder Rice Seed Project

Joe Famolu, Project Manager

Southeast Liberia Rural Development Project

Brian Brewer, Project Coordinator
George Fai Kermee, Senior Director, Rice/Swamp Development
Yarkpazuo Kolva, Supervisor, Monitoring and Evaluation Section

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USAID/Liberia

Various personnel

During the study period, many farmers, traders, wholesalers, retailers, millers, and other private sector participants directly involved in or serving the agricultural sector were interviewed. In general, information was given confidentially; therefore, their names are not presented.

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