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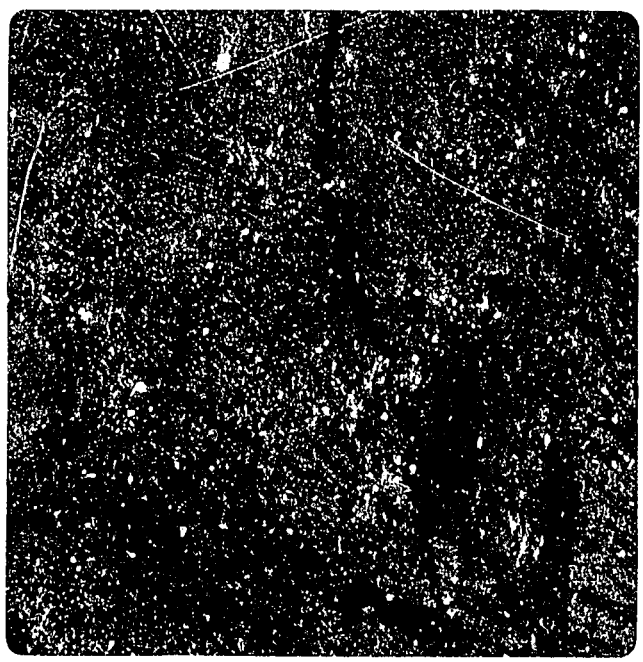

AGRICULTURAL POLICY ANALYSIS PROJECT

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AN INVENTORY OF POLICIES AFFECTING AGRICULTURE IN EL SALVADOR

MAIN REPORT
VOLUME 1: ANALYSIS OF SELECTED POLICY ISSUES AND ALTERNATIVES

SUBMITTED TO

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
RURAL DEVELOPMENT OFFICE
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TABLE OF CONTENTS

Chapter		Page
I.	INTRODUCTION	1
	Objectives of the Study	1
	Approach and Methodology	5
	A Guide to the Report	6
II.	THE ECONOMIC CONTEXT FOR POLICY ANALYSIS IN EL SALVADOR	9
	The Overall Economy	9
	The Agricultural Sector	11
	National Development Objectives	12
	The Institutional Setting	16
III.	A GENERAL FRAMEWORK FOR POLICY ANALYSIS IN AGRICULTURE	21
	Policy Instruments and the Agricultural Sector	22
	The Interrelationships Among Policy Instruments	25
	An Agricultural Pricing Policy	27
IV.	ANALYSIS OF POLICY ALTERNATIVES FOR SELECTED ISSUES	33
	Alternatives for a General Agricultural Pricing Strategy	34
	Acceleration of Credit for Investment	37
	Role of PL-480 Imports: The Case of Rice	40
	Improving Market Efficiency: IRA and Basic Grains	47
	Diversification and Agribusiness	50
	Policy Alternatives for Export Crops: The Case of Cotton	54
V.	RECOMMENDATIONS	59
	Priority Policy Issues	59
	Further Analyses and Improving the Analytical Base	62

I. INTRODUCTION

Objectives of the Study

As is succinctly stated in the Project Implementation Order authorizing this study, its objectives are: "to identify key macroeconomic, sectoral and subsectoral policies which influence the supply and demand for agricultural products in El Salvador, including a qualitative assessment of their direct impacts and of the interactions among them. This inventory will provide a framework and an information base for future analyses and evaluation of alternative agricultural policies in El Salvador."

Several observations on the above statement are in order. First, regarding classification of policies, the distinction among macroeconomic, sectoral, and subsectoral policies is made on the basis of the economic scope or reach over which a policy has, or is intended to have, force. Policies that have equal force over all sectors of the economy, such as the establishment of an official rate of exchange or the intersectoral allocation of the public sector's capital budget, are designated as "macroeconomic" policies.

Policies whose domain is restricted to the agricultural sector alone, such as land taxation or the intrasectoral allocation of credit, foreign exchange, public investment or services, are designated "sectoral." By extension, reference to subsectoral policies in our study is to those policies which only have force for a particular component of the agricultural system such as, for example, the Salvadoran coffee export tax.

One reason for adopting this kind of policy classification scheme is that in principle it permits the identification of possible redundancies or conflicts between policies formulated and implemented within different organizations and at different levels of government. For example, an export tax which applies at the subsectoral level could be mitigated by a credit subsidy instituted at the sectoral level, or exacerbated by an overvalued currency maintained by macro level policies. It is important to be aware that a variety of policies, instituted in pursuit of perhaps different objectives at different levels of government, may all be interacting with the performance of a particular subsectoral activity -- such as coffee production -- and that the net effect of this interaction may be quite different from that intended by any of the policies which are in place.

Furthermore, it is generally true that institutions such as the Ministry of Planning, the Central Bank and Ministry of Finance will be primarily concerned with policies of the kind we have designated as macroeconomic, while the Ministry of Agriculture will take the lead in formulating sectoral policies, and a variety of decentralized agencies will be involved in subsectoral policies.

The presumed "fit" between the classification system adopted and typical institutional structures for policy-making was therefore also an important consideration.

No classification system is perfectly neat or unambiguous in practice, however. As will be evident from the discussion below, in El Salvador's current transitional and sometimes chaotic circumstances, distinctions among policy categories occasionally break down completely. For example, at the present time we find the chief macroeconomic institutions of El Salvador deeply involved in case by case determinations of selective exchange rate policies for specific individual subsectors of agriculture, such as cotton and coffee. This is a case of subsectoral policy (by our classification) being determined by macro institutions and being implemented through what would normally be considered a macro policy instrument.

At the other extreme, we find a variety of subsectoral policies -- such as those involving international coffee marketing, producer price supports and consumer price controls for basic grains -- which are having significant impacts at the macro level through their fiscal, credit and balance-of-payments effects.

Despite this complexity, we have tried to adhere to the above stated definitions in those parts of the discussion which of necessity require a classification system.

A second important observation on the objectives of the study regards the task of assessing the impacts of current

policies. Here, we have limited our aspirations and attention to the assessment of their impacts on the agricultural sector and on specific subsectoral components of that sector only. We have not attempted a comprehensive assessment of policy impacts at the level of the national economy as a whole.

We fully recognize that in some cases decisions on policy reform alternatives cannot be made without first investigating the potential impacts of such reforms on other important sectors of the economy. In this sense our analyses should be considered partial, though, we hope, useful for a better understanding of policy interactions with the agricultural system. Where alternatives for policy reform presented in this report are recognized as having potentially significant effects on other sectors of the economy, we have attempted to clearly signal this fact and provide suggestions regarding the complementary analyses which should be undertaken before decisive action is taken.

There is also a degree of tension inherent in the objectives of the study between the breadth of the subject matter and the desirability of providing depth in the analysis of the impacts of specific policies. We have tried to deal with this tension by focussing the analysis on a subset of key policies and on policy impact areas where available time and data permitted a more thorough examination. The analysis of these key policy and impact areas is the primary focus of this volume of our report. It is presented in this volume in a qualitative manner. Quantitative or technical investigations which support the findings contained in this volume are presented in the report's four Annexes.

Finally, we wish to note that it has been our objective to provide an assessment of the relative priorities for policy reform among the various policy areas we have examined, and to suggest specific policy alternatives for the further consideration of the Government of El Salvador. Thus, the report is not intended merely as a static inventory of existing policies which affect agriculture, but also as a constructive basis for orienting the discussion of how these policies may be amended to foster the rehabilitation and sustained future development of Salvadoran agriculture over the short to medium term.

Approach and Methodology

The study was conducted by a five-person team which was assembled in El Salvador for an approximately 2-month period beginning May 15, 1984. The team was composed of a macroeconomist, who also served as Team Leader, a broad-gauged agricultural economist responsible for the analysis of sectoral policy and the coordination of subsectoral analyses, and three subsectoral specialists (also agricultural economists) in the following areas:

- Traditional export crops, i.e., coffee, cotton, sugar;
- Basic food staples; and
- Horticulture and agroindustry.

The study was executed through the following phased steps:

- Familiarization with the recent history of the economy, agriculture, and its respective subsectors;

- Identification of key policies in force at the macro, sectoral, and subsectoral levels;
- Assessment of the impacts of current policies on subsectoral and sectoral performance; and
- Identification and preliminary analysis of policy alternatives.

At the conclusion of these four phases, interim results were reviewed by a group of three senior policy advisors, representatives of USAID/ES, and the Government of El Salvador (GOES) during a one-week program of meetings. Preparation of the Main Report and revision of the Annexes has been accomplished during a three-week period following this review.

A Guide to the Report

The full report consists of the following volumes:

I. Main Report

Vol. 1. Analysis of Selected Policy Issues and Alternatives

Vol. 2. Policy Inventory

II. Policy Analysis Annexes

Annex 1. El Salvador's Economy: A Macroeconomic and Sectoral Overview

Annex 2. Traditional Export Crops

Annex 3. Basic Grains

Annex 4. Agricultural Diversification and Agribusiness

The two volumes of the Main Report are intended to synthesize the results of the study as a whole. Volume 1 focuses on what, in the judgment of the policy analysis team, are the key policy issues and alternatives facing Salvadoran decision-makers today. It is intended to assist in establishing a priority agenda for Salvadoran policy analysts and decision-makers, and to serve as a framework for continuing policy dialogue between the GOES and USAID.

Volume 2 summarizes the policy inventory itself, providing a broader but more descriptive view of the various elements which make up the existing policy regime in El Salvador, with some elaboration of their historical and institutional origins and their development over time. An attempt is also made in Volume 2 to characterize the nature of the existing framework of policies as a whole, with a view to identifying major inconsistencies, summarizing its overall influence on the agricultural sector, and assessing its general relevance both to the immediate problems and future development of agriculture in El Salvador.

Annexes 1 through 4 provide a more detailed presentation of the evidence and analyses substantiating the conclusions of the Main Report.

II. THE ECONOMIC CONTEXT FOR POLICY ANALYSIS IN EL SALVADOR

The Overall Economy

In the two decades preceding 1978, El Salvador's economy had experienced average annual growth rates of approximately 5 percent. With population increases of around 3 percent annum, this translated into real per capita gross product rises on the order of 2 percent, certainly a commendable performance. The principal engines of growth were the external and investment sectors. While exports of manufactured goods grew in relative importance over this period, the backbone of the external sector were the traditional agricultural exports of coffee, cotton, and sugar. A relatively high degree of openness characterized the economy and subjected it to the vicissitudes of external demand and price shifts; in 1978 goods and services exports comprised 30 percent of gross domestic product (GDP).

Post-1978 trends have been just the obverse. After 1980, the bottom fell out of coffee prices, and recession within other Central American Common Market (CACM) countries weakened those export markets. The heating up of the civil war in 1979-80 (and its continuation) destroyed investor confidence, as private investment fell by almost two-thirds from 1978 to 1980. Moreover, the ongoing internal conflict

has inflicted a heavy toll on the nation's basic infrastructure, its agricultural and manufacturing output, and its domestic marketing channels. On top of these elements were placed the 1980 land reform (which injected short-run disruptions into the agricultural production processes), bank nationalization, and parastatal interventions in the marketing of coffee and sugar.

As a result of this combination of factors, GDP, which had grown at a 5.5 percent annual rate from 1970 to 1978, fell at a 4.9 percent annual rate between 1978 and 1983. Real GDP in 1983 was 22 percent below its 1978 level, and real per capita GDP dropped by 29 percent. Total employment followed GDP downward, and in the past few years unemployment has affected at least a quarter of the labor force. Underemployment, especially in the agricultural sector, has also increased to massive proportions. Although GDP did stabilize in 1983, with signs that 1984 might provide a gross output rise of 1-2 percent, the fact remains that El Salvador's economy experienced the equivalent of a major depression.

Under the circumstances, it comes as no surprise that the nation's fiscal and external accounts severely deteriorated. Large central government and public sector fiscal deficits have been the order of the day, with the public sector revenue shortfall amounting to 8 percent of GDP in 1983. This contrasts sharply with the fiscal policies followed in the pre-1978 period. The trade balance has been highly negative since 1981, and only massive external balance-of-payments aid has permitted the economy to overcome its severe foreign exchange constraint. It is estimated that USAID alone has contributed some $1 billion to El

Salvador since 1978. Poor international prices for the country's exports and rising prices for its imports have combined to drive the external terms of trade continually downward since 1978.

The Agricultural Sector

Both in pre- and post-1978 years agriculture has been and remains the key economic sector, generating close to a quarter of GDP, two-fifths of total employment, and over two-thirds of total exports and foreign exchange. Within the sector, coffee is king, in normal years comprising around two-thirds of total crop value and some one-half of total sectoral output; it further contributes directly to central government revenues via the coffee export tax, and it is estimated that about 30 percent of total employment in the crop sector is linked to it. Basic grains (corn, rice, beans, sorghum) output, while not nearly as important as coffee, cotton, and sugar in terms of national value-added, are nonetheless a vital component of the farm sector for their employment and consumption impact. Around two-fifths of the agricultural labor force is tied to their production, and they represent the most basic items in the national diet. Pre-1978 El Salvador was essentially self-sufficient in basic grains.

Although since 1978 the value of agricultural decline in gross output has held up better than GDP, the sector has also experienced real declines in gross value and production volume. Value added in real terms fell 18 percent between 1979 and 1983, with coffee and cotton values declining by 16 percent and 41 percent, respectively; basic grains also suffered after 1979-80. In terms of overall and per capita

production volume, it has been the same story. The per capita physical output of basic grains in 1983 was 24 percent below its 1978 level and 13 percent under its 1970-72 average.

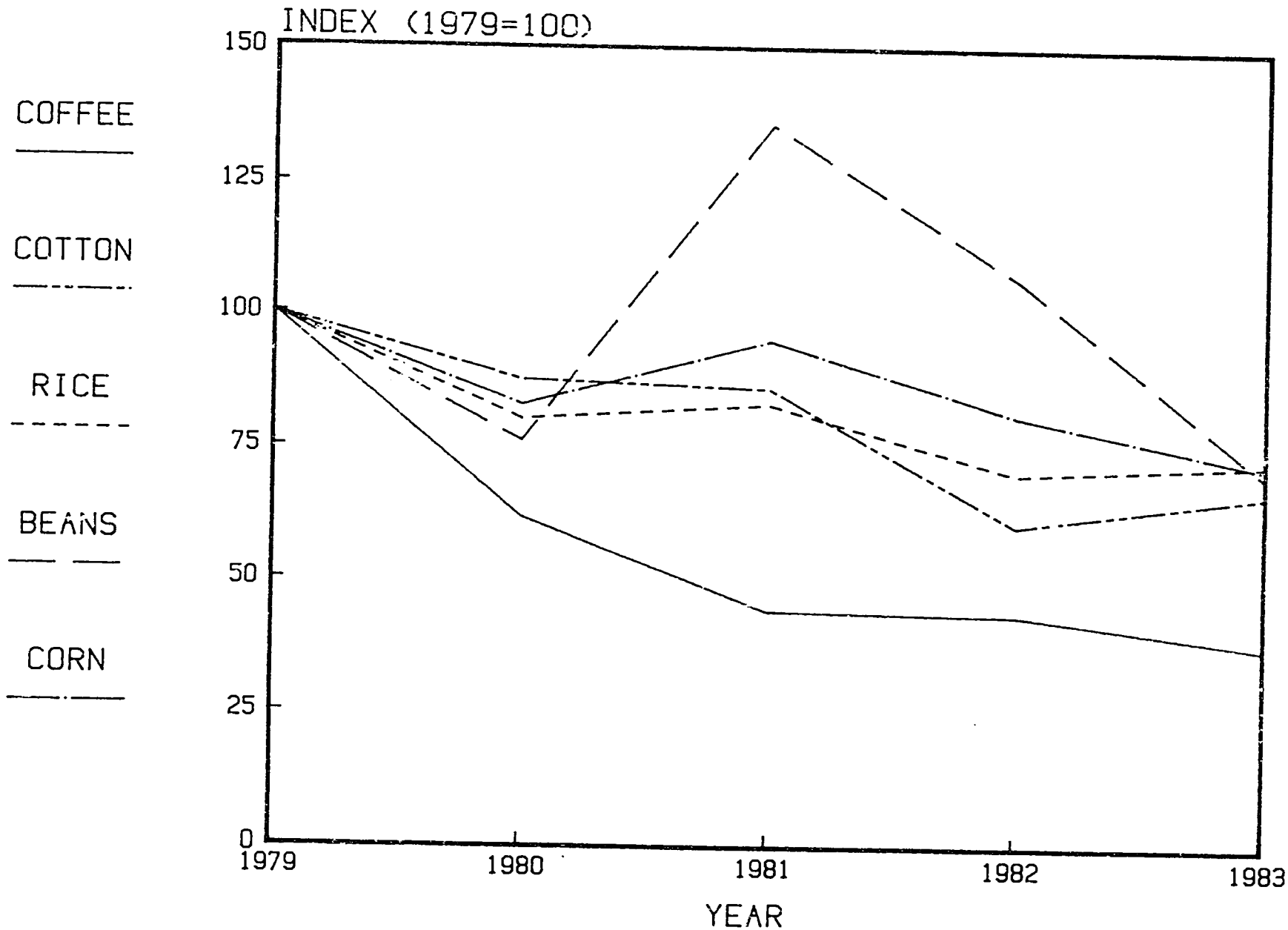
One significant factor linked to these production falls has been the decline in domestic producer prices. The deflation of producer-received prices by the consumer price index for the period 1979-83 reveals that these real prices for the three major export crops (coffee, cotton, sugar) and for the four basic grains have declined. The percentage drop ranged from 62 percent for coffee to approximately 30 percent for each basic grain crop (see Figure 1).

Just as the external terms of trade mentioned previously have moved against agriculture (export prices falling and import prices rising), so too has the domestic or internal terms of trade moved against agriculture. Probably the most revealing set of figures are the ratios of current prices to constant prices for basic sectors taken from El Salvador's national accounts. Between 1978 and 1983 this ratio for agriculture increased only 6 percent, while for the manufacturing and service sectors the proportional increases were 88 and 86 percent, respectively. These figures demonstrate the dramatic shift in income from agriculture to other sectors of the economy, with the shift occurring in a sharply declining economy.

National Development Objectives

Policies are intended to serve the basic development objectives of a country. The national development objectives of the Government have both short-term and long-term

Figure 1. Real Producer-Received Prices of Principal Agricultural Crops: El Salvador, 1979-83



time dimensions. There is clearly a high interest and pressing need to reverse immediately the economic deterioration, an objective which has short-term policy implications (such as improving agricultural prices). There is also a well-articulated objective of changing the fundamental structure of production, which implies longer-run policy choices (such as consolidating agrarian reform and improving the incomes of basic grain producers). In some instances, the short-term and long-run policies may not be mutually supporting, such as increasing prices for the traditional export crops to assist in economic recovery, which will postpone and possibly render more difficult the achievement of the longer term goals.

Recognizing that the time dimension of El Salvador's objectives is important, the principal national development objectives include:

1. Employment creation so as to reduce the present massive incidence of unemployment and underemployment. Given its labor-intensive nature, such a goal clearly must place a major thrust on the agriculture sector.

2. Overall economic recovery, with particular emphasis on raising agriculture and manufacturing incomes.

3. A strengthening of the balance-of-payments position and a subsequent reduction in the magnitude of the foreign exchange bottleneck. In the near term implies reliance on El Salvador's traditional export crops, and for the longer term increasing the diversity of non-traditional export products.

4. Increasing domestic food production so as to improve the nutritional health of the low-income segments of the population; this also has balance-of-payments implications as an import substitution measure.

5. Achieving a more equitable distribution of income and wealth.

Some of the objectives held at the level of the agriculture sector revolve around:

1. The consolidation and strengthening of the agrarian reform. This involves specifically improving weak management structures, reducing the deleterious effects on production incentives caused by a lack of definition of policy, and ensuring that the overhang of cooperative debt does not permanently weaken reform measures.

2. The recovery of production and productivity levels in both the reformed and non-reformed segments to those before 1978.

3. The promotion and increased production of traditional and non-traditional agroindustrial crops in order to meet the domestic demand for raw materials and to generate foreign exchange. This also touches upon the enhanced cultivation of fruits and vegetables both for export and to substitute current imports.

4. The improvement in the delivery of social services to the rural and farm low-income populations.

What emerges from the statement of the national objectives is the key role that the agricultural sector must play and is expected to play. In order to move toward achievement of both the national and sectoral objectives, a well-defined agricultural pricing policy must be designed and implemented. Given what has happened over the past few years to real producer prices and to the (agriculture) sectoral terms of trade, the first order of business for such a pricing policy is to reverse the deterioration in

prices. There are alternative policy instruments by which the Government can do this. These alternatives are discussed in the following chapter. Suffice it to say here that these instruments consist of measures which fall into the major policy categories of fiscal, monetary, trade-related, and regulatory.

The Institutional Setting

Each of these policy instruments, separately and in conjunction, falls within the domain of the myriad of institutions which are charged with forging and carrying out policy directives. To provide an overview of those public and private institutions which have some bearing on agricultural policy, it will be helpful to refer to the taxonomy set forth in Chapter I regarding the distinction among macroeconomic, sectoral, and subsectoral levels and policies.

At the macroeconomic level, the major institutional actors are the Central Bank (Banco Central de Reserva de El Salvador -- hereafter BCR), the Ministry of Planning (Ministerio de Planificacion y Coordinacion del Desarrollo Economico y Social -- hereafter MIPLAN), the Ministry of Finance (Ministerio de Hacienda -- hereafter MH), the Ministry of Economics (Ministerio de Economia -- hereafter ME), and the Ministry of Foreign Trade (Ministerio de Comercio Exterior -- hereafter MICE). The ministers (or presidents) and personnel from each one of these institutions form part of the Monetary Board (Junta Monetaria) in addition to carrying out their separate functions. It is this Board which establishes general policy guidelines with regard to monetary policy (credit, foreign exchange, interest rate).

Clearly, such decisions have impacts across the entire economy and within the agricultural sector.

Individually, the BCR deals with control of the money supply via the traditional instruments of reserve requirements, open-market transactions, and the rediscount rate. Moreover, it allocates credits both inter- and intra-sectorally, serves as the public sector's fiscal agent, receives and allocates foreign exchange, and generally serves as the banker's bank for the nationalized banking system. MIPLAN serves as the global planning agency with respect to intersectoral allocation of public investment funds for social and economic purposes. MH deals with tax policy, from overall taxation levels to the tax mix, and with the expenditure side of the government's budget. ME has both regulatory and development promotion functions; it is in charge of industrial promotion laws and acts as the overseer of legal price controls, even though it lacks resources to do so effectively. MICE is in charge of regulating foreign trade and administering import and export rules and regulations (tariffs, quotas, licenses, etc.).

At the sectoral level, the principal central government agency that deals with the farm sector is the Ministry of Agriculture and Livestock (Ministerio de Agricultura y Ganaderia -- hereafter MAG). MAG represents that institution which, in terms of the public administrative structure, has traditionally carried out governmental functions as they relate to agriculture. Within the ministry's framework is the Agricultural Sector Planning Office (Oficina Sectorial de Planificacion Agricola -- hereafter OSPA), whose principal task is to design and evaluate projects relating to the agricultural sector. In addition to the credits channeled to the agricultural sector by the nationalized banking

system, there specifically exists the Agricultural Development Bank (Banco de Fomento Agropecuario -- hereafter BFA) which, on top of its lending activities, also imports and distributes certain farm inputs (fertilizers and pesticides).

Agricultural extension services and assistance are provided through the Center for Agricultural Technology (Centro de Tecnologia Agropecuaria -- hereafter CENTA). Such a function has become even more significant since 1980, as many of the incipient reformed sector cooperatives are in dire need of this type of aid. Unfortunately, CENTA lacks both the required financial resources and personnel to adequately cover Phase I and III cooperatives and beneficiaries. Also providing aid to the reformed sector is the Institute of Agricultural Transformation (Instituto de Transformacion Agraria -- hereafter ISTA), which is the principal agency in charge of overseeing Phase I reforms.

The 1980 reforms brought enhanced state intervention in marketing activities which had theretofore been handled by the private sector. The state Sugar and Coffee Export Marketing Agencies (INAZUCAR and INCAFE) were created to monopolize the external sales of sugar and coffee. The third principal export crop, cotton, was left in private hands, although the state does have minority legal participation in the Cotton Export Marketing Agency (COPAL). The state further participates in the domestic marketing of basic foodstuffs (rice, corn, beans, milk) through the Basic Foodstuffs Marketing Agency (Instituto Regulador de Abastecimientos -- hereafter IRA), which, due to its limited finances, only controls approximately one-fifth of the market in basic grains; its intervention on the producers

side of the market is aimed at guaranteeing a minimum support price.

There are numerous private and public sector institutions which deal with agribusiness. Among the most important are FOSEP, CORSAIN, BANAFI, FUSADES, and one of the latter's offshoots. The Salvadoran Fund for Feasibility Studies (Fondo Salvadoreno para Estudios de Preinversion -- FOSEP), financed under an IDB loan administered by MIPLAN, carries out feasibility studies for agricultural and agribusiness projects. Two other public sector organizations have recently been created by splitting up INSAFI, which had been established in 1960 to promote industrial projects. The resulting institutions are the Salvadoran Investment Corporation (Corporacion Salvadorena de Inversiones -- CORSAIN) and the National Bank for Industrial Development (Banco Nacional de Fomento Industrial -- BANAFI); the former prepares feasibility studies and administers those businesses that were under the auspices of INSAFI, while the latter gives credits for industrial development projects. In the private sector is the Salvadoran Foundation for Economic Development (Fundacion Salvadorena para el Desarrollo Economico y Social--FUSADES), partially financed by U.S. assistance, whose main objective is to attract external and domestic capital into industrial ventures. Linked to FUSADES is the National Committee for the Development of Rural Enterprises (Comite Nacional de Desarrollo de Empresas Rurales) and its Secretariat, the Rural Enterprise Development Office, which identify and process investment project ideas and put sponsors in touch with sources of financial and technical aid.

The institutions in El Salvador which influence agricultural policies are numerous. Whether their principal focus is macro, sectoral, or subsectoral, their policy actions impact consumption and production of agricultural goods. On occasion, their actions are mutually reinforcing, and in other instances, they are inconsistent. The relationship and coordination of agricultural policies among these institutions is one of the subjects of the next chapter.

III. A GENERAL FRAMEWORK FOR POLICY ANALYSIS IN AGRICULTURE

The importance of understanding the set of agricultural policies presently in place and their primary and secondary impacts upon the behavior of the actors within the agricultural sector cannot be overestimated. Agriculture is generally the principal sector in the economy of a less developed country, standing out not only in terms of its relative contribution to GDP but also as the major generator of employment and foreign exchange earnings. As seen in Chapter II, El Salvador is no exception. Although over the long-run agriculture may be a "declining industry," in the sense that its proportional share of GDP will decrease, its interdependence and complementarity with other economic sectors give it a crucial long-term role. While it releases manpower and sells its output to other sectors, it also receives and buys inputs and consumer goods from them. A strong agricultural sector and strong overall economic growth go hand-in-hand, and general economic policies which tend to discriminate against agriculture ultimately prove prejudicial to both the agricultural sector and the overall economy. In the short-term, a dramatic improvement in agricultural production and income in El Salvador is critical to the viability of the national economy.

Policy Instruments and the Agricultural Sector

There are numerous policy instruments which affect performance within the agricultural sector and between the sector and the rest of the economy. These instruments may be classified into four broad categories: fiscal, monetary, trade-related, and regulatory.

Fiscal policy is concerned with the taxing and spending policies of government. While in most LDCs the central government is the predominant governmental fiscal agent, there are countries where both state (provincial, departmental) and local fiscal agents also have considerable tax and spending power. And where the central government is predominant, as it is in El Salvador, there have usually grown up around it a variety of parastatal financial and non-financial institutions which have independent or semi-independent fiscal (and monetary) functions and/or which are linked to the central government through some form of fiscal-transfer or subsidy mechanism.

The links between fiscal policy and the agricultural sector in El Salvador are multiple and occur at both the macroeconomic, sectoral, and subsectoral levels. At the macro level, the overall expenditure, revenue, and deficit policy of the public sector influence the overall performance of the economy and thereby impact upon agriculture. In general, where the overall economy is prosperous, agriculture is prosperous. At the sectoral plane, government takes from and gives to the sector via its taxation and expenditure policies. The most common avenues of taxation are via export and property taxes, although all other forms

of taxation directly or indirectly affect the agricultural sector. Public budget allocations, whether they be for infrastructure development (rural roads, irrigation), technical assistance, or crop subsidies clearly influence production within the sector. Of course, this taxation and expenditure targeting can be taken down to the subsectoral, or specific crop, level where it may act to stimulate or deter output activities.

Monetary policy deals with the general money supply, interest rates, the price level, and the amount and the availability of credit. It is controlled and implemented from the central government, although the allocation of credit can also be dependent upon the role permitted the banking system; a nationalized banking system will have less independence to channel credits than one in which there is a private-public mix. The level of interest rates and the amount and availability of credit are of obvious concern to the agricultural producer. Interest rates are one of his costs, and most producers are simply unable to finance either short- or long-term activities without recurrence to credit. Thus, credit allocation is central to agricultural output and marketing. This is particularly the case in El Salvador with the accumulation of unpaid loans due to the sustained and large drop in agricultural income in the last four years. Finally, the Central Bank's control of the money supply (and the monetary base) determines both the amount of liquidity within the banking and financial system and influences the general price level. This latter variable, in turn, impacts upon the prices received by and charged to the farmer.

Trade-related policies comprise the allocation of foreign exchange, the determination of the foreign exchange rate, and foreign trade policy (tariffs, export taxes, import quotas). In the context of foreign exchange scarcity, access to foreign exchange can be vital to an agricultural sector which depends on imported inputs such as fertilizers, pesticides, and equipment. Moreover, the local currency price paid for this foreign exchange is an important determinant of the profitability of farm operations -- the foreign exchange rate is a crucial price in the farm budget. Another element in the farm profitability equation is tied to import and export taxes, both of which affect production decisions. Agricultural inputs become more expensive if subject to import duties and potential farm revenues are reduced if crops are subject to export levies. On the other hand, the tariff structure may serve to spur domestic production by raising the prices of competing imported agricultural commodities, and possibly stimulating import substitution activities.

Regulatory policy instruments are many and varied. They can include a whole range of policies from wage, rent, and price controls to the regulation of land and water use and the establishment of numerous government rules and administrative procedures. They represent public sector intervention in the marketplace which, in one way or the other, implies reduced private sector freedom of action. Of course, in many instances they are introduced precisely to reduce the monopolistic or oligopolistic bottlenecks created by the private sector. Such regulatory policy can readily have both negative and positive direct and indirect effects. The tracing of these effects and the estimation of their

approximate magnitudes are vital in understanding how the agricultural sector actually responds to them.

The Interrelationships Among Policy Instruments

As is already evident, even the conceptual division of the aforementioned policy instruments into four distinct categories is not clear-cut. At the operational level this rather gray dividing line becomes even more blurred, for there are multiple and sometimes complicated interrelationships between monetary, trade, fiscal, and regulatory measures. Several examples which draw upon the Salvadoran case will suffice at this juncture.

At the fiscal policy level, the central government taxes some agricultural exports as a significant revenue source to cover public expenditures. Export taxes, mostly on coffee, provided 18 percent of El Salvador's tax revenue in 1983, and as recently as 1979 this proportion had reached 34 percent. Clearly, the coffee tax is important to the government's budget. The burden of the tax falls on the coffee producer, who does not receive the full export value for his production; this tax therefore has disincentive effects on production. Since 1979, as the real and nominal value of export revenues has steadily fallen, the central government's fiscal deficit has increased to unprecedented magnitudes (due to a combination of factors, of which the export tax drop is only one). This budget must be financed via internal and external sources. Internal financing implies either monetizing the deficit with all its attendant effects on the general price level and on relative prices and/or recurrence to domestic credit markets. If this latter practice is followed, the public and private sectors

compete in the credit markets, either raising interest rates or reducing the supply of credit to, say, the agricultural sector.

Furthermore, the coffee export market is highly regulated. Since 1980 all marketing must be done through INCAFE, the state coffee marketing organization, and most exported coffee is sold in the external market as controlled by the International Coffee Agreement. The foreign exchange generated by these exports is converted to colones at the 2.50 to $1 official rate rather than at the higher parallel rate; this further reduces coffee's profitability. Thus, here is an example of how all four policy instruments intertwine to influence and be influenced by what, at first glance, is a strictly fiscal measure.

The issue of the foreign exchange rate offers another excellent example of policy instrument interrelationships. The present dual foreign exchange market in El Salvador can be taken as an indicator of colon overvaluation at the official 2.50 to $1 rate. The channeling of transactions through the official market encourages imports (assuming away, for the sake of simplicity, the availability of hard currencies) and discourages exports. The agricultural sector, representing the source of most of the country's exports, is especially affected by this overvaluation, for it exercises downward pressures on internal prices and may be discouraging production both for export and for the domestic market. Of course, overvaluation also implies subsidizing imports of agricultural inputs, but, on balance, the sector is probably more negatively than positively affected.

Under the assumption that part of the post-1978 decline in agricultural output is due to the lack of price incentives linked to exchange rate policy, domestic production shortfalls of basic grains have been increasingly compensated for by PL-480 imports under United States aid programs. These imports of rice, yellow corn, wheat, and edible oils have repercussions. Rice imports depress domestic prices and producer incentives; yellow corn imports are channeled into the poultry sector, thereby stimulating it; wheat imports, although not in direct competition with domestic production (which is zero) may cause consumers to shift demand from corn-based consumption toward wheat products; edible oils imports may be affecting the cotton industry. These PL-480 imports additionally serve as a source of central government external financing, thereby enabling it to cover part of its deficit. Overvaluation and PL-480 imports also generate subsidies for consumers of these imported goods, and removal of this subsidy by devaluing the colon would certainly have strong implications regarding inflation, income redistribution, and politics.

An Agricultural Pricing Policy

It is evident that the four basic policy instruments impact agricultural production and agricultural prices. In fact, agricultural pricing policy consists of all these elements and deals with the ways in which they can be used in conjunction. Clearly, any agricultural pricing strategy is multi-faceted, complicated, and interrelated with a host of variables. The need for an agricultural pricing strategy was made apparent in Chapter II, where it was emphasized that the internal terms of trade have turned strongly against agriculture since 1978. The real price drops of all basic grains and of export crops were starkly set forth.

This price phenomenon is all the more dramatic considering that El Salvador has been in a state of war for the past several years, when one would normally expect the prices for food and other agricultural products to rise. While the world market prices for coffee, sugar, and cotton explain part of this phenomenon, the most likely principal factor is the overvaluation of the colon. Overvaluation is not new; the process of changing market conditions in the world economy and that of El Salvador has been underway for years with the colon-dollar exchange remaining unchanged. The cumulative effect of changing economic conditions and a stable exchange rate has led to the present critical price position for El Salvador's agriculture.

A necessary condition to getting the agricultural sector turned around after such a relatively long period of unfavorable economic performance certainly involves the design of a feasible and realistic pricing plan. This does not necessarily mean a larger degree of government intervention, as pricing policy can take one of two general forms: a movement toward more commodity price supports and consumer food subsidies, or a move toward a more market-oriented approach in which the interplay of supply and demand is given freer rein.

The increased intervention approach can take the form of further price supports, such as strengthening IRA's functions to cover a far larger part of crop production than it can now possibly buy and store. Or a system of further price supports could be combined with greater input subsidies (as is now actually occurring by allocating foreign exchange to the importation of agricultural inputs at 2.50 colones). Given the government's serious budget deficits,

neither approach would appear feasible at this time. IRA depends on fiscal transfers for sustenance and, given the basic contradiction between maintaining high producer prices and low consumer prices, IRA will never be self-supporting.

The partial government withdrawal from intervention in agricultural pricing policy should not be seen as a retreat from previous policies but rather as a strategic refocusing of efforts to the benefit of agricultural production and the nation's economy. Emphasis here is placed upon "partial" withdrawal, not total. There is quite clearly a very legitimate role for the government to play in fostering the development of the agricultural sector. As already pointed out, it must coordinate the broad mix of macroeconomic and sectoral measures which impact upon the sector and upon agricultural prices; it also must provide the social and economic infrastructure without which development cannot easily occur. Moreover, there are numerous kinds of policies that, if effectively designed and administered, can provide the required backdrop to a strong farm policy. For example, a well-implemented program of guaranteeing minimum producer prices can serve as a stimulus to production. However, care must be taken to set that minimum price at close to medium to long-term "equilibrium" levels so as to avoid overproduction and/or large financial drains. Additionally, it is certainly a legitimate public sector function to aid low-income consumers in gaining access to basic foodstuffs at either "reasonable" or subsidized prices. But this measure must form part of a consistent and sustainable plan; hit-and-miss selling off the back of trucks in poor neighborhoods, for example, may not be part of an integrated plan to aid poor consumers.

What must be recognized in all this is that government intervention in the marketplace does shift relative prices, thereby influencing both consumer and producer welfare. These relative price changes can either add to or subtract from total and group-sectoral welfare, and therefore can play a crucial role in moving toward (or away from) the development goals set by policy makers. But it is not enough to be merely aware of the distortions introduced by price changes. Not only must the direction of change be gauged, but its magnitude should be estimated.

A return to the IRA case can be illustrative of this. Essentially, this state enterprise has a dual function. In the first place, it is charged with offering price supports to agricultural producers so as to protect them against sharp price declines, the idea being that the existence of minimum guaranteed prices will prove a stimulus to output. In the second place, it has the task of providing low-income consumers with basic foodstuffs at fair or subsidized prices. It is apparent that there is an inherent contradiction in carrying out these two responsibilities, without substantial fiscal transfers and effective enforcement procedures. In June 1984, IRA was selling rice to the consumer at 7 cents per pound less than it was paying the producer. Unless the government is prepared to permanently absorb the loss that is explicit in subsiding consumers, and provide for effective enforcement given the high profit margin with access to IRA commodities, this pricing strategy most likely cannot be maintained.

As previously stated, both subsidizing consumers and producers can be legitimate public interventions -- if the distortions generated by such policies are explicitly

recognized and if the "costs" of the relative price changes generated by these actions are qualitatively and quantitatively estimated. However, it appears as if IRA has not really measured the output incentive effects of its minimum producer prices. In fact, as our analysis demonstrates, if IRA only has the resources to buy about one-fifth of basic grains produced domestically, IRA cannot influence the price and production of basic grains. And whether it is able to focus its sales to low-income households remains an open question. Here, then, is a major pricing policy of the government, the objectives of which are clear but for which the production and consumption effects clearly require thorough quantification. An initial effort has been made in our study, discussed in detail in Annex 3 (Basic Grains) and summarized in the following chapter.

IV. ANALYSIS OF POLICY ALTERNATIVES FOR SELECTED ISSUES

The preceding two chapters presented an overview of the framework within which policy analysis in El Salvador is undertaken -- economic and agricultural performance, principal national development objectives to be served by policy instruments, and the institutions in El Salvador that design and implement policies related to agricultural performance -- and a summary of the varied policy instruments in El Salvador that are available to influence the performance of this sector. The range, interdependence, mutual reenforcing or conflict, and relative significance of the many policy instruments have also been examined. A more complete inventory of policies in El Salvador affecting the production and consumption of agricultural products, their probable impacts and potential alternative policy instruments that might be considered is described in Volume 2.

In this chapter we discuss briefly the background, relative importance, and alternatives for selected policy issues. These issues have been selected for discussion principally because of our judgment of their relative importance and the need for early attention by the Government of El Salvador. In some of the issues, illustrations for a particular crop are used since the depth of analysis

for the particular commodity permits a more useful means for illustrating the impact and interrelationships of policy alternatives.

Alternatives for a General Agricultural Pricing Strategy

It should be clear by now that agriculture plays a critical role in El Salvador's economy -- in terms of income generation, employment creation, and foreign exchange earnings -- and that the single most important characteristic throughout El Salvador's agriculture has been the severe deterioration in the prices for agricultural products and the pronounced shift against agriculture in the terms of trade, both internationally and within the domestic economy. An essential element for the recovery of El Salvador's economy, through the recovery of the agricultural sector, is the design and implementation of a general agricultural pricing strategy that reverses the trend of the last several years in a clear and definite manner.

There are numerous specific actions that could be taken that affect prices for particular commodities, such as modifying the tax on coffee exports, adjusting the level of PL-480 imports, or taking steps to reduce the margins of market intermediaries for fresh vegetables and fruits. Each of these specific steps could contribute in its own way toward an improved pricing strategy. However, a process that addresses prices on a piecemeal basis is unlikely to bring about the fundamental change required, namely, to increase the income of farmers through their response to higher prices by producing more goods.

taking place and would continue to take place under this process. The economic and political sensitivities are less pronounced with this alternative, and it could provide at least a partial response to the need for improved agricultural prices. One limitation of this alternative is that there is no necessary correspondence between the cost of inputs and outputs, since one or the other for a particular production process may be at the official rate, while the other is at the parallel rate, thus causing distortions in the marketplace that may be impeding investment decisions or accelerating investment decisions that do not represent a prudent use of scarce resources in the economy. Another difficulty with this alternative is that it forces the government to select products to move to the parallel market, thus increasing the pressures upon the government from a variety of interest groups who would wish to be added to or left off the parallel rate, depending upon whether they are selling or purchasing.

Yet another alternative that could affect the general pricing strategy for El Salvador would be to introduce a general increase in import duties with export subsidies provided. In effect, this constitutes a de facto devaluation as well. The export subsidy increases producer income, both through better prices and the response of farmers to produce more. Import duties generate revenues to finance the export subsidies without an additional drain upon the government's fiscal position. To the extent that imports which are priced at the official exchange rate are substituting for domestic production, a general regime of import duties would also provide a price incentive for increased domestic production.

What appears to be particularly appropriate at this crucial time is for the general level of agricultural prices to be modified through a coherent and consistent strategy. Since much of El Salvador's agriculture is influenced or affected by imports and exports, the one means by which this can be accomplished concerns the foreign exchange rate. Consequently, the price of the colon becomes an important, if not the central, variable in any agricultural pricing strategy. The present exchange rate clearly penalizes the output of export commodities and stimulates the importation of competitive farm substitute products. There has been considerable discussion in El Salvador regarding the advantages and costs of a general devaluation of the colon. Clearly, this could be one alternative by which prices of agricultural products would be increased, providing a policy instrument by which incomes of agricultural producers generally in El Salvador could be improved. For El Salvador's agricultural sector, a general devaluation would provide a net positive impact. Yet, this policy alternative has sensitive economic and political implications, impacts on other sectors of the economy, and, depending upon how it is implemented and the extent of the devaluation, could yield either net positive effects for the economy as a whole in the short run, or could cause serious losses in output and employment.

Devaluation is one alternative for accomplishing an effective agricultural pricing strategy, but there are other alternatives that can be considered as well. One such alternative is to continue (or accelerate) the present practice of maintaining an official and higher parallel exchange rate, adding products to the parallel market on a periodic basis. In effect, a de facto devaluation has been

All three alternatives discussed thus far for a general pricing strategy could be introduced in the short run and have relatively early results. There is another alternative which could be pursued, either on its own basis or as a complement to one of the other three strategies; this is to bring about an improved package of inputs, more efficient marketing, and new technology which in combination would increase the efficiency of production at the farm and hence improve the income the farmers receive. This alternative obviously involves the coordination of several institutions and the investment of resources. Moreover, it is an alternative which has a different time dimension, since the improvement in efficiency, whether on the farm or in the marketing system, is likely to require years rather than months to accomplish significant change. Ultimately, of course, such changes represent the improvements that El Salvador's agriculture would strive to achieve. The current necessity for immediate change in agricultural prices, thus enabling a more significant and fast-paced recovery of El Salvador's economy, requires serious consideration of one of the first three pricing alternatives.

Acceleration of Credit for Investment

Between 1979 and 1983 the total credit authorized by the banking system and the Agricultural Development Bank (BFA) to agriculture rose by some 74 percent. However, over this same period an increasing proportion of total sectoral credit was channeled into refinancing (fully one-third in 1983), so that the real value of new productive credits actually fell by 25 percent (a percentage which, not coincidentally, roughly corresponds to the drop of 18 percent in sectoral value-added). Thus, although agriculture has maintained a relatively large portion of total national

credit allocation, public sector absorption of domestic credits for deficit financing and the debt overhang within the agricultural sector have combined to substantially reduce the amount of new credits flowing into agricultural activities. This has adversely affected both current production and investment for future production. The recovery of the agriculture sector depends to a large extent on reversing this downward trend.

In 1983, 92 percent of the banking system's credit refinancing went to the traditional export crops of coffee, cotton, and sugar, with coffee absorbing the bulk. The obvious solution to the debt overhang is to improve the income and profit position of the producer so that future income will not be tied up in debt repayments. One way of augmenting these incomes is through the adoption of a general pricing strategy as discussed above. No matter what strategy is adopted, the point to emphasize is that it is not sufficient to increase credit allocation to producers if they must use it to roll-over past debts. The bottom line is that producer profitability must be enhanced by reversing the downtrend in the agricultural terms of trade. The channeling of additional credits to the sector is only part of the answer.

Increasing the amount of real credit availability to agriculture would clearly have a favorable impact on production. Some of this increase could be channeled through BFA, but a major part could, and probably should, come from the commercial banks. Though their agriculture lending posture has improved recently (due partly to the BCR refinancing of existing overdue debts), commercial banks continue to be bound by low-risk and traditional lending practices. One means to reduce their risk and thereby increase their

willingness to lend more to agriculture would be to free interest rates, or raise the ceiling by several points. Since demand for credit in El Salvador's agriculture at this time is probably relatively inelastic with respect to price (interest rate), an increase is not likely to dampen credit demand. This is a policy instrument over which the government can exercise control, with potential near-term gains.

It is recognized that there are other competing sectors for credit. At the macro level, heed must be paid to intersectoral credit allocation. So the question becomes one of how to increase both total and agricultural credit.

Given the domestic financial and economic situation, credit financing should ideally come from external sources. A strong argument can be made for the need to substantially expand external-source financing of agricultural credits. No sector can make a greater contribution to national development objectives. Barring external assistance, domestic sources would have to be generated. Whether an increase in the money supply would have short-run inflationary consequences in uncertain. However, the strong supply-side output expansion which can be expected in agriculture would reduce medium to long-term inflationary pressures by permitting increased use of present capacity and by raising the capacity ceiling.

Although the foregoing points represent the most outstanding credit topics, there are other credit issues. The present allocation of agricultural credits by the banking system is far too one-sided in favor of traditional export crops. This is undoubtedly a holdover from pre-nationalization patterns. The BFA distribution is more

diverse, as it spreads its credits among all subsectors. Given the need to encourage agricultural diversification, more care should be taken in the future to satisfying the credit needs of a more diverse crop distribution.

More consideration could be given to extending the amortization period of authorized credits. The short-term "creditos de avio" often must be paid off before all returns are received; this is especially true for annual crops. Moreover, in the cases of small-scale agribusinesses, where crop diversification can truly be pushed, there is a real need to extend the term structure of present debts and to offer medium- to long-term credits. This is due to the fact that a return on investment does not normally become a reality for at least several years.

There are also administrative bottlenecks. State enterprises which buy a debtor's produce often do not pay on time; this has been extensively documented in the cases of IRA and INCAFE. Some BFA authorized credit does not reach the farmer at the appropriate time, and lengthy procedures make it difficult for the reformed sector to tap into the nationalized banking system for credits. Prompt utilization of foreign long-term loans is often hindered, and the use of counterpart funds could smooth over the transition period.

Role of PL-480 Imports: The Case of Rice

U.S. Public Law-480 constitutes one of the principal instruments available to the Government of El Salvador to influence the prices, consumption, and production of basic grains and other commodities. Under this program, the U.S. government makes available to El Salvador surplus commodities,

either as outright grants or under soft credit terms. For fiscal year 1984, USAID/El Salvador has requested delivery of the following commodities: 120,000 metric tons of wheat and/or wheat flour; 14,000 metric tons of vegetable oil; 175,700 metric tons of yellow corn; and 10,000 metric tons of milled rice. To finance these commodity shipments, the repayment terms are 40 years, a 10-year grace period, and an initial interest rate of 2 percent (3 percent during amortization).

In El Salvador, U.S. commodity imports under PL-480 are channeled mainly through IRA, though vegetable oil is distributed by the BFA directly to the oil processing enterprises. Although IRA does not actually pay for PL-480 commodities, they technically enter El Salvador valued as if they were purchased at the official exchange rate of ₡ 2.5 colones. Since IRA is required to sell at the official (government-controlled) prices for basic grains and other commodities, the prices at which IRA disposes of PL-480 commodities in the retail market are, in principle, substantially below the prevailing retail prices in urban areas (for example, in the case of rice in April 1984, the IRA price was about 55¢ per pound compared to the prevailing retail price in San Salvador of 83¢).

The basic policy issues surrounding the import of PL-480 commodities are not whether imports of such commodities should be continued, but rather:

- What should be the composition of PL-480 commodities?
- For any given commodity, what should be the appropriate quantity imported?

- For the quantity imported, what is the most appropriate price at which PL 480 imports should be valued?
- What is the most appropriate means for distributing PL 480 imports?

These are not trivial policy issues. PL 480 imports can meet shortfalls in required commodities at times of scarcity and provide balance-of-payment support, on the assumption that at least part of the commodities under PL 480 would be purchased on the world market through commercial channels during times of scarcity. Equally important is the effect which PL 480 imports have on the price of these commodities within the El Salvador economy, and thereby their impact on consumers and producers of these commodities.

The Case of Rice

In addressing these policy questions, we undertook a detailed analysis of the PL 480 imports of milled rice, tracing through quantitatively the impacts on both consumers and producers of rice. This analysis also attempts to assess the impact of rice imports on the price for other foodstuffs that are partial substitutes for rice. PL 480 rice imports were selected for detailed analysis in part because of the availability of data for the analysis, but also because the other principal PL 480 basic grains (wheat and yellow corn) are not as useful for illustration purposes. Traditionally, El Salvador has imported wheat, and yellow corn is basically a substitute for sorghum as a feed grain, for which available data and time did not permit a ready quantification of impacts.

The analysis of the effects of PL 480 rice imports on prices, consumption, and production is described in Annex 3 (Basic Grains). The detail of the presentation in the annex has been done to demonstrate the analytical techniques involved for making such assessments. It should be noted that the analysis was undertaken with data available in El Salvador, or with estimates derived by standard statistical techniques, to derive the values for key parameters, such as the price elasticity of demand, the consumption pattern for foods by different income groups, the price elasticity of supply, and the production function for rice. The analysis was performed within a period of several weeks by one analyst with the relevant equations and computational procedures undertaken on a Compaq microcomputer with programs which enable similar analyses for PL 480 imports or other interventions that influence price, production, and consumption to be assessed quickly and systematically. The capability to assess quantitatively the impacts on production and consumption provides valuable additional information for policy analysis. At the same time, we recognize that the results of this analysis provide orders-of-magnitude change rather than precise estimates.

PL 480 rice imports for 1984 will contribute approximately 10,000 metric tons to a national consumption estimate of 58,500 metric tons. In other words, imports will increase the total available supply of rice by one-fifth over what otherwise would have been the case. The analysis was done by examining the consequences of this addition of 10,000 tons to the supply of rice. Without these rice imports, the consumer would have paid 78¢ per pound more, which represents a 98 percent increase, while for the producer the removal of the PL 480 imports would result in a

142 percent increase in the price of rice. Both are very substantial price changes and, therefore, are expected to have considerable impacts on both the consumption and production of rice.

The availability of PL 480 rice imports increases the supply and thereby reduces the price of rice which, in turn, has a positive impact on most consumers, since there will be an increase in rice consumption. The increase in rice consumption is accompanied by a reduction in consumption for all other foods, since rice substitutes for other foods, though this substitution effect is stronger among higher income families. Thus, principally because of the relative consumption of rice by different income groups, higher income families benefit more by PL 480 rice imports than do low-income families.

Lower consumer prices for rice also have an impact on the food consumption and nutrition for a farm household that depends on the sale of rice for its income. It might be noted here that most rice producers are small farmers using manual or animal traction techniques to grow upland rice. Based on our analysis, rice farmers tend to respond to a drop in the price of rice by eating more rice and less of other foods. In contrast to urban consumers whose consumption of other foods is basically affected only modestly by the rice price drop, rice farmers experience a substantial contraction in food other than rice. The net result is that the calorie intake among rice producer households in the lower income groups suffers a significant decline, while in the highest income farmer rice producer household group there is a very slight increase in caloric intake.

The reduction in the price of rice accompanying the additional 10,000 metric tons for PL 480 imports also has an impact on the domestic production of rice in two different ways: the impact on area planted to rice, and the impact on yields. Based on the analysis described in Annex 3, the 60 percent drop in producer prices received by rice growers will induce a contraction in the area planted of approximately 83 percent, a substantial reduction. This estimate is sensitive to the price elasticity of supply, which was estimated to be .38; a lower supply response would cause less of a reduction in area planted. With respect to the impact on the yields for rice, based on the estimation of a production function for rice, a 60 percent fall in the producer price of rice will result in rice yields of only 49 percent of their former level, or a loss of 51 percent.

By combining these two impacts (area and yield) rice production based upon an import of 10,000 metric tons will decline to 8.3 percent of the level that would have prevailed at the price in the absence of the PL 480 imports. This dramatic decline (which, again, should be considered an order-of-magnitude change) is based upon a significant price change of 60 percent. Though this price decline is based on realistic estimates of the price of elasticity of demand for rice, were we to assume, for example, that PL 480 imports would only depress producer prices by say, 20 percent, then the total production of rice would be 61 percent of what it would be without rice imports. This still represents a decline but not nearly as dramatic as our analysis has shown.

A less complete analysis of the impact of PL 480 imports of yellow corn was undertaken, assuming that yellow corn imports substitute for yellow corn production in El

Salvador (the more likely reality is that yellow corn imports substitute for sorghum, an analysis which is more demanding yet feasible). Using the same set of equations and computational procedures, but with different values that are applicable to yellow corn, the results are similar in some respects and different in others compared to rice. There is, for example, a gain by consumers as a result of the lower price, and predominantly by low income consumers. Low income farmers do not have the same dramatic decline in their caloric intake as in the case of rice. However, there is also a substantial decline in the production of yellow corn, which tends to be produced predominantly by small farmers. The net effect is that the value in the decline of production is greater than the value gained through increased consumption and/or changes in real income of consumers.

Conclusions

The analysis of PL 480 rice imports does not suggest that PL 480 imports should necessarily be discontinued. Rather, the analysis demonstrates the importance of analyzing the consequences of alternative composition of commodities to be imported, and the quantities to be imported in any particular year and any particular commodity under the PL 480 program.

Though not a direct consequence of the quantitative analysis, our findings also suggest that consideration be given to the pricing of PL 480 imports under an alternative exchange rate regime, which simultaneously provides for the physical availability of additional supply but establishes a price level which is more realistic in terms of the competitive posture of El Salvador's agriculture and the rest of

the world. Pricing PL 480 imports under an alternative exchange regime (for example, at the parallel exchange rate) would mitigate some of the price decline to the farmers and, hence, mitigate some of the otherwise dramatic decline in domestic production.

Our findings also suggest that if IRA continues to be the instrument through which PL 480 imports are distributed, that modifications in its distribution program be undertaken so as to increase the assurance that these commodities reach predominantly low income urban consumers.

Improving Market Efficiency: IRA and Basic Grains

The Instituto Regulador de Abastecimiento (IRA), or Foodstuffs Stabilization Board, constitutes an important part of the marketing system for basic grains. It is an autonomous government agency charged with the responsibilities of purchasing grains from producers; transporting, warehousing, and processing as required; and selling grains to consumers at retail outlets at officially specified prices. IRA's objectives are to stabilize prices and to provide particular marketing assistance to small farmers and low-income consumers.

Our analysis, described in more detail in Annex 3 (Basic Grains), indicates that IRA is unable to meet its objectives or fulfill its responsibilities. IRA must compete for procurement from farmers against well-established market intermediaries ("coyotes" as they are called in El Salvador), and are able to generally purchase about one-fifth of basic grain production largely because of an informal linkage between continued credit from the Agricultural Development Bank (BFA) and sales to IRA. With respect

to sales to consumers, IRA must attempt to enforce the fair distribution of food despite large differences between prevailing market prices and the official prices at which IRA is commissioned to sell. The inherent difficulties of enforcement almost certainly mean that the target low-income households are not the primary beneficiaries of the subsidy on basic grains.

The combination of subsidies on the products moved through IRA and its system costs (both operational and investment) result in a substantial net cost to the public. IRA's losses are financed in part by the government but principally by credit provided by the central bank (BCR). A reasonable policy question is whether such costs should be continued. Can IRA influence market prices of basic grains (for producers and/or consumers), and if not, what roles, if any, should it have to improve the efficiency of the basic grains market?

There are no ready answers to these questions but the directions of change seem clear. Given its modest role in the marketplace (purchasing and selling only about one-fifth of total supply), IRA cannot influence market prices, except in the very short run. A simulation of the market place -- described in Annex 3 and titled "IRA and the Game of the Coyotes" -- produces the following conclusions:

- Setting aside IRA's capability of affecting the grain market through imports, IRA's domestic operations have negligible or negative effects.

- In a competitive market, IRA has negligible or very limited capability to influence consumer prices through the year, even in a situation when it controls a considerable share of the market.

- To be effective in lowering prices for a period, IRA needs to use its own stocks to cover all the market needs in that period at that price. This, however, drains IRA's inventories rapidly and reduces its ability to influence future prices.

- To the extent that IRA succeeds in reducing prices in one period, it also induces an opposite jump in price in another period.

- Consumers experience greater price variability whenever IRA succeeds in affecting prices.

- IRA suffers financial operating losses when it succeeds in influencing consumer prices in a given period.

- By contrast, IRA unintentionally generates profits for coyotes when it succeeds in affecting prices.

These conclusions, combined with the net budget costs, demonstrate that consideration be given to alternative future strategies for IRA. While dismantling IRA may appear at first glance to be appealing, there are other alternatives. Its sales function to consumers could be changed in one or both of two ways: sell basic grains at prevailing market prices, and/or if subsidies are continued, change the distribution system to increase the probability that the beneficiaries are low-income households (for example, have IRA distribution centers only in areas where low-income households predominate). At the same time, IRA's procurement functions could be modified. Rather than attempt to cover the entire country through large, permanent purchasing centers, IRA could limit its purchasing functions in areas where existing private marketing systems are poor (such as remote areas, where IRA would be subsidizing more directly smaller, and probably poorer, farmers), and/or in areas

where there is reason to believe that the continued presence of IRA would improve the competitive structure of the marketing function. Either function would most likely require a smaller but more flexible institution, and one equipped with a better information system and market analysis capability.

Diversification and Agribusiness

Diversification is an essential dimension for El Salvador's longer term agricultural growth. Diversification means more than reducing reliance on traditional export crops and low-productivity basic grains; it also means increasing the value of production per unit of input and hence farm household income.

Fruits and vegetables, a variety of minor crops (kenaf, sisal, etc.), dairy products, and poultry constitute the foundation for the potential of diversification, with agricultural business being a critical instrument for realizing the potential. These agriculture subsectors are characterized by several common features:

- They are infant industries in every sense: production and productivity are lower than even in neighboring Guatemala (poultry excepted), yet they suffer from no disadvantages as regards soils, water, climate, labor costs, or other inputs except technology. Thus, yields of horticultural crops, milk and fiber crops are a small fraction of potentials.

- The local market is sufficiently large for efficient processing; El Salvador has a large deficit in foreign trade of these products (again, poultry excepted). Domestic and international markets for many of these products are growing rapidly. In some cases,

such as fresh and processed fruits and vegetables, foreign markets may be literally inexhaustible for a country of El Salvador's size.

- They are dependent upon private sector marketing and processing units, not only for providing the forward linkages to industry and final consumers, but also for mobilizing and making effective the delivery systems for inputs such as seeds (dependent on cultivar selection), herbicides, insecticides and fungicides.

- These subsectors are highlighted in program and policy priorities of the government because of their potential contributions to rural income, nutrition, employment creation, import substitution, and exports. Yet, public sector institutions serving these crops are ineffective and show limited prospects for improvement in the foreseeable future.

- There has been a sharply dropping trend in relative prices at the retail level which can be attributed in part to import competition in some lines. Productivity advances might have accounted for this trend to some degree.

- Marketing margins greatly exceed the measurable costs of marketing (e.g., spoilage, transport, salaries of wholesalers and retailers, etc.). We do not know much about the potential effects on prices of improvements in the marketing system, but mark-ups of 250 percent combined with high price elasticity, suggest that producers would greatly benefit from even modest reductions in these margins. Much of the reluctance of producing units to undertake the marketing function (e.g., by developing farmers' markets) arises from the fact that fruits and vegetables represent a small fraction of their output.

- With the exception of poultry, production in these subsectors has either declined substantially (dairy products and most minor crops),

or increased very slowly (some fruits and vegetables).

Poultry and egg production appear to be an anomaly. Real prices have dropped yet production has grown rapidly. This growth is export-led, with low-cost feed grains imported under PL 480 and the most up-to-date production technology being employed. Poultry and eggs are exported at the parallel exchange rate. The international competitiveness of the poultry industry is due to all of the factors. Were PL 480 feed grains to be priced at the parallel rate (rather than the official rate), there would be a substantial adverse impact on the industry (though it is unlikely that all exports would be ended).

There are several policies which could assist subtantially the diversification of El Salvador's agriculture. The two most important are pricing strategies and an institutional environment which encourages agribusiness growth.

A pricing strategy for these subsectors has several components. Produce and minor crops present a variety of marketing problems. Producers are subjected to price fluctuations because of inadequate financing of middlemen and inadequate marketing infrastructure (washing, packing, cold storage). The marketing of perishables should be studied with the objective of discovering ways to help middlemen perform the marketing function more efficiently, thereby increasing prices to farmers. This assumes, of course, a reasonably competitive market structure. Another means of providing price incentives (at some cost to consumers, in the short run) would be for the government to move fruits and vegetables to the parallel exchange rate (the parallel rate is currently applied to some inputs, such

as seeds and plant material). As a partial step, consideration could be given to a seasonal tariff which would provide some price incentives for the local market and a reduction in sharp price fluctuations.

Rapid development of agribusiness appears to be the most important element for promoting growth of these subsectors, yet it must be promoted in the right ways for it to have an impact on agriculture. Among the most promising areas of growth are fresh and frozen fruits and vegetables, fruit juices, and certain spices. Many of the more promising export products require a minimum of in-country processing but a great deal of marketing know-how. A rapid growth of agribusiness will require assimilation of a large amount of foreign technology, market knowledge, and farm production systems. The most effective means toward this end is private foreign investment. One difficulty in this regard is harmonization of a number of disparate pieces of legislation (Ley de Incentivos Fiscales, Ley de las Zonas Francas, Ley de Fomento de Exportaciones and Ley de Control de Transferencias Internacionales).

Two other policy initiatives concern the availability of credit and the coordination of irrigation and horticultural production. The lines of credit available for financing multi-year crops have amortization periods which are much too short. For annual crops, on-farm processing, small-scale agribusiness and dairy production, the problem centers not so much on credit availability (especially to the reform sector) as on the expansion of absorptive capacity of producing units. One method is for financial agencies to develop within the cooperatives a separate form of business organization to which it can apply a management or

technical assistance contract, and with which it can become a co-borrower. Availability of physical facilities for irrigation is not a constraint on expansion of production. But official technical assistance is not now well-integrated with management of irrigation and drainage facilities. This problem will have to be tackled on an individual basis, perhaps with the aid of outside talent embracing both horticulture and water management.

Policy Alternatives for Export Crops: The Case of Cotton

Both the area cultivated in cotton and its production have drastically declined since the 1978-79 season. These declines are due to a combination of factors:

- More than half of the country's cotton crop is planted in those departments most severely affected by the guerrilla conflict; burnings, intimidations, and the like have led to a large degree of abandonment.
- There is still a great deal of uncertainty regarding Phase II of the agrarian reform, which has had a deleterious effect on production and investment decisions.
- A substantial decrease in producer profitability. Of the three elements determining profits (prices, costs, and yields), the principal factor in lower profitability appears to be input costs.
- As a consequence of several years of operating at a loss, a large portion of income has to be devoted to debt servicing; this reduces the ability to obtain new credits and discourages continuation of production.
- Imported input costs have risen faster than producers' incomes, and the inadequacy of pest-control technology has led to an increase in the number of applications of insecticides and fungicides, further augmenting average costs.

The fall in cotton output has had a significant impact on employment, rural income levels, and foreign exchange earnings. The permanent employment equivalent has fallen by at least half to approximately 17,000 during the 1983-84 season, and dollar earnings dropped 44 percent between 1978 and 1983. This foreign exchange effect was entirely due to volume declines, as international prices were relatively steady. Domestically, the output of edible cottonseed oil has forced the nation to use foreign exchange to import increasing quantities of vegetable oils, both on commercial terms and via PL-480. The animal feed by-product of cotton has also been reduced correspondingly.

Apart from the guerrilla situation, the case of cotton presents an excellent example where agricultural pricing policy could well have a positive effect. There arise numerous policy alternatives which might be put into effect which could lead to enhanced producer profitability in both the short and medium runs. The uncertainty surrounding Phase II of the agrarian reform can be cleared up with legislation and strong executive support of the measures agreed upon. Other measures are just as feasible.

Before this year, cotton export proceeds were all channeled through the Central Bank to producers at the official 2.5:1 rate. Recently the government agreed that $15 million of cotton exports from the 1983-84 crop could be exchanged on the parallel market, and that 50 percent of exports over and above this present base from the 1984-85 crop year would also be transferred through the parallel market. At the macro level, the stimulative effects of such a measure appear obvious, and this is simply another indication of government recognition of colon overvaluation. However, this apparently salutary policy may have little

effect on output at the micro level, because the individual producer has no idea of what the transfer to the parallel market means to him in terms of expected output prices. Also, since the measure was announced in June 1984, it came several months too late to have any effect on planting decisions for the 1984-85 crop.

According to estimates made by the Salvadoran private sector, the new cotton exchange rate policy would cover costs only if the area planted in cotton exceed some 90,000 manzanas; only 54,400 were cultivated in the latest crop year, compared to 150,000 in 1978-79. Thus, it is questionable as to whether this latest measure will restore some degree of profitability to the cotton sector. It is only fair to state that there are vast differences between several cost of production studies. Moreover, production costs vary widely among farms and regions, and the new effective exchange rate may very well cover the total average cost of a majority of producers. The cost of production controversy aside, partial transfer to the parallel market of cotton export proceeds is certainly a step in the right direction as far as enhancing producer profitability goes. What remains to be done is to translate this measure into "dollars and cents" terms so that it is comprehensible to the individual producer. Only then will he be able to respond to price signals.

The refinancing of producer debt is another issue that must be addressed by policy-makers, for its burden holds back production decisions and reduces profitability. In 1983, 35 percent of cotton loans were tied up in refinancing. Naturally, better output prices will have a considerable effect on the ability to repay accumulated debts, but renegotiation and extension of the debt term

structure must also be considered. There is precedent. In 1982 the BCR approved a special debt refinancing facility applicable to the three previous harvests under which terms were extended and interest rates lowered.

By no means has the government in the past ignored the plight of the cotton producer, as it has taken steps to guarantee prices. In December 1982 a cotton Stabilization Fund was established to cover the gap between the price received by the producer and the guarantee price. Administered by COPAL and with a five-year duration, it is alleged by the cotton producers that the guarantee price falls below production costs. Whether this is the case is difficult to judge since actual production costs are not known. What is known is that the guarantee price is announced too late in the year to have any influence on producers' output decisions. More attention should be paid to timing.

The setting of a guarantee price which covers production costs of the "average" producer is a crucial element in evoking a positive output response. Yet, there is no consensus in El Salvador as to what this price should be or as to how to define production costs. The several institutions involved in its estimation vary widely as to the "correct" price. The establishment of improved statistical methods and data bases inorder to arrive at a more "efficient" price is an obvious necessity. Some of the variables involved in the calculation of this guarantee price are harvest volume, effective internal demand and supply, productivity levels, types and varieties of cotton and estimates of probable net income to be received by producers.

Through CENTA/MAG the government has maintained research and extension services specifically geared to cotton. Nevertheless, these services have lacked continuity and sufficient funding. For example, an integrated cotton pest control program was initiated in 1980, but it is underfunded, and adequate technical assistance is not reaching the farmer. Consequently, he is spending a great deal more than he should on pesticide applications. This is due both to the lack of an appropriate technology for pest control and to insufficient dissemination of what is known. Higher and more efficient funding of research and extension services would certainly enhance cotton producer profitability.

Although the discussion of policy alternatives here has been limited to cotton, most (if not all) of what has been said can easily be applied to other traditional crops, particularly coffee, as well as non-traditional export crops. The exchange rate issue, the question of adequate credit flows and costs, the topic of generating producer profitability and more adequate financing of research and dissemination of research results, and the absolute necessity for improving the data base as a means to improve the decision-making process are just as applicable to other agricultural activities as they are to cotton.

V. RECOMMENDATIONS

Priority Policy Issues

The policy instruments affecting El Salvador's agriculture are numerous, and the national objectives they are intended to serve are varied in content and time dimension. The urgency of bringing about economic recovery, employment generation, and increased foreign exchange earnings in the short term suggest certain policy issues which have high potential for accomplishing these goals, and hence constitute priority policy issues. Four priority areas for government consideration are recommended here.

Improvement in the general price level for agricultural products is crucial to El Salvador's economic recovery. Continuation of present price policies with the consequent effects on agricultural production, employment, and exports would have severe implications for the country's agricultural sector. The direction of the pricing strategy is clear; the means of implementation are less so. Four alternatives for a general pricing strategy were outlined in the previous chapter. Each has different costs and benefits, which we have assessed in only the most preliminary manner. Hence, it would be inappropriate to propose a particular policy alternative, though the need for a general agricultural pricing strategy is unequivocal.

Increased agricultural production, both current and prospective, is constrained by the availability of credit. The debt overhang problem is serious and has become more so in recent years. Improved prices could greatly reduce this dimension of the credit problem but the volume of credit for agriculture would still need to be increased. A more flexible interest rate policy could potentially encourage increased commercial bank lending to agriculture, and greater efficiency in BFA's lending program would certainly contribute. But increasing the volume of credit to agriculture means either shifts away from other sectors or, more likely, an increase in aggregate credit.

Is the latter desirable? Clearly, if the increase in aggregate credit were financed by foreign savings (assistance), the answer would be "yes." But if the financing were domestic, such as monetization of a larger public sector deficit, the answer is not so clear. The current budget deficit is about 8 percent of GDP (high by historical standards in El Salvador, but low compared to some other LDCs and even to the historical experience of many developed economies, including the United States). The experience with capital flight in 1980 partially caused by a sudden increase in the money supply is still a concern. Yet, there are also reasons to believe that an increase in aggregate credit in today's very different circumstances would not have an intolerable inflationary effect or cause another flight of capital. The political situation in El Salvador today, both domestic and international, is far more favorable than it was in 1980; there is substantial excess capacity in all sectors; labor is abundant; the supply response in agriculture (including coffee and cotton) can be substantial in the near term; and the strength of monetary and foreign exchange control systems is far greater than four years ago. While an easing of fiscal

and monetary policies to facilitate aggregate credit expansion seems appropriate, the magnitude and rate of change require careful assessment.

Uncertainty inevitably deters agricultural production and investment decisions. In the context of the current conflict and sustained decline in the economy, opportunities to reduce uncertainties in the agricultural sector should be carefully considered. One such opportunity is to establish now the future operating guidelines for the agrarian reform sector. The clear definition of the rules of the game in the reform program, including the definition of property rights for current beneficiaries, would have positive effects on agricultural production. Observation of the effects of uncertainty concerning the future course of land reform include significant reductions in dairy and beef production, reduction in cotton production (with the lost by-products of cotton seed and feed), reduced maintenance on coffee plantations and other multi-year crops, and reduced investment in new trees and other capital assets. All have adverse effects on production, employment, and foreign exchange. Certainty on agrarian reform -- whatever the content -- will yield positive results in the agricultural sector.

One other priority policy issue concerns the future role of IRA. It is a large institution with substantial fixed assets placing a major claim on scarce public sector resources. Yet, its ability to influence producer prices is limited and its retail sales system, to be effective, would demand a large enforcement effort to guarantee that subsidized grains and other basic foodstuffs reach low-income families. So long as the government has an objective of improving the welfare of low-income, non-farming households, there will continue to be an appropriate role for IRA. A more sharply focussed

marketing function to meet this specific government objective would, however, change the size and basic functions of IRA. Modifications in IRA's marketing system to better accomplish this more limited but important objective need to be examined.

Further Analyses and Improving the Analytical Base

Policy analysis is a dynamic process. As economic conditions change, national objectives are reordered, and as knowledge on the effectiveness of various policy instruments improves, further policy analysis and studies become necessary. Just as important is the need to strengthen the analysis on current policy choices. Throughout this report suggestions for further analysis and study are offered -- on redesigning the taxation of agricultural land, revising the coffee export tax, improving the efficiency of the marketing system (which is to be incorporated in a forthcoming marketing study for El Salvador), as well as other specific analyses.

High priority analyses are related to the priority policy issues discussed above. They can be focussed on the following questions:

- What are the costs and benefits -- both short-term and long-term -- of the alternatives for a general agricultural pricing strategy?
- What is the appropriate range of aggregate credit expansion for agriculture?
- Will the freeing of interest rates induce more lending by commercial banks without causing serious increased cost burdens on farmers?
- What are the costs and benefits of each alternative on future agrarian reform, and particularly the degree of certainty which each

alternative would bring to the agricultural sector?

What are the various distribution systems which IRA could use to perform more efficiently its sales function to low-income households?

The analysis of policy choices, and often the implementation of policy instruments, requires the availability of a sound data base. We have encountered many instances where the most fundamental data do not exist in El Salvador: no reliable data on costs of production for cotton, a key crop requiring policy reform linked to production costs; virtually no data on coffee, the most important single crop; limited data on fruits and vegetables, which constitute an important part of the government's intent to diversify; deficient data on prices and production; badly outdated inventory and accounting information on IRA operations; incomplete information on public sector revenue flows and on credit flows to agriculture.

The collection of data and their organization into usable information can be costly. Data serving no analytical function represent a waste of resources, but, at the same time, analysis without a good data base can lead to poor policy choices that impose economic costs on the nation. The improvement of El Salvador's data base for policy analysis must be highly selective and should be derived from the most important analyses to be performed (or which are required for the implementation and monitoring of policy instruments). Hence, an early study by the government should determine priority data needs and selection of the most efficient means for establishing these information bases.

AN INVENTORY OF POLICIES AFFECTING AGRICULTURE IN EL SALVADOR

POLICY ANALYSIS ANNEXES
ANNEX 1: EL SALVADOR'S ECONOMY: A MACROECONOMIC AND SECTORAL OVERVIEW

SUBMITTED TO

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
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14

LIST OF TABLES

Table No.		Page
1-1	Expenditure on Gross Domestic Product: El Salvador, 1970 and 1978-83	5
1-2	Sectoral Structure of the Economy: El Salvador, 1959-61, 1969-71, and 1977-83	7
1-3	Gross Domestic Product by Sector: El Salvador, 1970 and 1978-83	9
1-4	Expenditure on Gross Domestic Product, El Salvador, 1960-62, 1970-72 and 1978-83	11
1-5	National Saving and Social Accounts Summary: El Salvador, 1975 and 1978-83	12
1-6	Balance of Payments: El Salvador, 1975 and 1978-83	14
1-7	Principal Exports by Value, Volume, and Price: El Salvador, 1975 and 1978-83	17
1-8	Imports by Economic Category: El Salvador, 1975 and 1978-83	19
1-9	Agricultural and Agro-Industrial Imports: El Salvador, 1978-83	20
1-10	Labor Force and Employment: El Salvador, 1970-82	22
1-11	Labor Force and Employment Profile: El Salvador, 1980	24
1-12	Income Distribution in El Salvador	25
1-13	Income Distribution of Employed Persons: El Salvador, 1980	28

TABLE OF CONTENTS

	Page
I. EL SALVADOR'S ECONOMY: MACROECONOMIC OVERVIEW	1
Introduction	1
The Structure of the Economy	6
Balance of Payments	13
The Labor Force and Employment	21
Income Distribution	23
Intersectoral Public Investment	29
II. AN OVERVIEW OF EL SALVADOR'S AGRICULTURAL SECTOR	33
Introduction	33
The Subsectoral Structure of Agriculture and Value-Added/ Production Trends	34
Agricultural Employment and Income	39
Agricultural Regionalization	43
Potential Land Use	43
Present Land Use	45
Input Utilization	47
III. FISCAL POLICY	59
Central Government Finances	60
The Finances of the Rest of the Public Sector	70
Overall Public Sector Finances	74
IV. MONETARY POLICY	77
Interest Rates	78
The Money Supply	80
The Price Level	84
Credit Allocation	88
The Foreign Exchange System	91
Appendix A	97

Table No.		Page
1-14	Total Public Intersectoral Investment: El Salvador, 1975-83	30
1-15	Structure of Agricultural Sector: El Salvador, 1970-72 and 1978-84	35
1-16	Value-Added of Agricultural Sector: El Salvador, 1970-72 and 1978-84	37
1-17	Indices of Volume of Production by Total and Per Capita: El Salvador, 1970-72 and 1978-84	38
1-18	Pre- and Post-Agrarian Reform Crop Yields: El Salvador	40
1-19	Employment Profile of Agricultural Sector: El Salvador, 1980 and 1983	42
1-20	Land Use Capacity by Regions: El Salvador	46
1-21	Agricultural Input Utilization: El Salvador, 1978-84	49
1-22	Internal Sales of Fertilizers, 1978-82	50
1-23	National Sales of Fertilizer and BFA Percentage on Sales	52
1-24	Estimation of Number of Tractors: El Salvador, 1983	57
1-25	Public Sector and Components: El Salvador	61
1-26	Central Government Current Revenues: El Salvador, 1970-83	62
1-27	Central Government Expenditures: El Salvador, 1978-83	65
1-28	Central Government Expenditures by Functional Category: El Salvador, 1970 and 1978-83	66
1-29	Summary Statement of Central Government Cash Flows: El Salvador, 1978-83	67

Table No.		Page
1-30	Operations of the Rest of General Goverment: El Salvador, 1978-83	71
1-31	Operations of the Nonfinancial Public Enterprises: El Salvador, 1978-83	72
1-32	Surplus or Deficit Status of State Enterprises: El Salvador, 1979-83	73
1-33	Consolidated Operations of the Overall Public Sector: El Salvador, 1978-83	75
1-34	Summary Accounts of Consolidated Banking System: El Salvador, 1978-83	81
1-35	Consumer Price Index: Urban Areas, El Salvador, 1971-84	85
1-36	Wholesale Price Index: El Salvador, 1971-84	86
1-37	Sectoral Credit Allocation: El Salvador, 1979-83	89
1-38	RRNA Simulation Model of the Short-Run Effects of Devaluation on Selected Macroeconomic Variables: El Salvador, 1984	98
1-39	RRNA-Taylor Simulation Model of the Short-Run Effects of Devaluation on Selected Macroeconomic Variables: El Salvador, 1984	100
1-40	Comparative Approaches to Estimating the Effects of Devaluation on Selected Macroeconomic Variables: El Salvador	103
1-41	Macro Variable Impacts Under Assumption of Partial Transfer of External Transactions to Parallel Market	104

ANNEX 1. EL SALVADOR'S ECONOMY: A MACROECONOMIC AND SECTORAL OVERVIEW

I. EL SALVADOR'S ECONOMY: MACROECONOMIC OVERVIEW

Introduction

From the late 1950s through 1978 the Salvadoran economy grew at a real rate of close to 5 percent per annum, with real per capita growth at around 2 percent per year. In contrast, during the post-1978 period real gross domestic product (GDP) fell at an annual rate of almost 5 percent through 1983. Until 1973 growth was accompanied by relative stability in the key macroeconomic variables of price level, interest rates, and exchange rates. Although the years 1973-78 witnessed fluctuations in such relative stability (e.g., consumer price rises reached double-digits in 1974, 1975, 1977, and 1978), GDP growth continued almost unabated; the 1970-78 span evidenced an annualized GDP growth rate of 5.5 percent. The principal engines of growth in the pre-1978 economy were the export and investment sectors. The formation of the Central American Common Market (CACM) in the early 1960s and the general level of world prices sustained the export sector through the late 1960s, while investment spending pushed the economy to new heights during the most of the 1970s. Gross domestic investment, which in the 1970-72 period comprised 14 percent of GDP, jumped to almost 24 percent of gross output by 1978; the private sector was especially important in generating this rise.

The principal characteristics of the economy may be summarized as follows:

- A high degree of openness producing great sensitivity to foreign demand, prices, and external phenomena in general. Goods and services exports made up 22 percent of GDP in the 1960-62 span, with this same proportion reaching 30 percent by 1978. This means that the balance of payments cum foreign exchange constraint is a stark reality which further constrains the scope of domestic fiscal and monetary policies.

- A high rate of population growth which greatly reduced real GDP per capita gains and made more difficult an attack on the problems of unemployment and underemployment. Although these dual and interrelated difficulties have become greatly exacerbated since 1978, they reached relatively low levels by the end of the growth period (1977-78).

- A relatively unequal distribution of income and (especially) wealth. While the very scanty data available reveal a long-term trend toward a narrowing of income inequality through 197[illegible], the gap between upper and lower income classes remains wide. Despite the agrarian reform of 1980, this gap has probably widened since 1978, especially in view of high unemployment and underemployment rates.

- A relatively poor formation of human resources as evidenced by schooling rates, rural wage levels, and underemployment. Roughly three-quarters of those persons employed in the agricultural sector as late as 1980 were functionally illiterate (in terms of formal education).

- An overriding dependence on the agricultural sector to generate employment and foreign exchange. Close to two-fifths of the country's total employment is generated by this sector, and around three-quarters of exports flow directly from it.

> As a corollary to the magnitude of openness and export-led growth, the internal market is probably not capable of sustaining relatively high rates of long-term output growth. While this can be linked in part to the income distribution issue, it merely serves to emphasize the importance of external markets and other external elements in the growth equation.

Since 1978 the Salvadoran economy has been buffeted by a host of negative elements. Although the guerrilla insurrection and its economic warfare focus have drawn most of the headlines, they do not represent the only elements in the overall negative mix. The markets for El Salvador's exports have weakened considerably, both within and outside of the CACM. Recession within other CACM countries reduced the real value of exports in a steady progression since 1979, and after 1981 the bottom fell out of coffee prices (coffee is far and above the most important export). Moreover, the prices of imports have risen, especially those of agricultural and industrial inputs. The result has been drastically reduced international terms of trade. Added to these elements have been the internal reforms pertaining to land redistribution, bank nationalization, and state intervention in marketing coffee and sugar.

Within this political and economic context, private sector confidence was lost. It is estimated that capital flight may have been withdrawn up to $1.5 billion from the economy since 1978. The effect upon investment spending is telling. From 1978 to 1983 real fixed capital outlays dropped by 54 percent, with the private portion of these outlays falling by some 67 percent. Fixed capital spending, while growing at a 12.3 percent annual rate from 1970 to

1978, decreased at a 14.5 percent annual rate between 1978 and 1983. This clearly has both short and long-run implications.

The contrasts between the 1970-78 and 1978-83 periods are evident in Table 1-1. While all the principal components of expenditure on GDP reveal highly positive annual growth rates over the former span, they invariably show negative rates in the latter period. Constant price GDP fell by 22 percent and per capita GDP by 29 percent from 1978 to 1983. This fall would have been even worse if the public sector had not greatly increased its (deficit) spending. Both private consumption and investment fell at far higher rates than did public consumption and investment. This, of course, has implications for the nation's public finances, but for now it is simply pointed out that the government's fiscal policy was so designed as to somewhat ameliorate the worsening economic conditions.

Between 1982 and 1983 real GDP stopped falling, as its growth rate was effectively zero. Official government real GDP projections for 1984 run in the 1-2 percent range and, judging from a conjunction of internal and external elements, this does not appear to be overly optimistic. International coffee prices have been rising, and economic recovery in the developed nations, especially the United States, should exercise a positive influence on El Salvador's exports. The partial recovery of investor confidence (interviews with some private individuals have indicated that some of the capital that fled the country after 1978 has returned to finance current operations) and the medium to long-run effects of the Caribbean Basin Initiative are also salutary. A great deal of progress has

Table 1-1. Expenditure on Gross Domestic Product: El Salvador, 1970 and 1978-83

(Millions of 1962 colones)

	1970	1978	1979	1980	1981	1982	1983	Annualized Growth Rates 1970-1978	1978-1983
I. CONSUMPTION	2155.0	3379.8	3161.5	2918.2	2716.0	2555.6	2477.1	5.8	-6.0
A. Private	1903.7	2943.3	2714.2	2495.7	2278.8	2125.2	2061.0	5.6	-6.9
B. Public	251.3	436.5	447.3	422.4	437.3	430.4	416.1	7.1	-1.0
II. GROSS DOMESTIC INVESTMENT	288.1	785.9	606.1	412.0	396.2	336.7	350.5	13.4	-14.9
A. Fixed capital	259.1	695.4	586.7	422.3	376.7	336.7	318.2	13.1	-14.5
1. Private	195.6	495.3	371.2	189.4	161.3	163.7	164.2	12.3	-19.8
2. Public	63.5	200.2	215.5	232.9	215.4	173.0	154.0	15.4	-5.1
B. Net Inventory Change	29.0	90.5	19.4	-10.2	19.5	-	32.3	-	-
III. EXTERNAL BALANCE	-49.5	-501.0	-165.9	-40.9	-95.4	-44.6	18.9	-	-
A. Exports, Goods and Services	510.1	719.7	979.9	837.6	690.4	592.3	646.3	4.4	-2.1
B. Imports, Goods and Services	559.6	1220.7	1145.8	878.5	785.8	636.9	627.4	10.2	-12.5
IV. GROSS DOMESTIC PRODUCT	2393.6	3664.7	3601.6	3289.3	3016.8	2847.7	2846.5	5.5	-4.9
V. PER CAPITA GDP (in colones)	677	842	812	730	658	610	597	2.8	-6.6

SOURCE: Derived from Banco Central de Reserva data.

also been made on the international political front, progress which may well translate into increased financial aid from western European sources.

Much of this is speculative, but at the hard data level there are distinct signs of recovery over the first 3-5 months of 1984. Perusal of the Central Bank's Monthly Economic Indicators (Indicadores Económicos Mensuales), which compare a given period in 1984 with the same period in previous years, reveal substantial 1984 rises in coffee exports, agricultural and manufacturing imports of intermediate and capital goods, electric energy consumption in manufacturing and trade, and private gasoline/diesel consumption.

The Structure of the Economy

From Table 1-2 a rudimentary grasp of the sectoral structure of El Salvador's economy may be gained. In 1983 the most important sectors in terms of their percentage contribution to current price GDP were, in descending order of magnitude, trade, agriculture, manufacturing, and government. By taking this year alone, the historical and fundamental importance of the agricultural sector is underestimated. Historically, agriculture has been the most significant generator of national value-added, its percentage contribution comprising 29 percent of GDP as late as 1979. That this proportional contribution has declined over the past few years is a function of the civil war, international market factors, land reform, and, at least partially, large and unresolved production and incentive problems in the sector itself. The sectoral share drop from 29 percent in 1979 to 21 percent in 1983 certainly cannot be ascribed

Table 1-2. Sectoral Structure of the Economy: El Salvador, 1959-61, 1969-71, and 1977-83

(Current prices)

Sector	1959-1961	1969-1971	1977-1978	1979	1980	198[illegible]	1982	1983
Agriculture	32.7	27.0	29.8	29.1	27.8	24.4	23.1	21.4
Mining	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2
Manufacturing	14.6	19.2	15.2	15.5	15.0	15.7	15.4	15.8
Construction	3.3	2.9	4.4	3.9	3.4	3.3	3.4	3.5
Public Utilities	1.2	1.5	1.6	1.9	2.1	2.2	2.1	2.2
Transport & Communication	4.7	5.0	3.6	3.4	3.5	3.8	3.8	4.1
Trade	21.3	21.8	23.8	23.3	22.9	23.5	23.7	24.3
Finance	1.5	2.2	3.3	3.3	3.4	3.4	3.5	3.7
Housing	5.4	3.8	3.4	3.7	4.3	4.8	4.9	4.9
Government	8.2	8.0	8.7	9.1	10.3	10.9	11.7	11.5
Personal Services	7.0	8.5	6.2	6.5	7.2	7.9	8.3	8.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Derived from Banco Central de Reserva data.

to the secular tendency for the agriculture share of GDP to fall over time simply because the four-year 1979-83 span can hardly be categorized as "secular." The fundamental importance of agriculture lies in the already mentioned facts that this is the sector which generates around 40 percent of the nation's employment and a large majority of its export earnings. Overall, what is really being observed since 1978 is the "tertiarization" of the Salvadoran economy, as income and product generation shifts away from the primary and secondary sectors toward the service or tertiary sector; in 1977-78 the tertiary sector made up 49 percent of current price GDP, whereas the corresponding figure for 1983 was 57 percent. This rather abrupt shift toward "non-productive" activities is certainly not healthy, given the socioeconomic context within which it occurred. And the key to reversing this trend lies within the agricultural sector.

Moving from current price proportional structures to constant price sectoral trends, the last two columns of Table 1-3 tell most of the story. Whereas all sectors experienced extremely healthy annual growth rates from 1970 to 1978, most sectors were burdened by negative rates after 1978. Significantly, those three sectors which experienced constant price expansion after 1978 are all linked to public spending (public utilities, housing, and government). Once again, this is associated with fiscal policy and the public sector's growing deficit. Singling out the agricultural sector, note should be taken of the inexorable decline in constant price value-added after 1979, a drop of almost 18 percent over the 1979-83 interval.

With reference to the consumption-investment-net export breakdown of spending on GDP, the data presented in Tables

Table 1-3. Gross Domestic Product by Sector:
El Salvador, 1970 and 1978-83

(Millions of 1962 colones)

SECTOR	1970	1978	1979	1980	1981	1982	1983	Annualized Growth Rates 1970-1978	1978-1983
Agriculture	627.2	856.6	887.4	841.1	787.5	750.6	729.9	4.0	-3.2
Mining	3.6	3.7	3.8	3.9	3.8	3.8	3.8	-	-
Manufacturing	438.3	691.5	656.8	586.2	525.0	480.9	484.4	5.9	-6.9
Construction	63.8	147.0	143.9	111.4	94.4	92.4	96.4	11.0	-8.1
Public Utilities	45.0	96.6	107.7	105.7	102.4	98.5	101.4	10.0	1.0
Transport & Communication	127.9	223.3	208.8	193.7	172.5	161.3	165.0	7.2	-5.9
Trade	565.6	828.5	759.7	625.0	531.9	468.1	463.8	4.9	-11.0
Finance	51.0	103.9	106.1	102.6	93.1	91.7	95.5	9.3	-1.7
Housing	90.4	122.5	126.9	130.0	133.8	137.3	140.0	3.9	2.7
Government	182.8	320.3	332.2	341.9	346.0	356.3	361.8	7.3	2.5
Personal Services	198.0	270.7	268.4	247.9	226.5	206.9	204.5	4.0	-5.5
GDP at Market Prices	2393.6	3664.7	3601.6	3289.3	3016.8	2847.7	2846.5	5.5	-4.9

SOURCE: Derived from Banco Central de Reserva data.

1-1 and 1-4 yield a good overview. In current price percentages the 1978-83 trends have been away from private fixed capital outlays and towards consumption. This is certainly not surprising given the fall in real personal incomes, the loss of investor confidence, and the subsequent drops in aggregate demand; a sort of ratchet effect relating to consumer outlays and public spending has relatively buoyed this category. With respect to the external (im)balance, it is has been far higher in recent years than its pre-1978 percentage levels. Moreover, its large absolute magnitude after 1980 has required formidable injections of balance-of-payments aid from external sources, sources which are probably not sustainable over the long-run.

Table 1-5 summarizes what may be the principal domestic macroeconomic problem: the drop in national saving. As the external resource gap (the difference between goods and services imports and exports) has jumped since 1981 and gross domestic investment has declined, national saving as a proportion of GDP has subsequently fallen. In a large sense even part of this saving is "artificial," for it has been buoyed by an influx of official transfers, an influx which abruptly increased in 1982 and 1983. This, too, is unsustainable over the long-term. After removing the effect of these official transfers from the data, it becomes apparent (lines IX, X, and XI) that there has been a formidable erosion of the national saving position since 1979. This clearly will have both short and long-run repercussions on the country's ability to finance real investment and/or simply to maintain the present infrastructure.

Table 1-4. Expenditure on Gross Domestic Product, El Salvador, 1960-62, 1970-72 and 1978-83

(Millions of current colones at market prices)

	1960/62		1970/72		1978		1979		1980		1981		1982		1983	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
I. CONSUMPTION	1305.3	87.7	2335.8	85.9	6570.4	85.4	7065.7	82.1	7651.9	85.8	8012.8	92.7	8335.3	93.0	8920.8	92.1
A. Private	1154.2	77.5	2049.6	75.4	5574.4	72.5	5932.7	68.9	6404.5	71.8	6644.1	76.8	6920.6	77.2	7522.2	77.7
B. Public	151.1	10.2	286.2	10.5	996.0	12.9	1133.0	13.2	1247.4	14.0	1368.6	15.8	1414.7	15.8	1398.6	14.4
II. GROSS DOMESTIC INVESTMENT	201.9	13.6	386.9	14.2	1834.3	23.8	1556.1	18.1	1183.0	13.3	1231.1	14.2	1131.5	12.6	1258.8	13.0
A. Fixed Capital	181.8	12.2	377.3	13.9	1651.8	21.5	1511.7	17.6	1210.1	13.6	1173.0	13.6	1131.3	12.6	1148.4	11.9
1. Private	140.3	9.4	281.8	10.4	1202.5	15.6	989.6	11.5	574.6	6.4	539.2	6.2	586.7	6.5	629.7	6.5
2. Public	41.5	2.8	95.5	3.5	449.4	5.8	522.0	6.1	635.5	7.1	633.8	7.3	544.6	6.1	518.7	5.4
B. Net Inventory Change	20.1	1.4	9.6	0.3	182.5	2.4	44.5	0.5	-27.1	-0.3	58.1	0.7	-	-	110.4	1.1
III. EXTERNAL BALANCE	-18.3	-1.2	-3.6	-0.1	-712.6	-9.3	-14.7	-0.2	81.7	0.9	-597.4	-6.9	-500.4	-5.6	-497.7	-5.1
A. Exports, Goods and Services	329.3	22.1	717.7	26.4	2328.2	30.3	3182.2	37.0	3046.1	34.2	2306.7	26.7	2042.3	22.8	2157.4	22.3
B. Imports, Goods and Services	347.6	23.4	721.3	26.5	3040.8	39.5	3196.9	37.1	2964.4	33.2	2904.1	33.6	2542.7	28.4	2655.1	27.4
IV. GROSS DOMESTIC PRODUCT	1488.6	100.0	2719.1	100.0	7692.2	100.0	8607.2	100.0	8916.6	100.0	8646.5	100.0	8966.2	100.0	9681.9	100.0
V. GROSS NATIONAL PRODUCT	1477.6	99.3	2704.8	99.5	7561.8	98.3	8546.8	99.3	8789.1	98.6	8466.9	97.9	8712.4	97.2	9413.7	97.2
VI. NET NATIONAL PRODUCT	1405.4	94.4	2562.8	94.3	7243.7	94.2	8190.8	95.2	8420.3	94.4	8109.3	93.8	8341.6	93.0	9015.1	93.1
VII. NATIONAL INCOME	1294.0	86.9	2356.9	86.7	6583.6	85.6	7335.7	85.2	7778.7	87.2	7447.8	86.1	7725.9	86.2	8261.6	85.3

SOURCE: Banco Central de Reserva

Table 1-5. National Saving and Social Accounts Summary: El Salvador, 1975 and 1978-83

(Millions of current colones)

	1975	1978	1979	1980	1981	1982	1983
GDP	4,478	7,692	8,607	8,917	8,647	8,966	9,682
Resource Gap (A-B)	228	713	15	-82	597	501	498
Goods and services imports	1,713	3,041	3,197	2,964	2,904	2,543	2,655
Goods and services exports	1,485	2,328	3,182	3,046	2,307	2,042	2,157
Gross domestic investment	991	1,834	1,556	1,183	1,231	1,131	1,259
Domestic Saving (III-II)	763	1,121	1,541	1,265	634	630	761
Net income, external factors	-66	-130	-60	-128	-180	-254	-263
Net current transfers	68	128	129	122	151	427	580
National saving	765	1,119	1,610	1,259	605	803	1,078
National saving as percent of GDP	17.1	14.5	18.7	14.1	7.0	9.0	11.1
National saving, deflated[a] (1978=100)	963	1,119	1,484	1,043	461	567	709
Net current transfers	68	128	129	122	151	427	580
Income	77	155	164	132	188	435	593
Private	66	132	143	52	145	145	178
Official	11	23	21	80	43	290	415
Outlay	15	26	36	10	37	8	13
National saving excluding official transfers	754	1,096	1,589	1,179	562	513	663
"Net" national saving as percent of GDP	16.8	14.2	18.5	13.2	6.5	5.7	6.8
"Net" national saving, deflated[a] (1978 = 100)	950	1,046	1,465	977	429	363	436

a. Deflated by the national accounts implicit price deflator for fixed investment.

Source: Derived from Banco Central de Reserva data.

Balance of Payments

El Salvador's balance-of-payments position in recent years has been deleteriously affected by the same mix of negative elements that has buffeted the overall economy. Falling international prices, the effects of agrarian reform on agricultural production, domestic strife, developments in the rest of the CACM, high international interest rates, and declining international terms of trade have all intermingled to create significant balance-of-payments difficulties (see Table 1-6). After 1980 the merchandise trade balance became substantially negative as FOB export values declined drastically after reaching a high-water mark in 1979 (real values decreased even more). Meanwhile, CIF imports, essential to the efficient operation of the economy (e.g., petroleum, agricultural inputs), declined at a decidedly lesser rate. The sharp rise in (official) transfers in 1982 and 1983 dropped the current account imbalance from 7 percent of GDP in 1981 to 2 percent in 1983, but as stated above, it can well be questioned whether such balance-of-payments aid is sustainable over the medium to long-term given the international and political realities with which the country must work. On the capital account, the large decline in net international reserves was the result of officially recorded private capital flight (which comprised 12 percent of GDP in 1980) and the havoc created by the political situation on private credit lines from banks and suppliers. In the last three years (1981-83), as private capital outflows have dampened, a massive influx of official and bank capital provided by a series of international lenders (AID, IMF, IDB) has served to buoy the country's international reserve position, which moved out the red in 1983 for the first time since 1979.

Table 1-6. Balance of Payments: El Salvador, 1975 and 1978-83
(Millions of colones)

	1975	1978	1979	1980	1981	1982	1983
I. TRADE BALANCE	-163.4	-568.6	228.9	283.1	-466.6	-393.2	-387.9
A. Exports, FOB	1.331.6	2.004.1	2.830.8	2.688.3	1.995.0	1.748.9	1.840.8
B. Imports, CIF	1.495.0	2.572.7	2.601.9	2.405.2	2.461.6	2.142.1	2.228.7
II. NET SERVICES	-136.8	-274.3	-303.8	-329.0	-310.5	-361.0	-378.0
III. NET TRANSFERS	70.8	128.4	128.5	122.3	150.9	427.0	579.7
IV. CURRENT ACCOUNT BALANCE (I+II+III)	-229.4	-714.5	53.6	76.5	-626.2	-327.2	-186.2
V. CAPITAL ACCOUNT	349.8	786.1	-323.8	-567.0	428.4	502.4	687.2
A. Official Capital, Net	180.2	154.5	167.0	225.4	446.3	407.7	447.2
B. Bank Capital, Net	9.4	167.2	91.3	251.5	210.3	312.4	333.0
C. Private Capital, Net	160.2	464.4	-582.1	-1.043.9	-228.2	-217.2	-93.0
VI. NET INTERNATIONAL RESERVES	325.2	585.9	315.7	-174.8	-372.6	-197.4	303.6
VII. AS % OF GDP:							
A. Exports	29.7	26.1	32.9	30.1	23.1	19.5	19.0
B. Imports	33.4	33.4	30.2	27.0	28.5	23.9	23.0

SOURCE: Derived from Banco Central de Reserva data.

Despite improvement in the net international reserve position, the balance of payments cum foreign exchange problem remains an ever-present difficulty. Day-to-day foreign exchange management by the monetary authorities encounters constant problems. For example, as payment arrears became serious after 1980, foreign banks stopped handling exports to El Salvador via collections (sight or time drafts) and switched over to a confirmed sight letter of credit basis at the exchange rate of four colones to one dollar (with the official rate at 2.5 colones = $1). Moreover, they would not confirm the four-to-one rate unless the opening bank had funds abroad and these funds were either immediately debited or "held." In effect, this meant import prepayment. Since El Salvador (and the rest of Central America) had traditionally imported on a collections basis, this bank policy change has proven to be highly disruptive and costly in light of foreign exchange scarcity.

The capital inflows have, of course, augmented the public external debt. At the end of 1978, the public foreign debt amounted to a relatively low 11 percent of GDP; this same proportion at the end of 1983 comprised 26 percent of GDP. While this is not an alarming percent relative to the foreign public debts of some other Latin American countries, its doubling in the space of a few years, coupled with the country's reduced capacity to fund it (via exports), must give rise to concern. Debt servicing (amortization and interest) absorbed 2.9 percent of exports in 1978 and 14.4 percent in 1983. These figures do not include private sector external debt, whose financing obviously exerts additional pressures on the use of export revenues. Of course, it can be argued that the term structure of El Salvador's external debt is of greater operational relevance

than its size. The debt service ratio remains quite low due to the preponderance of concessionary financing; i.e., there is a high grant element in official capital inflows.

The poor balance-of-payments performance over the past few years has exerted increasing pressure on the colon, whose official rate vis-à-vis the dollar has been set at 2.5 for decades. At present there are two additional exchange rates: the parallel market rate (around 4 colones to the dollar) and the black market (4.20-4.30 colones to the dollar). Traditional exports, priority imports, and public debt servicing move through the official market, while non-traditional exports, non-essential imports, and invisibles are transacted at the parallel market rate. Given the balance-of-payments crisis of the last several years, there has, quite naturally, arisen an outcry from certain (export) sectors to devalue the official colon. At present, the government appears to be resisting devaluation, concerned that it would set off an inflationary spiral which would have decided income redistributive effects.

As Table 1-7 makes clear, coffee is by far El Salvador's principal export, having generated 55-57 percent of the nation's total exports in the period 1981-83. Additionally, as will become apparent later on, coffee is the single crop that generates most employment, foreign exchange, and tax revenues. Coffee exports reached a peak in terms of value and volume in 1979. Value declined steadily through 1983, and volume fell through 1982 and recuperated in 1983. While the rise in export volume is a positive element, it has been accompanied by steady total production declines since 1979. Moreover, the absence of price incentives (due largely to the exchange rate quandary)

Table 1-7. Principal Exports by Value, Volume, and Price: El Salvador, 1975 and 1978-83

(Millions of colones)

	UNITS	1975	1978	1979	1980	1981	1982	1983 1/
I. COFFEE								
A. Value		467.6	964.1	1.688.0	1.538.0	1.131.5	1.006.5	1.005.7
B. Volume	1000 qq.	3.422.0	2.396.3	4.562.0	4.002.8	3.601.6	3.074.7	3.752.7
C. Average Price	dollars/qq.	54.7	160.9	148.0	153.7	125.7	130.9	107.2
II. COTTON								
A. Value		186.0	246.1	211.5	211.6	134.0	112.9	138.6
B. Volume	1000 qq.	1.708.0	1.682.7	1.228.0	1.133.5	662.4	697.9	769.7
C. Average Price	dollars/qq.	43.6	58.5	68.9	74.6	80.9	64.7	72.0
III. SUGAR								
A. Value		205.3	47.3	67.1	33.4	37.1	39.7	100.2
B. Volume	1000 qq.	2.963.0	2.477.3	3.286.0	750.5	972.7	1.176.4	1.939.2
C. Average Price	dollars/qq.	27.7	7.6	8.2	17.6	15.3	13.5	20.7
IV. SHRIMP								
A. Value		25.9	26.5	30.8	32.1	40.1	45.5	34.4
B. Volume	1000 qq.	3.857.0	2.859.8	3.086.6	3.014.0	2.940.3	3.155.0	2.449.0
C. Average Price	dollars/kg.	2.7	3.7	4.0	4.3	5.5	5.8	5.6
V. CENTRAL AMERICAN COMMON MARKET		354.4	583.9	666.5	739.5	516.2	435.6	420.3
VI. OTHERS		92.4	136.2	167.0	133.8	136.1	108.7	141.6
VII. TOTAL EXPORT VALUE		1.331.6	2.004.1	2.830.9	2.688.4	1.995.0	1.748.9	1.840.8

1/ Preliminary figures.

Note: qq. = 1 quintal = 100 lbs.

SOURCE: Derived from Banco Central de Reserva

will most likely lead to further production drops, with all the attendant long-range effects on the balance-of-payments and tax collections.

Cotton production and export volume have faced the same set of negative internal factors as coffee, but internationally the price has held up (in contrast to falling external coffee prices). Domestic cotton production has also been affected to a greater extent than coffee by the agarian reform and civil strife. Consequently, cotton export volume has fallen off at a far greater rate than has coffee. In contrast, sugar production and export volume have been stimulated in recent years by access to the U.S. market, and sugar has become a much more significant element in the export mix.

Finally, since 1980 poor economic conditions in the Central American economies have led to a continual drop in export values to the CACM. In fact, vis-à-vis CACM member countries, El Salvador has moved from a net exporter to a net importer position in the past several years, a situation exacerbated by the problem of obtaining the foreign exchange necessary to import industrial inputs from outside the CACM area.

The structure of El Salvador's imports is summarized in Tables 1-8 and 1-9. The importance of both intermediate and capital goods to the operation of the economy becomes immediately apparent, and the abrupt decline (after 1979) in capital goods imports coincides with the fall-off in domestic investment. That imports of nondurables (mostly foodstuffs) have increased slightly as a percentage of total imports since 1978 reflects the necessity to use foreign

Table 1-8. Imports by Economic Category:
El Salvador, 1975 and 1978-83

(Millions of colones)

	1975	1978	1979	1980	1981	1982	1983 1/
I. CONSUMER GOODS	368.6	666.0	689.7	766.8	755.7	653.6	657.3
A. Nondurable	305.2	509.9	546.6	682.8	690.6	588.7	585.4
B Durable	63.4	156.1	143.1	84.0	65.1	64.9	71.9
II. SEMIFINISHED GOODS	789.8	1,232.9	1,366.4	1,361.0	1,422.4	1,268.1	1,311.1
A. Manufacturing	548.2	858.3	1,025.4	1,087.1	1,066.6	1,024.4	1,034.2
1. Petroleum	(155.3)	(190.9	(285.8)	(378.3)	(372.4)	(335.5)	(316.4)
B. Agricultural	149.3	159.6	142.2	119.4	193.4	116.9	131.1
1. Fertilizers	(113.1)	(90.7	(67.9)	(65.9)	(117.6)	(45.9)	(66.8)
C. Construction	91.2	191.5	180.8	141.5	148.7	114.5	128.6
D. Others	10.1	23.5	18.1	13.0	13.8	12.3	17.2
III. CAPITAL GOODS	348.3	663.1	539.9	279.9	286.4	248.9	260.3
A. Manufacturing	139.6	217.3	167.4	113.1	97.9	80.5	94.2
B. Transportation	116.6	250.2	204.8	83.9	104.8	93.3	86.5
C. Agricultural	39.8	56.6	43.1	18.0	19.1	17.0	24.7
D. Construction	44.5	76.4	73.4	31.7	20.6	20.1	13.8
E. Others	43.8	62.6	51.2	33.2	44.0	38.0	41.1
IV. NOT CLASSIFIED AND STATISTICAL DISCREPANCY	-56.7	10.7	6.0	-2.5	-2.9	-28.5	-
V. TOTAL IMPORT VALUE	1,495.0	2,572.7	2,602.0	2,405.2	2,461.6	2,142.1	2,228.7

1/ Preliminary figures.

SOURCE: Derived from Banco Central de Reserva.

Table 1-9. Agricultural and Agro-Industrial Imports: El Salvador, 1978-83

(Millions of colones)

	1978		1980		1982		1983	
	Value	%	Value	%	Value	%	Value	%
I. Foodstuffs and Animals	264.1	58.6	374.3	71.5	365.8	72.4	397.7	70.9
A. Live Animals	3.2	0.7	2.6	0.5	2.0	0.4	17.5	3.1
B. Meat & Prepared Goods	9.9	2.2	16.4	3.1	13.9	2.8	10.7	1.9
C. Dairy Products	49.7	11.0	58.6	11.2	47.4	9.4	57.4	10.2
D. Fish and Prepared Goods	5.8	1.3	6.3	1.2	2.4	0.5	3.4	0.6
E. Wheat	44.1	9.8	65.5	12.5	77.8	15.4	50.9	9.1
F. Corn	34.6	7.7	0.3	-	10.7	2.1	84.9	15.1
G. Other Cereals	13.4	3.0	26.1	5.0	26.0	5.1	26.8	4.8
H. Fruits and Prepared Goods	27.7	6.2	52.2	10.0	48.4	9.6	34.1	6.1
I. Vegetables	24.9	5.5	85.3	16.3	75.1	14.9	44.5	7.9
J. Sugar Preparations	10.3	2.3	11.5	2.2	14.6	2.9	8.5	1.5
K. Others	40.5	9.0	49.5	9.5	47.5	9.4	59.0	10.5
II. Vegetable and Animal Oils	20.4	4.5	46.3	8.8	48.1	9.5	58.7	10.5
III. Agricultural Inputs	165.9	36.8	103.2	19.7	91.2	18.1	104.3	18.6
A. Fertilizers	92.1	20.4	69.1	13.2	45.9	9.1	66.8	11.9
B. Pesticides	36.5	8.1	25.9	4.9	38.7	7.7	27.2	4.9
C. Machinery	37.3	8.3	8.2	1.6	6.5	1.3	10.3	1.8
IV. Total	450.4	100.0	523.8	100.0	505.1	100.0	560.7	100.0
V. Total as % of:								
A. GDP	5.9		5.9		5.6		5.8	
B. Merchandise Imports	17.5		21.8		23.6		25.2	
C. Merchandise Exports	22.5		19.5		28.9		30.5	

SOURCE: Derived from Dirección General de Estadística y Censos data.

exchange to import basic foodstuffs in order to close the gap created by domestic production declines. The data in Tables 1-8 and 1-9 include only commercial imports, excluding those noncommercial imports brought in under PL-480 arrangements. To a certain extent, these latter imports (wheat, yellow corn, rice, lard, and edible oils) substitute for commercial transactions, thereby reducing the magnitude of the imports shown in Tables 1-8 and 1-9 and freeing up scarce foreign exchange. However, as is demonstrated in Annex 3, PL-480 imports, although well- intentioned, do have disincentive effects on domestic agricultural production.

The Labor Force and Employment

El Salvador's population nearly doubled from 1950 to 1970, with the gross rate of population increase around 3 percent. There is evidence that by the early 1980s this rate of increase had fallen below 2 percent, but population data, as well as labor force and employment data, are probably not overly reliable. The last full-scale population census was carried out in 1971, and the latest estimates of population and employment totals refer to the first half of 1980; these latter data were generated from a sample survey.

The series presented in Table 1-10 demonstrate that employment growth outstripped population increase from 1970 to 1978, thereby raising the activity rate and significantly reducing the unemployment rate to less than ercent. After 1978 the unemployment problem worsened, after 1979 total employment began to drop. Assuming that a positive correlation between production and employment held during the last few years, recent employment levels have most likely continued to fall, thereby further raising total

Table 1-10. Labor Force and Employment: El Salvador, 1970-82
(Thousands)

Year	Total Population	Economically Active Population				Total Employment	Total Unemployment	Unemployment Rate	Activity Rate (Total Population)
		Total	Agriculture	Manufacturing	Other				
1970	3534	1115	611	112	392	965	150	13.5	31.6
1975	4005	1297	608	159	530	-	-	-	32.4
1978	4353	1426	588	202	636	1372	53	3.7	32.8
1979	4436	1576	715	214	647	1471	105	6.7	35.5
1980	4497	1593	637	248	657	1337	256	16.1	35.4
1981	4587	1556	NA	NA	NA	1266	290	18.6	33.9
1982	4665	1515	NA	NA	NA	1136	379	25.0	32.5

SOURCE: Ministerio de Planificación and RNNA estimates (1981-82)

unemployment and the unemployment rate. As of mid-1984, El Salvador has a massive unemployment and underemployment problem and, despite signs of a modest economic recovery in mid-1984, these difficulties will be with the country for years to come.

With respect to the sectoral breakdown of the labor force and employment in 1980, the dominant position of the agricultural sector is revealed in Table 1-11. According to this sample survey, agriculture contained exactly 40 percent of the economically active population and generated 35 percent of overall employment. Almost equal proportions of the labor force (16 percent) were found in each of the sectors of manufacturing, trade, and services (which includes public administration). Clearly, it would appear that the most efficient and fastest way to attack the unemployment problem is to generate production increases in agriculture so as to absorb larger amounts of idle and semi-idle manpower.

Income Distribution

Although historical income distribution data exist for El Salvador, they are taken from three disparate and non-comparable sources (see Table 1-12). Given their basic incomparability, any conclusion regarding temporal movements in income concentration must be taken with large doses of salt. The data reveal a distinct trend toward greater income inequality between 1945 and 1961, followed by a significant narrowing of income inequalities between 1961 and 1977. Since real per capita income did rise over the entire 1945-77 period, what is observed may be taken as confirmation of the Kuznets hypothesis of an inverted

Table 1-11. Labor Force and Employment Profile: El Salvador, 1980

Variable	Value	%
I. TOTAL POPULATION	4,497,257	100.0
A. Urban	1,887,251	42.0
B. Rural	2,610,006	58.0
C. Male	2,187,515	48.6
D. Famale	2,309,142	51.4
II. POPULATION, 10 YEARS AND OVER	3,132,394	100.0
A. Economically Active	1,593,353	50.9
1. Employed	1,336,525	42.7
2. Unemployed	256,829	8.2
B. Activity Rates (10 years & over)		
1. Overall	50.9	
2. Male	69.4	
3. Female	33.9	
C. Unemployment Rates		
1. Overall	16.1	
2. Male	14.0	
3. Female	20.1	

III. SECTORAL BREAKDOWN	Economically Active Population		Employed	
	Total	%	Total	%
Agriculture	636,729	40.0	468,376	35.0
Mining	4,394	0.3	4,394	0.3
Manufacturing	247,621	15.5	228,295	17.1
Public Utilities	9,681	0.6	9,332	0.7
Construction	80,089	5.0	67,240	5.0
Trade	256,086	16.1	247,739	18.5
Transport, Communication	86,593	5.5	60,264	4.5
Finance	15,863	1.0	14,833	1.1
Services	250,158	15.7	236,052	17.7
Other	6,139	0.4	-	-
TOTAL	1,593,353	100.0	1,336,525	100.0

SOURCE: Ministerio de Planificación, Encuesta de Hogares de Propósitos Múltiples.

Table 1-12. Income Distribution in El Salvador

A. HISTORICAL TRENDS:

Family Income Shares	1945	1961	1976-77
Lower 30 %	15	9	14
Lower 60 %	32	21	25
Top 20 %	52	62	45
Top 10 %	45	56	37
Top 5 %	36	33	23

SOURCES: 1945 data from H. Wallich and J. Adler, Proyecciones Económicas de las Finanzas Públicas: Un estudio experimental en El Salvador (México, Fondo de Cultura, 1949).

1961 data from ECLA, Economic Study for Latin America (U.N., 1968).

1976-77 data from Ministerio de Planificación, Encuesta Nacional de Presupuestos Familiares (San Salvador, 1978).

B. 1976-77 RESULTS:

Sector	Gini Coefficients: Households	Gini Coefficients: Households Per Capita	Monthly Average Household Income (Colones)
National	0.475	0.394	383
Urban Areas	0.461	0.313	528
Rural Areas	0.411	0.315	258

NOTE: The income concept used in this survey includes money income, income-in-kind, imputed rental income, and farm-produced and consumed goods.

U-shaped relationship between income inequality and economic growth (as measured by real per capita income). Even assuming the absence of inherent intra- and inter-survey measurement problems, there are certain difficulties with this interpretation, however. In an economy so highly dependent upon the agricultural export sector and, by definition, international prices, both income levels and aggregate income distribution can be expected to be considerably influenced by agro and/or export phenomena. The year 1961 was one of little growth, whereas the 1976-77 interval was one of high rates of economic growth. This latter high growth year could well have generated a significant narrowing of income inequality. Nevertheless, the magnitude of the narrowing between 1961 and 1977 is such that the 1977 figures certainly cannot be solely ascribed to healthy economic conditions. Therefore, pre-1978 El Salvador was apparently moving toward lower levels of income concentration via a convergence of the accompanying factors of economic growth.

Taking the 1976-77 figures by themselves, it is obvious that despite enhanced income equalities over time, there remained a large dispersion of incomes (and, undoubtedly, a far larger wealth dispersion). At the national level the first decile received 1.7 percent of total household income (money and non-money); in contrast, the highest decile received 37.4 percent of total income, and the highest 5 percent of households captured 23.8 percent. The survey-generated household income data produced a Gini coefficient of income concentration of 0.475. In terms of international comparisons, this does not represent an extremely high value. Moreover, the Gini coefficients attached to the urban (0.461) and rural (0.411) sectors do not yield highly

skewed (statistical) income concentrations. Of course, large gaps exist between rural and urban average household income levels, with urban levels more than twice as high as rural levels. More importantly, the Gini coefficients related to household per capita income are well below those for household income, and reflect, within the urban (0.313) and rural (0.315) sectors, quite reasonable income dispersions. Conceptually, this latter Gini is far superior to the household Gini, for it takes into account differing family cum household sizes. To reiterate, these distributions may be, in part, a function of the particular period. Income distribution has probably moved strongly in the direction of greater inequality since that time.

Table 1-13 presents the most recent data (1980) pertinent to El Salvador's overall and sectoral income distribution. For at least two reasons, the data presented in this table are not comparable to those presented in Table 1-12. First, the income receiving unit here is the employed individual (versus the household in the former case). Second, the 1980 income concept includes only money income, which contrasts with the broader money and non-money income base for the 1977-76 data. Not surprisingly, a far large number of lower income employed persons is found in rural areas. Moreover, the agricultural sector is made up in a large majority by lower income persons; more than four-fifths of the employed individuals in this sector fell within the three lowest income categories. Additionally, average incomes in both the rural and agricultural zones are far below what they are in urban areas. Clearly, the way to close this gap is to generate higher production/employment levels in the agricultural sector.

Table 1-13. Income Distribution of Employed Persons: El Salvador, 1980

Monthly Income Groups (Colones)	Area/Sector							
	National		Urban		Rural		Agricultural	
	Number	%	Number	%	Number	%	Number	%
39 or less	271,055	20.3	60,298	9.1	210,758	31.4	190,344	40.6
40-99	180,899	13.5	84,538	12.7	96,361	14.4	55,932	11.9
100-199	295,531	22.1	118,622	17.8	181,909	27.1	134,288	28.7
200-299	176,329	13.2	94,733	14.2	81,596	12.2	43,970	9.4
300-399	165,326	12.4	108,015	16.2	52,321	7.8	22,039	4.7
400-599	134,916	10.1	102,756	15.4	32,760	4.9	14,550	3.1
600-999	79,986	6.0	66,434	10.0	13,552	2.0	4,905	1.0
1000-1999	22,267	1.7	20,647	3.1	1,620	0.2	1,341	0.3
2000 and over	10,215	0.8	9,732	1.5	431	0.1	967	0.2
Total	1,336,524	100.0	665,825	100.0	671,308	100.0	468,336	100.0
Monthly Average Income	271		379		162		136	

NOTE: The income concept used in this survey includes only money income. The exclusion from the income base of income-in-kind and farm-produced and consumed goods understates all income levels and relatively underestimates rural and agricultural incomes vis-à-vis urban incomes.

SOURCE: Ministerio de Planificación, Encuesta de Hogares de Propósitos Múltiples, January-June, 1980.

Intersectoral Public Investment

The role of public investment spending since 1978 has previously been discussed. The gap left by the dramatic post-1978 drop in private investment outlays was partially filled by the public sector through 1981 (see Table 1-1), while in 1982 and 1983, as private fixed capital outlays held steady, constant colon public investment disbursements declined.

The data on the intersectoral allocation of public investment spending in Table 1-14 are not comparable to those investment figures presented in Tables 1-1 and 1-4 because they include both fixed capital (new asset creation) and financial (the purchase of already-existing assets) investment. Nevertheless, they do give a good idea of public investment priorities over the 1978-83 interval.

The agriculture sector has not been slighted, although it is a net contributor to, rather than a beneficiary of, public investment/savings. Over the period it received at least one-quarter of total investment, and in 1980 and 1983 its proportional allocation fell to the 36-37 percent range. To a large extent, this is due to the initial implementation of agrarian reform and the subsequent desire to "make it work." Investment in the country's basic infrastructure was fairly well-maintained through 1982, although within this category a redistribution did occur away from transportation and toward power (until 1983). The social development proportions were actually increased, with housing comprising the largest majority of disbursements in this classification. Over the last few years, the government has clearly given high priority to the housing issue, both for social

Table 1-14. Total Public Intersectoral Investment[a]: El Salvador, 1975-83
(Million of Colones)

	1975		1978		1979		1980		1981		1982		1983	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
I. ECONOMIC SECTOR	158.4	34.9	214.0	29.5	287.5	31.7	430.3	39.0	292.2	26.0	264.2	23.9	381.1	37.1
A. Agriculture	89.6	19.7	178.7	24.6	259.7	28.6	409.5	37.1	284.2	25.3	255.5	23.2	367.8	35.8
B. Industry & Commerce	66.3	14.6	33.1	4.6	25.4	2.8	19.2	1.7	5.7	0.5	7.0	0.6	12.3	1.2
C. Tourism	2.5	0.6	2.2	0.3	2.4	0.3	1.6	0.1	2.3	0.2	1.0	0.1	1.0	0.1
II. BASIC INFRASTRUCTURE	201.9	44.5	295.1	40.6	335.1	36.9	318.6	28.8	343.3	30.6	35.8	30.3	222.9	21.7
A. Transportation	62.7	13.8	196.2	27.0	205.4	22.6	178.7	16.2	133.5	11.9	104.6	9.4	120.3	11.7
B. Telecomunications	10.7	2.4	24.8	3.4	19.4	2.1	5.8	0.5	13.3	1.2	70.2	6.3	38.5	3.7
C. Power	128.5	28.3	74.1	10.2	110.3	12.1	134.1	12.1	196.5	17.5	161.0	14.5	64.1	6.2
III. SOCIAL DEVELOPMENT	71.8	15.8	202.1	27.8	236.3	26.0	252.5	22.9	371.0	33.1	450.9	40.7	399.2	38.8
A. Health	16.3	3.6	31.1	4.3	18.1	2.0	35.8	3.2	19.1	1.7	21.4	1.9	10.0	1.0
B. Education	19.1	4.2	21.0	2.9	26.0	2.9	21.5	1.9	26.9	2.4	28.0	2.5	12.9	1.3
C. Housing	28.2	6.2	107.5	14.8	145.9	16.1	163.5	14.8	296.4	26.4	374.0	33.8	362.8	35.3
D. Community Development	2.4	0.5	3.1	0.4	3.6	0.4	-	-	3.4	0.3	1.8	0.2	-	-
E. Water & Sewerage	5.3	1.2	39.4	5.4	42.7	4.7	31.7	2.9	25.2	2.2	25.7	2.3	13.5	1.3
IV. PUBLIC ADMINISTRATION	22.6	5.0	15.1	2.1	49.2	5.4	102.0	9.2	113.3	10.1	53.0	4.8	24.1	2.3
V. OTHER	-	-	-	-	-	-	1.1	0.1	2.7	0.2	3.0	0.3	0.9	0.1
VI. TOTAL	454.2	100.0	726.3	100.0	908.1	100.0	1104.5	100.0	1122.5	100.0	1107.2	100.0	1028.2	100.0
VII. TOTAL DEFLATED (1962=100)[b]			323.5		374.8		404.7		381.5		351.7		305.3	
VIII. TOTAL AS % GDP	10.1		9.4		10.6		12.4		13.0		12.3		10.6	

NOTES: a Fixed capital and financial investment.
b Deflated by implicit price deflator for public investment.

SOURCE: Derived from Ministerio de Planificación data.

and political reasons. The May 1984 interest rate adjustments were instituted primarily to stimulate housing construction.

II. AN OVERVIEW OF EL SALVADOR'S AGRICULTURAL SECTOR

Introduction

Agriculture represents El Salvador's key economic sector in terms of income, employment, and foreign exchange earnings. Thus, any understanding of the country's socio-economic condition must necessarily begin with an analysis of the role of agriculture on the overall macroeconomic scene.

Decades of high population growth have generated a situation in which there is presently available around one-third of an hectare of arable land per capita. While prior to the agrarian reform initiated in 1980 there was a high concentration of these lands in a few hands, it is clear that high population density sets future constraints on land redistribution. Moreover, such density will in itself require much more thought to be given to greater diversification cum high value-added/labor intensive crops.

The position of the sector in the overall scheme of things was noted in Table 1-2. While in 1983 agriculture fell behind the trade sector in its proportional contribution to current price GDP (with 21.4 percent), through 1981 the farm sector had consistently been the major generator of

gross output and income. That its recent performance has been depressed is due to a series of elements which have unfortuitously come together at the same time (domestic and world recession, agrarian reform, political violence). There is no objective reason to expect that the sector will not regain its former position of preeminence in terms of national value-added.

The Subsectoral Structure of Agriculture and Value-Added/Production Trends

Table 1-15 provides the current price value-added composition of El Salvador's agricultural sector. Historically, the crop sector has accounted for well over three-quarters of gross output, with livestock comprising 10-14 percent over the last few years. Poultry output has risen sharply since 1980, partly in response to PL 480 imports of yellow corn. The forestry, fishing, and bee-keeping subsectors are of no major importance. Coffee is the most important crop, in "normal" years generating around two-thirds of total crop value (and therefore at least half of total sectoral output). Coffee is also the principal foreign exchange earner and a significant contributor to the central government's coffers, directly via the coffee export tax and indirectly via income generation and import capacity/import taxation. It is estimated that about 30 percent of total employment in the crop subsector is linked to coffee. Cotton and sugar, the other two main export crops, together comprised 15 percent of crop value-added in 1983. Noteworthy is the increasing percentage contribution of sugar to crop value in recent years; this is associated with El Salvador's access to the U.S. sugar market. The output of basic grains (corn, beans, rice, and sorghum), while

Table 1-15. Structure of Agricultural Sector: El Salvador, 1970-72 and 1978-84

(Value-added percentages taken at current prices)

OVERALL SUBSECTOR	1970/72	1978	1979	1980	1981	1982	1983	Estimated 1984
Crops	75.5	82.4	85.8	83.9	77.9	75.1	75.0	75.7
Livestock	13.2	11.0	8.9	9.4	12.7	14.0	13.4	12.3
Forestry	3.2	1.6	1.3	1.4	1.6	1.7	1.8	1.8
Fishing	2.4	1.5	1.3	1.7	2.8	3.5	2.8	3.2
Bee-Keeping	0.2	0.2	0.2	0.2	0.4	0.5	0.4	0.5
Poultry	5.4	3.1	2.5	3.5	4.6	5.3	6.6	6.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Crops								
Coffee	52.0	62.3	72.4	70.2	64.2	63.9	55.3	53.7
Cotton	12.3	9.0	7.0	7.5	6.9	5.2	6.7	5.9
Sugar	5.0	5.1	3.8	4.0	5.4	6.3	8.5	8.7
Corn	7.4	10.1	5.3	5.8	6.5	8.1	11.7	12.6
Beans	3.2	2.1	1.4	1.8	2.9	2.5	2.9	2.8
Rice	2.1	1.8	1.3	1.4	1.5	1.1	1.5	1.7
Sorghum	4.3	2.5	1.7	1.9	2.7	2.6	2.4	2.3
Others	13.7	7.1	7.0	7.3	9.9	10.2	11.1	12.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Derived from Banco Central de Reserva data.

accounting for a bit less than one-fifth of crop gross output in 1983, is of vital importance for its employment and domestic consumption impacts. Approximately two-fifths of the agricultural labor force is associated with basic grains, and they are the most important elements in the diet of the population. Under normal conditions, the country is practically self-sufficient in its production of grains.

The percentage structure of the sector hides what has happened to production trends over time, and this is revealed in Tables 1-16 and 1-17. Looking first at value-added measured in constant prices, total gross output of the sector fell 18 percent between 1979 and 1983; little change is estimated for 1984. Between 1979 and 1983 drops of 16 percent, 41 percent, and 9 percent were evidenced in coffee, cotton, and sugar value-added, respectively. The drastic decline in cotton is linked to a considerable drop in area cultivated, associated with the civil war, land reform, and, increasingly, with an overvalued colon. Basic grain production has also suffered since 1979, but there are encouraging signs of rising output in 1983 and (estimated) 1984. Nevertheless, the general fall in basic grain production after 1980 has necessitated growing imports of rice and corn, much of it under PL-480 programs.

The production volume data in Table 1-17 reiterate the same basic tale. Population growth has meant that per capita output of basic grains has fallen even faster than total output. Per capita basic grain production volume for the years 1982-83 was at levels below those reached in the 1970-72 period; the rice subsector was the principal culprit.

Table 1-16. Value-Added of Agricultural Sector: El Salvador, 1970-72 and 1978-84

(Millions of 1962 colones)

	SUBSECTOR	1970/72	1978	1979	1980	1981	1982	1983	Estimated 1984
I.	CROPS, TOTAL	468.7	577.7	602.8	580.4	537.8	510.4	490.3	488.2
	A. Coffee	222.0	251.6	294.7	292.4	273.2	271.1	246.1	232.2
	B. Cotton	64.8	84.8	69.8	66.8	46.9	43.1	40.9	35.1
	C. Sugar	16.8	30.7	28.4	21.9	19.3	20.3	25.8	28.5
	D. Corn	50.8	79.5	81.6	82.2	78.2	64.5	69.2	78.8
	E. Beans	11.2	16.0	17.2	14.5	14.2	14.1	15.3	16.3
	F. Rice	12.3	13.6	15.6	16.2	13.4	9.5	11.6	13.5
	G. Sorghum	16.4	17.7	17.6	15.3	14.9	13.6	11.2	11.6
	H. Others	74.4	83.9	77.9	71.0	77.7	74.2	69.8	72.0
II.	LIVESTOCK	81.0	127.8	132.0	110.5	100.6	88.0	80.7	78.4
III.	FORESTRY	21.9	28.5	28.9	26.5	27.5	27.6	28.1	28.4
IV.	FISHING	14.2	12.1	12.5	13.1	11.3	12.4	10.9	11.8
V.	BEE-KEEPING	1.1	1.8	1.5	1.7	2.2	2.1	2.4	2.5
VI.	POULTRY	59.2	108.7	109.7	108.8	108.0	110.1	114.5	116.0
VII.	TOTAL	646.1	856.6	887.4	841.1	787.5	750.6	726.9	725.2

SOURCE: Derived from Banco Central de Reserva data.

Table 1-17. Indices of Volume of Production by Total and Per Capita: El Salvador, 1970-72 and 1978-84

(1978 = 100)

	1970/72	1978	1979	1980	1981	1982	1983	Estimated 1984
I. PRODUCTION VOLUME								
A. Coffee	88.2	100.0	117.1	116.2	108.6	107.8	97.8	92.3
B. Cotton	76.4	100.0	82.3	78.8	55.3	50.8	48.2	41.4
C. Sugar	54.6	100.0	92.4	71.3	62.9	66.0	83.9	92.9
D. Basic Grains	72.7	100.0	103.0	100.2	94.9	79.9	82.6	92.3
1. Corn	63.9	100.0	102.7	103.5	98.5	81.2	87.1	99.2
2. Beans	70.0	100.0	107.6	90.8	88.9	88.2	98.8	102.3
3. Rice	90.8	100.0	114.6	119.5	98.6	69.7	85.1	99.5
4. Sorghum	95.4	100.0	99.1	86.4	83.9	76.7	63.0	65.4
II. PER CAPITA PRODUCTION VOLUME								
A. Basic Grains	86.9	100.0	101.1	96.8	90.0	74.5	75.8	83.3
1. Corn	76.4	100.0	100.8	99.9	93.4	75.7	79.9	89.5
2. Beans	83.8	100.0	105.6	87.5	84.3	81.9	90.3	92.1
3. Rice	108.6	100.0	112.5	115.4	93.6	65.1	78.1	89.8

SOURCE: Derived from data provided by the Ministerio de Agricultura y Ganadería and the Ministerio de Planificación.

Despite the observed drops in production volume, the statistical evidence regarding crop yields is rather encouraging, especially with regard to basic grains. Comparing yields over the four year periods preceding and following implementation of agrarian reforms in 1980 indicates that the corn, bean, and rice crops increased their yields per area (see Table 1-18). This behavior can apparently be explained by the increase in credits allocated toward basic grains and the improved use of fertilizers and insecticides. This input use rise was carried out through the Banco de Fomento Agropecuario (BFA), but the rest of the banking system also channeled more credit into these areas. The one basic grain exception was sorghum; yellow corn imports may have had a deleterious impact on sorghum prices, thereby reducing incentives to improve yields. In contrast, average yields on the three basic export crops declined. In the cases of cotton and coffee this was due to the reduced use of intermediate inputs in response to domestic and to international price decreases.

Agricultural Employment and Income

The issues of employment and income generated in the agricultural sector were discussed in Chapter I and in Tables 1-10 through 1-13. Based on the latest available data relating to 1980, two-fifths of El Salvador's labor force and 35 per cent of its total employment were generated in agriculture. The sectoral unemployment rate was 26 percent, a figure that, given the nature of the agricultural cycle, must be taken with a grain of salt. Underemployment is an even more nebulous figure. Moreover, it is most probable that the agricultural employment/unemployment equation varies across time and that, given the declining

Table 1-18. Pre- and Post-Agrarian Reform Crop Yields: El Salvador

Crop	1976-79	1980-83	Percentage change
Basic grains (qq/mz)			
Corn	25.6	27.5	7.4
Beans	11.2	11.6	3.6
Rice	30.8	35.9	16.5
Sorghum	18.6	17.5	-5.9
Export products			
Cotton	33.2	24.8	-25.3
Sugar cane (TC/mz)	62.5	55.5	-11.2
Coffee	15.8	14.5	-8.2

Source: Anuario de Estadística Agropecuaria, 1982-83, MAG.

volume of agricultural production since 1980, the unemployment/underemployment quandary has worsened. The data found in Part C of Table 1-19, while not comparable to those in Table 1-11, give some indication of the magnitude of unemployment and underemployment in 1983. Less than two-fifths of the total number of persons associated with the sector were employed 12 months of the year, while almost half worked a half year or less.

Table 1-19 offers further information pertinent to the employment profile of El Salvador's agricultural sector. Nearly a third are self-employed, and another 28 percent are wage workers. At the very bottom of the pecking order are the 17 percent piece-wage workers and the 23 percent unsalaried family workers; it is likely that the largest portion of the underemployed and the medium-term unemployed come from these two latter categories. The educational level of employed persons in agriculture is proffered both for informatic purposes and because there may be some potential association between these formal schooling levels and the ability to absorb and/or adapt to new technologies and different methods of doing things. There is, of course, no clear-cut relationship between intelligence and formal schooling, but there is probably a direct association between teaching methods and absorptive capacity <u>cum</u> ability.

With respect to sectoral income, data were presented in Table 1-13. At least in terms of money income, the incomes of persons in agriculture were far lower than the national, urban, and rural averages. As pointed out, by using a <u>money</u> income base the figures relatively depress the agricultural average. Nevertheless, there can be little doubt of the

Table 1-19. Employment Profile of Agricultural Sector: El Salvador, 1980 and 1983

A. Employment by Occupational Category, 1980

	Number	%
Employers	1,901	0.4
Self-employed	137,857	29.5
Salaried Workers	13,096	2.8
Wage Workers	130,405	27.9
Piece-Wage Workers	77,915	16.7
Non-salaried Family Workers	106,402	22.8
Total	467,576	100.0

B. Employed persons by Educational Level, 1980

Years of Formal Education	Number	%
None	210,569	45.0
Less than 4	148,056	31.6
4-6	87,246	18.6
7-9	17,151	3.7
10-12	3,978	0.8
13 and more	1,378	0.3
Total	468,378	100.0

C. Employment/Unemployment by Duration, 1983 (1000 persons)

Duration of Full-Time Employment (in months)	Persons		Man-Year Equivalent	
	Value	%	Value	%
12	341	37.1	341	58.9
9	132	14.4	99	17.1
6	174	18.9	87	15.0
3	75	8.2	19	3.3
2	197	21.4	33	5.7
Total	919	100.0	579	100.0

SOURCE: Ministerio de Planificación and Banco de Fomento Agropecuario.

relatively widespread incidence of rural/agricultural poverty which only substantial production increases can feasibly attack.

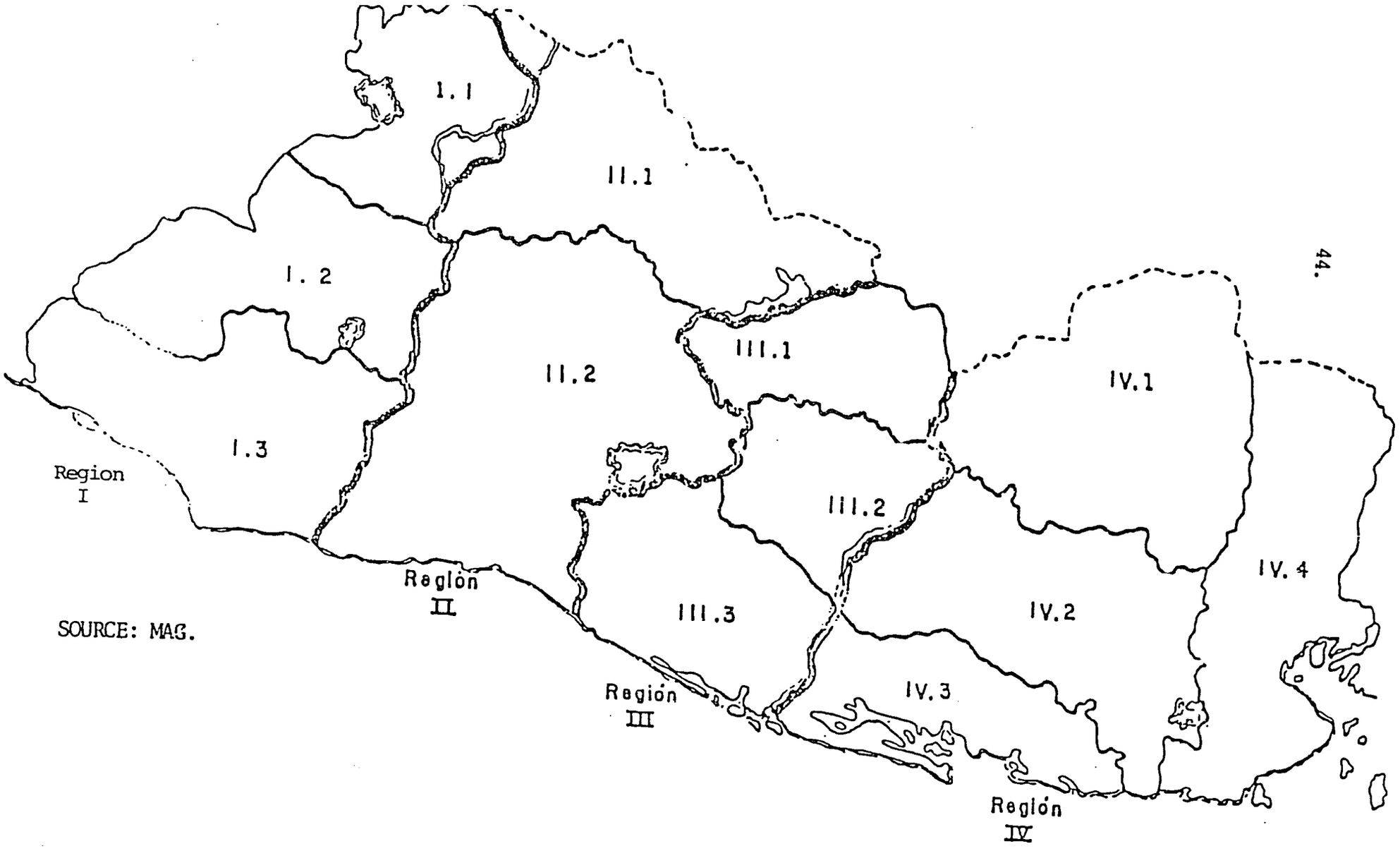
Agricultural Regionalization

For the preparation of statistics, reports, operational plans, etc., there is a regionalization which is used by all the institutions of the Ministry of Agriculture (MAG) and by autonomous institutions within the sector. This scheme is based on the definition of twelve zones which are part of four regions: Occidental (I), Central (II), Para-Central (III) and Oriental (IV). Figure 1-1 gives an overview of the regional and zonal limits. Each region is divided into zones, according to access and administrative, municipal infrastructure criteria. Although this system permits sectoral planning at the zonal level, it has not been used for this purpose within the general sectoral planning scheme. In 1982 the MAG used the scheme for administrative decentralization purposes, but a year later it returned to the old system of a central unit in San Salvador. It is important to note the importance of regionalization within the context of sectoral planning; application of the regional criterion would make it possible to assign resources better, thereby achieving greater efficiency in assistance to the sector.

Potential Land Use

An agrological or land-use capacity study is an interpretative analysis of the productive behavior expected from the soil. The classification used in the land-use survey of El Salvador is an eight-class system known as the American

Figure 1-1. El Salvador: Map of Agricultural Regions



SOURCE: MAG.

system, modified and adapted to the agricultural needs of the country. Table 1-20 contains a summary of the information on potential land use for the entire country and for each agricultural region. Soils are grouped for use as follows: (1) soils appropriate for intensive agriculture contained in classes I, II, and III and IV, which aggregate 706,000 hectares, representing 34.4 percent of the soils available in El Salvador; (2) limited-use soils, generally not adequate for intensive cultivation, which include classes V and VI; class V soils are appropriate for ranching with special management, and aggregate 46,000 hectares, or 2.2 percent of the total; class VI soils are limited to permanent crops such as coffee, fruits, timber, and prairies, and constitute 203,000 hectares (9.9 percent of the total); and (3) areas useful for wildlife or recreation, which include class VII and VIII soils. There are about one million hectares of this type, representing 53.2 percent of the available area.

The above analysis is relevant because it identifies the severe restrictions which exist as far as the amount of land available for agriculture is concerned. Intensive production systems will be needed in order to optimize soil use.

Present Land Use

The information available on present land use for the period 1982-83 (MAG, 1984) makes it possible to arrive at the following potential use estimates (in hectares):

Table 1-20. Land Use Capacity by Regions: El Salvador
(Thousand hectares)

Agrological Class	Regions				
	I	II	III	IV	Total
I	1.1	-	2.8	9.8	13.7
II	21.8	18.4	33.4	34.5	108.1
III	70.2	46.4	44.8	78.8	240.2
IV	77.0	78.8	63.0	125.1	343.9
V	7.2	4.5	8.5	25.2	45.4
VI	38.9	57.6	26.5	80.0	203.0
VII	169.3	251.8	110.7	315.2	847.0
VIII	55.0	45.7	53.2	91.6	245.5
Total	440.5	503.3	342.9	760.2	2052.2

SOURCE: Dirección General de Recursos Naturales Renovables.

	Activity	Current use	Potential use	Difference
a.	Annual crops	330.2	705.9	375.7
b.	Permanent crops and ranching	272.3	248.0	-488.9
	(natural and improved pastures)	464.6		
		1167.1	953.9	

The data reveal two important aspects. First, the soil appropriate for intensive use in annual crops is being used at the rate of only 47 percent; apparently these areas are occupied by permanent crops and to a large extent by extensive ranching (1.75 B.U. per hectare). Second, there is a possibility that over 200,000 hectares of soils not appropriate from the agrological point of view are being used for agriculture.

Input Utilization

Seed

Through the Center for Agricultural Technology (CENTA) the government has played a significant role in the country's grain seed program. A law controlling the certification of seeds was passed in 1971 (Decree 229), giving to the Ministry of Agriculture (MAG) the task of conducting research into new varieties. The private sector grows around 80 percent of certified seeds, but under the supervision of MAG. The essential facilities for an effective seed program are available in both the public and private sectors.

According to present production patterns the country's need for seed has been estimated by MAG as following (in metric tons):

Corn	5,520
Rice	2,024
Sorghum	1,955
Beans	4,747
Cotton	2,831
Sesame	63
Peanut	18
Tobacco	24
Total	17,182

The amounts of certified corn seeds distributed are given in Table 1-21. The seed improvement programs have been useful in distributing to farmers varieties which are best adapted to local conditions, and which have facilitated the introduction of high-yield corn varieties. However, production of certified seeds has been lower than requirements mainly because availability of credit and technical assistance to the seed growers has not been sufficient. As a result, prices of certified corn seeds are generally 1.5 times higher than market corn prices. Moreover, private seed production other than basic grains is not significant. These must largely be imported at the parallel rate of exchange.

Fertilizer

Increased use of fertilizer i a precondition for agricultural development. In the two decades before 1979, consumption of fertilizer increased very sharply. Amounts have declined during the last five years (Tables 1-21 and 1-22). The great bulk of these inputs sent into production

Table 1-21. Agricultural Input Utilization: El Salvador, 1978-84

Input		Years						
		1978	1979	1980	1981	1982	1983	1984*
Crops								
Fertilizers (thousand MT)								
Simple		254.0	226.0	129.5	141.2	155.2	170.0	175.9
Compound		128.0	127.0	96.9	79.7	87.5	92.8	100.6
Total fertilizers		382.0	353.0	226.4	220.9	242.7	262.8	276.4
Pesticides								
Fungicides								
Powder	(mil kgs)	-	11.2	74.1	98.0	143.0	303.4	-
Liquid	(mil lts)	-	37.3	16.0	18.0	13.0	25.4	-
Weedicides								
Powder		-	57.5	47.7	62.0	84.0	110.7	-
Liquid		-	723.5	1054.0	788.0	894.0	1849.4	
Insecticides								
Powder		-	4161.0	3350.0	3379.0	2823.0	3572.2	-
Liquid		-	3806.0	3309.0	2601.0	3028.0	2863.6	-
Total pesticides								
Powder		-	4229.7	3471.8	3539.0	3350.0	3998.0	-
Liquid		-	4566.8	4379.0	3407.0	3935.0	4738.4	-
Seeds								
Corn	(MT)	293.6	308.8	302.3	295.0	302.3	237.9	-

RESOURCE: Dirección General de Economía Agropecuaria, MAG.
(-) Not available. (*) Projected figures.

Table 1-22. Internal Sales of Fertilizers, 1978-82
(Thousands of metric tons)

Type of fertilizer	1978	1979	1980	1981	1982	1983
Simple fertilizer						
Ammonium sulfate	226.0	210.2	119.1	129.8	148.9	163.0
Urea	22.8	13.5	9.0	9.8	5.6	6.1
Others	5.0	2.2	1.4	1.5	0.7	0.8
Sub-total simple	253.8	225.9	129.5	141.1	155.2	169.9
Compound fertilizer						
20-20-0	78.0	80.9	47.1	31.9	12.9	1.3
16-20-0	6.4	11.5	38.7	38.7	58.3	71.9
15-15-15	12.8	10.2	3.7	3.0	4.5	8.9
15-15-6-4	24.3	23.0	2.3	1.8	3.0	1.6
Others	6.4	1.3	4.5	4.1	8.7	9.4
Sub-total	127.9	126.9	96.3	79.5	87.4	93.1

SOURCE: Diagnóstico Sector Agropecuario, MAG.

117

for export. It is estimated that approximately 50 percent of chemical fertilizers were used for coffee production and 30 percent for cotton, leaving only 20 percent for other crops. The relative importance of export crops declined somewhat over the period 1979-83. It has already been seen that cotton is largely responsible for the decline in the growth rate of agricultural export crops. Its decline is a principal reason for the fall in the use of chemical fertilizers. However, domestic crops increased their share in relative consumption to nearly 40 percent. The increased use of these inputs in basic grains is reflected via increased productivity.

Fertilizer must be imported, and 56 percent of it is distributed through government institutions, of which the BFA is the most important. The private sector imports the remaining 44 percent. A number of production and marketing cooperatives (COPAL and Union of Coffee producer cooperatives) also distribute fertilizer to their members. The BFA's increased distribution seems to be responsible for the sharp increase in fertilizer consumption for domestic crops, as can be seen from the data presented in Table 1-23. The data show that distribution of fertilizer by the BFA has steadily increased since 1976. As indicated by the average use of fertilizer (450 k/hectare), it is estimated that nearly 55 percent of the acreage of basic grains was fertilized in 1983. Thus, the potential scope for increased use of inputs in the sector producing for domestic consumption is still quite large.

The recent reduction of fertilizer use in El Salvador has mainly been due to foreign exchange shortages. Import quotas have been set by the government in an effort to

Table 1-23. National Sales of Fertilizer and BFA Percentage on Sales
(Thousands of metric tons)

Type of fertilizer	1976	1977	1978	1979	1980	1981	1982	1983	1984
National sales level									
Simple	250.4	250.8	254.0	225.6	129.5	132.3	154.3	170.0	175.9
Compound	91.4	121.7	127.9	127.6	96.8	77.1	87.0	92.8	100.6
Sub-total	341.8	372.5	381.9	353.2	226.3	209.4	241.3	262.8	276.5
Fertilizer sales by BFA									
Simple	39.2	36.9	36.9	48.3	78.7	52.8	57.3		65.4
Compound	25.6	31.6	34.1	38.8	65.1	44.8	47.0		54.5
Sub-total	64.8	68.5	71.0	87.1	143.8	97.6	104.3		119.9
Percentages of BFA									
Sales in the National total									
Simple	15.7	14.7	14.5	21.4	60.8	40.0	37.1		37.1
Compound	28.1	25.9	26.6	30.4	67.3	58.2	54.0		54.1
of the total	19.0	18.4	18.6	24.6	63.5	46.7	43.2		43.3

SOURCE: Dirección General de Economía Agropecuaria. MAG.

maintain the balance between production requirements and foreign exchange difficulties.

Irrigation Potential

The potential of water resources and the area suitable for irrigation is still under study. However, extensive investigations have been carried out in El Salvador during the past years. According to a Diagnóstico del Sector Agropecuario (MAG, 1984) of the total amount of precipitation, 17,777 million cubic meters are lost in the form of runoff. The amount of this runoff that is utilized in agriculture is estimated to be 487 million cubic meters (2.6 percent of total available). Groundwater research also has been undertaken. It is estimated that for the entire country groundwater resources amount to approximately 5,972 million cubic meters.

The total area suitable for irrigation is estimated to be about 211 thousand hectares. There are sufficient surface water resources to irrigate even more land. Thus, it is not the water but the amount of irrigable land for which water can be profitably used that is the limiting factor.

The area of agricultural land now under irrigation is estimated to be about 34.7 thousand hectares, and another 12.6 thousand hectares are under construction. There are no data available for the remaining area under private development. However, it is estimated that no more than 20 percent of the area physically suitable is now under irrigation. Potential exists to irrigate about 170 thousand hectares, nearly 18 percent of the cultivated area of the country.

If at least half of this area were successfully developed and planted with high-yield crops, it would obviously make a great impact on the total level of agricultural production in El Salvador. The extent to which water resources will be economically developed depends, of course, upon many factors, including efficiency in using water, the yield levels obtained, product prices, and engineering technology.

Investment in irrigation works accounts for only 4.8 percent of the government's total sectoral investment budget. In addition, the efficiency of distribution and the use of water in the area under irrigation is inadequate. The deficiencies seem to derive in large measure from a general lack of knowledge on the part of farmers regarding modern irrigation methods and practices and also to the lack of coordination in the construction of irrigation programs. Because of these problems, only a small proportion of the expected advantages of the irrigation systems has been obtained.

There is one strategy presently being used for on-farm water development in El Salvador. The plan is being carried out within state project areas, most notably Zaptitan and Aticoyo. These are government-financed and government-executed on-farm projects. While the government-financed strategy has proved effective in bringing development to selected projects, it is necessarily linked to the size of the government budget. Little effort has been applied to implement this strategy, which would mobilize capital for on-farm investment.

Farm Mechanization

In El Salvador, there are four sources of traction power:

- Using only labor;
- Using labor and animals;
- Using labor, animals, and machinery; and
- Using labor and machinery

The second alternative refers to the practice of using draft animals for all traction operations; this is the major one observed for small farmers: the primary sources of motive power are still bullocks. The third alternative, mechanical power, is used for land preparation and sometimes seeding, while draft animals are used for other operations. The fourth alternative is a totally mechanized technique defined so that operations are done with tractors, including land preparation, harvesting, and more intermediate cultivation steps.

According to available estimates, the number of tractors in El Salvador decreased in the last five years as follows:

Year	Number of tractors
1979	1,493
1980	1,439
1981	1,380
1982	1,322
1983	1,260

Currently in El Salvador tractors are mainly used in cotton areas, where relatively large operational land units

exist. An estimate of the number of tractors among the various regions in 1983 is shown in Table 1-24. The data in the table indicate that the eastern part of the country is much less mechanized than the other parts of the country.

Because of the surplus of manpower in the country, mechanization should occur gradually and in selected regions. Mechanization could be an important part of a new strategy that would also include the use of yield-increasing inputs and methods in areas where growing conditions would permit the harvest of two or three crops per year. On the other hand, even doubling the number of tractors would not in itself initiate an agricultural revolution.

Table 1-24. Estimation of Number of Tractors: El Salvador, 1983

(Units)

Region	Number of tractors
I.1	57
I.2	105
I.3	144
II.1	61
II.2	222
III.1	8
III.2	96
III.3	182
IV.1	16
IV.2	176
IV.3	169
IV.4	24
Total	1260

Estimated in base of MOCA/ES SIECA - ECIE figures.

III. FISCAL POLICY

Over the past decade and a half the role of the public sector in El Salvador's social and economic life has increased substantially. The reforms of 1980 were especially important in the areas of agrarian reform, bank nationalization, and government intervention in the marketing of the traditional export crops of coffee and sugar. Naturally, each of these measures significantly increased the impact of government policy instrumentation on the overall economy.

One manner of measuring the impact and/or magnitude of government intervention is to look at the simple ratio between public expenditures and/or revenues and GDP. Total public sector spending as a proportion of GDP amounted to one-fifth in 1970; this same proportion reached the 38 percent level in 1983. Public sector revenues have not kept pace with expenditure growth, and the resulting deficit and its financing have come to represent one of the government's principal problems. In a sense the public sector has moved by default into more extensive areas of the economy, as after 1978 there occurred a process of disinvestment in many sectors of the private economy. Explicit and conscious policy decisions have also acted to enhance the public sector profile.

At the outset a clarification of what is meant by the "public sector" is in order. The tabular presentations employed to support the ensuing discussion are separated into several components. At the heart of the traditional public sector is the central government; it is this level which imposes the nation's principal taxes. General government includes the central government, local governments, and decentralized units ("unidades descentralizadas"); e.g., the Instituto Salvadoreño del Seguro Social. The non-financial public sector includes these first two levels in addition to state enterprises such as the Administración Nacional de Telecomunicaciones (ANTEL) and the Instituto Regulador de Abastecimientos (IRA). Finally, the overall public sector (sector publico consolidado) includes public financial institutions, such as the Banco de Fomento Agropecuario (BFA) and the Financiera Nacional de Tierras Agrícolas (FINATA). The complete structure is schematically set out in Table 1-25.

In terms of the national accounts, public consumption and investment spending comprised some 14 percent of GDP in the 1970-72 period (see Table 1-4) and 20 percent in 1983. Government currently controls approximately 10 percent of the gross value of agricultural production and about 15 percent of agricultural land. Although overall employment figures are rather flimsy, at least 10 percent of total employment is directly generated in the public sector.

Central Government Finances

The structure of central government revenues is found in Table 1-26. Several characteristics and structural changes are to be noted. The tax system is largely dependent on indirect levies and/or foreign trade taxes. At

Table 1-25. Public Sector and Components: El Salvador

- Overall Public Sector
  - Non-Financial Public Sector
    - General Government
      - Central Government
        - Executive, Legislative and Judicial Branches
      - Local Governments
        - Municipalities
      - Decentralized Units
        - Consejo Salvadoreño de Menores
        - Universidad de El Salvador
        - Instituto Nacional de los Deportes (INDES)
        - Federación Salvadoreña de Futbol (FEDEFUTBOL)
        - Instituto Centroamericano de Telecomunicaciones (INCATEL)
        - Hospitales y Centros Asistenciales
        - Consejo Superior de Salud Pública
        - Instituto Salvadoreño de Fomento Cooperativo (INSAFOCOOP)
        - Instituto Salvadoreño de Turismo (ISTU)
        - Centro Nacional de Productividad (CENAP)
        - Comité Ejecutivo de la Feria Internacional
        - Consejo de Vigilancia de la Contaduría Pública y Auditoría
        - Instituto Salvadoreño de Investigaciones del Café
        - Instituto Salvadoreño de Transformación Agraria (ISTA)
        - Proveeduría General de la República
        - Fondo de Garantía para el Crédito Educativo (EDUCREDITO)
        - Instituto Salvadoreño del Seguro Social (ISSS)
        - Escuela Nacional de Agricultura (ENA)
        - Instituto Salvadoreño de Artesanía.
    - State Enterprises
      - Lotería Nacional
      - Circuito de Teatros Nacionales
      - Administración Nacional de Telecomunicaciones (ANTEL)
      - Comisión Ejecutiva Portuaria Autónoma (CEPA)
      - Comisión Ejecutiva Hidroeléctrica del Río Lempa (CEL)
      - Instituto Regulador de Abastecimientos (IRA)
      - Administración Nacional de Acueductos y Alcantarillados (ANDA)
      - Instituto de Vivienda Urbana (IVU)
  - Public Financial Institutions
    - Financiera Nacional de la Vivienda (FNV)
    - Fondo de Garantía de la Pequeña Empresa (FIGAPE)
    - Fondo Social para la Vivienda (FSV)
    - Financiera Nacional de Tierras Agrícolas (FINATA)
    - Financiera Salvadoreña
    - Fondo Salvadoreño de Estudios de Pre-Inversión (FOSEP)
    - Instituto Nacional de Pensiones de Empleados Públicos (INPEP)
    - Instituto Nacional del Café (INCAFE)
    - Instituto Nacional del Azúcar (INAZUCAR)
    - Banco de Fomento Agropecuario (BFA)
    - Banco Nacional de Fomento Industrial (BANAFI)
    - Corporación Salvadoreña de Inversiones (CORSAIN)

121

Table 1-26. Central Government Current Revenues: El Salvador, 1970-83

(Millions of colones)

	1970		1978		1979		1980		1981		1982		1983	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
I. Tax Revenues	264.6	100.0	972.1	100.0	1162.3	100.0	989.3	100.0	990.3	100.0	952.2	100.0	1079.8	100.0
A. Direct Taxes	64.6	24.4	285.6	29.4	277.2	23.8	312.0	31.5	297.3	30.0	294.4	30.9	306.2	28.4
1. Income	39.7	15.0	201.8	20.8	192.8	16.6	235.1	23.8	226.2	22.8	224.6	23.6	234.8	21.7
a. Personal	22.0	8.3	90.4	9.3	97.8	8.4	115.8	11.7	112.2	11.3	107.8	11.3	103.7	9.6
b. Business	11.6	4.4	77.9	8.0	73.2	6.3	92.5	9.4	91.0	9.2	88.0	9.2	99.7	9.2
c. Other	6.1	2.3	33.5	3.4	21.8	1.9	26.8	2.7	23.0	2.3	28.8	3.0	31.4	2.9
2. Property	17.8	6.7	61.7	6.3	61.0	5.2	59.9	6.1	56.0	5.7	52.3	5.5	50.0	4.6
3. Property Transfers	7.1	2.7	22.1	2.3	23.4	2.0	17.0	1.7	15.1	1.5	17.5	1.8	21.4	2.0
B. Indirect Internal	86.5	32.7	284.9	29.3	313.9	27.0	302.4	30.6	370.5	37.4	378.9	39.8	495.1	45.9
1. Excises on Products	64.6	24.4	170.1	17.5	191.6	16.5	185.8	18.8	189.6	19.1	194.0	20.4	205.4	19.0
2. Excises on Services	7.1	2.7	20.9	2.1	20.9	1.8	21.9	2.2	26.9	2.7	24.0	2.5	24.7	2.3
3. Stamp Tax	9.6	3.6	80.3	8.3	87.8	7.6	81.4	8.2	142.0	14.3	149.0	15.6	251.4	23.3
4. Others	5.2	2.0	13.6	1.4	13.6	1.2	13.3	1.3	12.0	1.2	11.9	1.2	13.6	1.3
C. Foreign Trade	113.5	42.9	401.6	41.3	571.2	49.1	374.9	37.9	322.5	32.6	278.9	29.3	278.5	25.8
1. Imports	65.0	24.6	157.3	16.2	178.3	15.3	98.5	10.0	86.9	8.8	79.4	8.3	89.5	8.3
2. Exports	48.5	18.3	244.3	25.1	392.9	33.8	276.4	27.9	235.6	23.8	199.5	21.0	189.0	17.5
a. Coffee	47.5	18.0	243.5	25.0	392.0	33.7	274.1	27.7	232.0	23.4	195.9	20.6	181.3	16.8
II. Non-Tax Revenue	17.2	-	54.8	-	53.1	-	50.5	-	116.7	-	157.6	-	181.9	-
III. Uncollected Taxes	-	-	13.6	-	23.4	-	25.3	-	17.4	-	5.1	-	5.8	-
IV. Total Current Revenue (I + II - III)	281.8		1013.3		1192.0		1014.5		1089.6		1104.7		1255.9	
V. Taxes as % GDP	10.3		12.6		13.5		11.1		11.5		10.6		11.2	

SOURCE: Derived from Banco Central de Reserva data.

present, less than one-third of tax revenues flows from what is traditionally labeled direct sources, and of these "direct" taxes there is a high degree of probability that both the business income and property taxes are shiftable to other economic units (i.e., the consumer). Thus, there appears to be a good a priori argument that the overall tax structure probably comes down hard on the side of regressivity. Of note also is that the personal income tax generates less than one-tenth of total tax monies. Foreign trade taxes, especially the export tax on coffee, have long played a considerable role in the cental government revenue outlook. As coffee export volume and international prices dropped in the last few years, the proportional contribution of coffee-generated taxes has declined from 34 percent in 1979 to 17 percent in 1983. In order to compensate for the low elasticity of foreign trade and most other direct and indirect taxes, the government has recurred more and more to the so-called stamp tax. This impost, which produced a mere four percent of tax revenue in 1970 in contrast to 23 percent in 1983, is actually a multi-stage turnover tax; i.e., far from being a value-added levy, its multiple stage base is on gross value. As a result , its pyramiding effects on final prices are probably large and its burden most likely highly regressive. As presently structured, it is levied at rates of two percent on professional services, four percent on industrial sales,and five percent on commercial sales (these rates went into effect in June of 1983, having been raised from an across-the-board two percent level which had been in effect since 1981). Thus, the central government, given its revenue problem, has chosen out of necessity to recur to a form of taxation which is loaded with both inefficiencies and inequities. A value-

added tax has been under consideration for years, and may be introduced by the present administration.

While taxes and current revenues have remained basically stationary as a proportion of GDP, as is revealed in Table 1-27, current and total expenditures as a percent of GDP have shot upward. The 1978 total expenditure/GDP ratio of 15.0 percent contrasts starkly with the 1983 ratio of 27.9 percent. The 1983 jump was principally produced by two items: internal debt amortization payments and capital transfers (principally to INSAFI and to the agrarian reform). That fixed investment disbursements have not increased since 1980 in terms of current prices means that real public asset creation has actually fallen off considerably in the last few years. This contrasts with the pre-1978 period during which the government's real spending on the economic infrastructure increased steadily.

The central government current-capital expenditure breakdown is complemented by the functional outlay disaggregation presented in Table 1-28. Not surprisingly, the first time-trend change which is observed is the ever-increasing defense expenditure proportion of total spending. Defense expenditures have reduced spending on infrastructure development and human resources (education and health), and, given the revenue-expenditure gap, public debt service outlays have relatively grown. While disbursements on agriculture appear to be holding their own in terms of a stable percentage of total outlays, the period 1980-83 has witnessed a falling real value of such expenditures.

The state of the central government's budget is summarized in Table 1-29. As can be readily noted, both the

Table 1-27. Central Government Expenditures:
El Salvador, 1978-83

(Millions of colones)

		1978	1979	1980	1981	1982	1983
I.	CURRENT EXPENDITURES	782.7	861.7	1077.3	1233.5	1346.6	1454.6
	A. Consumption	564.3	604.9	777.4	837.7	896.5	1015.8
	1. Wages & Salaries	411.2	475.2	617.7	657.5	728.6	789.2
	2. Goods & Services	153.1	129.7	159.7	180.2	167.9	226.6
	B. Interest	22.2	25.8	39.5	98.1	161.0	143.7
	C. Transfers	195.3	207.5	228.6	249.9	236.6	241.4
	D. Outlays from Previous Budgets	23.1	23.5	31.[illegible]	47.8	52.5	53.7
II.	CAPITAL EXPENDITURES	341.9	416.5	457.4	446.8	395.3	687.8
	A. Fixed Investment	236.7	316.9	380.2	381.1	298.3	366.4
	1. Present Budget	137.4	205.0	271.5	255.2	206.8	290.5
	2. Previous Budgets	99.3	111.9	108.7	125.9	91.5	75.9
	B. Financial Investment	-	-	-	0.4	2.6	1.1
	C. Transfers	105.2	99.6	77.2	65.3	94.4	320.3
III.	DEBT AMORTIZATION	35.2	28.7	23.3	56.9	78.6	595.0
	A. Internal Debt	24.7	17.9	14.0	45.7	56.6	569.5
	B. External Debt	10.5	10.8	9.3	11.2	22.0	25.5
IV.	NET LENDING	-6.9	13.0	75.5	122.2	51.0	-39.0
V.	TOTAL EXPENDITURES	1152.9	1319.9	1633.5	1859.4	1871.5	2698.4
VI.	TOTAL AS % GDP	15.0	15.3	18.3	21.5	20.9	27.9
VII.	CURRENT AS % GDP	10.2	10.1	12.1	14.3	15.0	15.0

SOURCE: Derived from Banco Central de Reserva data.

Table 1-28. Central Government Expenditures by Functional Category: El Salvador, 1970 and 1978-83

(Millions of current colones)

	1970		1978		1979		1980		1981		1982		1983	
Functional Category	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
General Administration	40.2	13.6	114.6	10.5	142.7	10.4	176.2	11.7	206.5	11.7	211.3	12.1	212.9	12.4
Defense	14.4	4.9	74.5	6.8	125.6	9.2	154.6	10.3	179.8	10.2	206.7	11.9	258.8	15.1
Agriculture	23.3	7.9	74.0	6.8	91.1	6.7	103.0	6.8	110.1	6.2	110.0	6.3	120.7	7.0
Industry and Commerce	4.0	1.4	37.9	3.5	51.8	3.8	27.3	1.8	10.9	0.6	21.9	1.3	12.5	0.7
Tourism and Services	3.1	1.0	11.1	1.0	10.4	0.8	8.7	0.6	10.2	0.6	7.8	0.4	5.2	0.3
Infrastructure Development	37.0	12.5	172.5	15.8	311.6	22.8	274.8	18.2	340.4	19.3	194.8	11.2	186.0	10.8
Education	74.6	25.3	256.1	23.4	281.7	20.6	348.3	23.1	341.2	19.3	340.1	19.5	309.6	18.1
Health	33.3	11.3	104.3	9.5	125.4	9.2	160.0	10.6	150.7	8.5	141.9	8.1	142.0	8.3
Housing	0.5	0.2	18.3	1.7	7.8	0.6	11.4	0.8	8.7	0.5	4.3	0.2	30.3	1.8
Other social services	34.7	11.7	108.9	9.9	65.6	4.8	67.3	4.5	64.9	3.7	69.0	4.0	68.2	4.0
Natural resources	3.6	1.2	22.9	2.1	30.0	2.2	47.1	3.1	50.3	2.9	51.2	2.9	33.1	1.9
Economic and financial services	18.3	6.2	44.6	4.1	65.4	4.8	58.8	3.9	131.4	7.5	133.1	7.6	66.4	3.9
Public Debt service	8.4	2.8	55.3	5.1	56.7	4.2	69.7	4.6	158.6	9.0	250.8	14.4	269.4	15.7
Current Total	295.4	100.0	1095.0	100.0	1366.0	100.0	1507.2	100.0	1763.7	100.0	1742.8	100.0	1715.2	100.0
Obligations	5.7		239.6		87.3		137.9		54.6		79.3		136.0	
Grand Total	301.1		1334.6		1453.3		1645.1		1818.3		1822.0		1851.2	

SOURCE: Banco Central de Reserva.

Table 1-29. Summary Statement of Central Government Cash Flows: El Salvador, 1978-83

(Millions of colones)

		1978	1979	1980	1981	1982	1983
I.	CURRENT REVENUES	1013.3	1192.0	1014.5	1089.6	1104.7	1255.9
II.	CURRENT EXPENDITURES	782.7	861.7	1082.9	1233.5	1346.6	1454.6
III.	CURRENT SAVINGS (I-II)	230.6	330.3	-68.4	-143.9	-241.9	-198.7
IV.	CAPITAL REVENUES	0.1	-	1.2	6.0	-	603.1
V.	CAPITAL EXPENDITURES (Excluding Amortization)	341.9	416.5	457.4	446.8	395.3	687.8
VI.	NET LENDING	-6.9	13.0	75.5	122.2	51.0	-39.0
VII.	TOTAL DEFICIT (III + IV - V - VI)	-104.3	-99.2	-600.1	-706.9	-688.2	-244.4
VIII.	OVERALL DEFICIT FINANCING	104.3	99.2	600.1	706.9	688.2	244.4
	A. External	69.0	39.3	125.9	191.1	235.7	261.8
	1. Outlays	79.5	50.1	135.2	202.3	257.7	287.3
	2. Amortizations	10.5	10.8	9.3	11.2	22.0	25.5
	B. Domestic	35.3	59.9	474.2	515.8	452.5	-17.4
	1. Central Bank	39.2	124.3	396.7	439.7	417.7	-104.4
	a. Loans	6.4	-8.0	143.3	176.2	0.3	21.3
	b. Bonds	14.3	98.7	298.3	299.1	332.8	-51.7
	c. Deposits	18.5	33.6	-44.9	-35.6	84.6	-74.0
	2. Commercial Banks	-9.6	-5.3	0.6	47.2	42.1	-0.2
	a. Bonds	-6.1	-4.1	-4.9	50.8	42.5	11.5
	b. Deposits	-3.5	-1.2	5.5	-3.6	-0.4	-11.7
	3. Other Domestic Sources	5.7	-59.1	76.9	28.9	-7.3	87.2
	a. Bonds	-11.7	-12.2	65.3	58.0	-7.3	-28.0
	b. Others	17.4	-46.9	11.6	-29.1	-	115.2

SOURCE: Derived from Banco Central de Reserva data.

current (line III) and total deficits (line VII) reached large magnitudes over the 1980-83 span. What is more, the form of presentation (adopted from the Central Bank accounts for the sake of consistency) hides what is actually a far higher 1983 total deficit than the 244.4 million colon figure that appears. While at first glance the conclusion might be reached that the central government made heroic efforts to reduce 1983's overall revenue shortfall, the reality is simply that the improvement was due to an accounting adjustment. All USAID "donations" made to the central fisc's coffers for the years 1981-83 were entered under the Capital Revenues heading (line IV); until 1983 the colon counterpart was carried in the BCR books as a liability (suspense account) and could not be transferred to the government because of USAID conditions linked to the IMF program. In 1983, the amount was transferred due to a "successful" standby performance. The bulk of the monies transferred was used to amortize debt and make delinquent interest payments to the BCR. Adjusting the 1983 figures in Table 1-29 by excluding this accounting transaction (accounting because the dollars had already been received), the fiscal performance for 1983 would be as follows:

		Millions of colones
I.	Current revenues	1,255.9
II.	Current expenditures	1,321.0
III.	Current savings (I-II)	-65.1
IV.	Capital revenues	-
V.	Capital expenditures	652.8
VI.	Net lending	-46.0
VII.	Total deficit	-671.9
VIII.	Deficit financing	671.9
	B. Domestic financing	410.1
	1. Central bank	323.1
	b. Bonds	375.8

Thus, the "real" 1983 budget deficit amounted to ₡671.9 million, or 6.9 percent of GDP. The central government's 1980-83 fiscal policy can only be categorized as highly expansionary, although, given the slack in private sector spending, this deficit financing did not produce runaway inflationary pressures; this was also in part due to the fact that much of the USAID-financed expenditures were used to fund imports, thereby channeling such outlays away from internal markets. Through 1982 the principal burden of financing the deficit fell on the central bank, although since 1981 -- and especially in late 1982 and all of 1983 -- external financing played an increasingly important role. Certainly, this internal financing via debt issues did impact on the domestic inflation rate and on the availability of bank credits for funding private sector activities, but not to a great extent. As will be seen subsequently, monetary policy has been both accommodative and prudent. Both fiscal and monetary policies have been combined with exchange and import controls in an implicit attempt to relatively "close" the Salvadoran economy. Despite such actions, severe balance of payments difficulties have risen.

The central government's internal debt grew from 1.6 percent of GDP in 1978 to almost 20 percent by 1983; servicing rose from 0.4 percent to 2.0 percent in the same period. Deficit prospects for the current 1984 fiscal year (which coincides with the natural year) appear to be very similar to those of the four previous years, as a deficit of around ₡700 million is being projected. As of mid-1984, internal and external financing sources amount to ₡450 million, with the remainder of the projected deficit uncovered. In other words, the fiscal crunch is as bad (or worse) than ever, and

gives rise to genuine preoccupation over the central government's fiscal condition. Moreover, despite claims to the contrary, the recently approved (July 1984) public salary hikes will add to the expenditure-income gap. Tax revenues from the stamp tax are expected to shoot up merely because the mid-1983 tax rate hikes will be in effect for the entire year; import tax collections are projected to double since many restrictions on imports have been lifted (the principal reason was apparently to generate more tax revenues, but such a measure clearly has balance of payments effects). Nevertheless, as already pointed out, both these tax sources are probably regressive vis-à-vis the family income distribution (the stamp tax much more so). Perhaps greater revenue inroads could be made via the improvement of tax administration, but such measures, of course, require the political will to effectively carry them out. There are extant a number of reports done by international experts regarding tax reform, but action upon these recommendations obviously necessitates executive and legislative approval. Furthermore, international experience with tax reform proposals and missions has taught the lesson that tax reform occurs in marginal bites rather than in large chunks. The implication: El Salvador's budgetary situation will not be rapidly improved via the tax reform route.

The Finances of the Rest of the Public Sector

Tables 1-30, 1-31, and 1-32 summarize the financial operations of the remainder of the public sector. It will be noted that both the decentralized units and the state enterprises buoy their own revenues with current and capital transfers from the central government, thereby accounting for a large part of the latter's deficit. The operations of

Operations of the Rest of General Government: El Salvador, 1978-83
(Millions of colones)

	1978	1979	1980	1981	1982	1983
-CURRENT REVENUE	305.6	354.4	337.3	352.4	380.8	370.0
Contributions to ISSS received	97.4	128.9	106.6	107.4	130.7	140.6
Sales of goods and services and property income	77.2	81.4	80.8	87.7	120.9	94.7
Transfers from	130.5	143.9	148.7	156.3	129.1	134.7
Central Government	(129.1)	(142.7)	(143.1)	(155.9)	(129.1)	(134.7)
State enterprises	(0.3)	(0.5)	(---)	(---)	(---)	(---)
Private sector	(0.6)	(0.2)	(0.2)	(---)	(---)	(---)
Abroad	(0.5)	(0.5)	(0.4)	(0.4)	(---)	(---)
Other current revenue	0.5	0.2	1.2	1.0	0.1	---
-CURRENT EXPENDITURE	256.7	292.0	325.0	343.9	365.1	363.3
Wages and salaries						
Goods and services	231.6	263.3	288.9	301.8	285.7	280.4
Interest	---	---	---	---	29.0	20.0
Transfers to private sector	25.1	28.7	36.1	42.1	50.4	62.9
-CURRENT ACCOUNT SURPLUS OR DEFICIT (-)	48.9	62.4	12.3	8.5	15.7	6.7
-CAPITAL RECEIPTS	31.5	44.5	35.7	32.4	15.7	15.1
Transfers from Central Government	30.5	43.5	35.6	31.6	14.7	14.6
Other capital receipts	1.0	1.0	0.1	0.8	1.0	
-CAPITAL EXPENDITURE	42.9	60.1	61.3	248.0	110.0	116.6
Fixed capital formation	22.7	33.4	40.5	34.6	12.1	16.6
Other	2.5	1.2	1.3	1.7	1.8	--
Agrarian reform	17.7	25.5	19.5	211.7	96.1	100.0
-OVERALL SURPLUS OR DEFICIT (-)	37.5	46.8	-13.3	-207.1	-78.6	-94.8
Foreign financing	-1.0	-1.2	-2.3	---	-0.5	-1.0
Drawings	(---)	(---)	(---)	(---)	(---)	(---)
Amortization	(1.0)	(1.2)	(2.3)	(---)	(0.5)	(1.0)
Domestic financing	-36.5	-45.6	15.6	207.1	78.6	95.8
Central Bank	(21.9)	(24.2)	(7.6)	(0.2)	(56.0)	(18.7)
Commercial banks	(-5.4)	(-49.5)	(-1.8)	(33.9)	(-55.5)	(23.0)
Central Government (net lending)	(-0.4)	(2.0)	(0.5)	(17.4)	(---)	(-0.6)
Residual	(-52.6)	(-22.3)	(9.3)	(155.6)	(78.1)	(34.7)

SOURCE: Derived from Banco Central de Reserva data.

Table 1-31. Operations of the Nonfinancial Public Enterprises: El Salvador, 1978-83

(Millions of colones)

	1978	1979	1980	1981	1982	1983
-CURRENT REVENUE	413.5	460.1	531.7	589.6	710.7	986.1
-CURRENT EXPENDITURE	293.3	360.3	459.3	477.0	529.5	803.3
-CURRENT SURPLUS	120.2	99.8	72.4	112.6	181.2	182.8
Transfers						
From Central Government	59.4	53.7	55.7	40.8	39.3	34.2
Current	(23.4)	(42.6)	(39.3)	(32.6)	(30.3)	(15.6)
Capital	(36.0)	(11.1)	(16.4)	(8.2)	(9.0)	(18.6)
From private sector	3.2	2.2	---	---	---	---
Transfers						
To Central Government	19.3	14.2	11.0	10.9	11.3	12.3
-CURRENT ACCOUNT SURPLUS OR DEFICIT (-)	127.5	130.4	100.7	134.3	200.2	186.1
Capital revenue	7.2	0.5	7.6	7.1	7.4	7.3
Capital expenditure						
Fixed capital formation	256.8	278.3	245.9	253.7	315.6	242.3
-OVERALL SURPLUS OR DEFICIT (-)	-86.1	-136.3	-121.2	-104.1	-99.0	-30.3
External financing	99.7	88.0	79.3	117.5	140.4	110.2
Drawings	(103.5)	(111.8)	(87.3)	(147.0)	(140.3)	(142.0)
Amortization	(13.8)	(15.1)	(14.1)	(20.5)	(23.8)	(31.8)
Bonds	(10.0)	(-8.7)	(-2.9)	(---)	(-2.1)	(---)
Suppliers	(---)	(---)	(9.0)	(-9.0)	(26.0)	(---)
Domestic financing	-13.6	48.3	41.9	-13.4	-41.4	-79.9
Central Reserve Bank (net)	(-35.7)	(26.6)	(27.7)	(-13.1)	(-10.6)	(20.2)
Commercial banks (net)	(8.0)	(21.6)	(-45.5)	(-15.8)	(-19.5)	(-21.7)
Central government (net lending)	(0.1)	(-0.5)	(-0.2)	(-0.1)	(-0.6)	(-1.6)
Residual	(14.0)	(0.6)	(59.9)	(15.6)	(-10.7)	(-76.8)

SOURCE: Derived from Banco Central de Reserva data.

Table 1-32. Surplus (+) or Deficit (-) Status of State Enterprises: El Salvador, 1979-83

(Millions of colones)

Enterprise	1979	1980	1981	1982	1983
IRA	-20.6	+0.5	+14.0	0.9	25.1
ISTA	-16.3	-1.0	-204.6	-114.8	-97.7
ANDA	-37.4	-29.2	-4.2	-22.0	2.0
CEPA	-37.4	-9.4	+5.0	8.8	12.1
CEL	-60.8	-87.7	-118.7	-66.1	30.4
Fondo Social para Vivienda	-9.8	+13.0	+9.1	-24.1	-68.4
ISSS	+58.2	+22.4	+1.8	35.2	42.4
ANTEL	+21.7	+18.3	+26.8	0.9	4.3
INPEP	+11.6	+5.2	+49.9	-1.1	-22.4
National Lottery	-0.1	+0.1	-5.3	1.7	0.2
Others	-164.0	+79.4	-72.8	90.8	-126.9
Total	-254.9	11.6	-299.0	-89.8	-198.9

SOURCE: Derived from Banco Central de Reserva data.

both the rest of the general government and the nonfinancial state enterprises have been in deficit since 1980. The single most outstanding example regarding the aggregate state enterprise deficit has been the Agrarian Reform Institute (ISTA), a not unexpected development given the nature of the land reform process and the difficulties involved in its implementation.

Overall Public Sector Finances

The consolidated operations of the entire public sector are displayed in Table 1-33. As in the case of the central government, the picture is far from rosy, for the overall deficit has grown to extremely high amounts in both an absolute and proportional sense. Since the overall public sector deficit is composed of that of the central government plus that of the rest of the sector, the same caveat that applied to the central government deficit is once again meaningful; i.e., due to the 1983 accounting adjustment pertinent to USAID grants, the true 1983 overall deficit is ₡427.5 million higher than the 367.3 million colones that appears in Table 1-33. Thus, the overall deficit in 1983 actually amounted to 8.2 percent of GDP. At the same time, the current balance moved to a negative position from one which had been highly positive. Although the external debt and debt service burden are not at this time unbearable, a continued heavy dependence upon external sources of financing will certainly have future repercussions, especially since outside sources cannot be considered as recurrent income. Of course, external financing does have advantages, for in grant form it does not create the need for future debt servicing. Finally, this negative public sector contribution to national saving (the sector had generated

Table 1-33. Consolidated Operations of the Overall Public Sector: El Salvador, 1978-83

(Millions of colones)

	1978	1979	1980	1981	1982	1983
-CURRENT SURPLUS OR DEFICIT (-)	406.8	523.1	50.2	-1.1	-26.2	-9.2
-OVERALL SURPLUS OR DEFICIT (-)	-153.1	-188.8	-657.4	-1002.7	-815.9	-367.3
External financing (net)	167.7	142.7	203.5	374.1	375.7	371.0
Domestic financing (net)	-14.6	46.1	453.9	628.6	440.2	-3.7
-AS % OF GDP:						
Current surplus or deficit	5.3	6.1	0.6	---	-0.3	-0.1
Overall surplus or deficit	-2.0	-2.2	-7.3	-11.4	-8.9	-3.8
Net domestic borrowing	-0.2	0.5	5.1	7.1	4.3	--

SOURCE: Derived from Banco Central de Reserva data.

141

around one-third of domestic saving in 1978) clearly will have future implications with respect to the maintenance of the nation's infrastructure (see Table 1-5).

Obviously, the classical (or IMF-type) solution to this fiscal quandary is to move in the direction of greater budget balance. This means reducing expenditures and increasing revenues, especially tax revenues. The real question is whether or not such "austerity" measures are politically, economically, and socially necessary and feasible in the middle of a civil war and at the end (hopefully) of a severe recession the likes of which the country has not gone through since the 1930s. It would appear as if a Keynesian-type deficit solution would be the only way to proceed given the reluctance of the private sector to substantially reactivate its investment. Anyway, even under more pacific conditions, there must occur public infrastructure investment as prerequisite and/or complement to private fixed capital outlays. It could be argued that there is room for increasing the tax burden, for, as already pointed out, taxes as a proportion of GDP have remained essentially stagnant over the past several years. While there may be some validity to this argument, the manner in which the government has chosen to go about increasing tax revenues via the imposition of consumption taxation (on imports and transactions) appears to be highly regressive in nature. Undoubtedly, tax reform is called for, but whether such tax reform will have any significant short to medium term effect on public revenues is doubtful.

IV. MONETARY POLICY

Both in pre- and post-1978 periods the government of El Salvador via the Central Reserve Bank (Banco Central de Reserva--BCR) has carried out a monetary policy that can only be characterized a prudent. In its annual Plan Monetario the BCR sets its credit goals after taking into account the estimated availability of internal and external resources. The nationalization of the banking system in 1980 had little or no effect on this basic policy set. In fact, the retention of most bank management teams and the semi-autonomous leeway given to these formerly private businesses apparently assured an almost waveless transition period. What nationalization has done is to widen the sectoral allocation of credits in the sense of breaking up credit concentration in a few hands. Apparently, then, the efficiency-equity tradeoff was not a significant factor after nationalization.

In the context of El Salvador's very open economy, the money supply is partially dependent upon external trade and capital flows. In the past (and, of course, in the present to a large extent) monetary imbalances were quasi-automatically adjusted via trade and payments flows as increased imports and service outlays would soak up any excess monetary financing generated by export activities.

As a corollary, public fiscal activities were partially a function of these external flows.

Monetary goals appear to have usually been set with a constant eye toward the balance of payments and the avoidance of producing "excessive" increases in the money supply in order to keep inflationary pressures in line. With the magnitude of the fiscal deficits of the post-1980 period this has translated into closely clamping down on money supply and non-public credit growth. This policy also meant several past years of positive real interest rates (1982-83), although these rates in mid-1984 appear to be close to zero or even negative. Moreover, there are signs that the rate of inflation is slightly picking up.

Interest Rates

The general level of interest rates has been modified three times since 1978. Pre-1978 real rates had been generally negative, and in September of 1978 nominal rates were raised in search of positive real rates. However, the acceleration of general price rises to the 16-17 percent range in 1979 and 1980 compensated for the nominal rate hike. Consequently, nominal rates were once again raised to the 13-20 percent range in February 1982 (in general, agricultural loans were made at 13 percent) with the twin objectives of reducing inflationary pressures and stimulating domestic saving, thereby augmenting the amount of loanable funds. Additionally, this structure of rates was accompanied by the creation of new savings instruments which enabled the savings and loan associations to capture a greater amount of funds. According to BCR officials the banking system's deposits did increase in real terms in

response to this rate jump, and there was no reduction in the demand for credits.

Despite the drastic drop in international interest rates after mid-1982, the February 1982 rates were maintained until May 1984 (in April 1983 housing construction rates were decreased). With a 13 percent consumer price inflation rate for all of the 1983, many real rates were quite close to zero. The recently instituted structure of rates (May 1984) represented a general reduction of one point, the stated purpose being to stimulate the construction industry by reducing the cost of housing. Agricultural credits remained at 13 percent, which, with inflation (as measured by the consumer price index--CPI) running presently at a 14-15 percent annual rate, should not prove very onerous (assuming, of course, no significant drops in agricultural producer prices).

Overall interest rate policy is established by the Monetary Board (Junta Monetaria), which is comprised of the President of the BCR, the Ministers of Planning, Economics, Finance, Agriculture, and External Trade, and a number of undersecretaries from the same ministries. As is obvious from the foregoing discussion, interest rates are not market-determined and, consequently, have little flexibility. In addition to the elements already mentioned, the Junta Monetaria appears to use as its basic and underlying criterion for interest rate setting the inflation rate; i.e., whether or not the general level of real rates is negative or positive appears to be the principal long-term factor involved in fixing the rate levels. International rate levels are of secondary consideration.

The Money Supply

For the most part of the 1960s and 1970s both M1 (current in circulation and demand deposits) and M2 (M1 plus time and savings deposits) changed at approximately the same rates. However, beginning in 1979 the rate of expansion of these two monetary aggregates began to substantially diverge. For example, in 1979, no doubt due to political uncertainties, M1 grew at a far faster rate than did M2. On the other hand, the 1981-83 interval witnessed far higher growth rates of M2 over M1; in 1981 and 1983 M1 actually fell, whereas the near-monies leaped upward by over 20 percent in each of those years (see Table 1-34). Nevertheless, with an inflation rate of 13.1 percent for all of 1983 in comparison to 1982, the real value of the means of payment actually fell. The historical statistical correlation between El Salvador's money supply and GDP is very high (positive) and statistically significant. By far the largest part of money supply fluctuations have been determined by changes in the monetary base, defined as the sum of net international assets, net government debt, loans to commercial banks, and other net assets. From 1962 to 1982 only around one-tenth of money supply variations can be ascribed to changes in the value of the monetary base multiplier.

The pre-1978 period was characterized by conservative central money management. Excessive increases in the monetary base caused by external factors (e.g., export value rises due to higher international prices) were followed by measures to sterilize excess liquidity (e.g., hiking the discount rate, open market bonds sales). Over the period 1962-82 the public sector actually acted as a contractionary

Table 1-34. Summary Accounts of Consolidated Banking System: El Salvador, 1970-83

(Millions of colones: year-end balances)

	Item	1970	1975	1978	1979	1980	1981	1982	1983
I.	Means of Payment (M2)	595.5	1352.8	2241.3	2445.7	2550.2	2800.8	3103.1	3451.8
	A. Currency and Demand Deposits (M1)	295.3	648.1	1086.9	1320.9	1415.5	1403.8	1470.0	1447.5
	1. Currency in Circulation	136.1	252.8	500.5	742.9	718.7	703.1	732.0	724.7
	2. Demand Deposits	159.2	395.3	586.4	578.0	696.8	700.7	738.0	722.8
	B. Near-Monies	300.2	704.7	1154.4	1124.8	1134.7	1397.0	1633.1	2004.3
	1. Savings Deposits	141.3	318.9	575.7	593.3	642.9	787.3	893.2	904.3
	2. Time Deposits	157.7	384.6	575.5	529.9	490.8	604.8	722.0	1089.3
	3. Foreign Currency Deposits	1.2	1.2	3.2	1.6	1.0	4.9	17.9	10.7
II.	Expansionery Factors	790.9	1598.6	2823.8	3080.9	2964.5	3333.4	3850.1	3955.9
	A. External Sector	67.2	-19.8	158.2	-165.8	-899.5	-1294.6	-1436.5	-1268.5
	1. Net International Reserves	137.8	271.2	552.2	315.7	-174.8	-372.7	-197.4	303.6
	2. Long-Term Lending	-70.6	-291.0	-394.0	-481.5	-724.7	-921.9	-1239.1	-1572.1
	B. Net Domestic Credit	723.7	1618.4	2665.6	3246.7	3864.0	4628.0	5286.6	5224.4
	1. Private Sector	602.5	1322.5	2220.5	2487.8	2300.8	2436.1	2750.5	3017.5
	2. Net Public Sector	121.2	295.9	445.1	758.9	1563.2	2191.9	2536.1	2206.9
	a. Central Government	51.6	69.2	47.3	134.0	418.4	1209.3	1669.8	1372.5
	b. Official Entities	69.6	226.7	397.8	624.9	1144.8	982.6	866.3	834.4
III.	Contractionary Factors	195.4	245.8	582.5	635.2	414.3	532.6	746.9	504.1
	A. Liabilities to Private Sector	99.3	103.9	230.2	243.1	190.2	205.1	246.0	263.4
	B. Capital and Reserves	96.1	89.7	149.3	164.2	180.8	181.1	211.0	211.1
	C. Other Liabilities	-	52.2	203.0	227.9	43.3	146.4	289.9	29.6
IV.	As % GDP								
	A. Means o. Payment	23.2	30.2	29.1	28.4	28.6	32.4	34.6	35.7
	B. M1	11.5	14.5	14.1	15.3	15.9	16.2	16.4	15.0
	C. Net Domestic Credit	28.1	36.1	34.7	37.7	43.3	53.5	59.0	54.0
	D. Private Sector Credit	23.4	29.5	28.9	28.9	25.8	28.2	30.7	31.2

SOURCE: Derived from Banco Central de Reserva data.

element on six occasions, a type of behavior certainly lost since 1978. Prior to 1978, almost each time the external sector expanded the monetary base, the government acted to contract it. This is associated with the tax revenue-export tax link; increased public liquidity generated by exports reduced the government's need to recur to Central Bank credit.

The Central Reserve Bank does not take the money supply (M2) as a target variable. Based on studies of public willingness to hold liquid financial assets (the money demand function) and taking into account psychological, political, and other factors, it does generate estimates of M2. These are the internal resources (financial savings) which are made available to the banking system in order to finance domestic credit expansion. With respect to external resources, based upon balance of payments projections adjusted for the impact of policy actions, the Bank sets its net foreign asset target. Thus, the availability of internal and external resources determines the amount of net domestic credit and its subsequent allocation between the public and private sectors. In sum, while the Central Bank may create as much liquidity as it wishes, the money stock can rise only to the extent of the public's willingness to hold. Excess money creation would be dissipated via some combination of increased domestic spending (inflation) or increased external spending (balance of payments deficit).

Monetary policy was highly expansionary between 1978 and 1981, as the annual increases in net domestic credit reached around 20 percent; expansion slowed down considerably in 1982 and came to a halt in 1983. However, the public-private mix moved in opposite directions in

several of these years. There actually occurred a contraction of credits to the private sector in 1980 because bank liquidity was severely impaired as a result of a large outflow of bank short-term capital (scheduled repayments were made to foreign banks while these same banks cut new and refinancing credits). On the other hand, net public sector credit expansion literally took off in order to finance growing central government budget deficits and the large financial transfers needed to cover the nationalization of sugar and coffee exports and the expenditures of the agrarian reform. Capital flight and other balance of payments effects damped excessive internal money creation. The 1980 balance of payments deficit was nearly double that of 1979, and the 1979-80 increase in monetary holdings (M2) was well below what it had previously been (and what it subsequently was). Even though the tightening of monetary policy in 1982 and 1983 succeeded in sharply reducing the balance of payments deficit, there occurred a recovery in M2 and a greater flow of credit to the private sector, as the reduction in the public deficit made this possible.

In sum, both pre- and post-1978 Central Bank monetary policy may be characterized as prudent and quite conservative. Pre-1978 conditions are indicative of the conservative fiscal policy followed by the public sector, as current income usually came very close to covering total expenditures. While post-1978 fiscal and monetary policy were certainly highly expansionary (at least until 1982-83), even during this period the Central Bank did not permit things to get out of hand. The relatively low rates of inflation experienced during this time attest to this, as do the efforts taken after mid-1982 to raise tax revenues. It

might be mentioned that, despite its conservatively tinged policies, in 1983 the Central Bank did initiate a rather innovative experiment by establishing a 60 million colon fund to refinance loans extended to the coffee and cotton sectors; this was done at subsidized interest rates in order to reduce the illiquidity burden.

The Price Level

Given the conservative and stringently accomodative monetary policy followed over the years by the Salvadoran monetary authorities, monetary expansion over and above the very basic needs of the economy cannot be cited as a cause of inflation. Of course, there has been accomodation regarding the financing of the public sector deficit, but the expanded monetary base caused by these deficits must then be ascribed to fiscal policy and all the attendant fiscal difficulties described in Chapter III.

As demonstrated in Tables 1-35 and 1-36, inflationary pressures and trends in El Salvador since 1971 trace a pattern more similar to that of a developed country than that of most Latin American nations. Double-digit consumer price inflation in the mid-1970s was closely linked to OPEC price jumps, as was that in 1979 and 1980. Post-1980 inflation in the context of a severe recession is more of the cost-push and/or bottleneck variety despite the large fiscal deficits.

The consumer price index (CPI) for urban El Salvador (no index covers rural and/or agricultural families) gives a weight of 50 percent to food items, thereby closely linking production and supply activities in the agricultural sector

Table 1-35. Consumer Price Index: Urban Areas, El Salvador, 1971-84

(December 1978 = 100)

Year	Overall CPI	Annual % Change	Food in CPI	Annual % Change
1971	46.0	0.4	48.1	0.5
1972	46.7	1.6	48.5	0.8
1973	49.8	6.5	52.2	7.5
1974	58.1	16.8	61.2	17.3
1975	69.2	19.1	73.8	20.5
1976	74.1	7.0	78.9	7.0
1977	82.8	11.8	85.7	8.6
1978	93.8	13.3	94.9	10.7
1979	108.7	15.9	108.9	14.7
1980	127.6	17.4	130.3	19.7
1981	146.4	14.8	153.3	17.7
1982	163.6	11.7	169.6	10.7
1983	185.1	13.1	192.3	13.4
Month, 1984		% Change over Same month year ago		% Change over Same month year ago
January	199.3	14.7	210.3	18.1
February	199.7	14.5	211.1	17.8
March	202.7	14.6	215.2	18.9
April	204.8	15.8	218.8	20.8
May	205.4	14.6	219.7	19.2

NOTE: Weights in overall CPI

Food	50.12
Clothing	8.25
Housing	23.51
Other	18.12

SOURCE: Dirección General de Estadística y Censos.

Table 1-36. Wholesale Price Index: El Salvador, 1971-84
(1955 = 100)

Year	Overall Index [a]	Annual % Change	Overall Excluding Coffee	Annual % Change	Food [b]	Annual % Change	Producer Goods [c]	Annual % Change
1971	90.3		98.1		83.3		99.2	
1972	95.5	5.8	102.0	4.0	90.1	8.2	105.5	6.4
1973	115.7	21.2	121.4	19.0	116.0	28.7	116.6	10.5
1974	145.0	25.3	158.5	30.6	135.3	16.6	156.1	33.9
1975	147.6	1.8	169.8	7.1	131.1	3.1	167.1	7.0
1976	198.8	34.7	188.9	11.2	202.1	54.2	217.0	29.9
1977	292.9	47.3	211.0	11.7	359.8	78.0	231.8	6.8
1978	234.7	-19.9	221.1	4.8	251.7	-30.0	231.1	-0.3
1979	265.9	13.3	253.2	14.4	278.0	10.4	248.2	7.3
1980	273.0	2.7	300.8	18.8	248.5	-10.6	280.2	12.9
1981	288.7	5.8	345.4	14.8	229.2	-7.8	315.0	12.4
1982	311.9	8.0	366.2	6.0	253.8	10.7	334.7	6.3
1983	332.6	6.6	403.3	10.1	273.4	7.7	352.5	5.3
Month, 1984		% Change [d]		% Change [d]		% Change [d]		% Change [d]
January	352.0	10.8	430.7	14.3	287.2	11.7	371.4	8.5
February	356.3	13.9	426.3	13.0	299.2	20.5	368.9	7.8
March	358.9	12.5	428.5	11.1	301.3	15.1	369.8	8.0
April	359.8	11.2	429.5	10.1	304.2	12.8	369.6	5.0

NOTES: a Coffee has a weight of 28.93% in overall index.
b This index is 52% coffee.
c Comprised of industrial and agricultural inputs.
d Percentage change over same month year ago.

SOURCE: Derived from Banco Central de Reserva data.

to the overall index value. Since late 1983 food prices have increased at a faster rate than other prices, and the more than 20 percent annual rate at which food prices are presently going up must give rise to governmental concern. A quite extensive set of price controls on food items of popular consumption does exist, but the policing of these controls is deficient at best. Exactly what effect official ceiling prices have had on the overall inflation rate is unknown, but the answer is probably not very much. Also to be noted from Table 1-35 is that the rate of CPI climb appears to be increasing in 1984, a phenomenon which will most likely bring on social unrest if wages are not adjusted upward. Of course, subsequent wage adjustment may simply generate a classic price-wage spiral.

The CPI appears to be the only decent existing measure of month to month price changes in El Salvador's economy (the implicit national accounts price deflators are annual). The wholesale price index is useless. In the first place, it is based on a 1955 market basket; the consumer market basket for the CPI comes off a 1976-77 household budget sample. In the second place, the relatively high weight of coffee in the overall index and in some of the index components make it all too susceptible to coffee price fluctuations. For example, whereas in 1978 the wholesale price index registered a drop of 20 percent, the CPI rose by 13 percent. Consequently, most series in this report (excepting the national accounts data) have been deflated by the CPI -- not because it is the best index for deflating the myriad series, but because it is the only one.

Credit Allocation

As previously stated, a principal goal of bank nationalization was to lower the concentration of credit so as to give wider access to a larger number of firms and/or persons. Moreover, the agrarian reform and the nationalization of coffee and sugar exports necessitated large credit flows specifically channeled toward these sectors. In 1980 and 1981 the (expanded) public sector absorbed around half of total domestic credit, proportions which represented significant modifications over the early 1970s when the private sector received around four-fifths of aggregate credit allocations. The year 1983 witnessed a turnaround of this policy, as credit to the private sector rose by almost 10 percent (in current prices) whereas overall public sector credits fell by some 13 percent. This shift in credit allocation was the result of an intentional policy on the part of the BCR to attempt to reactivate private sector productive capacity, while, at the same time, the cuts in public sector credits represented an attempt to reduce inflationary pressures and enhance institutional efficiency.

The data presented in Table 1-37 tell the story of intersectoral credit allocation over the period 1979-83. In terms of current prices the total volume of credit appears to have risen between 1979-80 and 1983 (refer to Part C). However, deflation of this total by the CPI reveals that the aggregate value of new and refinancing credits in the 1980-83 period never did again reach 1979 levels, bottoming out in 1981 and apparently moving upward in 1982 and 1983. However, the ostensible rise in banking system authorized new credit allocation in 1983 (see Part A) was due to a

Table 1-37. Sectoral Credit Allocation:
El Salvador, 1979-83

(Millions of colones)

A. BANKING SYSTEM: AUTHORIZED NEW CREDIT ALLOCATION

Sector	1979 Value	1979 %	1980 Value	1980 %	1981 Value	1981 %	1982 Value	1982 %	1983 Value	1983 %
Agriculture	563.5	26.9	505.4	31.7	554.7	38.6	763.0	44.3	729.4	31.5
Manufacturing	296.6	14.2	197.2	12.4	191.6	13.3	240.6	14.0	250.9	10.8
Construction	143.2	6.8	76.9	4.8	57.6	4.0	114.6	6.7	89.0	3.8
Trade	1000.9	47.8	787.1	49.4	594.2	41.4	557.2	32.4	1186.5	51.2
Services	81.4	3.9	22.3	1.4	30.4	2.1	35.1	2.0	45.8	2.0
Other	8.1	0.4	5.2	0.3	7.3	0.5	11.3	0.7	14.2	0.6
Total, New Credits	2093.7	100.0	1594.0	100.0	1435.8	100.0	1721.8	100.0	2315.9	100.0
Total, Deflated by CPI (1979 = 100)	2093.7		1357.8		1065.9		1144.1		1360.7	
Credit Refinancing	234.8		374.5		493.1		548.8		686.7	
Grand Total, New and Refinanced	2328.5		1968.5		1928.9		2270.6		3002.6	
Grand Total Deflated (1979 = 100)	2328.5		1676.7		1432.0		1508.7		1764.2	
New Credits as % of Grand total	89.9		81.0		74.4		75.8		77.1	

B. BANCO DE FOMENTO AGROPECUARIO (BFA): AGRICULTURE CREDIT AUTHORIZATION

	1979	1980	1981	1982	1983
New Credits	174.3	272.2	212.3	179.6	210.4
Refinancing	---	10.1	11.4	25.7	54.1
Total	174.3	282.3	223.7	205.3	264.5
Total Deflated	174.3	240.5	166.1	136.4	155.4

C. TOTAL CREDITS: BANKING SYSTEM AND BFA

	1979	1980	1981	1982	1983
Total	2502.8	2250.8	2151.6	2475.9	3267.1
Total Deflated	2502.8	1917.2	1598.1	1645.1	1919.6
Total as % of GDP (Current prices)	29.1	25.2	24.9	27.6	33.7

SOURCE: Derived from Banco Central de Reserva and BFA data.

doubling of credit channeled into the trade sector, and this "doubling" was actually created by an accounting "sleight of hand;" until 1983 this BCR data series had not recorded interbank loans; by doing so in 1983 for the first time it greatly influenced the credit figures, but the real effect was nil. Thus, not only did total real credit allocation not reach 1979 levels, but it was essentially flat for the 1981-83 interval. Moreover, the amount of new credits declined even more as debtors, unable to repay their loans on time due chiefly to poor economic conditions, sought larger and larger amounts of refinancing. In 1982-83 fully a quarter of the banking system's credits was tied up in refinancing and, by definition, not being used to expand the productive capacity so much required by the depressed economy.

With reference to the intersectoral allocation of credits, the agricultural sector appears not to have fared too badly. Although the percentage of the total received by the sector did fluctuate quite widely, within the banking system (Part A) some 30-40 percent consistently flowed toward agricultural activities. By adding to the Part A agricultural total the Part B credits offered under Banco de Fomento Agropecuario (BFA) programs, the sector did fairly well maintain constant real levels through 1982. However, agriculture more than any other sector absorbed an increasing amount of credits for refinancing purposes. The vast majority of new and refinancing credits to the sector covered the traditional export crops of coffee, cotton, and sugar.

Thus, credit policy is seen as basically an extension of a rather conservative monetary policy. It is also a

policy that is presently (and in the future) straight-jacketed by the large and growing overhang of unpaid debts. These debts are especially significant in the agricultural sector, as domestic recession, low world prices, and an overvalued official colon have united to depress farm incomes. The debt overhang is also a noteworthy factor in the reformed sector, where the cooperatives, in addition to having faced the same depressed mix of elements as the non-reformed sector, are confronting the added burden of financial difficulties created by inefficient and/or neophyte administrations.

The Foreign Exchange System

For an economy traditionally dependent upon the external sector and so subject to the vicissitudes induced by international price fluctuations, the question of setting the "equilibrim" rate at which the colon exchanges against the dollar (or other hard currency) is clearly vital. For decades the colon-dollar official exchange rate has been maintained at 2.5 to one. However, as the post-1978 balance of payments deteriorated strict exchange controls were instituted and, not surprisingly, a black market for the dollar developed. In order to inject more realism into the exchange market and to benefit to a greater extent from dollar inflows, in August of 1982 the monetary authorities (the Junta Monetaria) legally institutionalized the existence of a dual exchange rate system (on top of which there continues to exist an illegal black market). Under this arrangement, the banks of the nationalized banking system are permitted to buy and sell foreign exchange in the new and so-called parallel market (whose current colon-dollar rate is in the area of 3.85-4.05 to one). A

summary of the transactions in the official and parallel markets follows:

Transactions in Official Market (2.5 colones = $1)	Transactions in Parallel Market (4 colones = $1)
1. Priority imports of energy supplies, medicines, raw materials, basic foods	1. Non-essential imports (which comprise 20-25 percent of total imports)
2. Traditional exports: coffee, cotton, sugar, shrimp	2. Non-traditional exports
3. Exports to the Central American Common Market	3. Family remittances and personal services
4. Governmental foreign debt service and other transactions	4. Non-governmental debt service
	5. Around half 1983-84 cotton exports; additional 15 percent above base for 1984-85 crop
	6. Some raw materials and intermediate goods imports

The transfer of the above transactions to the parallel market did apparently reduce demand pressures upon the foreign exchange market in 1982 and 1983. Moreover, in 1983 nearly all those goods whose importation had previously been prohibited were permitted to enter via the parallel market. For the year 1983 almost one-third of imports and one-fifth of exports were channelled through this market. Not only did these measures permit greater exchange flexibility and relieve further pressures (political and economic), but one major reason for relaxing non-essential imports (subject, of course, to foreign exchange availability) had to do with fiscal problems. More imports permit an expanded import tax base. As has already been pointed out, the central government is searching for additional tax revenues given its burgeoning fiscal deficit.

The parallel market exchange rate is not a freely determined demand and supply price. It is a managed rate arrived at under the guidance of the Central Bank and with a tacit agreement among the nationalized banks not to engage in price competition; it is presently set at the dollar quotation at the Guatemalan Customs Office $\pm$10 percent.

Foreign Exchange Allocation

The BCR and the nationalized banking system control the official and parallel foreign exchange markets. As of January 1980, the Junta Monetaria drew up a priority classification list of imports. Heading this list were (are) basic foodstuffs, medicines, raw materials (mostly notably petroleum and agricultural inputs), and machinery; it is therefore no coincidence that transactions in these items are in the official market. As noted above, many lesser priority goods which had originally been on the list or had been completely banned are now permitted to enter via the parallel market. A Foreign Exchange Allocation Committee analyzes the total amount of available foreign exchange and allocates from this pool according to priority classification and the length of time the exchange application has been outstanding. All imports must be authorized, and there are quite a number of bureaucratic procedures to overcome. Subsequent to an AID-financed Arthur D. Young audit of BCR foreign exchange allocation in 1983, the BCR established an International Price Control Department to monitor the international prices of imports. This was done to check on import prices to avoid over-invoicing designed to export capital in contravention of foreign exchange regulations. Two additional details: the Allocation Committee can give up to $15,000 for imports from the CACM without further

investigation; 90 percent of imports in the parallel market are consumer goods.

The Price of Foreign Exchange

The very existence of the legal parallel foreign exchange market would appear to offer strong evidence of colon overvaluation at the official rate. Yet, given the social and political implications of a change in this official rate, there is obvious reluctance on the part of the government to come to a final decision. Nevertheless, over the past two years a greater and greater volume of transactions has been shifted into the parallel market, so that the *de facto* exchange rate is currently close to three colones to the dollar.

The analysis contained in this report of the El Salvadoran agricultural sector clearly demonstrates that the price of foreign exchange is a critical factor in determining the profitability of that sector. Moreover, it is precisely this vital price that most likely largely explains the sharp deterioration in agriculture's terms of trade -- both internally and externally. There is a great deal of evidence that maintenance of the exchange rate at the present official level will generate further balance-of-payments difficulties, accelerating the deterioration of the traditional export sectors and holding back progress in developing non-traditional exports.

There does exist scope for debating both the timing and the form of implementation of devaluation. Although changing the foreign exchange price would clearly benefit the agricultural sector, its impact on other sectors of the economy

is not as certain. There are undoubtedly social and individual costs associated with devaluation, for changing the exchange rate raises the general price level and modifies the sectoral distribution of value added. Inter- and intra-sectoral fluctuations will have income redistributive effects. Wage-earners in home industries may suffer short-run income and employment losses, but those in export sectors will benefit.

As discussed in Chapter IV of Volume 1, several alternatives exist to changing the foreign exchange price. A sudden official rate jump to the parallel rate is only one of numerous possibilities. The colon price of the dollar could be slowly raised, as in a crawling series of mini-devaluations; this would "phase-in" any negative effects. This is really what has been happening over the last two years, as the volume of transactions in the parallel market has risen. Or if it is desired to leave the official exchange rate in place, a system of higher import taxes and export subsidies might be implemented in order to aid the export sector and the balance of payments.

Whichever route to modifying the de jure or de facto foreign exchange price is taken, the costs and benefits of each potential approach should be carefully assessed, both qualitatively and quantitatively. This is clearly important, for the issue of the level of the colon:dollar relationship is one of the most pressing policy questions in El Salvador. It is of crucial importance to the agricultural sector.

Appendix A presents several methods which can be used to estimate the macroeconomic effects of a devaluation. As will become evident, no one approach can be totally relied

upon. Rather, on an issue of such vital significance, several different approaches should be employed so as to generate estimates from diverse angles.

Appendix A

What precisely would be the consequences of devaluation is a matter of quite a bit of conjecture. One approach is to design econometric models of the Salvadoran economy in order to visualize the effects of a given devaluation on some major macroeconomic variables. This approach can be useful in the sense that it may offer some idea as to the expected direction of change, but the exact magnitudes of change derived from such a focus must be taken with a grain of salt. This is due simply to the fact that, in the land of (devaluation) models and/or scenarios, there are countless combinations and permutations of possible interrelationships which the model builder might include in his series of equations. To illustrate this vital point, Tables 1-38 and 1-39 present the results of two different devaluation models, both of which deal solely with the short-run effects of a simulated devaluation of the colon vis-a-vis the U.S. dollar.[1]

The Table 1-38 results are derived from a Keynesian-type model employing a set of 13 simple equations. The model's key aspects are that exports and imports respond to changes in the exchange rate and international prices, GDP has a flexible relationship to imported intermediate goods

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1. It should also be stressed that both models are comparative static models, which assume both starting and ending equilibrium (Full employment of all factors of production). These conditions obviously do not hold in El Salvador today.

Table 1-38. RRNA Simulation Model of the Short-Run Effects of Devaluation on Selected Macroeconomic Variables: El Salvador, 1984

(Index numbers based on 1983 data)

Macro Variables	Base Values ₡2.95=$1.00[a]	Devaluation Assumptions: ₡4.00=$1.00				
		I Base Case[b]	II Wage - Inflation Elasticity[c]	III Additional BOP Assistance[d]	IV Reduced Export Price Elasticity[e]	V Greater Inflationary Impact[f]
rice Level	100.0	113.0	113.0	113.0	113.0	120.0
ominal Wage Rate	100.0	106.3	108.9	108.9	108.9	113.6
nternational/Domestic rice Ratio	100.0	120.0	120.0	120.0	120.0	113.0
xports	100.0	109.6	109.6	109.6	103.7	106.3
mports	100.0	83.3	83.3	94.6	83.3	88.5
DP	100.0	97.0	97.0	99.1	97.0	98.0
mployment	100.0	103.1	100.7	102.8	100.7	103.5
abor Income	100.0	109.6	109.6	111.9	109.6	117.7
apital Income	100.0	83.7	83.7	80.5	83.7	70.9
omestic Savings	100.0	96.2	96.2	98.8	96.2	97.5
nvestment	100.0	46.1	46.1	71.5	56.1	63.5
onsumption	100.0	97.1	97.1	99.1	97.1	98.1

otes: a Although the present official exchange rate is ₡2.50=$1.00, the amount of transactions legally permitted in the parallel market generates an implicit exchange rate of ₡2.95=$1.00.

b Exchange rate moves to ₡4.00=$1.00.

c Wage elasticity to price changes rises from 0.5 to 0.7.

d Similar to Case II with additional balance of payments assistance=$300 million.

e Similar to Case II except that export price elasticity decreased from 0.5 to 0.2.

f Similar to Case II except that inflationary response to change in exchange rate is greater.

(i.e., coefficients are not fixed), and profit margins are flexible according to fluctuations in economic activity. Note that the starting point for the devaluation scenario is an implicit exchange rate of 2.95 colones to $1. Five different cases, by no means exhaustive, are displayed, and in all versions the new colon-dollar rate is assumed to move to 4:1. In all cases the price level rises and GDP, consumption, and investment fall. However, these short-run declines in GDP and overall consumption are not large, and it is to be expected that beyond the short-term even these variables, spurred by the stimulus provided by devaluation, would move upward. But the positive aspects outweigh the negative ones. The trade balance decidedly improves (exports rise and imports drop) and employment and labor income increase. Thus, the balance of payments effects are positive and the bulk of the population, via the employment and labor income rises, is not adversely affected. Moreover, it must be emphasized that these short-run modifications set the stage for a sounder and more balanced growth, free of the multiple distortions created by an overvalued currency.

The results found in Table 1-39 are derived from a type of model which has apparently circulated in El Salvador. Taken from a Lance Taylor formulation (L. Taylor, Macro Models for Developing Countries, McGraw-Hill, 1979), it posits rather strict import rigidities, constant profit margins, and ignores employment expansion effects created via export expansion. The version presented here has added import and export tax functions to the original formulation since these taxes are of such great significance in the case of El Salvador. Comparing the results of this model (last column of Table 1-39) with the Base Case (second column) of

Table 1-39. RRNA-Taylor Simulation Model of the Short-Run Effects of Devaluation on Selected Macroeconomic Variables: El Salvador, 1984

(Index numbers based on 1983 data)

Macro variables	Reference values ₡2.95=$1.00	Devaluation assumptions ₡3.12=$1.00	₡4.00=$1.00
GDP	100.0	98.7	93.5
Consumer price level	100.0	102.1	112.6
Home goods output: (C + I + G)	100.0	98.7	93.5
Total consumption	100.0	98.2	91.0
Consumption: labor income	100.0	98.9	94.7
Consumption: non-labor income	100.0	104.2	125.5
Gross domestic investment	100.0	103.1	118.3
Private saving	100.0	103.8	123.6
Foreign saving	100.0	95.6	70.0
Public fiscal deficit	100.0	102.1	112.2
Trade deficit: at domestic prices	100.0	99.3	93.3
At international prices	100.0	84.7	23.9
Global multiplier	100.0	97.9	89.6
Labor income	100.0	98.9	94.8
Non-labor income	100.0	104.1	124.8

Source: RRNA as adapted from Lance Taylor, Macro Models for Developing Countries (New York: McGraw-Hill, 1979).

the Table 1-38 model, it is evident that the Taylor-like formulation (hereafter Taylor-RRNA) generates more negative consequences than does the Table 1-38 formulation (hereafter RRNA model). While there is agreement regarding the magnitude of general price level changes and trade balance improvement, the Taylor-RRNA model produces significantly larger falls in GDP, total consumption, and labor income. Several variables move in opposite directions. Whereas in the Taylor-RRNA approach non-labor (capital) income and investment rise, under the RRNA format capital income and investment decrease; in the former labor income declines, while in the latter it goes up.

The merits and/or demerits of these two models can be long debated, and many more versions of different devaluation models can certainly be formulated. The point is that there is just no such thing as the definitive (devaluation) model, and it is invalid to base one's judgment as to the correct policy to follow on any one particular approach. No one specific model can be said to yield completely satisfactory results, for no series of equations, no matter how sophisticated, can hope to replicate the vast series of structural and behavioral relationships of the real world.

There are alternative approaches to estimating the economic consequences of devaluation. One perfectly valid approach is to trace through the balance of payments and fiscal accounts on an item-by-item basis the primary (and secondary) effects of assumed devaluation. After feeding these results into the system of national and monetary accounts and making adjustments for specific local conditions, the resulting estimates are likely to be just as good

as those produced by ostensibly more sophisticated (read econometric) techniques. This is the technique employed by USAID in its most recent analysis of the effects of colon devaluation, and these results are summarized in Table 1-40 where the devaluation effects on selected macro variables on a four colon-dollar rate are presented as generated by the RRNA, Taylor-RRNA, USAID, and El Salvador Central Bank "models."

These four of many devaluation scenarios are in general accord with respect to the direction -- but not the magnitude -- of change in the consumer price level, GDP, total consumption, and trade balance; they disagree as to the direction of change in investment spending and income redistribution effects. Clearly, devaluation hikes the inflation rate and reduces GDP and consumption in the short-run. Also evident is the salutary effect on the trade balance. Of special interest is that second year effects are far more positive than first year ones. But the real point is the rather wide divergence of results produced by each formulation. There are no definitive answers.

The foregoing scenarios have dealt with a sudden devaluation to the 4:1 level. Devaluation need not occur is one abrupt shift, but may "creep" toward its "equilibrium" goal. As has already been pointed out, over the past few years more and more transactions have been gradually shifted from the official to the parallel markets, a shift which, in essence, amounts to a series of mini-devaluations. A continuation of this trend might be considered. One such scenario and its effects are displayed in Table 1-41. This slow-motion devaluation has the advantage of largely ameliorating any negative socio-economic and political reprecussions.

Table 1-40. Comparative Approaches to Estimating the Effects of Devaluation on Selected Macroeconomic Variables: El Salvador

(Colon price of U.S. dollar at 4:1)

VARIABLE	RRNA	RRNA-Taylor	El Salvador Central Bank	USAID
Change in Consumer Price Level (no wage increases)	NA	+13%	+20 to 23%	+15 to 18%
Change in Consumer Price Level (4-6% wage increase)	+13%	NA	+21 to 24%	+18 to 21%
Gross Domestic Product:				
Year 1	-3%	-7%	NA	-5%
Year 2	NA	NA	NA	+2 to 6%[a]
Total Consumption	-3%	-9%	NA	see note "b"
Gross Domestic Investment	-54%	+18%	NA	no change
Balance of Trade	improves	improves	NA	improves
Central Government Fiscal Deficit	NA	rises	rises(40%)	no change
Effect on Income Distribution	not significant	significant toward higher incomes	same as RRNA-Taylor	not significant

[a]Change in relation to base year.

[b]Private Consumption:
Year 1 -3%
Year 2 -1% to +3%[a]

Public Consumption:
Year 1 +8%
Year 2 +8%[a]

Table 1-41. Macro Variable Impacts Under Assumption of Partial Transfer[a] of External Transactions to Parallel Market

VARIABLE	IMPACT
Change in Consumer Price Level	+2% with no wage increases +3 to 4% with 3% general wage increase
Balance of Trade (international prices)	Year 1: reduction negative balance = 40% Year 2: reduction negative balance = 65% in relation to base year
Central Government Fiscal Deficit	Alternative A: +8% Alternative B: -5%
Aggregate Demand	Year 1:+3 to 4% Year 2:+7% in relation to base year
Effect on Income Distribution	not significant

[a]Underlying assumptions:

Items in Parallel Market:

1. Private transfers
2. Non-traditional exports outside CACM
3. Shrimp and cotton
4. 25% of sugar and coffee
5. All travel and insurance and 75% of transportation
6. 75% of foreign investment and other services

Items in Official Market:

1. 67% of exports to CACM
2. 75% of coffee and sugar
3. 25% of transportation, foreign investment, and other services
4. All government transactions
5. All banking sector and official loans
6. All compensatory BOP financing
7. 80% of imports
8. All imports of petroleum, fertilizers, insecticides, medicines, and pharmaceuticals
9. All public debt service obligations

SOURCE: USAID

In closing, a word of caution must be injected. Devaluation, no matter what form it might take, can be a potent short- to medium-term remedy for open economies to restore external and domestic equilibrium and to establish the foundation for future growth. However, it will ultimately prove effective only if done in conjunction with a mix of appropriate demand management, pricing, production, and investment policies. Its longer-run potential can be soon dissipated if such measures are not invoked. It is not by itself a panacea.

AN INVENTORY OF POLICIES AFFECTING AGRICULTURE IN EL SALVADOR

POLICY ANALYSIS ANNEXES
ANNEX 2: TRADITIONAL EXPORT CROPS

SUBMITTED TO

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
RURAL DEVELOPMENT OFFICE
SAN SALVADOR, EL SALVADOR

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172

TABLE OF CONTENTS

Chapter		Page
	INTRODUCTION	1
I	COFFEE	2
	Description of Crop Behavior	2
	Impact at the Sectoral Level	7
	Main Policies in the Coffee Subsector	11
	General Comment on Coffee Policies	19
II	COTTON	23
	Crop Evolution in Recent Years	23
	Factors Affecting the Drop in the Cultivated Area	25
	Impact of the Drop in Cotton Production on the Economy	33
	Main Policies in the Cotton Industry	35
	General Comment	41
III	SUGAR CANE	43
	Behavior of the Crop	43
	Main Economic Policies	45
	General Comments	51
Appendix		
1	Methodologies for Policy Analysis -- The Case of Cotton	55
2	A Summary of Current GOES Policies Applicable to the Coffee and Cotton Subsectors	69
	References	75

173

LIST OF TABLES

Table		Page
2-1	El Salvador Area Planted and Yield for Coffee	3
2-2	Cost of Production per Manzana and per Quintal Oro for Coffee	6
2-3	Volume and Value of Exports for Coffee	9
2-4	Tax Rates Over Coffee Exports	12
2-5	Explicit and Implicit Coffee Export Taxes	14
2-6	Banking System: Credit Allocation for Coffee	16
2-7	Producer Price Estimation per Quintal Crop, 1983-84	20
2-8	El Salvador: Area Planted, Production and Yield for Cotton	24
2-9	El Salvador: World Prices and Farm Prices for Cotton Fiber	27
2-10	El Salvador: Farm Prices for Cotton	28
2-11	El Salvador: Estimation of Cost of Production for Cotton per Manzana	29
2-12	El Salvador: Distribution of Cotton Crop by Department	31
2-13	El Salvador: Volume and Value of Exports of Cotton	34
2-14	Banking System: Credit Allocation for Cotton	38
2-15	El Salvador: Area Planted, Production and Yield for Sugar Cane	44
2-16	Production Cost per Manzana for Cane, 1983-84	46
2-17	Banking System: Credit Allocation for Sugar Cane	47

2-18	El Salvador: Domestic Consumption of Sugar	49
2-19	El Salvador: Volume and Value of Export for Sugar	50
2-20	El Salvador: Average Price for Domestic and International Sales of Sugar	52

ANNEX 2. TRADITIONAL EXPORT CROPS

Introduction

El Salvador's traditional export crops of coffee, cotton, and sugar have long played an extremely significant economic role. They provide the bulwark of the nation's most important economic sector, a sector which generates around one-quarter of gross output and two-fifths of total employment. In normal years, these three crops generate at least two-thirds of the country's foreign exchange earnings, meaning that any future development strategy must use this traditional base as a starting point from which to grow. The foreign exchange element has always been one of the most crucial of El Salvador's growth constraints, and the production and export of coffee, cotton, and sugar are and will remain a vital part of any overall socioeconomic policy design.

Within the agricultural sector, the three traditional export crops comprise 50 to 60 percent of value-added, and coffee is by far the most important of the three. In normal periods, coffee alone generates approximately two-thirds of total crop value and one-half of the total value of agricultural output. Moreover, from 1979-83 coffee provided 57 percent of all export earnings, and, via the export tax,

it is an important contributor to the central government's revenues. Around 30 percent of all employment within the crop subsector is associated with coffee.

Thus, it is clear that any analysis of El Salvador's economy and agricultural sector must begin with an understanding of these three crops. Furthermore, any policy set designed to positively impact upon agriculture must assuredly take into account pricing policy as it influences the output of coffee, cotton, and sugar.

I. COFFEE

Description of Crop Behavior

The area currently planted with coffee in El Salvador is estimated at around 265,694 manzanas (185,800 hectares), or 22.7 percent of the area currently under agricultural use. The geographic distribution of the crop indicates that 61 percent of the planted area consists of lowlands, about 26 percent is at medium altitude, and 13 percent is strictly high altitude. This distribution is of special importance for the Salvadoran coffee industry because medium and high altitude coffee is of better quality and brings higher prices on the international market.

Table 2-1 contains information regarding coffee production and yields during the period 1977-78 - 1983-84 and estimates for 1984-85. The variation in production has depended basically on changes in average yields, since the cultivated area has remained relatively constant during the last few years. Physical productivity, in turn, varies at short term due to climate conditions, the production cycle

Table 2-1. El Salvador Area Planted and Yield for Coffee

Year	Production (thousand qq.)	Yield (qq./manzana)
1978/79	3 913.0	14.7
1979/80	4 337.0	16.3
1980/81	3 850.0	14.5
1981/82	3 800.0	14.3
1982/83	3 791.0	14.3
1983/84[p]	3 100.0	11.7
1984/85[e]	3 400.0	12.8

P = preliminary
E = estimate
Source: Central Bank

and the chosen production system.[1] Of these factors, the producer can only modify the production system through a more or less extensive use of intermediate inputs (fertilizers and pesticides) and the intensiveness of cultural practices, especially pruning, shade regulation, and weeding. Coffee producers respond to changes in prices by modifying their production systems; thus, during high-price periods the producer makes intensive use of inputs and cultural practices, thus increasing productivity. An opposite behavior seems to occur during low-price periods, which partly explains the high productivity levels seen during the 1979-80 season (16.3 qq/manzana), as well as the drastic reduction seen in the 1983-84 harvest (11.7 qq/manzana).

In consonance with this behavior, producer prices seem to be the element which to a large extent determine short-term production levels. However, other factors also are important, including:

- An increase in the price of inputs and credits, with a direct effect on production costs;
- An increase in the political risk, as a determining factor on the volume of reinvestment into production; and
- Spread and intensification of the effects of coffee rust (Hemileia vastatrix Berk & Br.), caused by a fungus which produces premature shedding of the leaves and a gradual decline in production.

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1. This analysis focuses on the short term. Over a longer period (four years) productivity can also depend on other factors, such as varieties, location of the crop, plant density, and management system.

With respect to production costs, the data are rather flimsy. Neither INCAFE (the state coffee export marketing agency) nor ABECAFE (Association of Coffee Processors) has historical data regarding production costs, and the MAG (Ministry of Agriculture and Livestock) has not carried out any definitive statistical survey. Through the auspices of ABECAFE, the production cost data presented in Table 2-2 were obtained. These data were gathered from a small sample survey compiled in conjunction with the Coffee Producers Association, and refer to the 1983-84 crop year. Given the nature of the survey (not very sound statistically) and the evident self-interest of the source in (perhaps) inflating the figures, the results should probably be interpreted with caution.

The average yield base for the study is well above nationwide average yield figures. Yet, even with this factor, the average price received by producers fell some 14 percent below average costs during the period. Taking the total cost per manzana (4,179.73 colones) and dividing it by the average price, the break-even yield becomes 23.2 quintales oro per manzana. The conclusion is that only those coffee farms that obtained yields above 23.2 were able to make profits during the 1983-84 crop year. If, based on MAG data, it is assumed that over the last four crop years the average yield in the coffee sector was 15 quintales per manzana, it is evident that coffee producers, in the face of this unfavorable cost-price relationship, have accumulated large financial losses. Although the quality of the cost data upon which these estimates are based may be questionable, there is no doubt that these losses are a reality. As pointed out elsewhere in this study, the coffee debt overhang and the exigencies of refinancing have absorbed an

Table 2-2. Cost of Production Per Manzana and Per Quintal Oro for Coffee

(in colones)

Labor Cost	
Trimming of shade trees (poda de sombra)	121.05
Trimming of coffee (poda de cafe)	100.69
Prop (agobio)	17.42
Removing nonproductive shoots (deshije)	100.69
Holing (ahoyado)	23.44
Replanting (resiembras)	54.00
Fertilization (2 times)	77.18
Pest controls	20.94
Soil erosion control	31.06
Cleaning (3 times) (peinas or limpias)	181.68
Maintenance of filed streets (calles y cercos)	19.53
Supervision (caporales)	72.69
Total labor	820.37
Nurseries (viveros)	90.83
Insecticides	31.00
Fertilizers (2 times)	422.75
Rust control	247.28
Harvest labor	1,600.00
Administration (Mandador)	82.50
Financial costs (15 percent ₡18.00 quintal)	360.00
Financial cost of unpaid debt (₡20 quintal)	400.00
Property tax (1 percent)	80.00
Road tax	45.00
Total cost	4,179.73

Average yield = 20 quintales oro per manzana
Average cost = ₡208.98/quintal oro

Source: ABECAFE, July 1984.

increasing amount of total credits. This is true not only for coffee but also for the entire agricultural sector.

The guerrillas do not seem to be a determining factor in the behavior of coffee production because 80 percent of the cultivated area is located in the departments of the southwestern region of the country, where guerrilla activity is less intense.

According to official figures (Table 2-1), coffee production has experienced a reduction of 28.5 percent over the last four years, reaching 3,100 thousand quintales at the end of the period. However, more recent unofficial estimates point to the possibility of a drop in 1983-84 to a level of 2,800 thousand quintales, representing a decrease of 25 percent with respect to the previous season.

Although these negative production conditions prevail, estimates for the 1984-85 season (the harvest beginning in November) are optimistic. Because of exceptionally favorable rainfall patterns, a harvest of approximately 3,400 thousand quintales may be possible.

Impact at the Sectoral Level

The drop experienced by prices and the domestic production of coffee has had a considerable impact on the national economy by reducing foreign exchange revenues, the employment level, and rural income.

Foreign-Exchange Revenues

The operation of the Salvadoran economy has depended to a large extent on the foreign exchange received from

coffee exports. According to figures published by the Central Bank, the equivalent of 1,688.0 million colones was earned in 1979. This figure fell to 1,005.7 million in 1983 (Table 2-3). Sixty percent of this reduction, i.e., ₡382.7 million, was the result of a drop in international prices, and the rest to the reduction of the volume exported.

In view of the characteristics of the world coffee market, El Salvador cannot influence the international price of the bean. Thererore, it has to be considered a given variable in the economy. The world market is also characterized by the existence of quotas which limit the exports of producing countries to certain annual levels established by the ICO. Since the implementation of the International Coffee Convention in 1962, El Salvador has observed its annual export quotas and has maintained surpluses which ha allowed it to increase its exports in line with an increas of the quotas established by the ICO.

The annual quota for El Salvador for the 1983-84 season (September-October) was fixed at 3,155.6 thousand quintales. To meet this quota, El Salvador has depleted all the existing stocks of exportable quality, thus maintaining its quota for this season, but virtually liquidating its reserves.

If the estimates regarding the 1984-85 production level are confirmed, i.e., if the weather conditions continue to be favorable, El Salvador will maintain its quota level for the next season. However, the lack of stored coffee and the persistent effect of negative production factors might have a serious impact on the maintenance of the quota level for the forthcoming seasons.

Table 2-3. Volume and Value of Exports for Coffee
(Thousand/qq and million/₡)

Year	Volume	Value	Average price ₡
1978	2,396.3	964.1	402.2
1979	4,562.0	1,688.0	370.0
1980	4,002.8	1,538.0	384.2
1981	3,601.6	1,131.5	314.2
1982	3,074.7	1,006.5	327.2
1983	3,752.7	1,005.7[a]	268.0

a. Preliminary figures.
Note: qq = 1 quintal = 100 pounds
2.50 colon = 1 US$
Source: Derived from Banco Central de Reserva

Employment Level

Coffee is a labor-intensive crop and the main generator of jobs in the agricultural sector. Using the 1978-79 season as a reference, it is estimated that this activity generated jobs for 42,000 permanent agricultural workers during 270 days a year, and for 180,000 temporary workers who worked an average of 80 actual days (MAG, 1982). In other words, the cultivation and harvesting of coffee provided occupation to an equivalent of 102 thousand permanent workers, or 17.3 percent of the economically active population in the agricultural sector.

The intensity in the use of labor depends on the production system used. Under the traditional system, labor varies between 40-50 annual man-days per manzana; the more intensive production system uses 170-180 annual man-days. The national average for the 1978-79 season was estimated at 98 man-days per manzana. Evidence that producers have changed to a less intensive production system permits an estimation of the current use of labor of about 66 man-days per manzana, which is equal to a 33 percent reduction with respect to the basic year. Therefore during the last season, coffee growing failed to provide jobs for close to 34 thousand permanent workers, which has had a considerable impact on the level of rural employment.

Use of Inputs

The change in production systems meant a drop in the levels of fertilization and pesticide application. Consultation with different private growers has indicated that on

the average fertilization levels have gone down from 16.0 to 8.33 quintales per manzana having a density of 2,322 plants; and from 8.33 to 4.16 quintales per manzana for densities of 1,111 plants per manzana. The above indicates the possibility that a drop of about 50 percent in the use of chemical fertilizers has already been experienced.

Main Policies in the Coffee Subsector

Different economic policies directly affect the coffee subsector. Some of these policies were implemented in years of better prices and their philosophy was basically the transfer of funds to other sectors of the economy less favored than the coffee subsector. Other policies have been implemented recently and, as in the case of marketing, constitute elements of the reforms carried out beginning in 1980. The following sections analyze these policies from the point of view of their implementation and probable effect on the subsector.

Taxes

Taxes directly affecting coffee producers are the export, land, road, and income taxes.

The tax which has the greatest impact, both because of its magnitude and direct effect on producers' prices, is the export tax, which is governed by Decree 836 of September 13, 1950. This law established a progressive tax based on value which is applied according to the increase in FOB prices (Table 2-4). When the tax was established, it was assumed that a price per quintal in excess of US$40.00 provided

Table 2-4. Tax Rates Over Coffee Exports

Tax rate (percent)	FOB price (US $/qq oro)	Formula
10	Up to 30	Tax = P(.10)
20	$30 < \bar{P} \leq 35$	Tax = (P-30)(.20) + 3
25	$35 < \bar{P} \leq 40$	Tax = (P-35)(.25) + 4.0
30	Over 40	Tax = (P-40)(.30) + 5.25

Source: Decree No. 836, Article 1, September 13, 1950.

substantial earnings for the grower (in view of then prevailing production costs). The highest tax was applied on this price. This criterion, used 34 years ago, continues in force for the application of the present tax, although the conditions which served as the basis for its design have changed considerably. At the average price of the 1983-84 harvest (US$140.97), the tax represents US$35.54, which is deducted from the price paid to the producer. For the central government, the export tax means an important fiscal revenue. In 1983, for example, it generated 181.3 million colones, which represented 16.8 percent of total revenues of the central government.

Taxes applied to exports destined to countries which are not members of the International Coffee Agreement are governed by Decree 184 of March 1983. This provision exempts coffee exports with an FOB price per quintal less than or equal to US$65.00 from the tax. For prices of $65.00 to $100.00, the rate is 10 percent based on the value.

In the context of the official exchange rate, the tax is presently quite burdensome. The official exchange rate acts as an additional export tax with a 37.5 percent rate. For example, for a FOB price of $140 per quintal oro (the current average price), the tax rate is equal to 25.18 percent. However, assuming an equilibrium exchange rate of 4 colones per dollar, the true tax rate becomes 53 percent of the FOB price. In other words, for every $140 exported, the government receives $74.53 and the coffee producer is left with $65.47 (not including transportation and administrative expenses that are deducted by INCAFE). Table 2-5 sets out the total tax (official export tax plus the implicitly generated tax due to the exchange rate differential) to which coffee is presently subjected under different FOB price assumptions.

Coffee industry spokesmen complain with justification about present tax policy, and have put forth different proposals to change it. One suggestion is to impose the tax only on increments above $80 (or 200 colones), since this represents the minimum cost of production (see Table 2-2). Decree 184, mentioned above, represents the only relief granted by the government to this moment.

Public Expenditures

Public expenditures in the coffee subsector have been primarily destined to the provision of extension and research services through ISIC. The results of research done on the adaptation of new varieties and cultivation systems seem to have been satisfactory, since El Salvador at one time reached one of the world's highest productivity levels in the cultivation of coffee. In 1982, as a result

Table 2-5. Explicit and Implicit Coffee Export Taxes

OB price $US/qq)	Explicit tax ($US/qq)	Explicit tax rate (percent)	Price after tax ($US/qq)	Implicit tax from exchange differential ($US/qq)	Total tax ($US/qq)	Total tax rate (percent)	Producer price after total tax
30	3.00	10.00	27.00	10.13	13.13	43.75	16.88
31	3.20	10.32	27.80	10.43	13.63	43.95	17.38
35	4.00	11.43	31.00	11.63	15.63	44.64	19.38
36	4.25	11.81	31.75	11.91	16.16	44.88	19.84
40	5.25	13.13	34.75	13.03	18.28	45.70	21.72
41	5.55	13.54	35.45	13.29	18.84	45.96	22.16
50	8.25	16.50	41.75	15.66	23.91	47.81	26.09
60	11.25	18.75	48.75	18.28	29.53	49.22	30.47
70	14.25	20.36	55.75	20.91	35.16	50.22	34.84
80	17.25	21.56	62.75	23.53	40.78	50.98	39.22
90	20.25	22.50	69.75	26.16	46.41	51.56	43.59
00	23.25	23.25	76.75	28.78	52.03	52.03	47.97
10	26.25	23.86	83.75	31.41	57.66	52.41	52.34
20	29.25	24.38	90.75	34.03	63.28	52.73	56.72
30	32.25	24.81	97.75	36.66	68.91	53.00	61.09
40	35.25	25.18	104.75	39.28	74.53	53.24	65.47
50	38.25	25.50	111.75	41.91	80.16	53.44	69.84
00	53.25	26.63	146.75	55.03	108.28	54.14	91.72

of changes made in the MAG, ISIC disappeared temporarily, losing continuity in research. Some efforts have been made recently to recommence the research effort. The institution's current budget is 3.7 million colones per year. In view of the current situation of coffee growing and the need to strengthen research in specific areas, it is advisable to strengthen the ISIC and to reorient its programs toward socioeconomic research and crop diversification in coffee-growing areas.

Public expenditures have also been made to develop a program for the control of coffee rust, which consists of the supply of inputs and equipment to small producers. There have been no evaluations regarding the results of this program, which was suspended in 1983 and had an annual budget of 4.7 million colones.

Credits

Credit policy for the coffee subsector is determined as part of global credit policy by the Monetary Board and implemented by the BCR through rediscounts to the banks of the system. New credits for coffee growing have grown rapidly in nominal terms during the last five years, from 288.8 million colones in 1979 to 508.6 million in 1983. This growth is partly due to better utilization of bank credit. An important aspect of this credit activity is the rapid growth registered in the refinancing of the overdue debt, which increased from 45.3 to 321.1 million colones during the indicated period (Table 2-6).

Table 2-6. Banking System: Credit Allocation for Coffee

(millions ¢)

Year	New Credits	Refinancing	Total	Refinancing as % of grand total
1979	288.8	45.3	334.1	14
1980	291.4	58.7	350.1	17
1981	301.0	156.2	457.2	34
1982	481.3	203.5	684.8	30
1983	508.6	321.1	829.7	39

Source: Banco Central de Reserva

Production credit regulations for the 1984-85 season provide ₡150.00 per quintal of hulled coffee based on average production during the last three years. The amount of credit per quintal is made up from ₡60.00 for the agricultural phase, paid against pro forma invoices for inputs and payrolls, and the balance of ₡90.00 for harvesting payable against the delivery of coffee receipts from the processing centers. The interest rate to producers is fixed as follows: (1) 13 percent for those producing up to 500 quintales in the bean; (2) 15 percent for those producing more than 500 and less than 5,000 quintales; and (3) an interest rate equal to the cost of the external resources acquired by the BCR for producers of more than 5,000 quintales. The interest rate for refinancing has been fixed at 11.0 percent.

The producers consulted regarding the credit policy agree that there are problems relative to discrimination in the application of the interest rate, to the timely granting of credit, and the amount allowed per quintal.

A specific credit line for control of coffee rust was begun in 1981 with funds provided by the CABEI. The object of the credit is to finance the cost of the technical equipment and labor needed for control. A maximum of ₡179.50 per manzana was fixed for the 1984-85 season, with 10 percent interest for producers of less than 500 quintales and 13 percent for those who produce in excess of this amount.

One of the main credit problems encountered by growers is the needed refinancing of accumulated debt. For this purpose, the BCR opened a special credit facility, which may

be used to cover the outstanding balances corresponding to the 1982-83 and 1983-84 harvests. This credit facility has a term of four years and an interest rate of 11 percent, without a grace period. Through ABECAFE and the Coffee Association of El Salvador, producers have asked the government for a refinancing facility at ten years and a 10 percent interest rate.

Exchange Rate

Sales of coffee abroad are paid for through the BCR at the official rate of ₡2.50. This provision directly affects the producers, who receive a price substantially lower than the market price, and also represents a transfer of resources from the coffee-growing to other sectors of the economy. In view of the existence of a parallel market which pays approximately 4 colones per US$1.00, the exchange rate acts as an additional tax equal to 37.5 percent of the market price (see Table 2-5).

Internal and External Marketing

Domestic marketing of coffee destined for export is the responsibility of INCAFE, as provided by Decree 124 of February 18, 1980. Purchases are made through the banking system. The producers thus receive the difference between the selling price and the amount of their bank loan plus interest. Producers argue that there are great delays in the payment of liquidations, which substantially increases their production costs due to the increase in the interest paid.

Table 2-7 contains the criteria used by INCAFE to estimate the price of the 1983-84 harvest. The high incidence of export taxes, as well as the significant production losses experienced, can be seen. The latter is an indicator of the inefficiency of the marketing process.

General Comment on Coffee Policies

In view of the current conditions prevailing in the coffee subsector in El Salvador, we can conclude that economic policy actions should be immediately aimed at the recovery and maintenance of production levels, in order for the country to be able to maintain its export capacity vis-a-vis the ICO in the next few years, and at the same time recover exportable surpluses which may allow it to increase its quota level. From the point of view of production, the objective must be to create adequate conditions for producers to select production systems permitting them, through adequate cultural practices, to maintain high productivity and rural employment levels.

In order to reach these objectives, it is necessary to modify the criteria presently used in establishing coffee policies, especially those which directly affect producers' costs and prices. The price paid to the producer is the main instrument for promoting productivity. This price can be increased through individual or combined use of the following tools: (1) modification of the exchange rate; (2) revision of the export tax rate; and (3) improvement of marketing efficiency. The first alternative should be analyzed in the context of its effect on the economy in general and its probable effect on production costs. The second one might have a lesser impact at the domestic economy level, if fiscal revenues are adequately substituted

Table 2-7. Producer Price Estimation
Per Quintal Crop 1983-84

	US $	¢	%
Average international price.1/	140.97	352.42	100.0
(-) Export tax	35.54	88.85	25.3
Sub-total	105.43	263.57	
(-) INCAFE Cost	3.00	7.50	2.1
Price in port	102.43	256.07	
(-) Transformation (Beneficio)	20.64	51.60	14.6
	81.79	204.47	
(-) Product loss (11.5%)	9.41	23.52	6.7
Producer price	72.38	180.95	51.3

1/ Official rate of change, 1 US $: 2.5 ¢

Source: INCAFE

by other taxes, possibly on idle agricultural lands or those under extensive use. The third option seems feasible if the coffee marketing systems are substantially improved.

Unfortunately, there is no reliable information available on production costs for the different regions and producer strata. Therefore, it is not possible to make inferences regarding efficiency in the use of these factors. However, the following elements are identified, which can be used to help producers reduce their production costs: (1) improve efficiency in the granting of production credit; (2) extend the period and lower the interest rate for refinancing the debt; and (3) orient technical assistance toward the adoption of production systems making optimum use of production factors.

At the medium and long term, coffee policies should be aimed toward locating production in geographic areas and soils which are ideal for the crop, as well as diversifying crops in marginal areas with lower coffee yields and qualities.

II. COTTON

Crop Evolution in Recent Years

One of the factors that has influenced the Salvadoran economy the most in recent years is the drastic reduction experienced by the surface planted with and the production of cotton. In fact, the cultivated area fell from 150.3 thousand manzana in 1978-79 to 54.4 thousand in the 1983-84 season -- a drop of 63.8 percent (Table 2-8). The 1978-79 season is taken as the basis for this analysis since this is the period preceding the reforms; however, this period constituted an especially favorable year during which the largest area of the last ten years was cultivated. Technical studies regarding the capacity of the soil (Rico, 1982) indicate that the area in which satisfactory yields can be obtained ranges from 100.0 thousand to 120.0 thousand manzanas, considered among the agrological or land-use capacity classes of class I to class III lands. In view of the presence of exceptionally favorable prices, farmers plant areas considered to be marginal with the crop.

During the last ten years cotton yields have experienced annual fluctuations due to climate conditions. In general, yields have been more stable than cultivated area. The above seems to confirm that producers have not varied

Table 2-8. El Salvador: Area Planted, Production and Yield for Cotton

(Thousand)

Year	Area planted Manzanas	Production /rama	Yield /manzana
1974/75	143.6	4 562.6	31.76
1975/76	113.9	3 609.5	31.68
1976/77	121.2	4 315.6	35.60
1977/78	145.2	4 946.4	34.06
1978/79	150.3	4 408.2	29.32
1979/80	129.6	4 004.8	30.90
1980/81	83.0	2 602.8	31.33
1981/82	82.7	2 397.4	28.97
1982/83	71.2	2 308.3	32.38
1983/84	54.4	1 690.9	31.07

Source: Memorias COPAL

their production systems substantially. The use of systems to effectively control pests and maintain fertilization levels is critical for the crop.

Factors Affecting the Drop in the Cultivated Area

Different factors have had an effect of varying intensity on the drop in the cultivated area. The most important ones are the fall in the producers' profits as a direct effect of production costs, and the production risk due to the sociopolitical conditions prevailing in the cultivated area. The main characteristics of these factors are discussed below.

Fall in Profits

Profitability in cotton growing depends on three factors: (1) the price paid to the producer; (2) production costs; and (3) the average yields per manzana. Of these three factors, the price paid the producer is the only variable which can be observed directly and on which there are reliable data. The information available on yields refers to the national average, and in view of the considerable dispersion in relation with the size of the plantations, it cannot be used to infer profitability at the national level. There are no information costs resulting from statistical sampling. The available information has been prepared by institutions, which show a certain bias depending on the objective sought in its preparation.

Producer Prices

Prices constitute an important element in the profitability of the crop and the farmers' decisions. The behavior of world prices in recent years does not seem to be the determining factor in the reduction of cultivated area as they have been increasing in recent years. Producers' prices, however, have grown to a lesser extent than international prices, due to an increase in unit processing and marketing costs resulting from low use of installed ginning capacity resulting from reduced harvests (Tables 2-9 and 2-10). Fixed processing costs spread over a smaller volume of output have reduced the farmers' share in the FOB export price. When deflated by the CPI, real producer prices have shown a downward trend since 1979. As explained, however, the fall in producer prices in real terms is in large measure a result of, rather than the cause of, reduced production.

Production Costs

The increase in costs seems to have a considerable impact on the low profits earned by producers. In fact, costs increased during the last three years at an average rate of 9.9 percent per year, exceeding the slow fluctuations in prices, with an evident deterioration of the profitability level. Table 2-11 shows production costs as estimated by DGEA of the MAG. Absolute values must be taken with reservations, but the analysis of their structure indicates the particularly important incidence of the value of inputs and financial costs. The behavior of the value of inputs has its origin both in the increase in international prices and the increase in the number of insecticide and

Table 2-9. El Salvador: World Prices and Farm Prices for Cotton Fiber

(Quintals)

Periods	World prices		Farm prices			Difference US $
	Value US$	Index	Colones	US$	Index	
1977/78	57.91	100	137.0	54.8	100	3.11
1978/79	69.41	119	164.7	65.8	120	3.61
1979/80	71.54	123	166.8	66.7	122	4.84
1980/81	81.15	140	174.6	69.8	127	11.35
1981/82	63.52	109	133.1	53.2	97	10.32
1982/83	71.95	124	154.6	61.8	113	10.15
1983/84	82.00	141				

Source: Memorias COPAL

Table 2-10. El Salvador: Farm Prices for Cotton
(Colones per quintal)

Year	Oro		Rama	Index rama 1973/74 = 100
	Fiber	Fiber + Seed		
1973/74	98.7	115.7	41.5	100
1974/75	103.8	125.4	45.9	110
1975/76	133.9	156.0	56.7	137
1976/77	166.2	189.1	67.2	162
1977/78	137.0	159.4	56.3	137
1978/79	164.7	188.7	67.4	162
1979/80	166.8	193.7	69.2	167
1980/81	174.6	203.4	77.9	188
1981/82	133.1	161.5	61.5	148
1982/83	154.6	199.8	76.6	185

Source: Memorias COPAL

Table 2-11. El Salvador: Estimation of Cost of Production for Cotton per Manzana

(Colones)

Item	1977/78		1980/81		1983/84	
	Value	%	Value	%	Value	%
1. Imputs	751	34.8	958	33.7	1 371	36.9
2. Land preparation	105	4.9	145	5.1	235	6.3
3. Cultural and harvest labor	772	35.7	1 085	38.1	1 252	33.6
4. Administration	50	2.3	65	2.3	88	2.4
5. Unforseen & Miscellaneous	96	4.4	121	4.3	156	4.2
6. Land rental	200	9.3	200	7.0	250	6.7
7. Transport	36	1.7	44	1.5	60	1.6
8. Financial interest	149	6.9	228	8.0	310	8.3
TOTAL	2 159	100.0	2 846	100.0	3 722	100.0

Source: D.G.E.A. Dirección General de Economía Agropecuaria. MAG.

fungicide applications, due to the resistance acquired by the insects. This phenomenon is due to the absence of an adequate pest-control technology. The increase in financial interest is basically due to the payment of interest on overdue debt.

Production Risks

The effect of risk on cotton production can be considered as a cost, with a high incidence on the producers' behavior in their annual cultivation plans. Cotton is in itself a very risky crop because of its uncertain yields and prices. In El Salvador the guerrillas' actions and political risk are added to the above factors.

The risk of guerrilla actions seems to have a high incidence on the area planted with cotton, since about 55.8 percent of the cultivated area is in the departments of San Miguel, Usulutan, and La Union, where a large part of this activity is concentrated (Table 2-12 and Figure 2-1). An interesting aspect is the displacement of the cultivated area toward the Departments of La Paz and La Libertad, which offer more security to the growers.

Political risk refers to the uncertainty felt by the producers with regard to Phase II of the land reform. According to the new constitutional charter, the lower size limit of farms subject to expropriation in Phase II has been increased to 254 hectares (363 manzanas). About 30 percent of currently cultivated area is above this limit.

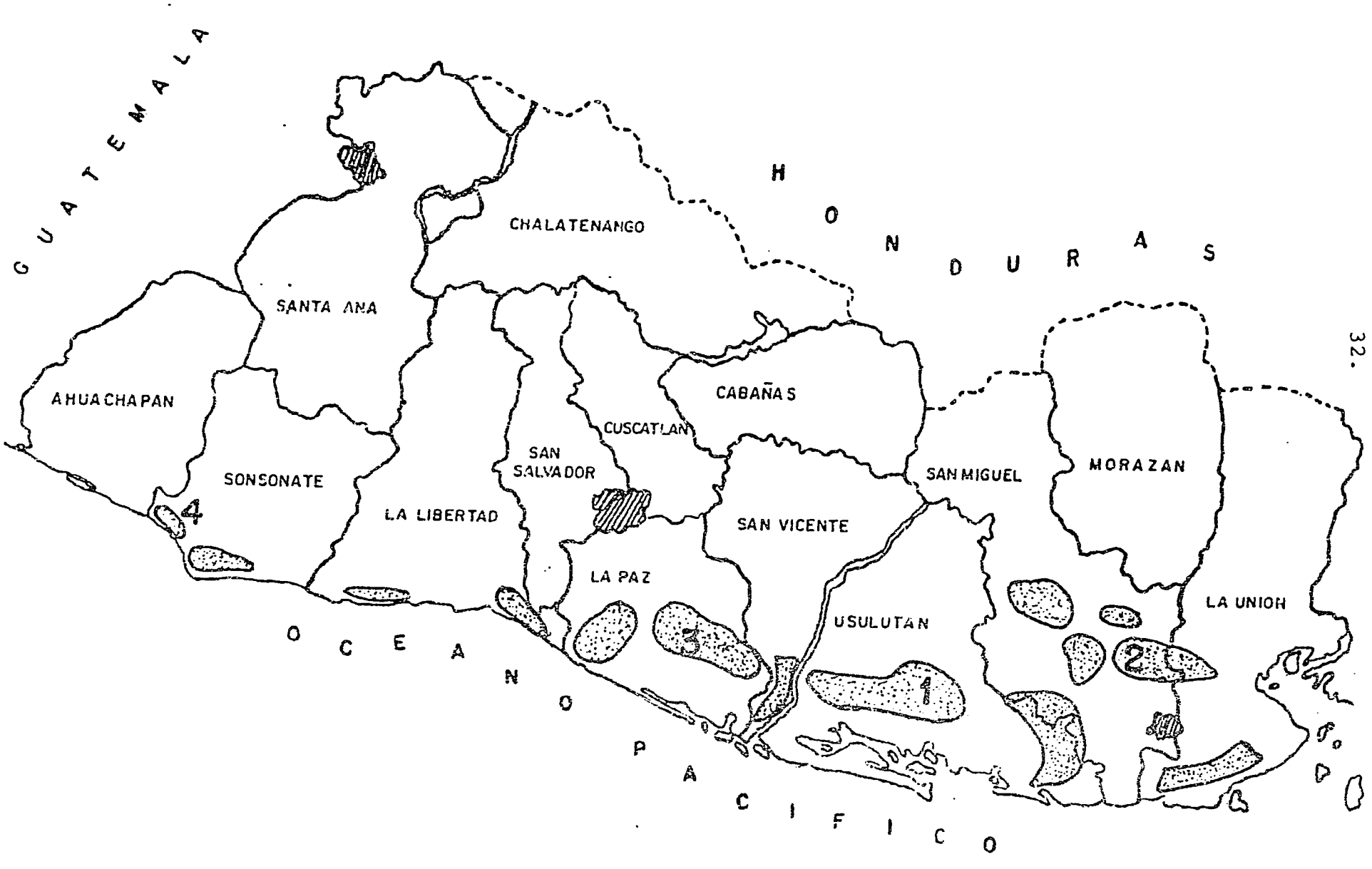
Table 2-12. El Salvador: Distribution of Cotton Crop by Departamento

(Percentage of area)

Departamento	1979/1980	1982/1983	1983/1984
La Libertad	3.5	3.7	5.9
San Vicente	6.4	1.4	1.5
La Paz	25.1	27.0	33.8
Usulután	31.2	37.2	30.5
San Miguel	25.9	26.4	23.8
La Unión	3.9	1.7	1.4
Otros	4.0	2.6	3.1
TOTAL	100.0	100.0	100.0

Source: Derived from COPAL data.

Figure 2.1. El Salvador: Cotton Crop Distribution by Departamentos, 1982-83



Impact of the Drop in Cotton Production on the Economy

The drop in cotton production has had a considerable impact on the foreign-exchange earnings, employment, and rural income levels. Indirect effects have been experienced by the textile and transportation industries. The main indicators of these effects are:

- Foreign-exchange earnings dropped from US$84.6 million in 1979 to $55.4 million in 1983, i.e., a 35 percent reduction with respect to the base year (Table 2-13). This behavior was due entirely to the drop in the exportable volume and not international market conditions or a significant price reduction.

- The demand for labor in cotton varies according to the degree of mechanization of its cultivation. It is estimated that on the average, requirements are for approximately 84 man-days per manzana (MAG, 1984). In one year, under normal conditions (120 thousand manzanas under cultivation), the cultivation of cotton can generate the equivalent of permanent employment for 37.3 thousand people. Using the same indicator, it is estimated that in the 1983-84 season, jobs were generated for an equivalent of 16.9 persons, or a deficit of 20.4 thousand.

- It is believed that around 300.0 thousand quintales of ginned cotton produced are destined to the domestic market. However, in recent years there have been problems of supply, especially of the high qualities used by the local industry, which in certain instances has found it necessary to use lower-quality cotton.

- Cottonseed is used as the raw material for the oil and fat industries, and for other by-products used in the manufacture of concentrates for animal feed. The scarcity

Table 2-13. El Salvador: Volume and Value of Exports of Cotton

(Thousand of 99/oro and US$)

Year	Volume	Value	Average Value
1975	1 708.0	74 468.8	43.6
1978	1 682.7	98 437.9	58.5
1979	1 228.0	84 609.2	68.9
1980	1 133.5	84 559.1	74.6
1981	662.4	53 588.2	80.9
1982	697.9	45 153.1	64.7
1983	769.7	55 418.4	72.0

Source: Banco Central de Reserva

of cottonseed has forced the oil industry to import its raw materials with an increase in the cost and prices of the end product. Under agreement PL-480 it has also been necessary to import increasing quantities of vegetable oil, in an amount which reached 15.2 thousand metric tons in 1983.

Main Policies in the Cotton Subsector

Public Expenditures

The government has maintained extension and research services specifically for cotton through CENTA/MAG; however, these programs have not had continuity, and are only given priority when crises of a productive nature appear. The integrated cotton pest control program, which is aimed at reducing costs related to the use of pesticides, was begun in 1980. There is a consensus among technicians and producers that the scale of the program is limited in comparison with the magnitude of the problem. The budget assigned to this program is about 590.0 thousand colones, which represents 0.4 percent of the total budget of the MAG.

An important aspect of extension and research services is the lack of coordination which exists between MAG and COPAL. As a result, priorities and research areas at the national level do not exist.

Through MAG/DGEA, the government also provides production support services which consist of the registration and authorization of planting areas, quality control of the inputs used, and the generation of production and factor use statistics. Apparently these services have not given the expected results, and therefore a more effective application

of the existing legislation on input quality control is required, as well as extension of the coverage of the statistical information.

Credits

Production Credits

The BCR places at the disposal of commercial banks an annual quota for cotton, in accordance with an estimate of the area to be cultivated. Other credit facilities are granted through the BFA and Cajas de Credito. The institutions thus lent 115.3 million colones in 1983 in working-capital production loans. The interest rate applied to loans granted by the Central Bank to intermediary institutions was 11 percent, whereas the maximum interest rate paid by the user was set at 13 percent.

For individual credits for the 1984-85 season, the BCR fixed a maximum amount of ₡72.00 per quintal of unginned cotton, plus ₡250.00 per manzana for producers using rented land.

Consultation among individual producers indicates that there are problems which do not permit the efficient use of credit. The one mentioned most often is lengthy processing of credit applications, which, they say, does not permit an adequate preparation of the soil, which affects the behavior of the crop in subsequent stages (weed and pest control) with a direct effect on production costs.

Another claim is that the amount granted by BCR is not sufficient to meet the demand and that individual credit only covers 83 percent of production costs.

Refinancing of the Debt

The producers' overdue debt to financial institutions currently constitutes a growing problem which merits special attention. In September 1982 the BCR approved a special facility for refinancing debts resulting from the cultivation of cotton for the 1979-80 to 1981-82 harvests, at a term of eight years and an interest rate of 11 percent per annum. The object of these loans is to ensure that producers continue to be creditworthy with the financial institutions. It is interesting that there are no monetary operations in these credits; the Central Bank only gives its guarantee to producers vis-a-vis credit institutions through discountable papers.

Refinancing of the cotton debt has grown rapidly from 17.6 million colones in 1979 to 62.8 million in 1982. During this last year, refinancing constituted 35 percent of the total loans for cotton (Table 2-14). The growing indebtedness of the producers is aggravated by the payment of interest, which in 1983 reached 6.9 million colones, i.e., an average of ₡126.8 per cultivated manzana.

Exchange Rate

In order to provide an incentive for growing cotton, the BCR authorized producers to exchange an amount of US$15.0 million resulting from the sale of cotton during the 1983-84 season on the parallel market. As a complementary step, for the 1984-85 harvest BCR approved, in addition to the $15.0 million, the incorporation to the parallel market of 50 percent of the production obtained from areas exceeding 50.0 thousand manzanas.

Table 2-14. Banking System: Credit Allocation for Cotton

Year	New Credits	Refinancing	total	Refinancing as % of grand total
1979	175.9	17.6	193.5	9.0
1980	141.6	13.6	155.2	9.0
1981	157.9	12.3	170.2	7.0
1982	170.7	71.0	241.7	29.0
1983	115.3	62.8	178.1	35.0

Source: Banco Central de Reserva.

In accordance with the production and productivity levels registered in the 1983-84 season, it is estimated that this measure will permit the exchange on the parallel market of around 45 percent of the foreign exchange earned by cotton exports. Computations made by FUSADES (1984) indicate that with the above provisions the average exchange rate applied to total production may range from ₡2.92 for 50.0 thousand manzanas to ₡3.06 for 90.0 thousand manzanas.

According to the calculation of costs carried out by institutions of the private sector (₡9.50 per quintal of unginned cotton), the new exchange rate would cover such costs only at the level of 90.0 thousand manzanas, an area which will be hard to reach for the coming season, in view of the other production-restricting factors. However, a technical and impartial analysis of the real impact of these steps will only be possible when information obtained from a statistical sampling of production costs is available. What is evident is that producers do not have a clear understanding of the effects these steps may have on their expected earnings; therefore, it is very likely that they do not give them the necessary weight when sizing the cultivation area. To overcome this problem, detailed information should be provided to producers regarding the benefits of the new exchange rate in terms of the expected price (or guaranteed price). This step apparently had no impact on the area cultivated in 1984-85 due to the fact that it was announced after planting decisions had been made.

Marketing

COPAL is responsible for the marketing of cotton as a private institution which representing producers of the

fiber. The cooperative buys unginned cotton through four reception centers (Figure 2-1), processes the product, and carries out both domestic and international sales. The judgment of both producers and public institutions is that COPAL's system for marketing the fiber is efficient, but that there are certain deficiencies in the marketing of by-products, especially cottonseed.

COPAL's processing and marketing costs have a strong impact on the end price of the product. Important scale economies can be achieved by processing volumes harvested on areas of 80.0 thousand to 100.0 thousand manzanas. Conversely, producers' prices experience a considerable reduction (₡12.00 per quintal approximately) when volumes under 70.0 thousand manzanas are processed, which happened in the 1983-84 harvest.

Improved efficiency in the marketing of by-products might be an important element in the improvement of producers' earnings and therefore an incentive to production. Timely fixing of seed prices seems to be particularly important.

Prices, Controls, and Quotas

Guarantee Price and Stabilization Fund

As part of its economic policy measures destined to foster growing cotton, the government has established a guaranteed price decreed by it annually. The Stabilization Fund (Decree 132 of December 1982) was created as a complementary measure, the main function of which is to pay producers the difference between the liquidation and the

guarantee price. This mechanism has a duration of five years (until December 1987) and is managed by COPAL. The government provided around 11.5 million colones to cover the difference between the guarantee and liquidation prices during the 1982-83 season.

There is a consensus that the guarantee price has not been fixed at an adequate level, and that its impact on the cultivated area is minimal due to the fact that it is not announced in a timely manner. In this regard, it is advisable to carry out field research through statistical sampling to determine production costs as a reference point for fixing the guarantee price, as well as to fix and publish the price at the right time.

Quotas

There is a system of annual quotas for the importation of fertilizers and insecticides, by which the BFA and private initiative can import at the official exchange rate (₡2.50). Quotas are defined annually in accordance with the estimated area to be cultivated. The operation of the distribution system seems to be efficient from the operational point of view. However, it is advisable to put aside a reserve fund for immediate pesticide imports which may be required in addition to the quota amount during the course of the year.

General Comment

The above comments permit us to identify the strong impact generated on the economy as a result of the drop in cotton production, mainly in terms of foreign-exchange

revenues, the generation of employment, and rural income. The drop in production is basically due to the reduction of the cultivated area, since yields have experience a relatively lower drop. Apparently, the main factor causing the reduction in the cultivated area is production risk, due to the fact that 55.8 percent of the usable land is in regions where guerrilla activity is more intense. Added to the above is the political risk resulting from uncertainty in the application of Phase II of the land reform.

Another important factor in connection with the cultivated area is the fall in producers' profits, caused basically by the increase in production costs, which is proportionately higher than the increase in producers' prices. The increase in costs is basically due to the increase in the value of inputs and of financial interest rates. The former is due to the lack of an appropriate technology for pest control; the latter is the result of the impressive increase in the financial debt.

The economic policy measures implemented to overcome the crisis have apparently not had positive results. Actions taken, such as the establishment of a minimum price, flexibility of the exchange rate and reassignment of the debt, lack efficiency in their implementation and there is no reliable statistical information, especially on production costs, which would make it possible to fix parameters in the design of the different policies. Efforts should be made to improve these policies and implement new measures especially geared toward reduction of the political and guerrilla risk, as well as to the reduction of production costs.

216

III. SUGAR CANE

Behavior of the Crop

The area on which sugar cane is grown experienced a high growth rate during the 1970s in response to the high prices on the world market in the first half of the decade. From 1978 to 1981, planted area experienced a reduction which began to recover in 1982. This movement was generated by the increase in domestic prices and the growth of the domestic market, which absorbs close to 60 percent of production.

The behavior of production has responded basically to the planted area, since changes in productivity have had no significant effects on variations of the volume of cane produced (Table 2-15).

The recovery in sugar production seen in 1983, following the drastic reduction in the production of sugar experienced during the three-year period 1979-82, was the result of larger production of sugar cane and improvement in the refineries' operating efficiency.

The development of sugar cane cultivation seems to encounter less restrictive factors than in the case of coffee and cotton. From the agronomical standpoint, the

Table 2-15. El Salvador: Area Planted, Production and Yield for Sugar Cane

Periods	Area Manzanas	Cane production (MT)	Yield MT/Manzana	Sugar production	Yield 99 sugar/M_2
1974/75	47.4	2 843.4	59.9	5 581.6	117.6
1975/76	47.9	2 814.6	58.6	5 691.2	118.6
1976/77	49.5	3 188.6	64.3	6 217.8	125.4
1977/78	49.1	3 143.7	64.0	6 261.0	127.4
1978/79	47.6	2 983.9	62.6	6 027.4	126.4
1979/80	39.0	2 194.8	56.8	3 887.1	99.6
1980/81	38.0	1 983.4	52.2	3 783.8	99.6
1981/82	39.2	2 117.4	61.2	3 910.6	99.8
1982/83	45.4	2 711.4	59.6	5 095.1	112.0
1983/84	53.0a/	3 119.1	58.8	5 326.0	100.5

a/ Estimated

Source: INAZUCAR.

problem lies in increasing productivity through a technology which might create a true soil-plant relationship, whereas the agroindustry faces the problem of increasing the efficiency of the eight sugar refineries in operation. The risks resulting from political violence are lower due to the fact that only around 15-20 percent of the cultivated areas is in the affected regions; added to this is the nature of the crop, which does not deteriorate easily.

The export quota on the United States preferential market and internal price levels have enabled the cane subsector to reach a balanced relationship between costs and benefits, which provides it with a reasonable safety margin (Table 2-16).

Main Economic Policies

Credit

The government has provided incentives for the cultivation of sugar cane through credit. In fact, the volume of bank financing of the crop rose from 24.8 million in 1979 to 37.4 million in 1983 (Table 2-17). There does not seem to be a growing indebtedness in the subsector, since refinancing only constitutes 7 percent of the total amount of credits granted. The banking system currently offers credit only for working capital. A maximum individual amount of ₡700 per manzana was fixed for the 1984-85 harvest. The user's interest rate is 15 percent.

Table 2-16. Production Cost per Manzana for Cane, 1983-84
(Colones)

	Phases			
	1rst. Year	2nd. Year	3erd. Year	4th. Year
COST OF PRODUCTION FOR MANZANA				
- Land preparation	265.00	-	-	-
- Inputs (Seeds, Fertilizers, Pesticides)	882.00	234.00	234.00	234.00
- Labor	677.50	483.00	483.00	483.00
- Harvest labor	852.00	805.00	690.00	575.00
- Transportation	800.00	700.00	600.00	500.00
- Loading	200.00	175.00	150.00	125.00
- SUBTOTAL	3 668.00	2 397.00	2 157.00	1 917.00
- Administration a/	110.04	71.91	64.71	57.51
- Land rental	200.00	200.00	200.00	200.00
- Interest b/	105.00	105.00	105.00	105.00
- Unforseen & Miscellaneous	50.00	50.00	50.00	50.00
- TOTAL	4 133.04	2 823.91	2 576.71	2 329.51
- Yield (Ton/Mz)	80	70	60	50
- Average Cost (¢/Ton)	51.66	40.34	42.95	46.59
- Price (¢/Ton)	50	50	50	50
- Average profit (¢/Ton)	(1.66)	9.66	7.05	3.41

a/ Administration cost (3% of list subtotal).

b/ Interest (15% of ¢700/Manzana).

Source: INAZUCAR.

Table 2-17. Banking System: Credit Allocation for Sugar Cane

(Million ₡)

Year	New Credit	Refinancing	Total	Refinancing as % of grand total
1979	24.8	3.1	27.9	11.0
1980	19.4	4.3	23.7	18.0
1981	33.2	1.2	34.4	3.0
1982	44.5	0.6	45.1	1.0
1983	37.4	2.9	40.3	7.0

Source: Banco Central de Reserva.

Domestic and External Marketing

INAZUCAR, responsible for domestic and external marketing, is a state institution created by the government by Decree 237 of May 1980.

Domestic Marketing

Domestic consumption of sugar has substantially increased in recent years, especially that of white sugar in lieu of refined sugar (Table 2-18). This behavior is due to a large extent to the greater availability of sugar for domestic consumption as a result of the drop in exports. To supply this market, INAZUCAR has designed a national distribution plan with the main objective of sending sugar directly from the processing plants to wholesale distributors throughout the country, using independent carriers.

External Marketing

Sugar exports (Table 2-19) fell considerably during the last five years, but experienced a major recovery in 1983. The low volume exported during 1980-81 is basically due to disruptions caused by nationalization of the sugar refineries and the nationalization of foreign trade. El Salvador participates in the United States preferential market. In fact, for fiscal year 1982-83, USDA distributed among the signatory countries a global import quota of 2,800.0 thousand ST, in which El Salvador was assigned 72.8 thousand ST (1,456.0 thousand quintales), equal to 2.6 percent of the total. Prices on this market have been substantially higher than those on the world market. Part of the exports were

Table 2-18. El Salvador: Domestic Consumption of Sugar
(Thousand quintals)

Year	Refined	White	Crude	Total
1975	1 643.0	512.2	75.4	2 230.6
1978	1 166.7	1 098.7	26.7	2 292.1
1979	2 022.3	743.9	71.4	2 837.6
1980	2 183.4	819.5	90.7	3 093.6
1981	1 623.1	1 221.3	38.2	2 882.6
1982	926.6	2 009.8	71.2	3 007.6
1983[a]	-	3 200.0	100.0	3 300.0

a/ Estimated.

Source: INAZUCAR.

Table 2-19. El Salvador: Volume and Value of Export for Sugar

(Thousand 99 and million ¢)

Year	Volume	Value	Average price ¢
1975	2 963.0	205.3	69.2
1978	2 477.3	47.3	19.0
1979	3 286.0	67.1	20.5
1980	750.5	33.4	44.0
1981	912.7	37.1	38.2
1982	1 176.4	39.7	33.7
1983	1 939.2	100.2	51.7

Source: Banco Central de Reserva.

also destined to the world market. In 1982-83 the International Sugar Organization (ISO) assigned a quota of 2,592.0 thousand quintales to El Salvador. However, this volume was not exported due to the low prices on the world market.

Prices

The policy has been to maintain the price level higher than the international market, thus bringing about a transfer of resources from the consumer to the producer of sugar cane. Table 2-20 contains information regarding the evolution of domestic and international prices, as well as the differentials experienced during the last five years.

General Comments

Three policy instruments have been principally used in the sugar can subsector: production loans, marketing, and prices. Their objectives have been to increase production and improve the efficiency of the sugar industry. Apparently, after an adjustment period, the objectives are being reached and both the production of cane and that of sugar have shown positive signs during the last season. In general, the price policy has consisted of stimulating production on the basis of domestic consumption and to a lesser extent the United States preferential quota. This policy should be substantially revised, since internal consumption will reach close to its saturation point and the assignment of quotas by USDA is an unforeseeable fact and to a large extent beyond the influence of the Salvadoran economy. The world market does not seem to present a favorable outlook for the increase of the quota. Special efforts will be needed for the identification of alternate

Table 2-20. El Salvador: Average Price for Domestic and International Sales of Sugar

(¢/99)

Year	World price	Domestic price	Difference
1975	71.55	21.39	(50.16)
1978	20.01	34.31	14.30
1979	21.62	37.58	15.96
1980	31.33	43.15	11.82
1981	33.02	43.20	10.18
1982	29.74	46.89	17.15

Source: BFA

uses for sugar cane, both as fuel and for animal feed. Efforts should continue to increase productivity on the basis of trials and adaptation of the existing varieties, as well as to increase the efficiency of industrialization by improving the operation systems of the existing refineries.

APPENDIX 1: METHODOLOGIES FOR POLICY ANALYSIS -- THE CASE OF COTTON

Production Costs

As stated in the text, reliable survey data do not exist to support production cost estimates for cotton. Cost estimates are a major source of controversy in the determination of appropriate policy measures.

Cotton producers indicate that, on average, they have been operating at a loss since 1979. While we can not corroborate this claim, data on average production costs presented by the cotton growers' cooperative, COPAL, is shown in Table A-1. Figure A-1 illustrates that it is at least plausible that some producers would have maintained production over recent years, in spite of short-run losses, so long as producer prices provided for some excess over average fixed costs (amortization of planes and other equipment, debt service on overdue production loans, the farmers' living expenses, etc.). Also illustrated in Figure A-1 is the possible effect on output and profitability of passing total cotton exports to the parallel market.

Yields required for break-even at historical producer prices -- based on COPAL average production cost estimates -- are presented in Table A-2. As can be seen, required yields for break-even considerably exceed historical average yields in El Salvador.

Table A-1. Cost of Production per Manzana and per Quintal Rama for Cotton

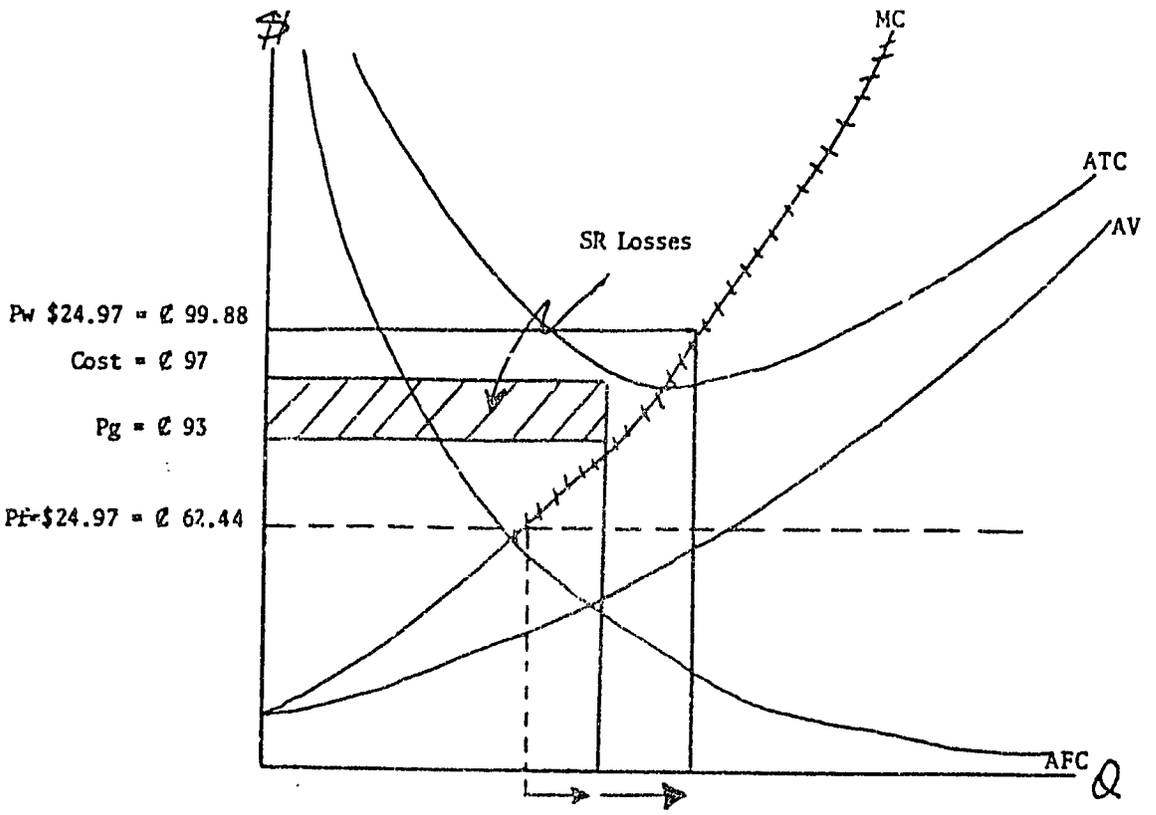
(Colones)

	1978/1979[a]	1979/1980[a]	1980/1981[b]	1981/1982[c]	1982/1983[a]	1983/1984[d]
COST OF PRODUCTION PER MZ						
-Inputs (seeds, fertiliz. and pesticides)	946.74	962.50	1018.80	1151.60	1085.60	1371.23
-Land preparation	146.66	165.66	194.00	218.33	232.00	235.00
-Labor	332.25	361.60	405.00	445.37	526.04	400.75
-Air spraying service	144.00	150.00	170.00	180.00	181.65	224.90
-Harvest labor	450.00	510.00	540.00	540.00	693.00	627.10
-Land Rental	300.00	300.00	300.00	300.00	250.00	250.00
Subtotal	2319.65	2450.76	2627.80	2835.30	2968.29	3108.98
-Farm implements	34.50	36.00	37.85	41.30	41.30	--
-Transport. & insurance	--	--	--	--	--	70.00
-Interest	139.53	165.00	189.20	225.45	295.34	309.95
-Administration	57.60	60.00	60.00	60.00	125.40	87.87
Subtotal	2551.28	2711.76	2914.85	3162.05	3430.33	3576.80
-Unforseen & miscellaneous	78.72	80.00	90.00	90.00	144.21	146.45
Total (₡/Mz)	2630.00	2791.76	3004.85	3252.05	3574.54	3723.25
Yield (qq-rama)	29.32	30.90	31.33	28.97	32.38	31.07
COST OF PROD. PER QQ-RAMA						
Average cost	89.7	90.3	95.9	112.3	110.4	119.80
Average cost[e]	87.0	87.8	93.0	109.2	105.9	115.1
FARM PRICE	67.4	69.2	78.0	61.5	76.6	93.0
NET RETURNS PER QQ-RAMA	(22.3)	(21.1)	(17.9)	(50.8)	(33.8)	(26.8)
NET RETURNS PER QQ-RAMA[e]	(19.6)	(18.6)	(15.0)	(47.7)	(29.3)	(22.1)

a Figures arrived by "Estudio Costos Comisión Mixta": MIPLAN, BCR, BFA, and COPAL.
b World Bank Reports.
c BCR Reports.
d COPAL: "Información Estadistica sobre el Algodón Ultimas tres Cocechas". Presented to the Minister of Economy, May 1984.
e Does not include: "Unforseen and miscellaneous".

SOURCE: COPAL.

Figure A-1.



Example

World price = PW = $82/qq oro.

Estimated production = 652 250 qq oro.

COPAL processing cost = $17.07 x 652 250 qq oro.

Net revenue of COPAL = Pw Q - Cost = $42.3 million.

Liquidation price = $42.3 ÷ 652 250 = $54.93 qq oro
or ($24.97/qq rama)

Pw = $24.97 x 4 = ₡99.88 per qq rama.

Pf = $24.97 x 2.50 = ₡62.44 per qq rama.

Pg = guaranteed price (1983-84)

Cost = ₡97/qq rama estimated by COPAL in base of 38 qq rama/Mz

SR LOSS = (97 - 93) x 38 = ₡152/Manzana

ATC = average total cost

AVC = average variable cost

AFC = average fixed cost

Table A-2. Yield Required to Break Even and to Have a Benefit-Cost Ratio of 1.13 for Cotton

	1978/1979	1979/1980	1980/1981	1981/1982	1982/1983	1983/1984
-Cost of production per manzana (colones)	2630.00	2791.76	3004.85	3252.05	3574.54	3723.25
-Farm price (in colones per quintal rama)	67.4	69.2	78.0	61.5	76.6	93.0
-Yield required for break even (qq rama/Mz)	39.02	40.34	38.52	52.88	46.67	40.03
.Cost per qq rama	67.4	69.2	78.0	61.5	76.6	93.0

Some Effects of Cotton Price Policy

The Government of El Salvador intervenes in the price-setting mechanism for cotton products in many different ways and for various reasons. These interventions can cause adverse effects on prices, farmers' income, and export revenues. Conversely, market instability can result in a lack of efficiency in the allocation of productive resources and the utilization of the output. Uncertainty in the prices and income of primary producers can create severe problems, particularly where there are geographical areas highly specialized in one agricultural product, such as the eastern region of El Salvador. Uncertainty affects investment decisions, family living expenses, and ultimately the level of agricultural output.

GOES policies related to cotton that are currently in use in El Salvador are reviewed below.

Exchange Rate Policy and Price Support Programs

For purposes of exposition, consider two markets: (1) the domestic market, where the supply side (S) represents the cotton growers (COPAL) and the demand side (D) represents the domestic textile industry; and (2) the export trade market, where the supply side (XS) represents the export supply for El Salvador (the difference between total supply and domestic demand, XS=S-D), and the demand side represents the demand for Salvadoran cotton from the rest of the world (assumed to be perfectly elastic). We are assuming that El Salvador cannot affect the world price, and that this price is given by the international market for cotton.

Further, assume that the real value of the dollar is ₡4.00 (instead of ₡2.50). The Government utilizes a multiple fixed exchange rate system (parallel and official) which can vary according to the type of transaction, or according to which product is being imported or exported.

Two types of policies are examined, representing in a general way the policies being implemented by the Government of El Salvador.

Type I Program (Past Policy)

Both domestic cotton producers and domestic consumers face the world price, at the official exchange rate. This type of policy is illustrated in Figure A-2.

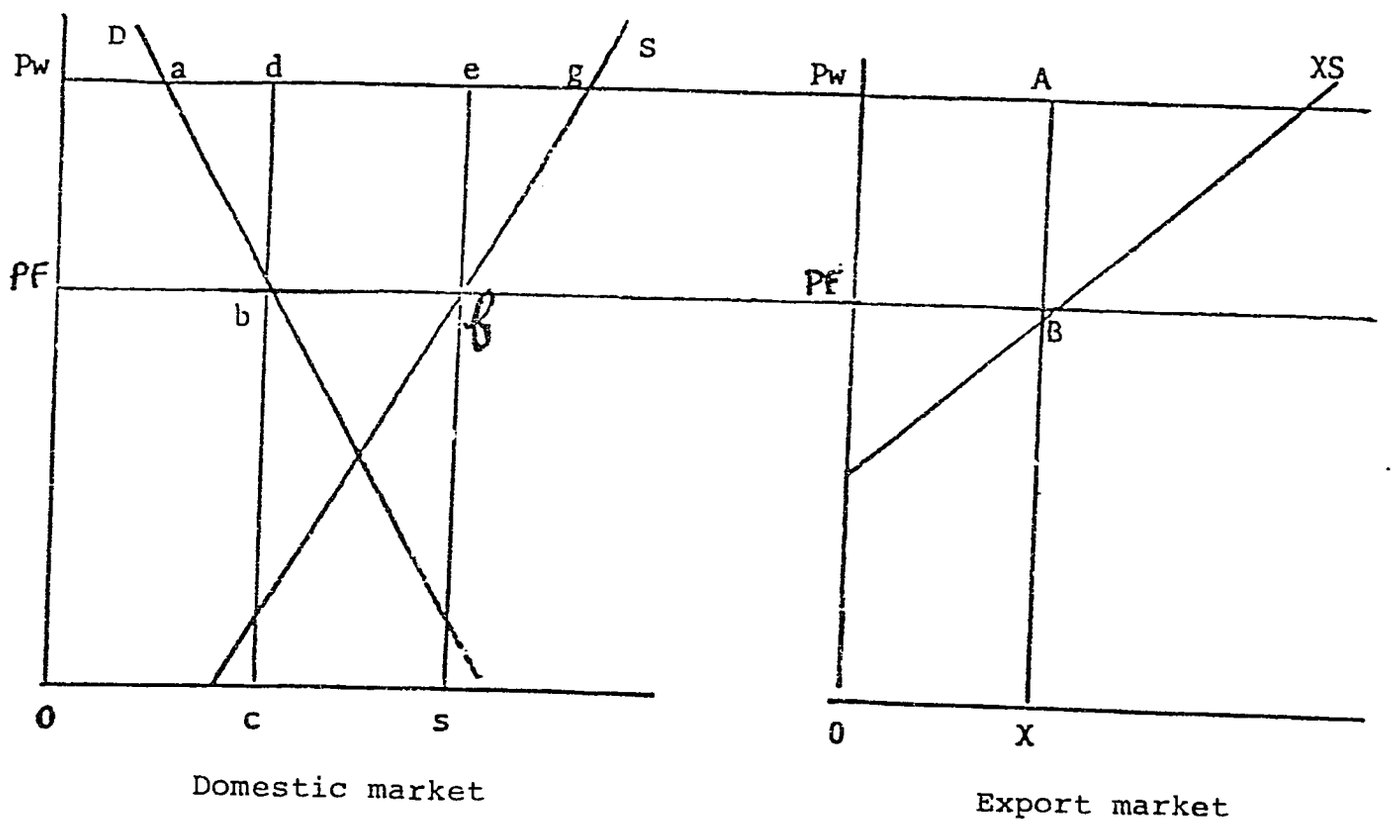
The world price at the official exchange rate is obtained in the following manner:

Pw = World Price (in U.S.$) x 4
Pf = Pw (1 - 0.375)

where Pw is the world price in colones at the parallel market rate, and Pf is the world price in colones at the official exchange rate (notice that Pf = world price, in U.S.$, x 2.50). The imposition of an overvalued official exchange rate acts like an export tax (equal to 37.5 percent) for producers, and also like a subsidy for domestic consumers. For every dollar of exports, domestic producers receive only $0.675 [$1 x (1 - 0.375) = $0.675] or ₡2.50 ($0.675 x 4 = ₡2.50).

Given the price (Pf), domestic producers supply an amount (os), domestic consumers of cotton demand (oc). The quantity of cotton exported is (ox), which is exactly equal to (cs = domestic supply - domestic demand).

Figure A-2. The Cotton Market With an Overvalued Exchange Rate



The implicit tax imposed on cotton is given by the area in the square (b d e f), which is exactly equal to the area in the square (Pf Pw A B). Because of the overvalued exchange rate, there is a gain in consumer surplus equal to the area within the trapezoid (Pw a b Pf) and a loss in producer surplus equal to the area of the trapezoid (Pf Pw g f). If the social welfare function is simply the summation of gains and losses of consumer surplus, producer surplus, and government revenue, then it is clear that overvalued exchange imposes a net social welfare loss (deadweight loss) equal to the sum of triangles (a d b) and (e g f).

There can be many different specifications of a social welfare function. For example, society can specify a weighted social welfare function, where the weights for producers, consumers, and government represent the level of importance that society gives to each of these groups. In a case in which society weights the well-being of domestic consumers (i.e., textile industry) and the well-being of the government (public sector) more highly than the welfare of producers, it would be possible that the present policy would produce a social welfare gain rather than a social loss. Given the absence of a unique social welfare criterion, the approach here will be to consider the policy in relation to the following government objectives: (1) an increase in cotton production and (2) an increase in export revenues. On this basis it is also clear from Figure A-2 that the impacts of an overvalued exchange rate are negative.

Type II Program (Present Policy)

In 1982, the government decided to set a guarantee price designed to help cotton producers. The objective of this policy is to provide protection against adverse market fluctuations. Domestic cotton consumers (i.e., the textile industry) still pay the world price at the official exchange rate.

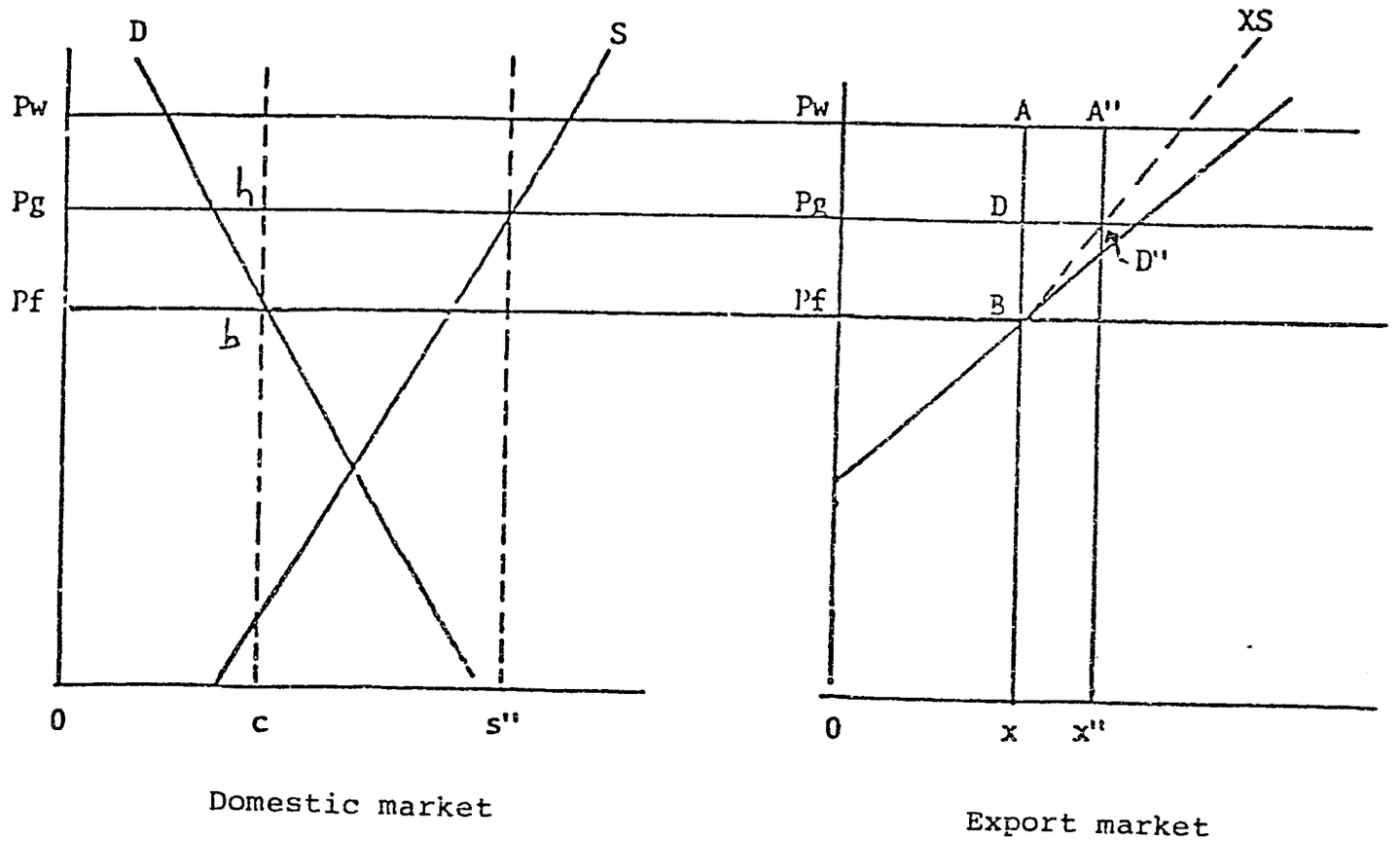
Under this program, three cases could reasonably happen: (1) the world price at the official exchange rate is higher than the guarantee price (Pf > Pg); (2) the world price equals the guarantee price (Pf = Pg); and (3) the world price is below the guarantee price (Pf < Pg). For the first two cases, the results of this program are going to be exactly the same as for the type I program. For the last case, however, there are going to be changes, as illustrated in Figure A-3.

Domestic consumers will still demand quantity (oc), since they face the Pf price. Notice that because of the difference between the guarantee price and the price paid by domestic consumers, the export supply function shifts backwards at price levels above (Pf). Producers will increase supply up to (s"). The implicit export tax is given by the area in the rectangle (Pg Pw A" D"). The net cost of the guarantee program is given by the following equation:

$$\text{Net cost} = (oc) \times (Pg - Pf) + (ox) \times (Pg - Pf) - (XX") \times (Pw - Pg), \text{ or}$$

$$= \text{Area } (Pf\ Pg\ h\ b) + \text{Area } (Pf\ Pg\ D\ B) - \text{Area } (D\ A\ A"\ D")$$

Figure A-3. The Cotton Market with an Overvalued Exchange Rate and Guarantee Prices



Where area (Pf Pg h b) represents the government cost resulting from the difference of the value of domestic consumption at the guarantee price and the world price at the official exchange rate, the area (Pf Pg D B) is the value of implicit tax revenues that the government gives up because of the program, and finally the area (D A A" D") is the value of the additional government export revenue resulting from an expansion in domestic supply. It is important to keep in mind that the net cost of this program for the government will depend not only on the difference between the guarantee price and the resulting world price, but also on the price elasticities of domestic supply and domestic demand. For example, in the extreme case of a zero price elasticity of supply (no reaction in quantity supplied for any given increase in cotton price), the cost of the program will increase to the sum of areas (Pf Pg h b) and (Pf Pg D B). More elastic supply response reduces the net cost of maintaining the guarantee price program through an increase in implicit tax revenues.

APPENDIX 2. A SUMMARY OF CURRENT GOES POLICIES APPLICABLE TO THE COFFEE AND COTTON SUBSECTORS

El Salvador
Summary of Policies in the Coffee Subsector

Policy	Instrument and legal base	Responsibility	Implementation
1. Fiscal policy	1.1 Taxes		
	a. Export tax Decree 836 September 13, 1950	Ministry of Finance	Established a progressive tax based on value which is applied according to the increase in FOB price.
	b. Agricultural land tax	Ministry of Finance	Provides that all agricultural landowners whose land has a value over 200 thousand colones pay land tax.
	1.2 Public Expenditures		
	a. Extension and research services	ISIC	Research done on the adaptation of new varieties and cultivation systems.
	b. Control of coffee rust	ISIC	Training programs in control of coffee rust. Supply of inputs and equipment to small producers.
2. Monetary policy	2.1 Credit		
	a. Production credits	BCR, BFA and commercial banks	Credit regulations establish an amount of ₡150.00 per quintal of coffee. This amount is distributed into ₡60.00 for the agricultural phase and the balance of ₡90.00 against the delivery of coffee receipts from the processing centers.
	b. Credit for control of coffee rust	CABEI and commercial banks	Financing of the cost of equipment and labor needed for control. A maximum of ₡179.50 per manzana was fixed for the 1984-85 season.

Policy	Instrument and legal base	Responsibility	Implementation
	2.2 Interest rate	BCR	The interest rate is 13 percent for those producing up to 500 quintals "oro"; 15 percent for those producing more than 500 and less than 5000 quintals; and an interest rate equal to the cost of external resources acquired by the BCR for producers of more than 5000 quintals.
	2.3 Exchange rate	BCR	Sales of coffee abroad are paid through the BCR at the official rate of ₡2.50.
. Marketing	3.1 Internal marketing	INCAFE	Purchases are made through the banking system. Producers receive the difference between the selling price to INCAFE and the amount of their bank loan, plus interest.
	3.2 External marketing	INCAFE	External marketing of coffee is the responsibility of INCAFE, as a state monopoly.
. Price and quota policy	4.1 Domestic price estimation	INCAFE	Producer price is set according to the average of external sales realized by INCAFE. Export taxes (30 percent) are deducted as well as product losses, processing and fixed costs.
	4.2 Quotas	ICO	Annual quotas are assigned to exporting members with a fixed part and a variable part. The fixed quota corresponds to 70 percent of the aggregate quota on the basis of average exports in the last three years. The variable part corresponds to the remaining 30 percent of the aggregated quota, which is distributed among exporting members in proportion to the verified stocks of all the exporting members which have a basic quota.

El Salvador
Summary of Policies in the Cotton Subsector

Policy	Instrument and legal basis	Division of responsibilities	Implementation
1. Fiscal policy	1.1 Taxes		
	a. Agricultural land tax Decree 435 of December 22, 1977	Ministry of Finance	Payment of 1 percent of the appraised value in the case of properties over 200.0 thousand colones.
	b. Income tax	Ministry of Finance	All individuals or legal persons whose annual income exceeds 7.0 thousand colones are subject to payment of this tax.
	1.2 Public expenditures		
	a. Destined to extension and research services	MAG/CENTA	These programs have not had continuity and are only given priority when crises of a productive nature appear.
	b. Production support services	MAG/DGEA	Registration and authorization of planting areas, quality control of the inputs and generation of statistical information.
2. Monetary policy	2.1 Credits		
	a. Production credits	BCR	The BCR places at the disposal of commercial banks an annual credit quota for cotton, in accordance with an estimate of the area to be cultivated. Other credit facilities are granted through the BFA and Cajas de Credito.

Policy	Instrument and legal bais	Division of responsibilities	Implementation
	b. Refinancing of the debt	BCR	Existence of a special facility for refinancing debts resulting from the cultivation of cotton for the 1979-80 to 1981-82 harvests.
	c. Interest rate	BCR	The interest applied to loans granted by the BCR to intermediary institutions was 11 percent. The maximum interest rate paid by users was 13 percent (1983-84 crop).
	2.2 Exchange rate	BCR	The BCR authorized producers to exchange an amount of US$15.0 million resulting from the sale of cotton during the 1983-84 season on the parallel market. In addition the incorporation to the parallel market of 50 percent of production obtained from areas exceeding 50.0 thousand manzanas.
Marketing policy		COPAL	The cooperative buys unginned cotton through four reception centers, processes the product and carries out both domestic and international sales.
Prices, control and quotas	4.1 Guarantee price	COPAL	The government, through COPAL has established a guarantee price decreed by it annually. The stabilization fund was created as a complementary measure whose main function is to pay producers the difference between the guarantee and liquidation price.
	Quotas for importation of inputs	BCR, MAG	Annual quotas are fixed for the importation of fertilizers and insecticides, by which the BFA and private businesses can import at the official exchange rate.

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AN INVENTORY OF POLICIES AFFECTING AGRICULTURE IN EL SALVADOR

POLICY ANALYSIS ANNEXES
ANNEX 3: BASIC GRAINS

SUBMITTED TO

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
RURAL DEVELOPMENT OFFICE
SAN SALVADOR, EL SALVADOR

AUGUST 1984

TABLE OF CONTENTS

	Page
INTRODUCTION	1
OFFICIAL PRICES FOR BASIC GRAINS	2
Introduction	2
IRA: The Good Intentions	3
IRA: Actual Performance	6
Concluding Observations	12
Considerations for Change	13
IMPACT OF PL-480 RICE IMPORTS	13
The IRA Connection	14
PL-480 Rice Imports: Impact on Rice Prices	17
FOOD CONSUMPTION EFFECTS OF PL-480 RICE IMPORTS	23
Income Effect and Income Elasticities	25
Budget Shares of Major Foods	28
Price Effect and Price Elasticities	30
Indirect Estimation of Price Elasticities	33
Calorie Contributions of Selected Foods	36
Computation of Consumption Changes	40
1-2-3 Computation Model	44
Nutritional Impact of Rice Imports	45
Consumption Impact on Rice Farmers	49
Conclusions of Consumption Effects	53
PRODUCTION EFFECTS OF PL-480 RICE IMPORTS	54
Impact on Area Planted to Rice	54
Impact on Rice Yields	65
A Rice Production Function	65
Total Production Impact	71
Conclusions	72
IRA AND THE GAME OF COYOTES	78
Introduction	78
The Setting	78
Coyotes Without IRA	82
IRA and the Coyote	84
Conclusions	91

248

LIST OF TABLES

Table		Page
3-1	Comparison of IRA and Market Consumer Prices in San Salvador, 1983-84	9
3-2	IRA: Guarantee Producer Prices and Wholesale Consumer Prices, 1980-84	11
3-3	Direct Price Elasticities for Food, Central America	19
3-4	Household Expenditures on Selected Foods by Income Group, El Salvador, 1976-77	27
3-5	Income Elasticities for Central America	29
3-6	Percent Share of Expenditures of Selected Foods, by Income Group: El Salvador, 1983	31
3-7	Computed Money Flexibility Coefficient Values, by Income Strata	35
3-8	Direct and Cross-Price Elasticities Matrix for Selected Foods Among High-Income Households, El Salvador, 1976-77	37
3-9	Average Consumption of Selected Foods by Income Group, El Salvador, October 1978-March 1979	39
3-10	Calorie and Protein Composition of Major Foodstuffs, El Salvador	41
3-11	Percent Share of Calorie Intake Provided by the Main Foods of El Salvador Diet, by Income Group, October 1978- March 1979	42
3-12	Sample Screen Content of 1-2-3 Program to Compute Nutritional Impact of Food Price Change	46
3-13	Consumption Effects of a 50 Percent Drop in the Consumer Price of Rice, El Salvador, 1983	47
3-14	Consumption Effects on a Farmer of a 50 Percent Drop in the Consumer Price of Rice, El Salvador, 1983	52
3-15	Area Planted to Four Basic Grains, El Salvador, 1960-83	6

LIST OF TABLES (cont.)

Table		Page
3-16	January Consumer Prices of Four Basic Grains in San Salvador, 1966-83	59
3-17	January Wholesale Prices for Basic Grains in Salvador, 1969-83	60
3-18	Response of Area Planted in Rice to Price Changes in Rice and Corn, El Salvador, 1969-83	64
3-19	Labor and Input Production Cost for Rice in 55 Sampled Farms, El Salvador, 1983-84 Crop Season	67
3-20	Estimation of a Cobb-Douglas Production Function for Rice: El Salvador 1983-84 Crop Season	69
3-21	Price and Quantity Distribution of 60 Kiloton Rice Harvest Over a Six-Period Year	80
3-22	Price and Quantity Evolution of Rice in El Salvador, Hypothetical Case: Coyotes Without IRA	83
3-23	Price and Quantity Evolution of Rice in El Salvador, Hypothetical Case, IRA with Smooth Supplies	85
3-24	IRA Attempts to Control Price in a World of Profit-Hungry Coyotes	88
3-25	Price and Quantity Evolution for Rice in El Salvador, Hypothetical Case: IRA Succeeds at Price Control	90

LIST OF FIGURES

Figure		Page
3-1	Principal Marketing Channels for Rice in El Salvador	15
3-2	Impact of PL-480 Rice Imports on Consumer Rice Prices	20
3-3	Impact of PL-480 Rice Imports on Producer Rice Prices	22
3-4	Tracing the Effect on Consumption and Calorie Intake from a Change in Rice Price	24
3-5	Calorie Intake Changes Resulting From a 50 Percent Drop in Rice Price Among Consumer and Producer Households	50
3-6	Area Planted to Rice, El Salvador, 1970-84	57
3-7	Wholesale Price of Rice in San Salvador, 1978-83	61
3-8	Wholesale Price of Corn in San Salvador in Constant Colones of December 1978, 1978-83	62
3-9	Price and Quantity Distribution of 60 Kilotons of Rice Harvest Over Six Bimonthly Periods	81

ANNEX 3. BASIC GRAINS

Introduction

As with other agricultural commodities in El Salvador, the production and consumption of basic grains -- corn, rice, beans, and sorghum -- are influenced by a wide range of policy instruments. Some are macroeconomic policies (monetary policies which affect the availability and cost of capital, exchange rate, and other trade policies), some are sectoral in character, and some are rather specific to basic grains (such as the role of IRA, or the Foodstuffs Stabilization Board, and the import of PL-480 commodities). These and other policy instruments, and the national development objectives they are intended to serve, are described in Volume 2: Policy Inventory.

Basic grains are an important segment of El Salvador's agriculture. In the aggregate, they represent 22 percent of value added in agriculture and account for a large part of agricultural employment. Most basic grain producers are also small farmers, thus having income distribution implications. And obviously all households in El Salvador are consumers of basic grains, though the relative importance depends on the income levels of the households.

Pricing policies for basic grains have the most significant impact on incomes of both producers and consumers and on production and in turn foreign exchange earned or saved. Though prices for basic grains in El Salvador can be influenced in numerous ways, this annex focuses on three:

- The role of official prices for basic grains;
- The impact of PL-480 imports; and
- The role of IRA as a marketing agent compared to the private market actors (or "coyotes" as they are called in El Salvador).

The rather detailed analysis of PL-480 is due in part to the intent of illustrating the analytical process and techniques for estimating quantitatively the impacts of policy changes which influence prices.

Official Prices for Basic Grains

Introduction

There are understandable reasons why the Government of El Salvador has become involved in setting prices of both export crops and internally for basic staples. The principal reasons are to protect consumers and producers from the vagaries of market prices, protect farmers from alleged exploitation by intermediaries, and stimulate production. In the case of export crops, the generation of tax revenue for the government is an additional factor.

The state has therefore set up or taken over a collection of large-scale marketing agencies with various degrees of market power to control trading in specific crops or industries, such as INCAFE to control the marketing of coffee, the principal export crop. In the domestic scene and, particularly for basic grains, responsibility for ensuring stable prices, ample supplies to consumers, and remunerative prices to farmers, has been assigned to IRA.

IRA, the Instituto Regulador de Abastecimiento (Regulatory Supply Institute, or Foodstuffs Stabilization Board), constitutes one of the more powerful instruments of agricultural economic policy for the Government of El Salvador. The background, objectives, organization, and policies of the Institute are presented in various IRA publications.[1]

IRA: The Good Intentions

Objectives

The Institute, created in 1953, was given three overall objectives:

- To ensure a regular supply of basic grains, sugar, and milk to consumers, especially those of low and middle income;
- To regulate prices to ensure remunerative production by small and medium sized farmers, while keeping staples affordable to consumers; and

1. "El IRA: Antecedentes, Objetivos, Politicas y Organizacion" (February 1984); "IRA: Plan Operative para 1984" (February 1984); and "IRA: Propuesta de Precios Minimos de Garantia para los Granos Basicos. Cosecha 1984-85" (March 1984).

To encourage basic grain production, mainly among small and medium sized farmers.

To accomplish these broad objectives, IRA carries out two main functions. First, it purchases grain from producers and sells to consumers through a vast network of warehouses, wholesalers, and retailers. Second, it markets food imports acquired through the United States Public Law 480 program. We shall be concerned at this stage with the domestic operations; the discussion about food imports will be taken up at a later stage.

Basic Grain Purchases

Since IRA offers producer prices above those of private traders, it needs to be selective about which farmers to favor with its purchases. Priority is given to those small farmers who receive production credit from the Agricultural Development Bank (BFA) or the Farm Credit Cooperative Federation (FEDECREDITO), and to those agricultural cooperatives created during Phase I of the Land Reform Program. IRA therefore reinforces the activities of those other institutions by offering their beneficiaries prices above those received by ordinary private farmers.

Strict quality standards are used at the time of purchase to ensure that only good products are stored for later distribution to consumers. Farmer rosters and identification cards will be used to organize purchasing schedules. A total of 16 assembly points (centros de acopio) are set up throughout the country to receive farmers product.

Producer Prices

IRA is also charged with setting minimum prices for basic grain producers. This price is decided sufficiently ahead of planting, and widely advertised, to ensure that farmers act upon them accordingly. The minimum price level is set to guarantee a reasonable profit margin over costs to farmers.

Consumer Prices

Just prices will be fixed in harmony with the overall economic stabilization policy of the government, and so as to prevent a loss of purchasing power by consumers. In setting consumer prices, IRA strives to reduce its own losses to the minimum possible, so long as consumers pay a just price.

Sales and Distribution

To guarantee that good quality, staple products reach consumers in sufficient amounts and in a timely fashion, IRA has established a nationwide network of marketing channels. IRA strives to "rationalize" the marketing of products in short supply by opening new distribution channels whenever it becomes necessary. It is a major IRA goal to improve its operating efficiency at all levels of the organization, within the limits imposed by the principles of economic rationality, budgetary and other resource constraints, and personnel capabilities.

Supervision

Finally, IRA carries out a continuous effort of supervising all assembly and distribution points, in order to learn about problems in storage and distribution, as well as to detect possible irregularities and problems in sales.

IRA: Actual Performance

IRA's overall goals and working procedures are sincere and well-intentioned. However, the breach between word and deed, between stated goals and actual performance, is vast indeed. Not that this should be surprising. Throughout the developing world there are state-run marketing agencies with identical difficulties. As an example, a recent report stated that:

> Agricultural marketing, in the conditions normally found in developing countries is inherently unsuitable for large-scale, bureaucratic organizations because it entails many small transactions taking place over large physical areas, typically characterized by poor communications and rapidly changing circumstances. It thus demands flexibility, rapid, and decentralized decision making because of the enormous obstacles to effective central supervision and control. Moreover, state trading systems require relative heavy inputs of skill per unit of sales (accountants, administrators, supervisors, etc.), and state trading monopolies waste the skill, experience, and human energy available in the actual or potential community of private traders. Such state monopolies substitute costly, formally acquired skills for the raw capacity and energy generated by the search for profit. Also, public sector trading monopolies involve wasteful use of capital resources. They are by nature capital

> intensive, requiring bigger inventories, more and better warehousing facilities, and more elaborate accounting procedures than private trade.[1]

In theory, prices of basic grains in El Salvador are controlled, not merely the small segment supplied by IRA, but also the open market that supplies the food for the bulk of the population. The Ministry of Economy, Division of Internal Commerce, periodically releases a 5-page list of regulated prices, most of which concerns prices of different size and brands of imported cans of milk, but also includes the prices of basic grains. The list released on June 1, 1984 announced these prices at the retail level:

Rice	0.55 colones/lb.
Red beans (ordinary red)	0.65 colones/lb.
Black beans (tineco)	0.65 colones/lb.
Corn	0.235 colones/lb.

The price of sorghum is no longer controlled.

Official Prices Are Ignored

The above list of official prices published by the Ministry of Economy merely reiterates the prices set by the Foodstuffs Stabilization Board (IRA). No adjustments are made for season, quality, or transportation costs. In fact, the price for rice has not changed since 1976 (and possibly earlier).

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1. Changing the Public-Private Mix: A Survey of Some Recent Experiences in LDCs, Elliot Berg, I.M.F., February 22, 1983.

Needless to say, nobody takes such prices seriously, and the Ministry of Economy makes no pretense at enforcing them. These "official" prices are just figures and are ignored accordingly, even by government agencies. The Agricultural Economics Division of the Ministry of Agriculture regularly collects and publishes actual market prices, illegal as they are, as part of its regular market surveys. The difference between official and market prices are substantial, as reflected in Table 3-1.

Only IRA makes any pretense at following official prices in its transactions. However, everything we have learned about IRA indicates a lack of internal controls within IRA over the prices at which its own agencies sell to consumers: IRA products leak out before they reach ordinary consumers; IRA agencies are mostly closed or empty; IRA is constantly closing agencies due to irregularities, and opening new ones to replace them; and consumers are charged higher than official prices for lower-quality products.

It would be incorrect to believe that the problem is one of insufficient enforcement. The current price differentials between IRA and the open market are so attractive that whoever can get IRA products can turn them into a handsome profit by reselling them in the open market. On April 17, 1984, as an example, an IRA employee could buy corn at 23.5 colones per quintal and sell it for 45.00, a 100 percent profit. (These figures are taken from a proposal for new sales price for basic grains submitted by IRA in May 1984.) This illustration should not be construed to imply that IRA employees engage in this kind of operation.

Table 3-1. Comparison of IRA and Market Consumer Prices in San Salvador, 1983-84

(Colones/lb)

Month	Corn			Beans			Rice		
	IRA price	Market price	Ratio (percent)	IRA price	Market price	Ratio (percent)	IRA price	Market price	Ratio (percent)
1983									
Jan.	0.235	0.30	78.3	0.60	0.90	66.7	0.55	0.70	78.6
Feb.	0.235	0.25	94.0	0.60	0.90	66.7	0.55	0.70	78.6
Mar.	0.235	0.30	78.3	0.60	0.90	66.7	0.55	0.70	78.6
Apr.	0.235	0.30	78.3	0.60	0.90	66.7	0.55	0.75	73.3
May.	0.235	0.30	78.3	0.60	0.90	66.7	0.55	0.90	61.1
Jun.	0.235	0.30	78.3	0.60	0.90	66.7	0.55	0.80	68.8
Jul.	0.235	0.30	78.3	0.60	0.90	66.7	0.55	0.95	57.9
Aug.	0.235	0.30	78.3	0.60	0.80	75.0	0.55	0.80	68.8
Sep.	0.235	0.35	67.1	0.60	0.75	80.0	0.55	0.90	61.1
Oct.	0.235	0.35	67.1	0.60	0.75	80.0	0.55	0.85	64.7
Nov.	0.235	0.35	67.1	0.60	0.80	75.0	0.55	0.80	68.8
Dec.	0.235	0.35	67.1	0.60	0.75	80.0	0.55	0.85	64.7
1984									
Jan.	0.235	0.35	67.1	0.60	0.75	80.0	0.55	0.85	64.7
Feb.	0.235	0.35	67.1	0.60	0.75	80.0	0.55	0.90	61.7
Mar.	0.235	0.35	67.1	0.60	0.75	80.0	0.55	0.90	61.1
Apr.-27	0.235	0.45	52.2	0.60	0.75	80.0	0.55	0.83	66.3
Average	0.235	0.328	71.6	0.60	0.82	73.1	0.55	0.82	67.1

SOURCE: Dirección General de Economía Agropecuaria, and I.R.A.

The basic point is that anyone who has access to IRA products, consumers included, can earn a substantial profit by doing so.

For the 1983-84 crop year, IRA purchased corn from farmers at 30 colones per quintal, while it sold to IRA's agencies at 22.35, a loss of 7.65 colones per quintal. This 25.5 percent automatic loss does not even include any of IRA's storage, transport, processing, packaging, administration, and financial costs.

Similar pictures emerge for beans and for rice (see Table 3-2). IRA pays 80 colones per quintal of beans in order to sell it for 57, and for rice it pays 61.66 to sell at 52.25. Not surprisingly, IRA needs substantial infusions of funds to cover those deficits. IRA's 1984 annual operating budget of 22.8 million colones is paid out of central government funds, except for 3.3 million that IRA makes as profit on powder milk sales from Title II PL-480 imports. Funds for purchases of grain are provided by a rotating credit of 150 million colones from the Central Reserve Bank, but since each quintal of product generates a loss, the rotating credit shrinks and every year it needs to be replenished accordingly. The above losses only cover the deficits generated by current operations, and do not take into account amortization and interest costs for investments IRA has in storage capacity and other infrastructure. (See IRA's 1984 Operating Plan for more details on financial resources.) This is a substantial fiscal transfer for a policy which has doubtful positive effects on basic grain producers and the low income consumers.

Table 3-2. IRA: Guarantee Producer Prices and Wholesale Consumer Prices, 1980-84

(Colones/quintal)

Year	Guarantee price	IRA price to agencies	Profit (loss) per quintal
	- - - - - - - - -	Corn	- - - - - - - -
1980-81	24.00	22.35	(1.65)
1981-82	24.00	22.35	(1.65)
1982-83	23.25	22.35	(0.90)
1983-84	30.00	22.35	(7.65)
	- - - - - - - - -	Beans	- - - - - - - -
1980-81	100.00	95.00	(5.00)
1981-82	100.00	95.00	(5.00)
1982-83	65.00	85.50	
	75.00	76.00	
		57.00	(2.83)[a]
1983-84	80.00	57.00	(23.00)
	- - - - - - - - -	Rice[b]	- - - - - - - -
1980-81	55.00	52.25	(2.75)
1981-82	55.00	52.25	(2.75)
1982-83	55.00	52.25	(2.75)
1983-84	61.66	52.25	(9.41)

a. Average loss.

b. Rice price converted to grain equivalent using a 60 percent paddy to grain ratio. Guarantee price for paddy has been 33 col/qq in the first three years and 37 col/qq in 1983-84.

Source: IRA, Propuesta de Nuevos Precios de Venta a los Granos Basicos, May 1984.

Official prices often have unforeseen but predictable consequences. We have seen the use of IRA yellow corn to feed chickens at a poultry farm. We also witnessed calves being fed with powder milk at a dairy farm. Products imported and distributed at subsidized prices in order to benefit infants and the poorer consumers can end up being diverted for the profit of poultry and dairy farmers (poultry farmers are now paying only about one-third of what the price would be without interventions).

Concluding Observations

- Ordinary consumers benefit only marginally from IRA's subsidized official prices.
- Official prices are ignored and unenforced, even at IRA's own centers of distribution.
- Among the real beneficiaries of IRA's subsidized prices are IRA's own employees and many other public service personnel who belong to the employee cooperatives that exist in most government branches and in large enterprises.
- The large disparity between subsidized official prices and market prices creates opportunities for considerable and easy profits.
- Considerable fiscal deficits result from IRA's basic operation of buying dear and selling cheap, not to mention the costs of IRA's operations and investments.
- Market distortions generated by the availability of cheap foods induce diversions of these products for animal feed.

Considerations for Change

- Reconsideration should be given to continuing the policy of maintaining official grain prices so far out of relation with market prices.

- The complete elimination of subsidized official prices should be the ultimate objective, even though the political obstacles to such a measure are considerable.

- IRA should simply sell at market prices and compete with private traders on an equal footing. Alternatively, IRA could sell the grain in the open market at prices set through open bidding. The resulting higher prices should alleviate the current deficits.

- If and when market prices for basic grains reach a politically intolerable level, the government could lower those prices through the judicious use of imports.

- If subsidized prices are continued, these should be clearly targeted to help lower income consumers.

Impact of PL-480 Rice Imports[1]

United States Public Law 480 constitutes one of the principal instruments available to the GOES to influence rice consumption and production. Under this law the U.S. government makes available to El Salvador surplus commodities, accumulated as a result of U.S. farm programs, either as outright grants or under soft credit terms.

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1. Rice was selected as the commodity for illustration partly because of the availability of data. This analysis could be repeated for other PL-480 imports, recognizing that the conclusions could differ from those of rice.

For fiscal year 1984, USAID/El Salvador has requested delivery of the following commodities:

120,000 metric tons of wheat/wheat flour,
14,000 metric tons of vegetable oil,
175,700 metric tons of corn (yellow),
10,000 metric tons of rice (milled).

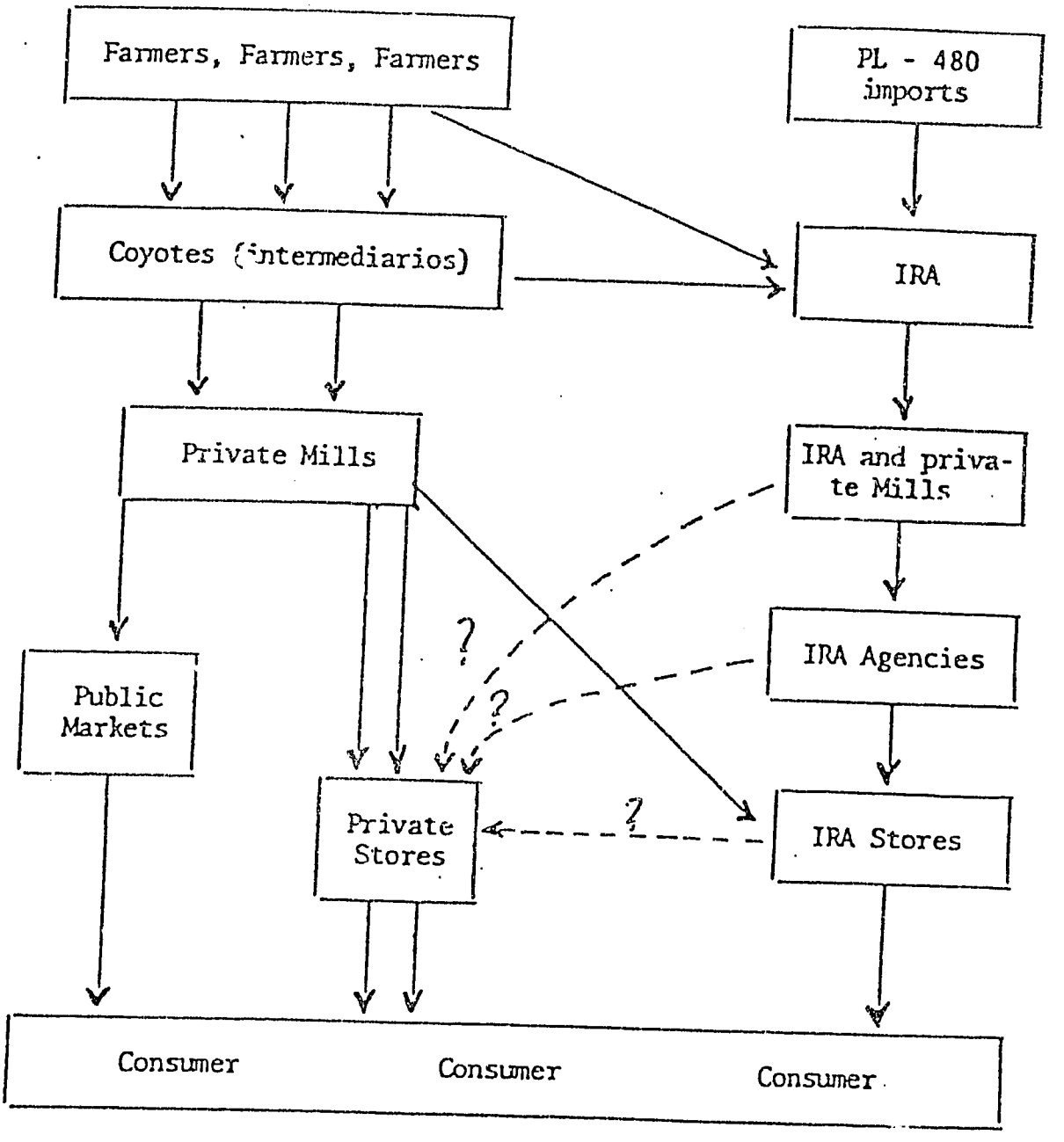
To finance these commodity shipments, the U.S. proposes concessional repayment terms of 40 years, including a 10-year grace period with initial interest rate of 2 percent and 3 percent during amortization.

The IRA Connection

U.S. commodity imports under PL-480 are channelled within El Salvador mainly through the IRA. Vegetable oil, however, is distributed by the Banco de Fomento Agropecuario (Agricultural Development Bank) directly to the oil processing enterprises.

To distribute these staples, IRA does not simply sell them through the regular commercial channels of public markets and private shops. Instead, as noted earlier, IRA has set up a parallel, nationwide network of IRA agencies to act as wholesalers, and these agencies in turn distribute to smaller neighborhood IRA stores, which presumably sell directly to the final consumer (see Figure 3-1). IRA agencies are not permitted to handle products other than IRA's; this precludes regular storekeepers and merchants from being involved in the IRA trade. Some IRA agencies are merely garages of, for example, retired army officers or a

Figure 3-1. Principal Marketing Channels for Rice in El Salvador



SOURCE: Interviews.

former schoolteacher. IRA stores may sell other products in addition to IRA's, but strict separation in accounting is expected.

Although IRA has not actually paid any money for PL-480 rice, it technically enters the country as purchased at the current world market price, which at the official exchange rate of 2.50 colones per dollar yields a local price of, for example, 0.41 colones per pound. After allowances for administration and operation costs, IRA sells PL-480 rice to IRA agencies at 52.25 colones per quintal (100 lbs). IRA stores are allowed to sell to consumers at 55 cents per pound. This price is considerably lower than the prevailing retail price per pound in San Salvador: 83 cents in April 1984 and 90 cents in March 1984.

Thus, there is the prospect of realizing over 50 percent profit by merely diverting IRA rice to the regular market. A cursory examination reveals that such diversion of IRA rice is taking place. Many IRA agencies are closed during regular business hours for lack of supplies; when they are open, IRA stores and agencies show mostly empty shelves. When small deliveries are received, they are quickly sold.

As an illustration, we bought IRA rice from an IRA agency in Ateos, a small town 30 km west of San Salvador. The store was located at a poultry farm half a kilometer from town. Until recently the IRA store had been in town but had been closed by IRA because of unspecified "irregularities." The "store" turns out to be a table in the storage room of the farm. The only IRA supplies it had for

sale were 20 5-lb. bags of rice. They did have yellow corn but could not sell it because they needed it for their own turkeys and chickens on the farm. A 5-lb. bag was purchased for 3.75 colones or 75 cents per pound of 2nd-grade rice, 20 cents above the "official" price of 55 cents set by IRA. For comparison purposes, we also bought two 1-lb. bags of high grade rice at a regular store in the center of town for 80 cents per pound, and their stocks were such that there was barely room to stand.

One may conclude from the above that despite the active participation of IRA at both producer and consumer levels, the effects of IRA's marketing activities are largely irrelevant in determining the ultimate price paid by ordinary consumers. PL-480 rice eventually reaches the consumer, not so much through IRA, but rather through the open market. The consumer price for rice is therefore basically determined by the free play of market supply and demand factors.

PL-480 Rice Imports: Impact on Rice Prices[1]

PL-480 rice imports for 1984 will contribute 10,000 metric tons out of a total national consumption estimated at 58,500 metric tons; that is, imports will increase total

1. The detailed analysis which follows is an effort to quantify the effects on consumers and producers. Recognizing that the values for some parameters must be derived from limited data, the results should be viewed as order-of-magnitude rather than precise quantitative estimates. Nonetheless, the results are highly instructive for the analysis of alternative policy interventions concerning basic grains.

available supply by one-fifth over what otherwise would have been. Domestic production for the 1983-84 crop season is expected to reach merely 37,200 metric tons; the difference is filled presumably out of stocks.

The policy question is what effect such an increase in market supply would have on the price of rice, as well as for other foodstuffs.

To answer this question, one needs to determine the relation between consumption levels and the rice price. Direct price elasticities for various food items have been estimated and reported for Central American countries (see Table 3-3). For rice, the direct price elasticity values are -0.18 for Guatemala, -0.17 for El Salvador, -0.16 for Honduras, -0.13 for Nicaragua, and -0.12 for Costa Rica. Moreover, let us make the usual short-term assumption that for a given year the supply of rice is determined by the volume of farm production at harvest time; that is, domestic supply is perfectly inelastic in the short run. Under these conditions, the effect of importing 10,000 metric tons of PL-480 rice can be shown graphically in Figure 3-2.

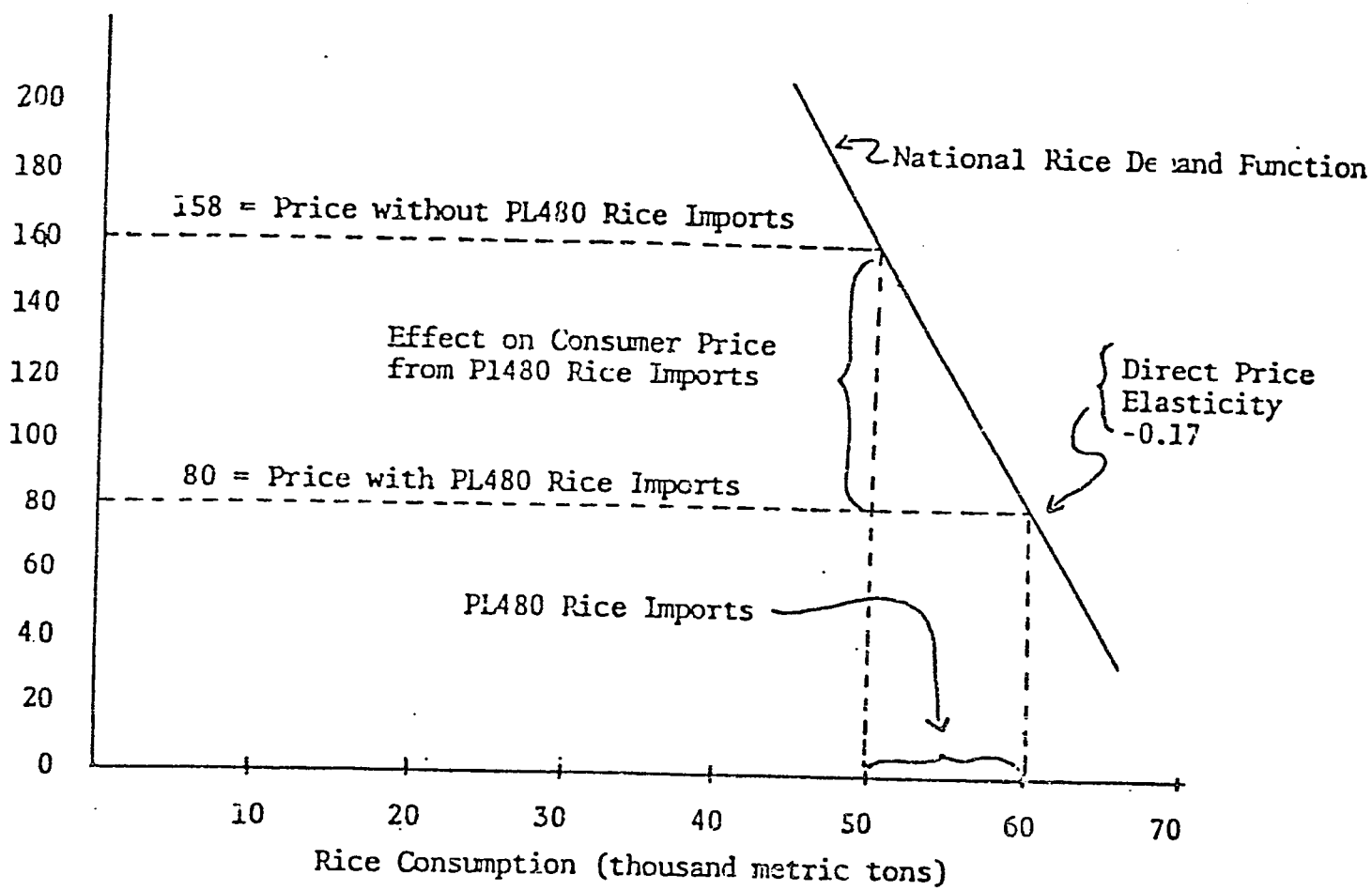
At present, the prevailing market price of 80 cents per pound corresponds to an overall market supply of 60,000 metric tons. At that level, a direct price elasticity of -0.17 indicates that a 10 percent increase in the price of rice will reduce overall rice consumption by 1.7 percent. Conversely, a reduction of 1.7 percent in rice consumption will induce a price increase of 10 percent. Extrapolating, a reduction of 20 percent in total supply available for consumption will induce a price increase of 117 percent.

Table 3-3. Direct Price Elasticities for Food, Central America

Product	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica
Wheat (flour)	0.19	0.21	0.20	0.23	0.16
Sorghum (meal)	0.06	0.06	0.05	0.06	0.08
Rice	0.18	0.17	0.16	0.13	0.12
Maize	0.03	0.03	0.03	0.03	0.04
Root crops	0.15	0.14	0.13	0.16	0.08
Plantain	0.09	0.06	0.05	0.06	0.08
Guineos	0.09	0.06	0.05	0.06	0.08
Sugar	0.15	0.15	0.17	0.13	0.04
Lump molasses	0.06	0.06	0.05	0.06	0.08
Beans	0.12	0.12	0.11	0.07	0.12
Fresh vegetables	0.16	0.19	0.18	0.27	0.24
Fruit	0.21	0.30	0.20	0.18	0.18
Bananas	0.09	0.09	0.08	0.06	0.08
Beef	0.28	0.25	0.23	0.25	0.31
Pork meat	0.15	0.15	0.14	0.16	0.19
Poultry	0.30	0.29	0.27	0.31	0.38
Eggs	0.25	0.24	0.27	0.26	0.27
Seafood	0.30	0.17	0.21	0.19	0.23
Milk and derivatives	0.26	0.22	0.22	0.15	0.21
Vegetable oils	0.25	0.21	0.22	0.19	0.23
Animal fats	0.12	0.14	0.11	0.16	0.19
Coffee	0.15	0.24	0.19	0.16	0.19
Alcoholic beverages	0.28	0.33	0.26	0.30	0.33

SOURCE: Cappi, C., L. Fletcher, R. Norton, C. Pomareda, and M. Wainer, (1978), "A Model of Agricultural Production and Trade in Central America", in W. R. Cline and E. Delgado (editors), Economic Integration in Central America, Brookings Institution, Washington, D.C. (pages 317-370).

Figure 3-2. Impact of PL480 Rice Imports on Consumer Rice Prices

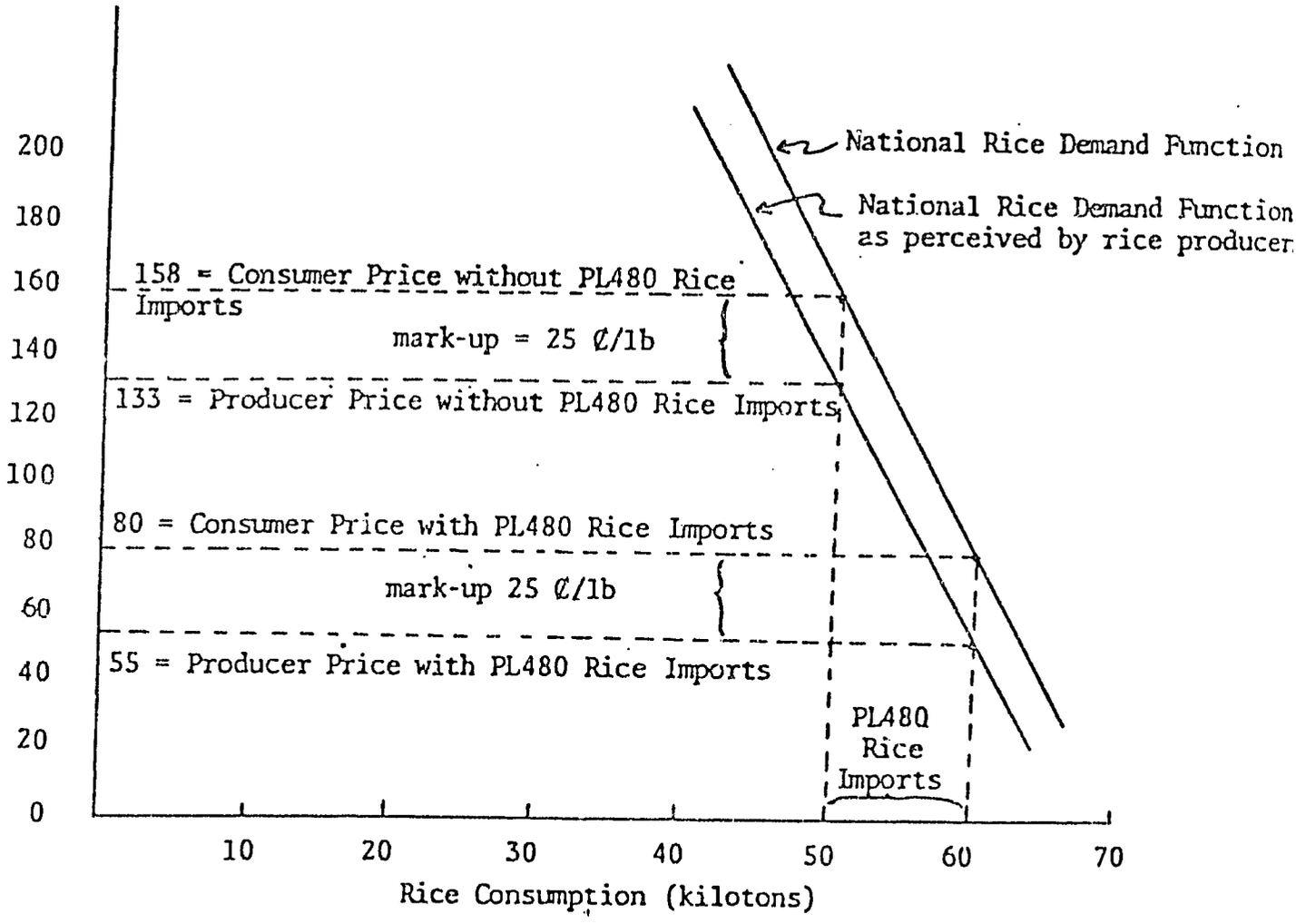


For the particular case of El Salvador, the subtraction of the 10,000 metric tons of rice contributed by PL-480 would result in a price increase of 78 cents to 1.58 colones per pound (see Note A at the end of this section for details on derivation).

From the point of view of Salvadoran consumers, PL-480 rice imports represent a significant bonus since in their absence the consumer price for rice would likely be double its current level.

From the point of view of Salvadoran rice producers, however, the effect of rice imports is even more dramatic but not as beneficial. To begin with, let us assume a mark-up differential of 25 cents per pound of milled rice between farm price and consumer retail price. This is a substantial difference but one must consider that there is a large milling and processing requirement to transform paddy rice into polished grain. During the past cropping season (1983-84), farmers received about 33 colones per quintal of 100 lbs. of paddy rice (based on interview with rice grower). This is equivalent to about 55 cents per pound of milled rice, assuming a 60 percent paddy-to-grain yield. The difference between the current consumer price of 80 cents and the 55 cents per pound received by farmers is indicative of mark-up charges. Figure 3-3 shows the national rice demand function and its equivalent price quantity relation as perceived by the rice producer. The vertical difference between the two lines represents the 25 colones per quintal mark-up.

Figure 3-3. Impact of PL480 Rice Imports on Producer Rice Prices



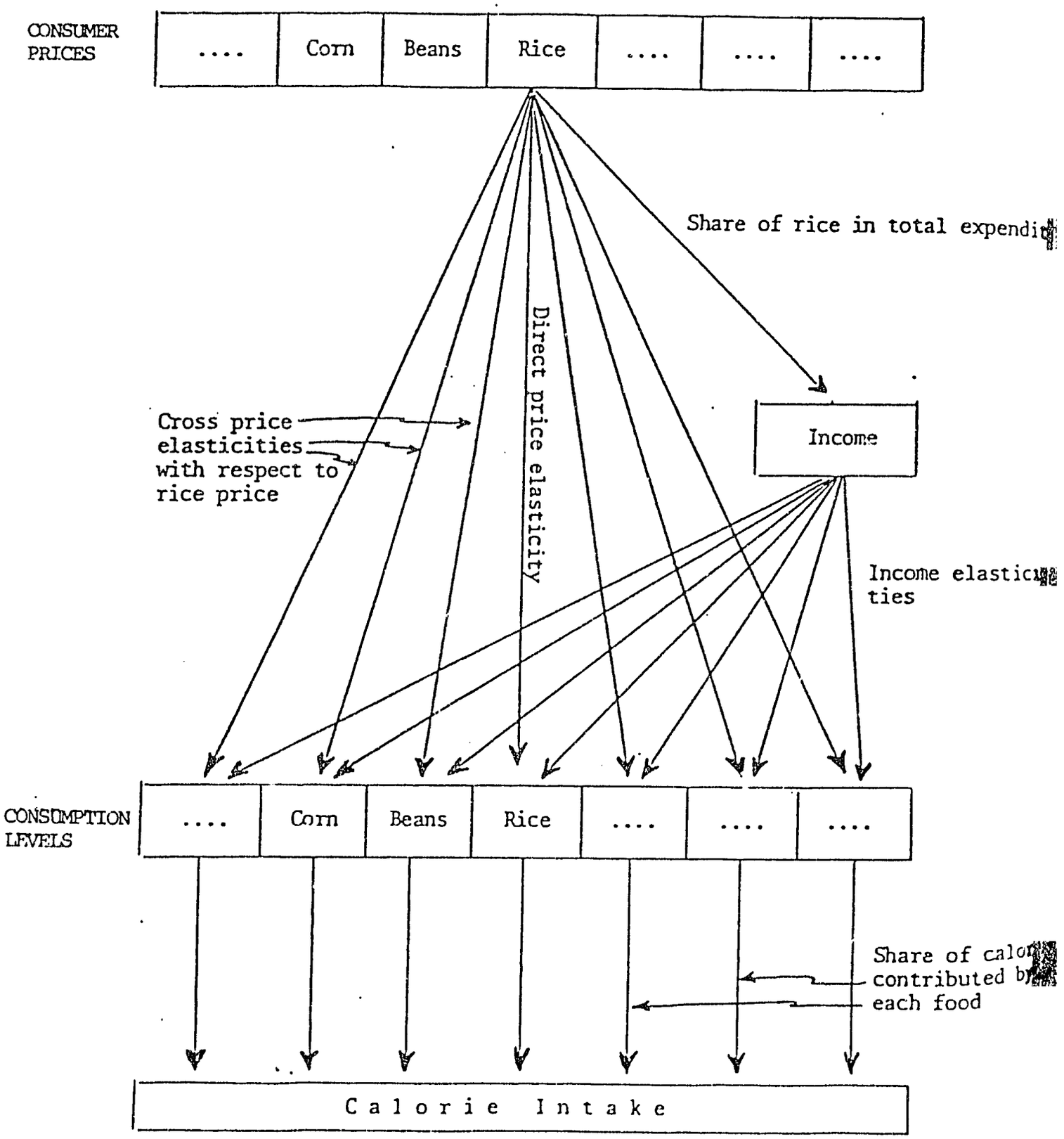
The important point derived from Figure 3-3 is that a given price change is proportionately greater at the farmer level than it is at the consumer level. Assuming sufficient competition exists among intermediaries (coyotes) and rice mills, we can expect that price changes at the consumer level would be reflected at the producer level. Thus, the price increase of 78 cents per pound that would result from removing PL-480 rice imports represents a 98 percent increase to the consumer, but it amounts to a 142 percent increase to the rice producer. Even allowing that the farmer does not receive the entire price change, the relative magnitudes demonstrate the ultimate impact on producer prices.

To summarize, we may conclude that the 10,000 metric tons of rice imported under PL-480, amounting to one-sixth of national consumption, result in a consumer price of 80 cents per pound. Without these rice imports, the consumer would have paid as much as 158 cents per pound. Conversely, the rice producer currently receiving 55 cents per pound of milled rice could be getting 133 cents instead in the absence of PL-480 rice imports. The effects of such considerable price changes on both consumption and production are worth exploring further.

Food Consumption Effects of PL-480 Rice Imports

We shall trace the impact of the 50 percent reduction in the consumer price of rice brought about by the PL-480 imports on the consumption pattern of various income groups. It is not possible to attempt a complete analysis of food consumption in El Salvador; instead, we will concentrate on

Figure 3-4. Tracing the Effect on Consumption and Calorie Intake from a Change in Rice Price



seven distinct products, for which we have gathered sufficient information. These products are corn, beans, rice, sugar, eggs, milk, and meats.

To visualize the chain of effects from a reduction in the price of rice, it is useful to examine Figure 3-4. There are two ways a change in the price of rice can affect the pattern of food intake of, say, an urban consumer in San Salvador, as depicted by the straight-down arrows, and the arrow going through the income box. First, there is the direct response of the ordinary consumers to changes in relative prices of goods. A drop in the price of rice has a positive effect on the consumption of rice, but a negative effect on the consumption levels of other foods. Second, there is an indirect effect through the impact of a change in price on the overall level of the consumer's income. A drop in price of a major expenditure item constitutes an increase in real income, which in turn stimulates the consumption of most other goods, including the food whose price changed. By convention, we shall refer to the first as price-effect and to the second as income-effect. However, the income effect occurs even though nominal income remains unchanged. In real terms, the consumer's income has increased as a result of the price reduction on one item, with the change in real income proportional to the share of the item in total expenditure.

Income-Effect and Income Elasticities

The well-off eat more than the worse-off, but in different proportions. Low-income groups have food consumption patterns where basic staples predominate, while meats,

eggs, and milk are conspicuous by their absence. Among higher income groups, by contrast, staples provide a smaller relative share of nutrients while animal products contribute significantly to the quality of the diet.

Each food has its own peculiar tendency to increase in consumption as income increases. Income elasticities for each food reflect how a given percent increase in income results in a given percent increase in consumption. For most ordinary foods, income elasticities vary between zero and one. However, staples such as corn or cassava might have slightly negative values, reflecting the fact that consumption might decrease in absolute amounts as income increases. Such might be the case, for example, of corn among the higher income strata of the population in San Salvador. Conversely, for some especially desirable foods, such as red meat, consumption might increase more than proportionally with respect to increments in income; income elasticity in those cases exceeds one.

Table 3-4 reports the values of income elasticities for seven commodities for each of six income groups (ranging from the lowest to the highest) calculated by the Survey Research Unit of the Ministry of Planning, based on the Household Budget Survey of 1976-77. For the entire population, food expenditures have an overall income elasticity of 0.61. Individual foods have values ranging from 0.25 for beans to 1.02 for meats. For rice, the computed estimate was 0.53.

Corn is a special case. The survey distinguishes between corn itself and corn-derived products. For the former, the income elasticity is not significantly different

Table 3-4. Household Expenditures on Selected Foods by Income Group, El Salvador, 1976-77

(Colones)

	Income group (colones/household/month)						
	Less than 100	100-199	200-299	300-599	600-999	More than 1,000	Income elasticity
Total average expenditure	110.03	165.22	258.75	407.53	718.24	1,465.41	
Food (total)	55.53	84.13	126.80	166.62	283.04	345.29	0.61
Corn[a]	16.92	26.67	29.88	32.57	35.33	35.68	0.25-0.05[b]
Beans[c]	7.16	9.89	12.13	12.93	13.93	16.94	0.25
Rice	2.43	4.34	6.40	8.29	10.00	12.41	0.53
Sugar	1.52	2.92	4.04	5.44	5.47	7.65	0.50
Eggs	3.32	5.29	8.37	11.26	13.81	17.30	0.56
Milk	1.25	2.39	4.71	8.16	14.43	18.66	0.94
Meat[d]	3.76	7.95	15.25	27.73	51.33	81.12	1.02

a. Includes corn, corn flour, and other corn products.
b. Income elasticity is allowed to decline from .25 for the lowest income groups to 0.05 for the highest.
c. No separate item is given for beans; instead, "other vegetables" was used since beans constitute the bulk of that category for all income groups.
d. Includes all meats, but not fish.
Source: MIPLAN - Unidad de Investigaciones Muestrales, "Algunos Resultados de la Encuesta Nacional de Presupuestos Familiares y Calculo de Coeficientes de Elasticidad - Ingreso - del Gasto, de los Principales Subgrupos de Articulos Consumidos por las Familias Salvadorenas," San Salvador, December 1979.

from zero, while for the latter type of products the value calculated was 0.85. Higher income groups eat a higher proportion of corn-derived products. We have combined the two corn categories and assigned decreasing income elasticity values to each income group. The lowest income group is assigned a 0.25 income elasticity and it declines to 0.20, 0.15, 0.10, 0.05, and 0.05 for the other five income groups. This diminishing value of income elasticity is adopted to reflect the fact that the amount of corn actually declines among the higher income groups, while corn-products increase markedly.

These income elasticities agree rather well with the values derived by Cappi et al. for El Salvador, and reported in Table 3-5, along with comparable values for other Central American countries. For rice, for example, the value 0.60 given by Cappi compares with 0.53 calculated by MIPLAN and adopted here. The ranking of elasticities by both sources follows basically the same pattern.

Budget Shares of Major Foods

The other element required in deriving the income-effect of prices on consumption is the relative budget share for the foods in question. Again, Table 3-4 presents the values obtained in the Household Budget Survey of 1976-77. Six separate income groups are identified by MIPLAN to report the budget shares. The lowest income group has earnings of less than 100 colones of 1976 per month per household (not per capita), while the highest group monthly income exceeds 1,000 colones. For each of the selected

Table 3-5. Income Elasticities for Central America[a]

Product	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica
Wheat (flour	0.60	0.70	0.70	0.70	0.40
Surghum (meal)	0.20[b]	0.20	0.20[b]	0.20[b]	--
Rice	0.60	0.60	0.60	0.40	0.30
Maize	0.10	0.10	0.10	0.10	0.10
Root crops	0.50	0.50	0.50	0.50	0.20
Plantain	0.30	0.20	0.20	0.20	0.20
Guineos	0.30	0.20	0.20	0.20	0.20
Sugar	0.50	0.50	0.60	0.40	0.10
Lump molasses	0.20	0.20	0.20	0.20	0.20
Beans	0.40	0.40	0.40	0.20	0.30
Fresh vegetables	0.50	0.60	0.60	0.80	0.60
Fruits	0.60	0.70	0.60	0.40	0.40
Bananas	0.30	0.30	0.30[c]	0.20	0.20[d]
Beef	0.80	0.80	0.80	0.70	0.70
Pork meat	0.50	0.50	0.50	0.50	0.50
Poultry	1.00	1.00	1.00	1.00	1.00
Eggs	0.80	0.80	1.00	0.80	0.70
Seafood	1.00	0.60	0.80	0.60	0.60
Milk and derivatives	0.80	0.70	0.70	0.40	0.50
Vegetables oils	0.80	0.70	0.80	0.60	0.60
Animal fats	0.40	0.50	0.40	0.50	0.50
Coffee	0.50	0.80	0.70	0.50	0.50
Alcoholic baverages	0.80	1.00	0.70	0.80	0.80
Total, nonfood[e]	0.81	0.81	0.81	0.81	0.81

Elasticities estimated for 1965.
The elasticity for this product was assumed to be equal to the corresponding elasticity for El Salvador.
Elasticity taken from Guatemala.
Elasticity taken from Nicaragua.
Elasticity for nonfood expenditures estimated by Musgrove for Colombia.

SOURCE: Cappi, C., L. Fletcher, R. Norton, C. Pomareda, and M. Wainer, (1978). "A Model of Agricultural Production and Trade in Central America", in W. R. Cline and E. Delgado (Editors), "Economic Integration in Central America", Brookings Institution, Washington, D.C. , pp. 317-370.

foods, the average expenditure in the group is given in Table 3-4, and its corresponding percentage of total expenditure appears in Table 3-6.

Corn constitutes the major food item in value terms, for all income groups but the very highest. The lowest income group spends over 50 percent of household income in all foods, of which 15 percent goes to corns, 6.5 for beans, 2.2 for rice, and 3.4 for meats. By contrast, the highest income group only needs 23.6 percent of household income for food consumption, of which only 2.43 goes for corn products, 1.2 for beans, and 0.85 for rice, while 5.5 percent goes for meats. These figures replicate similar changes in dietary patterns among different income strata found in other countries.

In the case of rice, the relative percent budget shar for the six income groups, from the lowest to the highest, are 2.21, 2.63, 2.47, 2.03, 1.34, and 0.85. However, despite the diminishing relative values as income increases, actual rice expenditures increase from 2.43 colones per month per household from the lowest income group to 4.34, 6.40, 8.29, 10.00, and finally 12.41 colones for the highest income group.

Price Effect and Price Elasticities

Arrows radiating downwards in Figure 3-4 reflect the influence of price of one food item -- rice in this case -- on the consumption levels of that food and all other foods as well. The straight-down arrow, for example, indicates that a change in the price of rice affects directly the

Table 3-6. Percent Share of Expenditures of Selected Foods, by Income Group: El Salvador, 1983

(Percent of total expenditure)

Product	Income Strata (colones/household/month)					
	0-100	100-200	200-300	300-599	600-999	1000 +
Corn	15.38	16.14	11.55	7.99	4.92	2.43
Beans	6.51	5.99	4.69	3.17	1.94	1.16
Rice	2.21	2.63	2.47	2.03	1.34	0.85
Sugar	1.38	1.77	1.56	1.33	0.76	0.52
Eggs	3.02	3.2	3.23	2.76	1.92	1.18
Milk	1.14	2.85	1.82	2.00	2.00	1.28
Meats	3.42	4.81	5.89	6.8	7.15	5.54
All foods	50.47	50.92	49.00	40.88	39.41	23.56

SOURCE: Derived from previous tables.

282

amount of rice consumed. Economists use the direct price elasticity parameter to represent how a 1 percent rise in price changes consumption by a given percent. For rice, the effect is obviously negative since consumption declines when price increases, and conversely, consumption rises when price declines. Most foods are said to be price-inelastic, that is, that consumption is rather unresponsive to price changes. For ordinary foods, the direct price elasticity is a negative value between 0 and 1, and in general closer to 0 than to 1, to reflect this lack of flexibility.

Changes in one food price also affect other foods. Cross-price elasticities are graphically depicited in Figure 3-4 by the sloping lines from the rice price box to foods other than rice. Generally, cross-price elasticities are positive and very close to zero, indicating that a rise in rice price, while depressing rice consumption, increases corn, beans, and other foods consumption to a slight extent.

Values for direct and cross-price elasticities are obtained in the course of estimating demand functions for the major food items. Unfortunately, these demand studies are not frequently done because their data requirements and statistical complexity are high and tax the technical resources available in most institutions concerned with nutrition and food consumption.

A common difficulty encountered, for example, is that insufficient variation in prices is found during a cross-section survey to obtain statistically meaningful coefficients. The 1976-77 Household Budget Survey for El Salvador does not contain price information, only expenditures, for

each item, thus no demand function can be derived from that survey. Using time series data is the easiest way to estimate demand functions for agricultural commodities, but that procedure also raises questions of aggregation over time and, when economic circumstances are changing rapidly, the obtained values might not reflect the current situation accurately.

Nevertheless, while demand functions are rather specific in time, location, and population group, the resulting elasticity parameters often fall within predictable ranges. For purposes of policy analysis, educated estimates of price elasticities can be used to reach reasonably sound conclusions, even though the specific parameters of the demand functions are not accurately known.

In the absence of previous estimates of food demand functions for El Salvador, or another Central American country, we will attempt to derive those "educated" elasticity estimates.

Indirect Estimation of Price Elasticities

In a well-known paper by Ragnar Frisch (Econometrica, 1959) simple formulae are developed to derive estimates of direct and cross-price elasticities for a set of goods on the basis of income elasticities and budget shares. These formulae assume want independence, that is, that the utility of consuming more of one food is independent of the amount of other foods. Clearly this assumption is too strong for individual food items, but it is reasonably valid for aggregate food categories.

For calculating direct price elasticities of food i, Frisch's formula would be:

$$Eii = Yi*[Ai-(1-Ai*Yi)/W]$$

where:

Eii = direct price elasticity of food i,
Yi = income elasticity of food i,
Ai = budget share of food i,
W = Money flexibility coefficient.

Frisch also suggests calculating the cross-price elasticity of food i with respect to the price of food j using the equation:

$$Eij = -Yi*Aj*(1+Yi/W)$$

where:

Eij = cross-price elasticity of food i to the price of j, and all other terms are defined as above.

Almost all the information needed to compute price elasticities has been discussed previously. The only missing item is the W coefficient in the formulas, defined as the money flexibility coefficient or, alternatively, as the marginal utility of money. This coefficient as derived by Frisch takes different values depending on the level of total expenditures. Estimates of W for poor households yield estimates as low as -10, while for very high income groups the value is as high as -1.

Table 3-7 provides the results of the efforts to estimate money flexibility coefficients for various income groups in Central American countries by the team of C. Cappi

Income Stratum	Country	(1) Per Capita Income (1970 CA$)	(2) w^1	(3) w^2	(4) w^3	(5) Average w
Low Income	Guatemala	79	-5.5494	-6.5558	-6.3957	-6.1670
	El Salvador	82	-5.4428	-6.4317	-6.3172	-6.1639
	Honduras	59	-6.4600	-7.6142	-7.0445	-7.0396
	Nicaragua	105	-4.7856	-5.6660	-5.8208	-5.4241
	Costa Rica	193	-3.4960	-4.1470	-4.7586	-4.1306
Middle Income	Guatemala	247	-3.0659	-3.6543	-4.3855	-3.7019
	El Salvador	227	-3.2037	-3.8160	-4.5098	-3.8432
	Honduras	187	-3.5438	-4.2147	-4.8086	-4.1890
	Nicaragua	285	-3.8407	-3.3897	-4.1778	-3.4694
	Costa Rica	406	-2.3033	-2.6391	-3.5544	-2.7989
High Income	Guatemala	589	-1.9504	-2.3405	-3.2892	-2.5267
	El Salvador	605	-1.9234	-2.3085	-3.2602	-2.4973
	Honduras	458	-2.2232	-2.6627	-3.5748	-2.8202
	Nicaragua	723	-1.7530	-2.1070	-3.0734	-2.3111
	Costa Rica	954	-1.5174	-1.8278	-2.8039	-2.0497
Very High Income	Guatemala	2,194	-0.98367	-1.1926	-2.1284	-1.4349
	El Salvador	1,538	-1.1835	-1.4308	-2.3940	-1.6694
	Honduras	1,540	-1.1827	-1.4299	-2.3929	-1.6685
	Nicaragua	1,895	-1.0616	-1.2856	-2.2341	-1.5271
	Costa Rica	3,153	-0.81447	-0.99025	-1.8877	-1.2308
Total	Guatemala	311	-2.7194	-3.2472	-4.0635	-3.3434
	El Salvador	278	-2.8830	-3.4394	-4.2172	-3.5132
	Honduras	231	-3.1747	-3.7820	-4.4838	-3.8135
	Nicaragua	340	-2.5961	-3.1021	-3.9453	-3.2145
	Costa Rica	537	-2.0465	-2.4540	-3.3914	-2.6306

SOURCE: Cappi, C., L. Fletcher, R. Norton, C. Pomareda, and M. Wainer, (1978). "A Moldel of Agricultural Production and Trade in Central America", in W. R. Cline and E. Delgado (Editors), "Economic Integration in Central America", Brookings Institution, Washington, D.C., pp. 317-370.

et al. For El Salvador, the W values reported range from -6.16 for the low-income group to -1.67 for the very high-income group. Since the income categories in our analysis do not correspond to those in Table 3-7, we will arbitrarily assign the following values to the six income groups:

Household monthly income	Value of W
Less than 100 colones	-10
100 to 199 colones	-6
200 to 299 colones	-4
300 to 599 colones	-3
600 to 999 colones	-2
More than 1000 colones	-1

Using Frisch's equations, we have been able to generate matrices of direct and cross-price elasticities for the selected foods among the six income groups. For illustration purposes, Table 3-8 presents the matrix of price elasticities for the high-income stratum, i.e., those households with monthly incomes between 600 and 999 colones. Computed direct price elasticities are -0.02 for corn, -0.12 for beans, -0.26 for rice, -0.25 for sugar, -0.27 for eggs, -0.44 for milk, and -0.46 for meats. These values correspond remarkably well with estimates reported in similar environments. Cross-price elasticities are in general very small and positive, as should be expected.

Calorie Contributions of Selected Foods

All information required to estimate changes in consumption of those selected foods among various income groups as a result of a drop in rice price is now assembled, namely, income elasticities, budget shares, and direct and cross-price elasticities. We must still translate these

Table 3-8. Direct and Cross-Price Elasticities Matrix for Selected Foods Among High-Income Households,[a] El Salvador, 1976-77

Food \ Price	Corn	Beans	Rice	Sugar	Eggs	Milk	Meats	
Corn	-0.02247	0.001090	0.000880	0.000475	0.001230	0.001476	0.005699	Corn
Beans	0.012618	-0.11954	0.004403	0.002379	0.006152	0.007383	0.028496	Beans
Rice	0.026752	0.011563	-0.25566	0.005045	0.013043	0.015652	0.060413	Rice
Sugar	0.025237	0.010909	0.008806	-0.24524	0.012305	0.014766	0.056993	Sugar
Eggs	0.028266	0.012218	0.009862	0.005531	-0.26621	0.016536	0.063832	Eggs
Milk	0.047447	0.020509	0.016555	0.008948	0.018247	-0.44223	0.107148	Milk
Meats	0.060066	0.025964	0.020958	0.011328	0.029287	0.035144	-0.45935	Meats

SOURCE: Derived from previous tables using Frisch's equations.

Notes : (a) Those households with monthly incomes between 600 and 999 colones in the 1976/77 Household Budget Survey.

changing intakes into a common nutritional denominator, such as calories or protein. From Figure 3-4, we note that to do this transformation from dietary composition into caloric intake, it is necessary to have the relative shares of total calories provided by each of the selected foods.

Calorie shares have been derived for each income group using data published by the Social Progress Indicators Project unit of the Ministry of Planning (MIPLAN-IPROS). IPROS has calculated typical food consumption baskets for various income groups in El Salvador, and published it in "Subsistema de la Alimentacion en El Salvador: El Caso Proteico-Calorico" (September 1983).

Table 3-9 presents typical food basket components for five income groups. Unfortunately, the income categories used by IPROS do not correspond to those we have adopted. IPROS' income groups are classified according to monthly per capita income in its survey carried out between October 1978 and March 1979, while the classification we are using is based on monthly household income in the Household Budget Survey of 1976-77. We will assume that the five IPROS income groups correspond to the first five income categories used here, and that the food basket for our highest income group is the same as the fifth IPROS group.

Average per capita calorie intakes for the lower income groups (1691, 1775, 1944 calories) are clearly below recommended allowances, while for the two higher income groups calories appear to be adequate (1898 and 2055 calories, respectively). Protein intake, however, seems adequate on

Table 3-9. Average Consumption of Selected Foods by Income Group, El Salvador, October 1978 - March 1979

(Grams/person/day)

Food	Income (colones/capita)				
	0-25	26-50	51-100	101-200	201 +
Beef	5.4	10.0	17.1	31.9	59.6
Pork	4.1	6.1	7.0	8.2	10.3
Chicken	10.9	14.0	20.9	32.6	58.0
Fish	5.9	5.9	7.1	9.7	19.4
Other Meats	0.5	0.6	0.5	0.6	1.5
Eggs	23.8	30.3	37.0	45.5	50.7
Whole Milk	43.2	50.5	65.0	95.9	153.4
Powder Milk	5.0	7.4	10.5	14.4	18.2
Beans	55.3	56.2	55.5	50.9	49.0
Corn	437.3	417.2	387.2	327.9	264.6
Margarine	11.8	13.8	15.6	16.4	14.3
Vegetable Oil	6.1	8.6	11.7	19.0	31.0
Rice	29.9	34.4	41.1	45.9	54.7
Sugar	35.3	45.8	53.7	60.5	68.3
Brown Sugar	20.5	15.5	9.3	4.5	2.4
Total Calories	1691.1	1774.6	1844.2	1897.8	2055.4
Total Protein	49.5	52.4	56.4	61.4	75.0

SOURCE: MIPLAN - IPROS. "Subsistema Monitor de la Alimentación en El Salvador. Enfoque Producto-Canasta. San Salvador, 1983.

the average for all income groups, since even the poorest strata has daily average intake of 49 grams, almost double the recommended minimum allowance.

From another IPROS publication, we were able to obtain calorie and protein equivalents for each one of the major foods (see Table 3-10). Together with Table 3-9, these values permit us to calculate the percentage shares of calories contributed by each major food. The results are given in Table 3-11. Corn (tortillas) account for fully 52.8 percent of all 1691 calories consumed by the lowest income group from the major foods. In comparison, corn only provided 26.3 percent of a total 2055 calories in the highest income group.

Rice shows a surprising stability in its relative energy contribution. It pr ded 10 percent of calories in the highest group, but even the poorest group it contributes 6.6 percent. This is clearly indicative that rice has become a basic component of the Salvadoran diet at all income levels. Beans, like corn, shows a declining importance as a source of energy as income increases; its share of calories drops from 11 to 8 percent from the lowest to the highest income group, respectively. One may conclude, therefore, that as household income increases cereal consumption shifts away from corn and beans, and more into rice and, presumably, wheat.

Computation of Consumption Changes

Figure 3-4, in addition to depicting the chain of effects from a price change in a given food, also provides a straightforward template for computing the eventual impact

Table 3-10. Calorie and Protein Composition of Major Foodstuffs, El Salvador

(Per 100 grams)

Food	Edible Portion (%)	Calories	Protein (g)
Beef	100	119	21.5
Pork	79	264	13.4
Chicken	67	132	19.7
Fish	81	87	17.9
Other Meats (a)	100	143	16.0
Eggs	89	160	11.3
Whole Milk	100	67	3.3
Powder Milk	100	492	25.8
Beans	100	344	23.2
Tortillas	100	204	5.4
Margarine	100	887	0.8
Edible Oil	100	881	---
Rice	100	375	7.8
Sugar	100	385	---
Brown Sugar	100	358	0.5

SOURCE: MIPLAN-IPROS. "Subsistema Monitor de la Alimentación en El Salvador. El Caso Proteico-Calórico". September 1983. Page 18. (Data attributed to Tabla de Composición de Alimentos de Centro América y Panamá. 4a. Edición, INCAP, 1960).

NOTES : (a) Includes offals.

Table 3-11. Percent Share of Calorie Intake Provided by the Main Foods of the El Salvador Diet, by Income Group, October 1978 - March 1979

(Percent)

Food	Income Group (colones/capita/month)				
	0-25	26-50	51-100	101-200	201 +
Beef	.38	.67	1.10	2.00	3.45
Pork	.64	.91	1.00	1.14	1.32
Chicken	.85	1.04	1.49	2.27	3.72
Fish	.30	.29	.33	.44	.82
Other Meats	.04	.05	.04	.05	.10
Eggs	2.26	2.73	3.21	3.84	3.95
Whole Milk	1.71	1.91	2.36	3.39	5.16
Powder Milk	1.46	2.05	2.80	3.73	4.36
Beans	11.07	10.89	10.35	9.22	8.20
Tortillas	52.85	47.96	42.83	35.25	26.26
Margarine	6.20	6.90	7.50	7.66	6.17
Edible Oil	3.18	4.27	5.59	8.82	13.29
Rice	6.64	7.27	8.36	9.07	9.98
Sugar	8.05	9.93	11.21	12.27	12.79
Brown Sugar	4.35	3.13	1.81	.85	.42

SOURCE: Derived from MIPLAN-IPROS. "Subsistema Monitor de la Alimentación en El Salvador. Enfoque Producto Canasta" San Salvador, August 1982. Cuadro Nº 11.

on consumption levels of the various foods. Arithmetic computation of food consumption changes is greatly simplified if we are primarily concerned with direction and relative magnitude of changes rather than with absolute values of variables.

The relative change in consumption of food j, for example, corn, as a result of a given percent variation in the price of food i, e.g., rice, can by computed by:

$$Cji = EJi*Pi+Yj*[1/(1+Pi*Ai)]$$

where:

Cji = percent charge in consumption of food j from a change in food i price,

Eji = cross-price elasticity of j to price of i,

Pi = percent change in the price of i,

Yi = income elasticity of i,

Ai = budget share of food i.

The two right-hand side components in the above formula represent the direct price effect and the income effect discussed earlier.

Basically the same formula can be used to compute the effect on consumption of rice, i.e., i itself:

$$Cii = Eii*Pi+Yi*[1/(1+Pi*Ai)]$$

where:

Cii = percent change in consumption of i from a change in the i price, and
Eii = direct price elasticity of i.

Finally, to compute the change in calorie intake from the multiple shifts in consumption, it suffices to compute:

$$k = \text{sum over } i \text{ of } (Ci*Ki)$$

where:

k = percent change in total calorie intake

Ci = percent change in consumption of food i,

Ki = percent contribution of food i to total calorie intake.

1-2-3 Computation Model

The above equations have been used to build a simple microcomputer computation procedure to derive nutritional impacts from price changes of individual foods.

A Compaq microcomputer available to the project has been programmed using the 1-2-3 spreadsheet software to perform the entire sequence of calculations each time the price of a food is modified. Separate spreadsheets have been constructed for each income group to facilitate the current analysis. It should be a simple matter to integrate the different groups into a single sheet to perform the complete analysis at once. A great advantage of the 1-2-3 spreadsheet approach is its friendly interactive response, that permits exploring a wide range of alternative price specifications in a matter of minutes. Adaptations of the 1-2-3 model to other microcomputers using Visicalc-type software packages could be accomplished by a person knowledgeable in Visicalc applications.

While the discussion so far has been concerned with the effects of a price change of a single food, the 1-2-3 program is designed to carry out simultaneously the analysis even when several or all food prices are modified. Such a feature allows, for example, simulating the impact of policies that affect several food prices at the same time.[1]

Table 3-12 presents a sample of the screen content for the fifth income group model, when the price of rice has been decreased by 50 percent.

Nutritional Impact of Rice Imports

Rice imports contribute positively to the nutritional status of consumers, and negatively to that of producers. Rice imports enhance the nutritional well-being of high-income groups, but only marginally help the lower-income groups, and it significantly harm the poorer producer of rice. It is essential to maintain those distinctions to appreciate the differential impact received by certain segments of the population. For instance, while urban consumers benefit unambiguously from resulting lower rice prices, the rice producer suffers a loss of income from the same lower prices.

The pattern of food consumption changes among purely urban consumers resulting from a 50 percent drop in rice price is summarized in Table 3-13. Clearly, a drop in rice

1. The value of this analytical tool, designed here for the specific circumstances of El Salvador, cannot be over-emphasized. In addition to this particular analysis of PL-480 imports, it can be used to assess the impacts of any policy instrument which changes basic food prices.

Table 3-12. Sample Screen Content of 1-2-3 Program to Compute Nutritional Impact of Food Price Changes

Cambios porcentuales en Precios e Ingresos

Maiz	Frijol	Arroz	Azúcar	Huevos	Leche	Carne	Ingreso
0	0	-50	0	0	0	0	0

TRAMO 5: 600-1000

EFECTOS DE LOS CAMBIOS ANTERIORES

	Cambio % Consumo
Maíz	-0.00897
Frijol	-0.04489
Arroz	13.15481
Azúcar	-0.08979
Huevos	-0.10057
Leche	-0.16882
Carne	-0.21371

Cambio % en calorías: 1.264283

SOURCE: 1-2-3 Screen printout.

Table 3-13. Consumption Effects of a 50 Percent Drop in the Consumer Price of Rice, El Salvador, 1983

(Percent change in quantities consumed)

Product	Income Strata (colones/household/month) 0-100	100-200	200-300	300-599	600-999	1000 +
Corn	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Beans	-0.01	-0.02	-0.04	-0.04	-0.04	-0.06
Rice	2.63	4.36	6.55	8.74	13.15	26.4
Sugar	-0.02	-0.05	-0.07	-0.08	-0.09	-0.11
Eggs	-0.03	-0.06	-0.08	-0.09	-0.1	-0.12
Milk	-0.04	-0.09	-0.14	-0.16	-0.17	-0.21
Meats	-0.05	-0.12	-0.18	-0.2	-0.21	-0.26
Calories (% change)	0.16	0.3	0.52	0.76	1.26	2.57
% of Households	12.5	28.4	18.5	24.5	9.7	6.3

SOURCE: Derived from previous tables and model of consumption relations.

price has induced a considerable increase in rice consumption among all income strata of the population. However, this rise in rice consumption is not uniform across income levels. Rice consumption among the very well-off rises by 26.4 percent, while among the lowest income households, it only increases by 2.6 percent.

It is far from clear why the well-off benefit more than the poor. One factor may be that rice accounts for a smaller budget share among the rich than among the poor, hence the income benefit from a drop in price is relatively larger for the lower income than for the high income. On the other hand, the lower value for money flexibility coefficient combined with the high budget shares result in inconsistently lower price elasticity values for the poorer than for the richer strata. In the final analysis the strong direct price effect among the higher income group, plus a weak income effect, result in a strong positive response by higher income groups to a drop in rice price, in contrast to a small reaction by the low income households.

Among all income groups, the increase in rice consumption is accompanied by a reduction in consumption of all other foods. Once again, the substitution of rice for other foods is considerably stronger among the higher than the lower income categories. The reduction in other foods consumption among the lowest income households is negligible.

What is the net effect of the estimated increase in rice consumption and reduced consumption of all other foods? In terms of calories, the effects are given at the bottom of

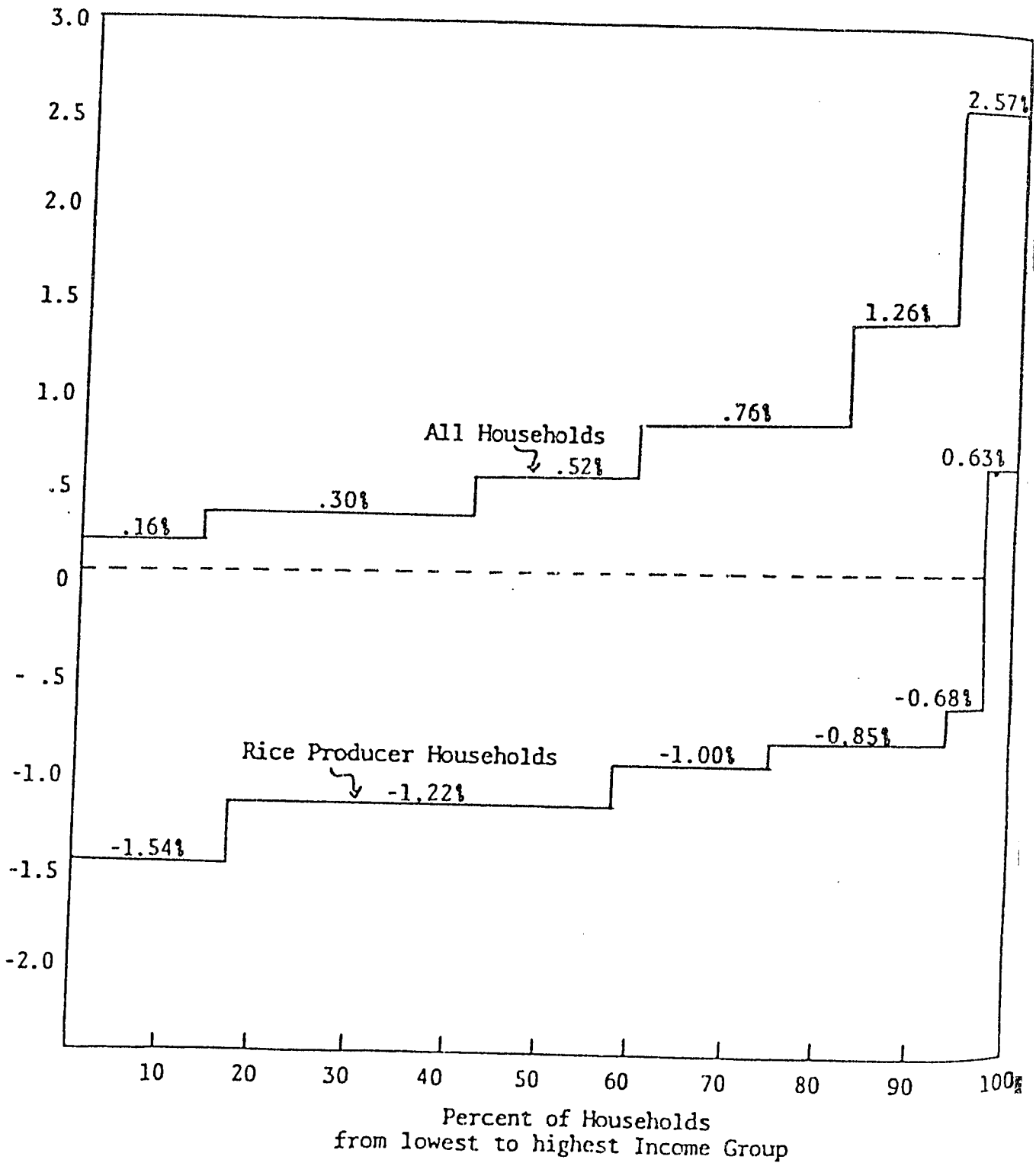
Table 3-13, along with the percentages of households belonging to each income category. The lowest 12.5 percent of households with monthly incomes lower than 100 colones gained a slight improvement of one-sixth of one percent in calorie intake as a result of the rice imports. The two higher income groups, with 9.7 and 6.3 of all households, benefitted more in their calorie intake by 1.26 and 2.57 percent, respectively. The solid line labelled "All Households" in Figure 3-5 shows graphically the relative impacts on calorie intakes. Although there is a difference between low- and high-income groups, the absolute change for any group is small.

Consumption Impact on Rice Farmers

Lower consumer prices for rice mean lower incomes for rice producers. We will now examine the potential impact on food consumption and nutrition upon a farm household that depends on the sale of rice for 10 percent of its income. Of course, rice producers are a very diverse group, but most of them are small farmers using manual or animal traction techniques to grow upland rice; there are a few farms producing rice under irrigation but they are the exception rather than the rule.

In an earlier section, we showed how placing 10,000 metric tons of imported rice in the market results in a drop in rice prices paid to farmers from 133 to 55 cents per pound of grain equivalent. This is a reduction of nearly 60 percent in producer price. A farm household that receives 10 percent of income from rice would therefore suffer a loss of 6 percent in money income. On the other hand, to the

Figure 3-5. Calorie Intake Changes Resulting from a 50 Percent Drop in Rice Price Among Consumer and Producer Households



extent that the same household also consumes rice, it benefits from the drop in consumer price in the manner already described.

The 1-2-3 microcomputer program also has built-in the capability of tracing simultaneously the reduction of income and food price changes. Entering the two expected changes, a drop of 50 percent in the consumer rice price and of 6 percent in income, we have generated the consumption effects on farming households, as shown in Table 3-14.

As a general rule, rice farmers respond to a drop in price by eating more rice and less of other foods. Unlike the case of urban consumers whose consumption of other foods is basically unaffected by the rice price drop, rice farmers do experience a drastic contraction in foods other than rice. Most noticeable is the large percent decline in consumption of meats (over 7 percent reduction across most income groups) and milk (almost 6 percent in all income groups). Corn consumption, on the other hand, exhibited only a minor decline, but it is significant among the poorer rice farmers.

Rice consumption itself, however, expands substantially among rice farmers, with the exception of the lowest income strata. Among the more prosperous rice farmers, rice consumption expands between 10 and 23 percent, while among the poorest group it declined by 0.5 percent and in group 2 it increased by 1.2 percent.

In terms of calories, the concurrent expansion of rice consumption and contraction of other foods consumption, yield results that appear in the bottom line of Table 3-14

Table 3-14. Consumption Effects on a Farmer of a 50 Percent Drop in the Consumer Price of Rice, El Salvador, 1983[a]

(Percent change in quantities consumed)

Product	Income Strata (colones/household/month) 0-100	100-200	200-300	300-599	600-999	1000 +
Corn	-1.51	-0.91	-0.61	-0.31	-0.31	-0.31
Beans	-1.51	-1.52	-1.54	-1.54	-1.54	-1.56
Rice	-0.55	1.18	3.37	5.56	9.97	23.2
Sugar	-3.02	-3.05	-3.07	-3.08	-3.09	-3.11
Eggs	-3.39	-3.42	-3.44	-3.45	-3.46	-3.48
Milk	-5.68	-5.73	-5.78	-5.8	-5.81	-5.85
Meats	-6.17	-7.26	-7.32	-7.34	-7.35	-7.4
Calories (% change)	-1.54	-1.22	-1.00	-0.85	-0.68	0.63

SOURCE: Derived from previous tables and model of consumption relations.

NOTES: (a).- Assumes a farmer earning 10 percent of income from the sale of rice, hence incurring a 6 percent money income loss.

and in Figure 3-5 are depicted by the line labelled "rice producing households." To draw the graph we assumed that rice farmers have the same income distribution by groups as all rural households in the country.

Calorie intake among rice producer households in the lower income groups suffers a significant decline from the drop in producer prices induced by rice imports. For the three poorer groups, the decline in calorie intake reached 1.5, 1.2, and 1.0 percent, for the poorest, poor, and not-so-poor, respectively. For the three higher income groups of rice farmers, energy intake declines less and, in the case of the highest income group, it actually shows an increase of 0.6 percent.

Conclusions on Consumption Effects

Three basic results stand out from the above analysis. First, rice imports, through their effect on lowering prices, benefit the rice consumer, but harm the rice producer. Second, the nutritional benefits from rice imports benefit more the higher income strata of the population.[1] Third, among rice producers, the poorer farmers suffer reductions in energy intake as a result of their income loss; the harm is less severe among higher income farmers.

1. Again, this is a result of the relative consumption of rice by different income groups. It is probable that a price decline for corn (say, through PL-480 imports) would benefit lower income groups more than higher income groups.

Production Effects of PL-480 Rice Imports

We have shown that PL-480 rice imports account for one-sixth of national consumption in El Salvador, that they result in a consumer price drop of nearly 50 percent, and that, at the producer level, the price drop is nearly 60 percent. We now examine the question: What impact on rice production can we expect from this 60 percent reduction in farm price?

To answer this question we will break down the issue into two parts: the impact on area planted to rice, and the impact on yields per unit of area. The end result, of course, will be the product of these separate effects.

Impact on Area Planted to Rice

Ideally, we should derive the impact on area planted to rice in the context of a whole-farm or whole farm sector, where the multiple interactions of crops, resources, technologies, and prices could be taken into account simultaneously. An exercise of this nature has been done for the south Pacific region of Guatemala, for example, using a regional linear programming model.[1]

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1. See "Area and Yield Response to Price Policy: A Case Study in Guatemala" by Carlos Pomareda and Otto Samayoa, American Journal of Agricultural Economics, November 1979.

Pomareda and Samayoa find that higher prices motivate farmers to adopt more input-intensive and higher yielding techniques, that are also riskier. Moreover, a higher price for maize expands production of maize in small farms at the expense of production of sesame and beans, while in large farms expanded maize production takes place at the expense of upland rice.

No attempt was made in this brief project to replicate the above methodology, although future analysts of these issues will find this approach promising and effective. Instead, we will limit our attention to finding out whether data for El Salvador confirm the above results, i.e., whether area planted to rice responds positively to the price of rice and negatively to the price of corn.

Data to test these relationships were assembled from the series of Agricultural Statistics Yearbooks issued by the Direccion General de Economia Agropecuaria of the Ministry of Agriculture and Livestock (MAG-DGEA). Table 3-15 presents the series of areas planted to rice, corn, beans, and sorghum for the period 1960-84.

Rice area has been highly variable over the two decades, ranging from a high of 40,000 manzanas in 1967-68 to a low of 12,234 in 1962-63. No obvious long-term trend in area is evident from the figures, but in the 1980s area has shrunk from 24,000 manzanas in 1980-81 to 16,000 in 1982-83, the last year for which we have final figures.

Figure 3-6 shows rice areas for the period 1970-84, depicting a curious cyclical regularity. No obvious reason for a cycle comes to mind, but future work on the issue

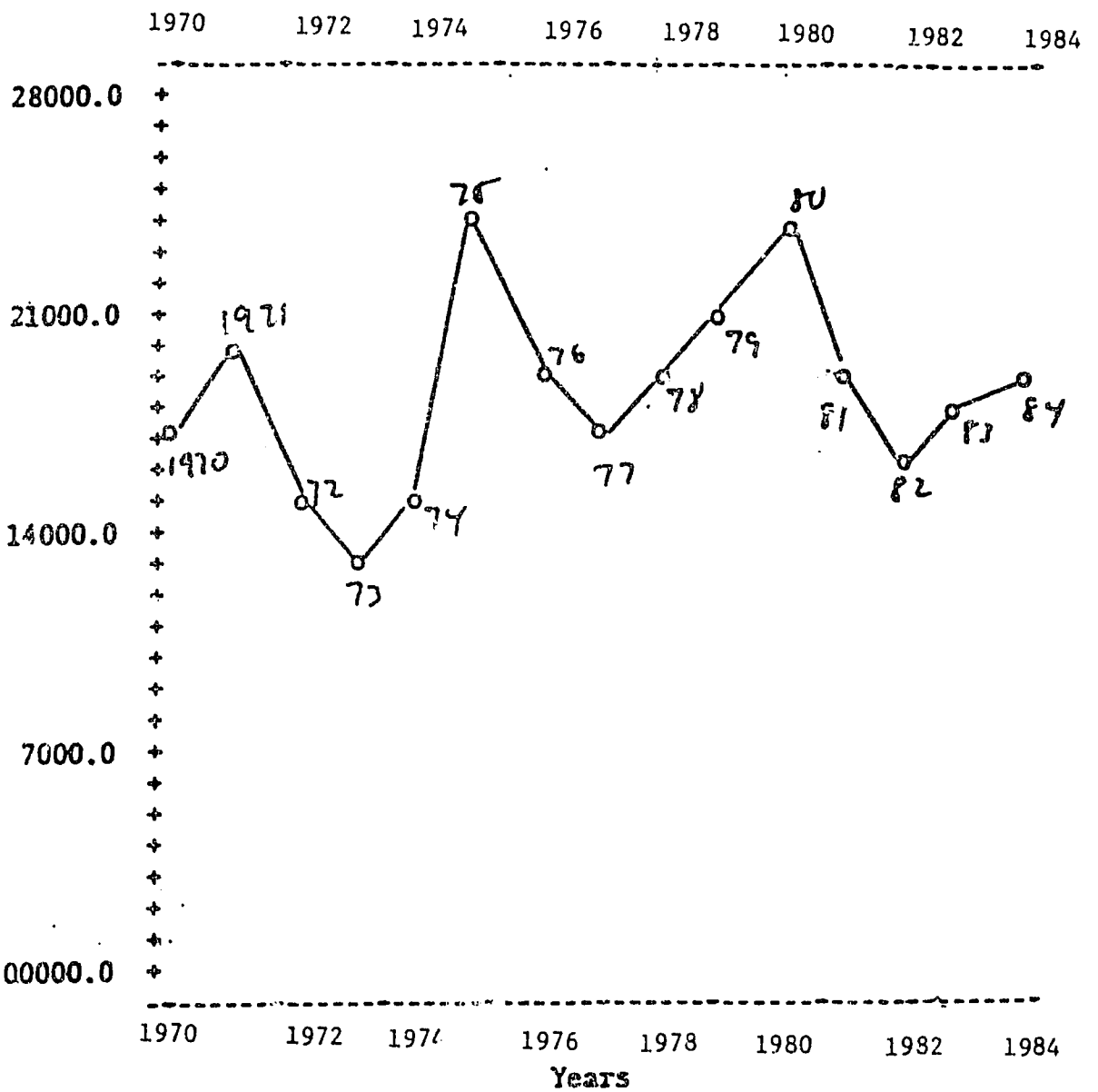
Table 3-15. Area Planted to Four Basic Grains, El Salvador, 1960-83
(Manzanas)[a]

Crop Year	Rice	Corn	Beans	Sorghum
1960/61	15,563	253,690	28,655	124,575
1961/62	12,710	221,795	30,700	140,470
1962/63	15,519	282,594	47,044	150,189
1963/64	12,234	246,680	39,690	
1964/65	21,150	236,792	30,541	124,455
1965/66	18,900	275,820	33,600	158,700
1966/67	28,178	296,600	37,761	153,719
1967/68	40,000	274,095	40,595	148,400
1968/69	39,000	285,350	45,270	162,500
1969/70	15,300	277,300	46,965	162,575
1070/71	17,000	294,200	51,600	177,400
1971/72	20,920	300,300	57,000	180,000
1972/73	15,700	292,800	56,850	186,400
1973/74	13,600	287,220	64,440	170,000
1974/75	15,900	302,100	73,470	182,000
1975/76	24,200	351,700	79,800	189,100
1976/77	19,710	334,500	75,540	178,500
1977/78	17,800	349,780	75,125	188,800
1978/79	19,850	377,600	74,000	195,400
1979/80	21,100	349,300	78,700	205,000
1980/81	24,000	417,000	75,000	170,700
1981/82	19,800	395,000	71,000	165,000
1982/83	16,000	341,000	79,400	170,000
1983/84(b)	18,000	347,950	80,600	114,100
1984/85(b)	19,800	384,600	80,000	121,000

NOTES: (a) 1 Manzana = 6897 sq. meters.
(b) Estimates.

SOURCE: MAG-DGEA. Agricultural Statistics Yearbook, various years.

Figure 3-6. Area Planted to Rice, El Salvador, 1970-84
(Manzanas)



should investigate the rationale for such possible behavior. A tentative explanation might be that the farmers are responding to changing market conditions in a cobweb fashion, i.e., that farmers are responding to high prices by planting more and as prices decline they reduce planting.

Price data for the major staples are also collected and reported by MAG-DGEA on a monthly basis, at both wholesale (transportista) and consumer levels, for San Salvador and other provincial capitals. We have selected the January price figure as indicative of price levels used by farmers in deciding area to plant in the following crop year. Tables 3-16 and 3-17 present two price series assembled for consumer and wholesale prices in San Salvador. Unfortunately, it is not possible to put together a single complete series because reporting procedures and definitions have changed at DGEA over time.

Using the overall consumer price index published by the Central Reserve Bank (BCR) to deflate current prices we were able to generate wholesale prices for rice, corn, beans, and sorghum in constant colones of December 1978, for the period 1969-83 (Table 3-17). Although wholesale prices for grain are not equivalent to farm gate prices, we can reasonably assume that variations in wholesale prices will be reflected at the farm level.

Figures 3-7 and 3-8 show the evolution of real prices for rice and corn over the period of interest, 1978-84. These figures demonstrate clearly the dramatic decline of grain prices received by farmers over the period. For rice, the drop from 59.7 to 34.0 colones per quintal represents a 43 percent loss. Similarly for corn, the price drop is 49 percent over the period, from 23.45 to 11.91 colones.

Table 3-16. January Consumer Prices of Four Basic Grains in San Salvador, 1966-83

(Cents per pound)

Year	Corn (white)	Sorghum	Rice (2nd)	Beans (Rojo)
1966	8.52	8.09	24.15	18.85
1967	8.15	6.34	23.08	19.92
1968	10.22	8.13	23.45	23.25
1969	8.70	7.33	21.14	21.68
1970(a)				
1971(a)				
1972(a)				
1973(a)				
1974(a)				
1975	20.00	19.00	55.00	60.00
1976	18.00	15.00	45.00	50.00
1977	20.00	18.00	55.00	60.00
1978	25.00	25.00	60.00	75.00
1979	25.00	25.00	55.00	70.00
1980	20.00	20.00	50.00	55.00
1981	25.00	25.00	60.00	120.00
1982	25.00	30.00	60.00	100.00
1983				

NOTES: (a) Series discontinued.

SOURCE: MAG-DGEA. Agricultural Statistics Yearbook, various years.

310

Table 3-17. January Wholesale Prices for Basic Grains in San Salvador, 1969-83[a]

Year	Current Colones per Quintal				CPI-All 12/78=100	Constant Colones of Dec. 1978			
	Rice	Corn	Beans	Sorghum		Rice	Corn	Beans	Sorghum
1969	22.00	8.75	22.00	7.50	-	-	-	-	-
1970	19.00	8.50	35.00	7.00	-	-	-	-	-
1971	23.00	8.25	33.00	7.00	48.10	47.81	17.15	68.60	14.55
1972	18.00	7.00	24.00	7.00	46.70	38.54	14.98	51.39	14.98
1973	23.00	11.25	39.00	8.50	49.80	46.18	22.59	78.31	17.06
1974	32.00	14.00	50.00	11.00	58.10	55.07	24.09	86.05	18.93
1975	50.00	18.50	58.00	17.00	69.20	72.25	26.73	83.81	24.56
1976	36.00	15.00	48.00	10.50	74.10	48.58	20.24	64.77	14.17
1977	51.00	18.00	51.00	14.00	82.80	61.59	21.73	61.59	16.90
1978	56.00	22.00	65.00	14.50	93.80	59.70	23.45	69.29	15.45
1979	51.00	18.00	56.00	15.50	108.70	46.91	16.55	51.51	14.25
1980	48.00	17.50	50.00	16.00	127.60	37.61	13.71	39.18	12.53
1981	57.00	23.00	102.50	20.00	146.40	38.93	15.71	70.01	13.66
1982	54.00	22.00	90.00	20.00	163.60	33.00	13.44	55.01	12.22
1983	63.00	22.00	67.00	18.00	185.10	34.03	11.88	36.19	9.72

NOTES: (a) 1 quintal = 100 lbs.

SOURCE: MAG-DGEA, Agricultural Statistics Yearbook, various years.

BCR, Division de Indicadores Económicos.

Figure 3-7. Wholesale Price of Rice in San Salvador, 1978-83
(In constant colones of December 1978)

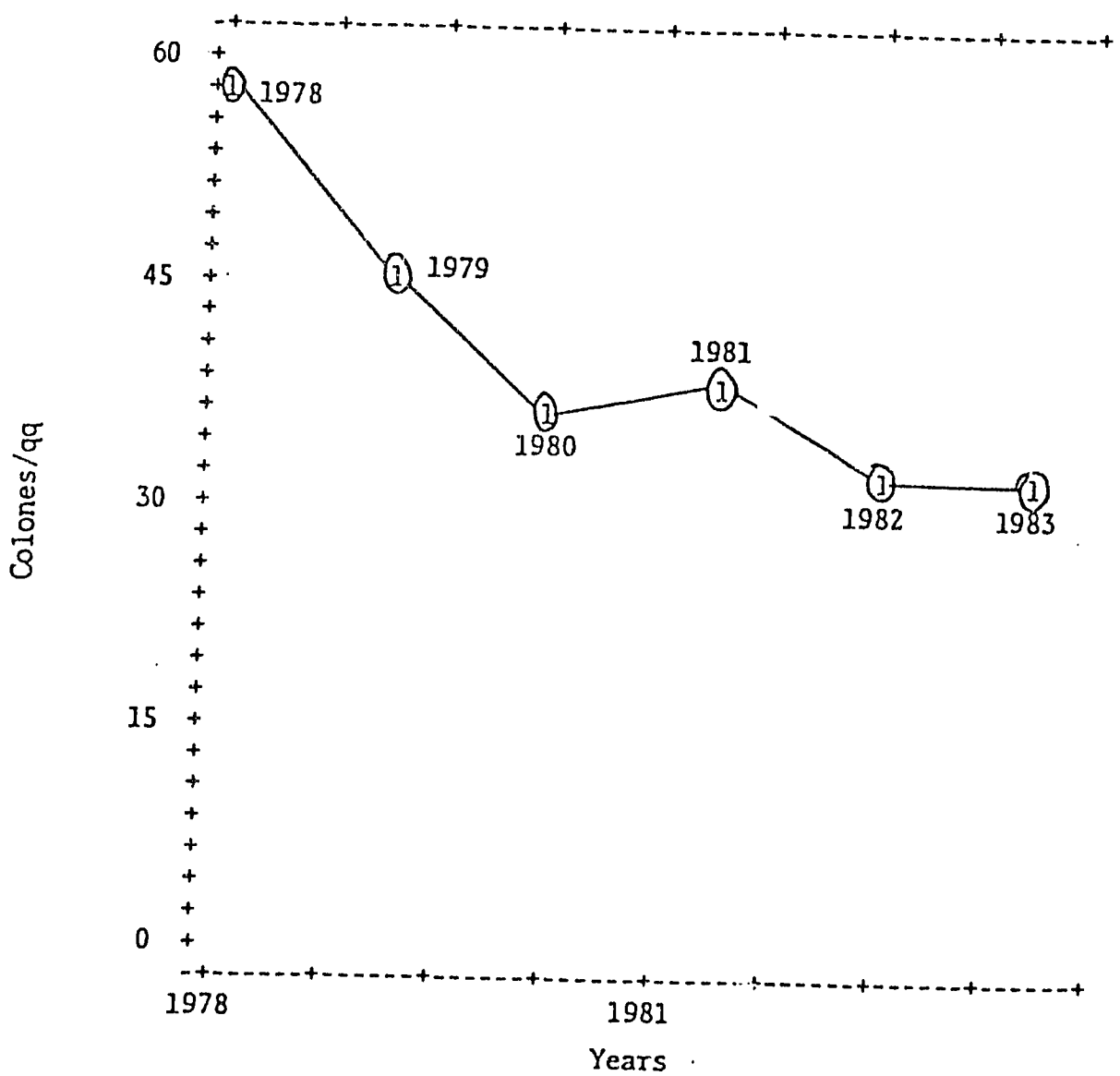
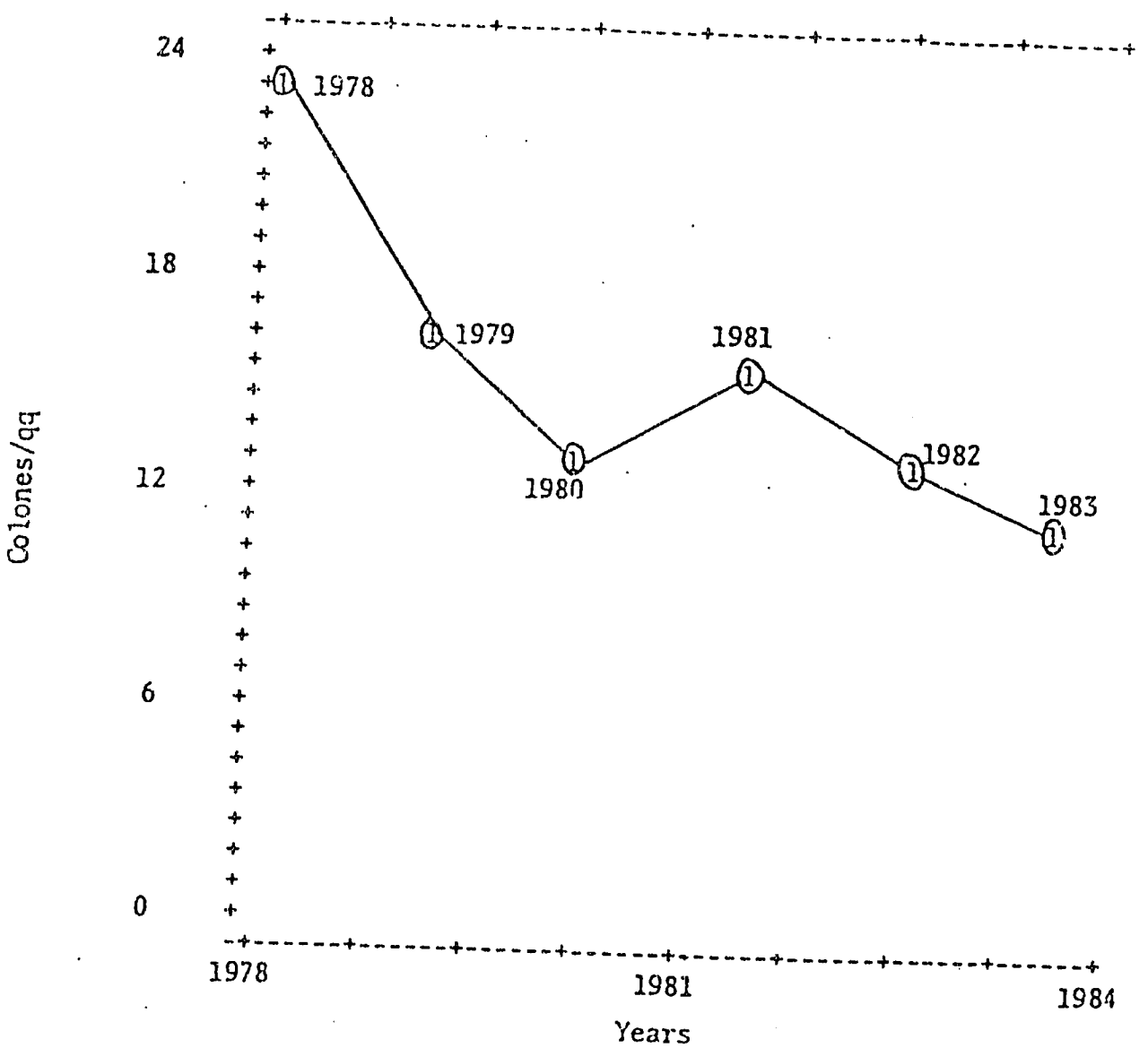


Figure 3-8. Wholesale Price of Corn in San Salvador, in Constant Colones of December 1978, 1978-83



To confirm whether a relation can be established between area planted to rice and the prices of rice and corn, we ran a multiple regression using the 12-year series 1969-82 for which we had a complete set of data. The logarithm of rice area was regressed on the logarithms of rice and corn prices to obtain direct price response elasticities as the regression coefficients. Statistical results of that regression are shown in Table 3-18 and confirm that there is an identifiable relationship. The regression as a whole was significant with a determination coefficient (R-square) of 0.538. The values of the regression coefficients are of the right signs and of reasonable magnitudes. A rise of 1 percent in rice price increases the rice area by 1.38 percent, while a rise of 1 percent in corn price induces a reduction of 1.26 percent on rice area. These results are consistent with the findings of Pomareda and Samayoa in southern Guatemala.

We now can address the question of what happens to area planted to rice as a result of PL-480 rice imports. Assuming corn prices remain unchanged as a result of rice imports, the 60 percent drop in producer prices received by rice growers will induce a contraction in area planted in the order of 83 percent (60*1.38).[1] This seems like an extraordinarily high value; on the other hand, a 60 percent reduction in producer prices is not a small change. Even

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1. This price elasticity of supply for rice may be high, though it falls within a plausible range. A lower supply elasticity would mean a less pronounced reduction in rice production for any given price decline.

Table 3-18. Response of Area Planted in Rice to Price Changes in Rice and Corn, El Salvador, 1969-83[a]

*** MULTIPLE LINEAR REGRESSION ***

Dependent Variable: 10 LARR

12 Valid Cases

Coeff of Determination:	.538177	Estimated Constant Term:	8.21758
Multiple Corr Coeff:	.733605	Standard Error of Estimate:	.134081

Analysis of Variance for the Regression:

Source of Variance	Degrees of Freedom	Sum of Squares	Mean of Squares	F Test
Regression	2	.188551	9.427E-002	5.24399
Residuals	9	.161800	1.797E-002	
Total	11	.350351		

Variable	Regression Coefficient	Standardized Coefficient	Correlation with Dependent
11 LPRA	1.37901	1.78852	.259511
12 LPRM	-1.26500	-1.67591	-4.417E-002

DURBIN - WATSON = 2.03071

NOTES: (a) Variables names are:
10 LARR = natural log of area planted to rice.
11 LPRA = natural log of price of rice in January.
12 LPRM = natural log of price of corn in January.

SOURCE: Data from previous tables. Analysis using ABSTAT Statistical program.

making allowances for the regression results, since only 12-year observations were used, there is a strong likelihood that the basic direction and magnitude of these effects are correct.

Impact on Rice Yields

A second consequence of higher product prices at the producer level, Pamoreda and Samayoa point out, is "...to induce farms to adopt more input-intensive, higher-yielding techniques...." Conversely, lower prices will induce a shift to less input-intensive and lower yielding techniques. We now attempt to foresee how a drop of 60 percent in producer rice price will affect rice yields in El Salvador. To address this issue, it is necessary to determine the empirical relationships between inputs and output in rice production. In other words, we need to estimate a production function for rice.

A Rice Production Function

Data for estimating production functions in developing countries are seldom available, where experimental trials and farm surveys are rare. In El Salvador, however, we were fortunate to have access to the sample of farms that the Agricultural Economics Division of the Ministry of Agriculture and Livestock (MAG-DGEA) interviewed at the end of the 1983-84 crop year to make their estimates of cost of production. This is only a 55 farm nationwide sample, but it includes a sufficient range of farm sizes and technologies.

Table 3-19 transcribes the information from the original DGEA sheets into aggregated categories. Originally the information was highly disaggregated; for example, inputs used are broken down into different kinds of fertilizers, herbicides, insecticides, and seeds. Similarly, labor costs are broken down by type of activity and operation. To derive a production function, it is necessary to aggregate these inputs, labor, and services into more-or-less homogeneous categories. We added all expenditures on inputs into a single value, and all labor and services into another. These values and total production were then divided over the number of manzanas to obtain input, labor, and output levels on a per-manzanas basis.

A Cobb-Douglas type production function was estimated using these data. The logarithm of rice yield was regressed on the logarithms of labor and inputs, the independent variables. Multiple regression analysis results for this estimation are given in Table 3-20. From the regression coefficients, we derive this production function for rice:

YIELD = 4.225 * (LABOR^0.1879) * (INPUTS^0.2496)

where:

YIELD = rice yield in quintals per manzana,

LABOR = labor and service expenses per manzana,

INPUTS = input expenses per manzana,

4.225 = exp(1.441) or antilog of the constant term, and ^ indicates exponentiation, and * indicates multiplication.

Table 3-19. Labor and Input Production Cost for Rice in 55 Sampled Farms, El Salvador, 1983-84 Crop Season

Manzanas a)	Inputs	Labor	Variable Cost	Total Cost	Production	Land Rent
1	466.00	524.00	990.40	1135.40	50.00	(115)*
1	223.00	370.00	593.40	730.30	60.00	50
1	69.00	321.00	390.00	497.10	40.00	50
1	519.35	382.00	901.35	1133.25	45.00	100
1	267.60	817.00	1084.6	1393.4	105.00	150
1	409.10	663.0	1072.25	1329.25	60.00	100
1	333.84	738.35	1072.19	1334.19	60.00	105
1	377.70	463.00	840.70	1163.80	80.00	200
1	275.00	644.00	919.00	1153.10	70.00	100
1	675.55	807.00	1482.55	1959.65	70.00	200
2	497.10	982.00	1479.10	1710.30	120.00	(160)*
2	783.75	1112.00	1895.75	2373.25	115.00	200
2	620.70	660.00	1280.70	1718.20	30.00	250
2	978.00	522.00	1500.00	1816.90	180.00	(160)*
2	952.25	1572.00	2524.25	2893.75	186.50	(160)
2	1045.95	953.06	1999.01	2791.71	170.00	500
2	1094.00	1006.00	2100.00	2807.50	90.00	400
2	821.40	1408.00	2229.40	2555.80	140.00	(160)
2	1192.50	2871.00	4063.60	4658.50	228.00	400
2.00	694.85	1668.00	2362.85	3108.75	128.00	400
2.50	1083.63	2143.90	3227.53	3699.93	130.00	(160)*
3.00	1340.00	1617.00	2957.00	3389.90	210.00	450
3.00	1969.35	1693.00	3662.35	4198.55	150.00	300
3.00	1104.00	2742.00	3846.00	4409.10	216.00	(160)*
3	1449.90	2334.00	3783.90	4337.83	150.00	(160)*
4	2040.00	1344.00	3384.00	3879.39	360.00	(160)*
4	1772.48	2024.00	3796.48	5152.24	280.00	800
5	1996.30	2325.00	4321.30	5178.90	350.00	225
5	1305.00	2001.00	3306.00	4473.52	150.00	625
5	2052.50	3388.00	5440.50	6778.21	312.00	(160)*

continues..

(Table 3-19 continued)

Manzanas[a)]	Inputs	Labor	Variable Cost	Total Cost	Production	Land Rent
5	3267.25	4785.00	8052.25	9731.02	330.00	550.00
5	4155.55	2220.00	6375.55	7808.87	350.00	500
5	3053.00	4715.00	7768.00	9905.16	400.00	1000
5	4267.30	4826.96	9094.26	10380.17	275.00	(160)*
6	2841.50	4443.00	7284.50	9100.88	420.00	750
7	3304.00	2968.00	6272.00	8240.20	840.00	1050
7	4098.70	6146.00	10244.70	13257.10	490.00	1400
7	3001.00	7554.00	10555.00	12100.20	980.00	(160)*
7.50	3129.49	5640.00	8769.49	10803.29	511.00	750
8	4807.20	5909.06	10716.26	13005.06	520.00	720
10	4828.60	6695.50	11524.10	15344.20	700.00	1500
10	7723.80	6997.00	14712.80	18616.60	900.00	1750
10	4618.00	12190.00	16808.00	21269.50	950.00	2000
10	5570.50	6968.50	12539.00	14374.70	650.00	(160)*
12	7314.00	10990.48	18304.48	20949.50	876.00	(160)
12.5	7088.30	10895.05	17983.35	23115.55	875.00	2500
20	6649.05	18120.00	24769.05	31248.65	500.00	3000
20	16185.00	13953.30	30138.30	37619.00	1600.00	3000
25	13655.75	15914.00	29569.75	40817.25	1750.00	5000
30	15273.30	6943.36	22216.66	25468.96	2160.00	(160)*
35	21332.50	35304.40	56636.90	71928.00	2660.00	7000
50	24178.70	32430.00	56608.70	69893.30	3000.00	5000
59	25497.00	47807.90	73304.90	84036.00	5015.00	(160)*
73	43111.61	77416.22	120527.83	152771.23	5402.00	14600
250	69153.74	183685.00	252838.74	289851.84	11600.00	(160)*

SOURCE: MAG-DGEA. (Dirección General de Economía Agrícola, Ministerio de Agricultura). Farm Survey summary sheets. 1984.

Notes: * Estimated rental value per manzana.

a) 1 Manzana = 6897 sq. meters.

Table 3-20. Estimation of a Cobb-Douglas Production Function for Rice: El Salvador 1983-84 Crop Season[a]

*** MULTIPLE LINEAR REGRESSION ***

Dependent Variable: 6 LQ

55 Valid Cases

Coeff of Determination:	.152839	Estimated Constant Term:	1.44136
Multiple Corr Coeff:	.390946	Standard Error of Estimate:	.340849

Analysis of Variance for the Regression:

Source of Variance	Degrees of Freedom	Sum of Squares	Mean of Squares	F Test
Regression	2	1.08992	0.544961	4.69074
Residuals	52	6.04126	0.116178	
Total	54	7.13119		

Variable	Regression Coefficient	Standardized Coefficient	Correlation with Dependent
7 LLAB	.187917	.202090	.291778
8 LINS	.249635	.275224	.341080

DURBIN - WATSON = 2.29039

NOTES: (a) Variable names:
6 LQ = natural log of rice yield per manzana.
7 LLAB = natural lop of labor cost per manzana.
8 LINS = natural lop of input cost per manzana.

SOURCE: Data from MAG-DGEA survey of 55 rice farms nation-wide.
ABSTAT Statistical program used for Analysis.

The above regression equation is highly significant despite the low coefficient of determination (R-square) of 0.15, because the 55 farms afford a high number of degrees of freedom. The low values of the regression coefficients indicate strong diminishing returns to additions of both labor and inputs. A 10 percent increase in labor only generates 1.9 percent additional output; similarly, adding 10 percent more inputs only results in 2.5 percent more output.

For our specific purposes, it is in fact possible to derive directly expected relative responses to rice price changes, bypassing the usual production function analysis. That is, we can obtain response changes in relative percentage terms without computing the actual quantities involved.

It can be shown (see Note B at end of section) that when we have a Cobb-Douglas production function, the relative change in yield resulting from a set of relative changes in the price of labor, inputs, and output can be simply calculated by:

```
(Q'/Q)={[(W1'/W1)^-A1]*[(W2'/W2)^-A2]*
     [(P'/P)^(A1+A2)]}^(1/(1-A1-A2))
```

where:

the primed symbols are ex-post values, and

(Q'/Q) = relative change in yield per manzana,

(W1'/W1) = relative change in price of labor,

(W2'/W2) = relative change in price inputs,

(P'/P) = relative change in product (rice) price,

A1 = 0.1879 = elasticity with respect to labor,

A2 = 0.2496 = elasticity with respect to inputs.

Since neither labor nor input prices are being affected by PL-480 rice imports, the expected change in yield per manzana of rice reduces to:

$$(Q'/Q) = (P'/P)^{[(A1+A2)/(1-A1-A2)]}.$$

For a drop in output price of 60 percent, and using the above values of production elasticities A1 and A2, we get:

$$(Q'/Q) = (.4)^{((.1879+.2496)/(1-.1879-.2496)}$$
$$(Q'/Q) = (.4)^{.778} = .49$$

In words, a 60 percent fall in the producer price of rice will result in rice yields of only 49 percent of their former level, or a loss of 51 percent.

Total Production Impact

We have derived two separate production impacts from a 60 percent fall in producer price for rice: rice area shrinks by 83 percent, and rice yields per manzana diminish by 51 percent. Combining these two separate results, we can conclude that rice production will fall to 8.3 percent ((1-.83)*(1-.51)=.083) of the level that would have prevailed at full price.[1]

1. Again, it should be recognized that these are order-of-magnitude estimates.

These values may seem excessive at first sight, but that is because we are postulating a price change of 60 percent to begin with. Were we to assume, for example, that PL-480 imports would be such as to only depress producer prices by say, 20 percent, then the area loss would only be 27.6 percent, and yield would only decline by 16 percent. The end result in such a case would be a total production of 61 percent of what it could be without rice imports.

These figures are therefore not to be taken literally as indicative of the present effects of PL-480 rice imports on rice production. Yet, they should clearly indicate the high potential these imports have for reducing domestic rice production.

Conclusions

The preceding analysis reveals some interesting findings:

- Given their large size vis-a-vis the total national market, PL-480 rice imports induce a disproportionately large fall in the consumer price of rice, and an even greater fall in producer rice price.
- Consumers benefit from these lower prices, though lower-income urban consumers benefit only slightly. Producers of rice suffer nutritionally from the lower prices as they experience a loss of income.
- Rice production in El Salvador drops dramatically as a consequence of the lower producer prices. On the one hand, area planted to rice has been shown to respond adversely to lower prices; on the other, rice yields per unit of area decline as farmers shift to less

> input-intensive techniques. The end result is a sharp decline of domestic production, far in excess of the seemingly modest share of imports in national consumption.

It is possible the PL-480 rice imports would not cause this domestic production effect if it is assumed that El Salvador is now producing the maximum rice it physically is capable of doing (either because farmers cannot do so because of conflict, agro-climatic or other conditions or additional land for rice is simply not available). This is probably an unrealistic condition, which higher producer prices would most likely change.

It is also recognized that PL-480 imports may simply be substituting for commercial imports, in which case the main policy issue is the price at which IRA sells the PL-480 rice.

In any event, this analysis demonstrates that the production and consumption effects should be examined in determining which commodities and the magnitude of each commodity imported under PL-480.

Notes

Note A

The expected price without PL-480 is derived thus: the direct elasticity of -.17 is defined as:

$$\frac{\text{change-in-consumption} * \text{price}}{\text{change-in-price} * \text{consumption}} = \text{elasticity} = -0.17$$

For a price level of 80 cents/lb and total consumption of 60 kilotons of rice, we have then:

$$\frac{\text{change-in-consumption}}{\text{change-in-price}} = \frac{-0.17 * 60}{80}$$

Solving for change-in-price we get:

$$\text{change-in-price} = 7.84 * \text{change-in-consumption}$$

Removal of 10 kilotons of PL-480 rice implies a change-in-consumption of -10; hence:

$$\text{change-in-price} = -7.84 * (-10) = 78.4$$

Adding this price change to the original price of 80 cents/lb., we get:

$$\text{price-without-PL-480} = 80+78.4 = 158.4 \text{ cents/lb.}$$

Note B

Relative Yield Response
to Price Changes

Let us take a Cobb-Douglas type production function on two inputs, X1 and X2:

$$Q = A*(X1^{A1}*(X2^{A2})$$

where:

Q = yield per unit of area,

X1 = input 1 used per unit area,

X2 = input 2 used per unit of area,

A1 = output elasticity with respect to input 1,

A2 = output elasticity with respect to input 2,

A = constant term in the Cobb-Douglas production function, and * indicates multiplication while ^indicates exponentiation.

For a given set of product and input prices, the optimum yield per unit of area is given by the equation (derivation courtesy of Carlos Ibanez):

$$Q^* = \{[(A1+A2)/K1]*A*W1^{(-A1)}*W2^{(-A2)}*P^{(A1+A1)}\}^{(1/(1-A1-A2))}$$

where:

Q* = optimum yield per area,

W1 = price per unit of input X1,

W2 = price per unit of input X2,

P = price per unit of output q,

K = a constant = (a1/a2)^(a2/(a1+a2))+(a1+a2)^(a1/(a1+a2)) and other symbols as defined earlier.

Now, consider that prices change for both inputs and outputs. Designate with P', W1', and W2' the new values of prices. The new optimal yield value, Q*' is now given by:

Q*' = {[(A1+A2)/k1]*A*W1'^(-a1)*W2'^(-a2)*P'^(A1+A1)}^(A1/(A1+a2))

Since we are interested mainly in the relative change in yield as a result of the new prices, divide Q*' by Q* to get:

Q*'/Q* = [(W1'/W1)^-A1*(W2'/W2)^-A2*(P'/P)^(A1+A2)]^(1/(1-A1+A2))

That is, we can calculate the change in yields directly using the ratios of new over old prices, thus bypassing the more complex computation of absolute yield values before and after the price changes. More significantly, we do not really need to know the <u>actual</u> levels of prices of neither inputs nor output, but merely the ratios of new and old prices, i.e., the percentage changes.

More succinctly, if we designate by lower case letter the ratio of new prices over old prices, we have:

q = [w1^(-a1)*w2^(-a2)*p^(a1+a2)]^[1/(1-a1-a2)]

where:

q = percent change in yield (ratio),

p = percent change in product price,

w1 = percent change in input X1 price,

w2 = percent change in input X2 price.

The above equation permits us to do powerful policy analysis regarding the yield impact of percent changes in prices of inputs and outputs, based solely on two actual values, namely, the Cobb-Douglas output elasticities for the two inputs in question.

IRA and the Game of Coyotes

Introduction

Intermediaries in the grain market can affect prices for both producers and consumers. Intermediaries may purchase most grain early from farmers, hold the grain and wait for demand to increase retail consumer prices. Or they may balance their purchase and sales over the course of a cropping year. There are other strategies as well.

In El Salvador, as in many other developing countries, there are two basic intermediaries in the grain market: many private dealers ("coyotes") and a government agency (IRA). Their relative role in the grain trade and impact on grain prices is a frequently discussed subject. Our analysis described earlier in this annex indicates that IRA is unlikely to affect grain prices despite its intended objective to do so.

To illustrate the limited possibilities of IRA to affect grain prices we have developed a 1-2-3 program that simulates IRA's interventions in the market of, say, rice. The program attempts to represent a scheme where IRA plays the market in competition against a rather simple-minded coyote.

The Setting

At the end of the harvest both the Coyote and IRA compete for a share of the total annual supply of, say, 60 kilotons of rice. Although it is not necessary, both

players (IRA and the Coyote) face the same storage costs of 3 colones per quintal per period over the year. Prices throughout the year must be such that price differentials just compensate for storage costs, including financial costs and a certain return to capital and management. Together, but in competition with each other, they must arrive at a competitive harvest price. The objective of the game is to distribute the total harvest over the entire year, in a manner equitable to consumers and producers.

Through trial and error, and also based on many years of experience with the market, Coyote and IRA will end up bidding against each other until a competitive harvest price is reached. Table 3-21 presents the likely situation that a competitive system will generate when the total harvest of 60 kilotons must be distributed over six two-month periods. Consumer demand is such that it has a direct price demand elasticity of -.17, the value derived by Cappi, et al. (1978) for El Salvador.

Figure 3-9 presents the same idea graphically: the total annual demand is given by the right-hand side sloping line, while the periodic demand for each 2-month period is just the same line, scaled down by one-sixth. A harvest price of 69.5 happens to be just the one that clears the market for the entire crop year.

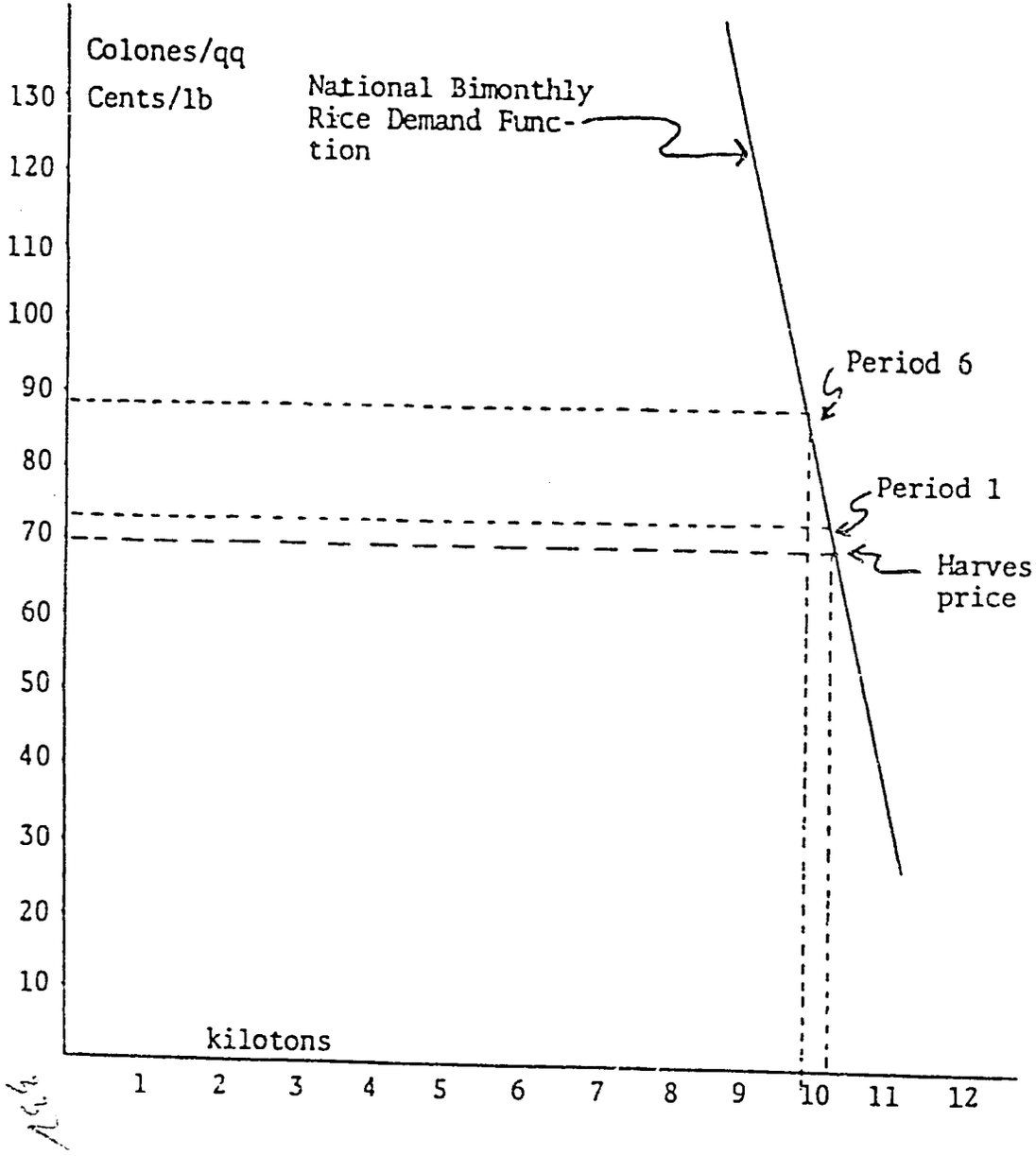
Prices increase from period to period to reflect storage costs. As prices increase, monthly demand diminishes slightly. There is therefore a whole series of period prices and quantities consumed. As should be expected with a low-elasticity good, the relative price variation is far higher than variations in quantities consumed. In Period 1,

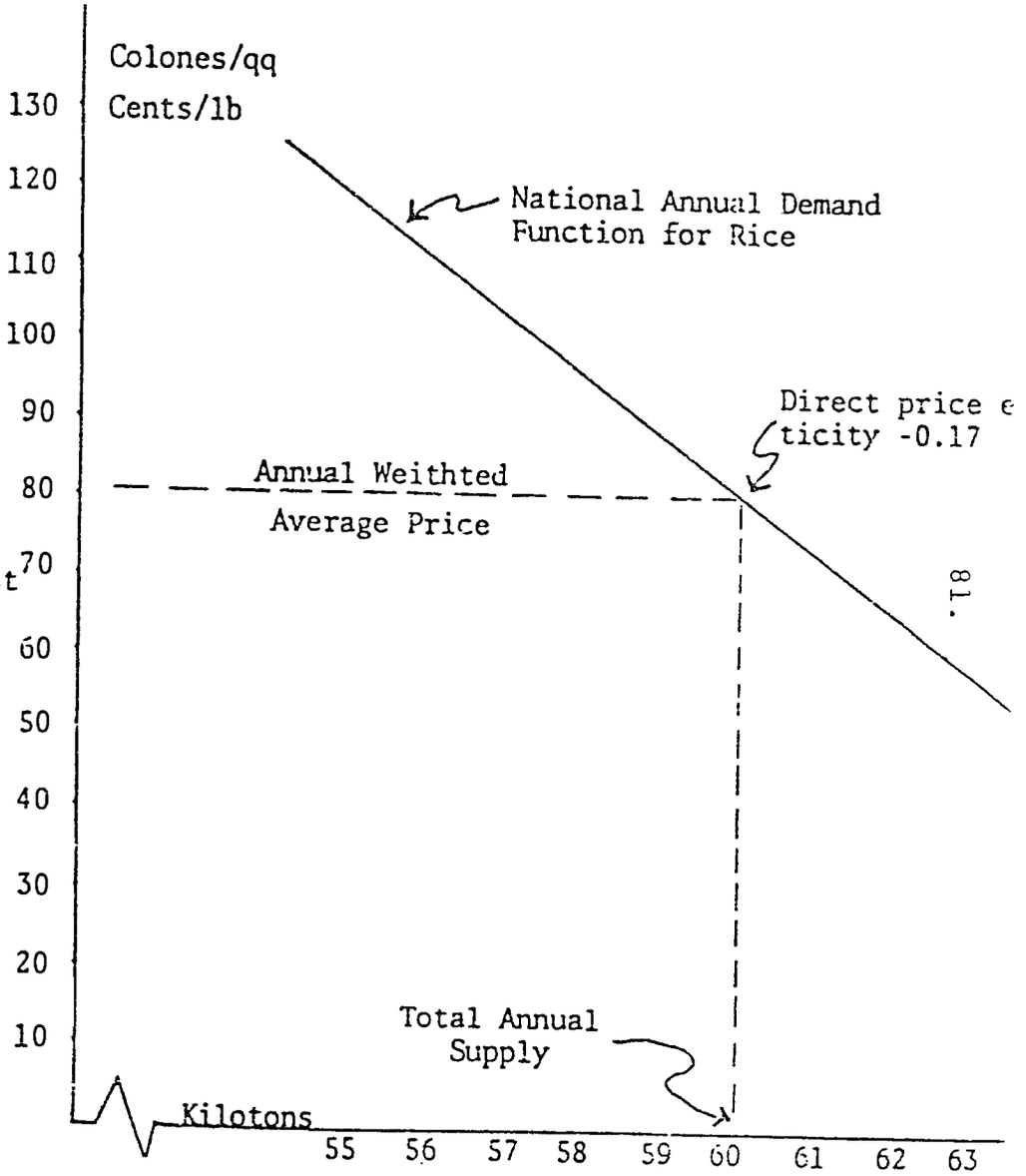
Table 3-21. Price and Quantity Distribution of 60 Kiloton Rice Harvest Over a Six-Period Year (Hypothetical)

Period	Price	Quantity Consumed
Harvest	69.5	
1	72.5	10.15937
2	75.5	10.09562
3	78.5	10.03187
4	81.5	9.968125
5	84.5	9.904375
6	87.5	9.840625
Annual Supply		60.000000

SOURCE: 1-2-3 Coyote Program.

Figure 3-9. Price and Quantity Distribution of 60 Kilotons of Rice Harvest Over Six Bimonthly Periods





at an initial price of 72.5 colones per quintal a total of 10.16 kilotons should be consumed, and, if the market operates competitively, at the end of the year in Period 6, the price would have climbed to 87.5 and consumption would have been reduced to 0.84 kilotons. The sum of all period consumptions must exactly equal total harvest. The annual price level for that harvest year is merely the weighted average price over the year.

Our simple-minded coyote is instructed to operate this way: sell so long as the market price exceeds or equals purchase price plus storage cost; do not sell otherwise. IRA has other objectives: it might set an "official" consumer price, and if the market price exceeds that price, IRA sells out of its stock until the official price is reached. Alternatively, IRA might try to ensure a smooth flow of supplies to the market.

Coyotes Without IRA

In a competitive market, the coyotes will arrive at the same harvest equilibrium price as before, i.e., 69.5 colones/qq. When IRA is absent, the entire harvest of 60 kilotons is in the hands of coyotes, and they will release the supply gradually according to the above rule of selling when they can make a profit or break even.

The price in Period 1 will be 72.5 colones per quintal, corresponding to the harvest price plus a storage cost of 3 colones per quintal (see Table 3-22). If the price were higher than 72.5, coyotes would make a profit in excess of costs; this would move coyotes to sell more to take advantage of that profit; that, of course, only lowers the price

Table 3-22. Price and Quantity Evolution of Rice in El Salvador
Hypothetical Case: Coyotes Without IRA

Period	Price /qq	Quantity consumed	IRA sales	IRA stock	IRA cost	COYOTE sales	COYOTE stock	COYOTE cost	Final price	IRA revenue	COYOTE revenue	period
Harvest	69.5			0			60					
1	72.5	10.15937	0	0	0	10.15937	49.84062	3.96	72.49981	0	12.24416	1
2	75.5	10.09562	0	0	0	10.09562	39.745	3.289481	75.49988	0	13.47932	2
3	78.5	10.03187	0	0	0	10.03187	29.71312	2.62317	78.49996	0	14.70166	3
4	81.5	9.968125	0	0	0	9.968125	19.745	1.961066	81.50003	0	15.91179	4
5	84.5	9.904375	0	0	0	9.904375	9.840625	1.30317	84.50011	0	17.10908	5
6	87.5	9.840625	0	0	0	9.840625	1.8E-15	0.649481	87.50018	0	18.29376	6
ANNUAL TOTALS		60	0		0	60		13.78636		0	91.73999	
								Purchase cost.....		0	-91.74	
								NET GAIN OR LOSS..		0	0	

SOURCE: 1-2-3 Coyote Program.

and reduces the incentive to sell more. Below a price of 72.5, our simple-minded coyote will abstain from selling more, according to his original instructions.

For the same reasons, in period 2 the price will end up being 75.5, i.e., 69.5 plus 6 colones of storage cost. Finally, in period 6, the price has reached 87.5 colones/qq, at which price coyotes sell the last remaining 9.84 kilotons of rice. The net result of these operations is a net profit of zero for the coyotes, since their total revenues (net of storage costs) of 91.74 million colones, exactly match the 91.74 they paid originally to producers for the 60 kilotons at 69.5 colones per quintal (there are 22 quintals in a metric ton).

The above developments are the predictable outcome of a competitive market where coyotes, in their search for profit opportunities, arrive at equilibrium situations where excess profits are zero, and price differentials over time exactly match storage costs.

IRA and the Coyote

When IRA enters the market, it must compete with coyotes for a share of the farmers' harvest. We shall assume that IRA pays the competitive harvest price up to the amount of produce that exhausts its budget for the given crop. Suppose that IRA manages to purchase one-third of the entire crop, namely 20 kilotons out of 60 (see Table 3-23). IRA must now decide how it is going to release its 20 kiloton inventory during the year.

Table 3-23. Price and Quantity Evolution of Rice in El Salvador
Hypothetical Case: IRA with Smooth Supplies

Period	Price /qq	Quantity consumed	IRA sales	IRA stock	IRA cost	COYOTE sales	COYOTE stock	COYOTE cost	Final price	IRA revenue	COYOTE revenue	period
harvest	69.5			20			40					
1	72.5	10.15937	0	20	1.32	10.15937	29.84062	2.64	72.49981	-1.32	13.56416	1
2	75.5	10.09562	0	20	1.32	10.09562	19.745	1.969481	75.49988	-1.32	14.79932	2
3	78.5	10.03187	5	15	1.32	5.031875	14.71312	1.30317	78.49996	7.314995	7.386873	3
4	81.5	9.968125	5	10	0.99	4.968125	9.745	0.971066	81.50003	7.975004	7.936785	4
5	84.5	9.904375	5	5	0.66	4.904375	4.840625	0.64317	84.50011	8.635012	8.474075	5
6	87.5	9.840625	5	0	0.33	4.840625	0	0.319981	87.50018	9.295020	8.998741	6
ANNUAL TOTALS		60	20		5.94	40		7.846368		30.58003	61.15996	
								Purchase cost.....		-30.58	-61.16	
								NET GAIN OR LOSS..		0	0	

SOURCE: 1-2-3 Coyote Program.

First, let us suppose IRA decides to place in the market regular amounts of rice during the last four periods of the year, in equal installments of 5 kilotons every period. The results of this strategy can be examined in detail in Table 3-23. Up to the 3rd period, the market situation evolves in identical manner to the previous case since IRA has not entered the market. In period 3, IRA places 5 kilotons, and the resulting drop in price induces the coyotes to refrain from selling at a loss: enough product is removed from the market by the coyotes that the price is brought up to 75.5, which covers purchase price and 9 colones storage cost. In periods 4, 5, and 6 the same situation results: coyotes match IRA's contributions by not selling the same amount, and resulting in exactly those prices that prevail in a competitive situation.

At the end of the year, the coyotes are no better or worse off than before: their total revenues match exactly their purchase costs plus storage costs, for a net profit of zero. IRA too has managed to break even, since they pay competitive prices at harvest and sell the product to consumers at market price as well. However, if IRA were to sell at lower than market prices, the corresponding losses would surely ensue, even though the market price would not likely change for most ordinary consumers.

We conclude that IRA's market sales do not affect monthly prices so long as IRA contributes only a portion of the market for each period. IRA sales simply induce coyotes to reduce their own sales in the period by an equal amount. Prices are unaffected.

An alternative strategy for IRA is to use its own stocks to actually affect consumer prices. Suppose, for example, that IRA decides on a consumer price of, say, 70 cents per pound, and is determined to use its 20 kiloton stock to ensure that this price prevails. The results are shown in Table 3-24.

Several lines at the top of Table 3-24 cover the options tried by IRA in the first period: IRA sales below 10 kilotons in period 1 leave the price unchanged, as explained before, at 72.5 cents, since coyotes simply match pound-for-pound whatever IRA sells. In order to lower the price to 70 cents, IRA must sell to consumers a total of 10.21249 kilotons of rice in the first period, at which point it has driven coyotes completely out of the market -- for that period.

The artificially low consumer price of 70 colones/qq lasts only briefly, however, for IRA finds itself at the beginning of period 2 with only 9,787 kilotons of rice on stock. Once again, Table 3-24 shows that IRA's attempts at lowering prices by selling small amounts is ineffective since simple-minded coyotes simply do not sell at a loss. When IRA tries to sell 10 kilotons it realizes that its warehouses are empty. It settles for selling its entire stock of 9.787 which coyotes supplement with 0.646 kilotons of their own to reach a total supply of 10.096 kilotons and a price of 75.5, precisely the price of the competitive market situation. IRA is now out of stock and out of the game for the rest of the season.

Table 3-24. IRA Attempts to Control Prices in a World of Profit-Hungry Coyotes (Hypothetical Case)

Period	Price /qq	Quantity consumed	IRA sales	IRA stock	IRA cost	COYOTE sales	COYOTE stock	COYOTE cost	Final price	IRA revenue	COYOTE revenue	period
harvest	69.5			20			40					
1	72.5	10.15937	2	18	1.32	8.159375	31.84062	2.64	72.49981	1.869991	10.37416	1
1	72.5	10.15937	5	15	1.32	5.159375	34.84062	2.64	72.49981	6.654979	5.589181	1
1	72.5	10.15937	8	12	1.32	2.159375	37.84062	2.64	72.49981	11.43996	0.804194	1
1	72.5	10.15937	10	10	1.32	0.159375	39.84062	2.64	72.49981	14.62995	-2.38579	1
1	72.5	10.15937	10.21249	9.78751	1.32	0	40	2.64	70.00022	14.40728	-2.64	1
2	75.5	10.09562	0	9.78751	0.645975	10.09562	29.90437	2.64	75.49988	-0.64597	14.12880	2
2	75.5	10.09562	5	4.78751	0.645975	5.095625	34.90437	2.64	75.49988	7.659011	5.823820	2
2	75.5	10.09562	10	-0.21249	0.645975	0.095625	39.90437	2.64	75.49988	15.96399	-2.48116	2
2	75.5	10.09562	9.78751	0	0.645975	0.308115	39.69188	2.64	75.49988	15.61105	-2.12822	2

SOURCE: 1-2-3 Coyote Program.

Unfortunately, IRA's impact did not end in Period 1. Unbeknown to IRA and the coyotes, an unseen and opposite effect is now in gestation. Table 3-25 summarizes the situation for the entire year, including periods 1 and 2 already reviewed. In period 5, profit-hungry coyotes release 9.9 kilotons of rice which bring about a price of 84.5 colones, enough to cover purchase price plus 15 colones storage cost. However, that leaves only 9.787 kilotons of rice on stock for sale in period 6; that is, less than the 9.84 that existed in the competitive situation. The resulting price of 90 colones in period 6 is therefore higher than the 87.5 that would have occurred without IRA's interventions. Conclusion: IRA succeeded in lowering the consumer price in period 1 to 70 colones, but in the process induced a price hike to 90 colones in period 6.

Table 3-25 also shows the financial implications for IRA and coyote at the end of the year. IRA received 30.02 million colones for rice for which it paid 30.58 million, that is, IRA incurred a loss of 0.6 million colones. By contrast, our simple-minded coyote succeeded in making a net profit of 0.5 million colones, since his revenues of 61.7 million exceeded its purchased cost of 61.2 million colones. Thus, IRA's market interventions, to the extent that they effectively affected prices, also succeeded in making profits for the coyote.

Looked at in a different light, IRA's successful effort to reduce prices in period 1 resulted in higher than usual prices in the last period; thus, IRA's intervention increased the range of price variation during the year.

Table 3-25. Price and Quantity Evolution for Rice in El Salvador, Hypothetical Case: IRA Succeeds at Price Control

Period	Price /qq	Quantity consumed	IRA sales	IRA stock	IRA cost	COYOTE sales	COYOTE stock	COYOTE cost	Final price	IRA revenue	COYOTE revenue	period
harvest	69.5			20			40					
1	72.5	10.15937	10.21249	9.78751	1.32	0	40	2.64	70.00022	14.40728	-2.64	1
2	75.5	10.09562	9.78751	0	0.645975	0.[illegible]3115	39.69188	2.64	75.49988	15.61105	-2.12822	2
3	78.5	10.03187	0	0	0	10.03187	29.66001	2.619664	78.49996	0	14.70537	3
4	81.5	9.968125	0	0	0	9.968125	19.69188	1.957560	81.50003	0	15.91529	4
5	84.5	9.904375	0	0	0	9.904375	9.78751	1.299664	84.50011	0	17.11259	5
6	87.5	9.840625	0	0	0	9.78751	0	0.645975	89.99977	0	18.73324	6
ANNUAL TOTALS		60	20		1.965975	40		11.80286		30.01833	61.69928	
								Purchase cost.....		-30.58	-61.16	
								NET GAIN OR LOSS..		-0.6	0.5	

SOURCE: 1-2-3 Coyote Program.

Conclusions

- Setting aside IRA's capability of affecting the grain market through imports, we can conclude that IRA's domestic operations have negligible or negative effects.

- In a competitive market, IRA has negligible or very limited capability to influence consumer prices through the year, even in a situation when it controls a considerable share of the market.

- To be effective in lowering prices for a period, IRA needs to use its own stocks to cover all the market needs in that period at that price. This, however, drains IRA's inventories very rapidly and reduces its ability to influence future prices.

- To the extent that IRA succeeds in reducing prices in one period, it also induces an opposite jump in price in another period.

- Consumers experience greater price variability whenever IRA succeeds in affecting prices.

- IRA suffers financial operating losses every time it succeeds in influencing consumer prices in a given period.

- By contrast, IRA unintentionally generates profits for coyotes every time it succeeds in affecting prices.

AN INVENTORY OF POLICIES AFFECTING AGRICULTURE IN EL SALVADOR

POLICY ANALYSIS ANNEXES
ANNEX 4: AGRICULTURAL DIVERSIFICATION AND AGRIBUSINESS

SUBMITTED TO

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
RURAL DEVELOPMENT OFFICE
SAN SALVADOR, EL SALVADOR

AUGUST 1984

3/13

TABLE OF CONTENTS

	Page
INTRODUCTION AND SUMMARY OF POLICY ISSUES	1
FRESH FRUITS AND VEGETABLES	6
Some Economic Parameters	6
Physical Parameters	10
Production Costs	15
Marketing	17
Credit Policies	20
Technical Assistance	21
Foreign Trade in Horticultural Products	23
MINOR CROPS	25
Sisal	26
Tobacco	27
Peanuts	27
Kenaf and Minor Fibers	28
Spices and Aromatics	29
Conclusions	30
THE CONTRASTING CASES OF POULTRY AND MILK PRODUCTION	30
Poultry	30
Milk and Milk Products	34
AGROINDUSTRIAL DEVELOPMENT ACTIVITIES OF GOES AND THE PRIVATE SECTOR	39
Project Preparation and Promotion	39
Pilot Plants	45
Conclusions	46
BIBLIOGRAPHY	48
PERSONS CONTACTED	49

344

LIST OF FIGURES

Figure		Page
4-1	Retail Price of Annual Horticultural Crops in San Salvador, 1976-83	11
4-2	Retail Price of Multi-Year Horticultural Crops in San Salvador, 1976-83	12

LIST OF TABLES

Table		Page
4-1	Horticultural Crops: Estimated Area Cultivated and Value of Production, Crop Year 1982-83	7
4-2	Fruits and Vegetables: Estimated Production Costs and Yields, Crop Year 1983-84	14
4-3	Horticultural Crops: Production, Foreign Trade, and Apparent Consumption, 1982	24
4-4	Chicken and Eggs: Production and Real Prices, 1971-84	31
4-5	Imports of Ingredients for Use in Chicken Feed, 1975-83	33
4-6	Female Cattle, Fluid Milk Production and Productivity, 1974-83	35
4-7	Milk Production, Imports, Total Supply, and Real Consumer Price, 1974-83	36
4-8	Banco de Fomento Agropecuario: Agribusiness Projects Financed 6/83 to 6/84	41

ANNEX 4. AGRICULTURAL DIVERSIFICATION AND AGROINDUSTRY

Introduction and Summary of Policy Issues

Economic and social forces, based on opposing forms of land ownership, account for the predominance of traditional export crops and basic grains in El Salvador's agricultural sector. Beginning in the third quarter of the last century, the coffee planters flourished under agricultural capitalism; latifundios burgeoned, forcing large numbers of rural families into a subsistence economy linked to the export producers through providing wage labor. A pattern of development of overhead capital and a structure of public finance discouraged economic diversification in response to new market demands. This pattern of development did respond to cotton production during this century, but it missed opportunities to incorporate many other elements of agricultural technology which have become available since World War II, notably those in the cultivation of tree fruits and nuts, ornamental plants, annual vegetables, spices, natural insecticides, and productive vegetable fiber plants such as kenaf.

Production and productivity in these agricultural subsectors, as well as in dairy production, are vastly lower than those in developed countries, or even in countries with

similar climate and ecological conditions. On the other hand, demand for a number of them is growing rapidly, both for local consumption and throughout the world. Moreover, since El Salvador's market is now sufficiently large for efficient production (and processing, in a number of cases), the consequences of this lag in agricultural diversification are numerous: lower incomes and purchasing power within the agricultural sector; adverse impact on the balance of payments, both because of lost opportunities to export and increased import penetration; and inadequate development of marketing structures for domestic products.

Agricultural diversification is emphasized in program and policy priorities by the Government, because of its potential contribution to rural income, employment creation, nutrition, environmental protection (soil conservation, reduction of pesticide use), and balance-of-payments considerations. Yet, public sector institutions contributing to this end are inadequate to achieve a significant impact, and public policy remains oriented toward promotion of traditional agriculture or export crops, rather than crop diversification. Moreover, in the absence of public support, the sub-sectors of agriculture most appropriate for development at this time are dependent upon private-sector marketing and processing firms, not only for providing marketing channels, but also for developing the delivery systems of inputs such as seeds and plant materials (cultivar selection) and for providing guidance on the acquisition and use of herbicides, insecticides, and fungicides, and labor inputs necessary for efficient production. But because of the failure so far of public policy to assist this latter development, the dynamic elements of the private sector are severely handicapped in

promoting the structural transformations necessary to achieve El Salvador's potential for agricultural modernization and diversification.

In the following sections, we discuss not only fruits and vegetables and minor crops, but also the contrasting cases of poultry and dairy. As for poultry, production of meat and eggs has been growing rapidly; this growth is now to a large extent export-led in El Salvador. However, milk production, which relies on approximately the same feed inputs, has fallen in recent years and shows poor prospects despite favorable price relationships and demand outlook. We can provide some explanation for the failure of public policy in these sub-sectors (poultry excepted); however, some aspects clearly require in-depth study. This includes detailed evaluation of marketing institutions and pricing strategies; appraisal of other institutional and legal changes which are required in specific instances; irrigation planning and its coordination with official and private-sector technical assistance; agricultural credit policies and availabilities to selected sub-sectors; and promotion of agribusiness.

In the short run, the most important of these issues is pricing strategy. Relative prices for all of the sub-sectors cited above have fallen in recent years. The reasons for this are varied. In the case of poultry and eggs, and in fruits and vegetables also although to a much lesser extent, technological progress in both production and marketing accounts for part of the drop. This factor is less significant in the case of milk and many other minor crops. More important in some instances are price disturbances caused by inadequate financing of middlemen and

inadequate marketing infrastructure (industrial processing of fiber crops such as kenaf and sisal; washing, waxing, packing and cold storage of perishables such as fruits and vegetables). Public pricing policy can be applied in three major ways:

(1) to help middlemen perform the marketing function more efficiently, thereby increasing potentially the farmgate price;

(2) to assist small producers to organize so as to participate more actively in the marketing function, thereby potentially increasing their prices;

(3) to examine whether trade and foreign exchange policies can be modified, such as moving fruits and vegetables to the parallel rate and/or introducing a seasonal import tariff.

Current credit policies are generally adequate for promoting agricultural diversification. This is in large measure due to intermediation by private buyers who themselves amortize producer credit as products are received. Another promising approach, promoted by CORSAIN, is to develop within Phase I cooperatives a separate form of business organization for processing crops or packing export crops, with which the financial agency can develop a management or technical assistance contract, and with which it can become a co-borrower from other financial institutions. These measures should be encouraged in order to increase the absorptive capacity of producing units that are potentially capable of developing modern production methods in these subsectors.

There are, however, some anomalies in the official credit lines which should be corrected, notably the absence

of credit lines for marketing facilities and the very hard terms on loans for establishment of multi-year crops, which have very short amortization periods.

Official technical assistance is insufficient in both quality and quantity for promoting agricultural diversification. This situation can be remedied in part by contracting private technical assistance firms. One change, which would immeasurably benefit the producers of vegetables, would be to increase the growing of new cultivars on experimental plots and facilitating the access of private growers to the results. More significant would be adequate integration of all forms of public and private technical assistance with official management of irrigation and drainage facilities.

The most important institutional change required in support of agricultural diversification would be rapid development of agribusiness. It should be borne in mind in this connection that many of the more promising products require a minimum of processing (even for export) and a great deal of knowledge with regard to primary production and marketing. Thus, a rapid growth of agribusiness will require a large amount of knowledge not now available in El Salvador, which means the importation of knowledge developed by the public and private sectors of developed countries in recent years.

In the short run, the most effective means toward this end is obviously private foreign investment. The Government, aided by private institutions, is moving toward promotion of private foreign investment, despite the obvious difficulties of doing so at this time. These efforts would be greatly assisted by harmonization of a number of disparate

pieces of legislation (Ley de Incentivos Fiscales, Ley de las Zonas Francas, Ley de Fomento de Exportaciones, and Ley de Control de Transferencias Internacionales).

Fresh Fruits and Vegetables

Some Economic Parameters

It is not possible in a brief survey to treat all aspects of horticultural production, even in such a small country as El Salvador. In addition to fresh fruits and vegetables, the field of horticulture includes nuts, berries, spices and ornamental plants, cut flowers, bulbs, seeds, and other materials. No systematic information of any sort is available for the latter group. Even for fruits and vegetables, the data available for analysis are of poor quality. Information on areas cultivated is not objectively measured; many new areas of production (observed in field trips by the RRNA team) are unrecorded; and estimates are not revised except after lags of several years. Even less is known concerning yields. As for producer prices, discussion with DGEA revealed that whereas estimates for any one year can be the subject of considerable review, the observations from one year to the next are made by differing methodologies; thus, year-to-year price movements are difficult to track with any degree of certainty. Moreover, average annual prices obviously do not reflect price volatility over the year, resulting from changes in the seasons, consumer habits of consumption, and even the arrival of large lots of imported produce into the San Salvador wholesale market, La Tiendona.

The latest available estimates (for 1982) for sixteen vegetable and fruit crops are presented in Table 4-1,

Table 4-1. Horticultural Crops: Estimated Area Cultivated and Value of Production, Crop Year 1982-83

	Annual crops									
Weight (Mz) -	Tomato (.14)	Cucumber (.01)	Pepper (.07)	Potato (.01)	Yuca (.16)	Cabbage (.07)	Watermelon (.16)	Onion (.08)	Other (.30)	Total annual crops
Area cultivated (Mz)	2,400	100	1,200	150	2,800	1,200	2,700	1,400	5,000	16,950
Yield (qq/Mz)	232	453	282	270	195	606	339	384	260	
Producer price (₡/qq)	18	12	48	18	16	18	19	49	18	
Gross value of production (million ₡)	10	1	16	1	9	13	17	26	23	116
Consumer price (₡/100 lbs.)	100	42	100	42	29	22	40	100	90	
Marketing margin (5-3)	82	30	52	24	13	4	21	51	72	
Marketing margin (6/3) x 100	455	250	108	133	81	22	110	104	400	235[a]
Value added/Mz	644	3,761	11,403	987	630	8,902	4,603	17,206	2,983	
Total value added (million ₡)	2	--	14	--	2	11	12	24	15	81

	Multi-year crops									
Weight (Mz) -	Plantain (.22)	Banana (.02)	Orange (.25)	Mango (.04)	Pineapple (.06)	Coconut (.20)	Cashew (.14)	Avocado (.02)	Other (.05)	Total multi-year crops
Area cultivated (Mz)	6,120	680	7,000	1,000	1,600	5,700	4,000	500	1,500	28,100
Yield (qq/Mz)	455	445	308	333	250	200	121	259	1,300	
Producer price (₡/qq)	18	12	12	31	33	9	12			
Gross value of production (million ₡)	50	4	26	10	13	10	16	40	35	
Consumer price (₡/100 lbs.)	62	30	36	66	75	26	375			
Marketing margin (23-20)	44	18	24	35	42	17	26	5	68	212
Marketing margin (26/20) x 100	244	150	200	113	127	189	100	132	110	
Value added/Mz	6,868	3,929	2,142	8,229	7,489	1,000	450			
Total value added (million ₡)	42	3	15	8	12	10	64	92	75	
							533	230	214	246[a]
							5,595	9,572	2,149	
							22	5	32	149

a. Weighted average.
Source: Derived from DGEA and ISIAP data.

organized within the framework of national accounts. Although, for reasons stated above, these estimates doubtless understate both the universe of horticultural production and the volume of production of the fruits and vegetables subsector measured, they are three times the estimate presented by the Banco Central in its national accounts statements. The Banco Central obviously understates the economic importance of the horticulture sector by a wide margin.

As a percent of total area of vegetables cultivated in that year (16,950 manzanas), watermelon and yuca accounted for 16 percent apiece; tomato, for 14 percent; onion, 8 percent; pepper and cabbage, 7 percent; and everything else, 22 percent. Of the fruits, organized plantations of plantain (11 percent), citrus (25 percent), coconut (20 percent), and cashew (14 percent) predominated. This is somewhat misleading, because a considerable share of avocado is harvested from shade trees for coffee, and mango is produced to a large extent from dooryard trees which are not included in the totals. But the multi-year crops, including pineapple (which accounts for only 6 percent of area) were estimated at 28,100 manzanas. It should be added that no data are available for such high-value crops as cantaloupe, honeydew and crenshaw melons or papaya, which further accentuates the undervaluation of the subsector. In the export sector alone, six firms are presently handling these crops.

From the data in Table 4-1, it is possible to compare estimated yields with those achieved in field trials at experiment stations in El Salvador with on-farm yields in the continental United States, Hawaii, or Puerto Rico. For virtually all crops, El Salvador's yields (on experiment

stations, not on farms) are significantly below yields in the comparative locations.

One further application of Table 4-1 is to estimate marketing margins by comparing producers' prices with those paid by consumers. These seem to be several times as large as the gross value of production. Marketing margins for vegetables vary from 22 percent (probably an error) for cabbage to 455 percent for tomato. Weighting all of these by areas cultivated, we obtain an average marketing margin of 235 percent for vegetables. The same procedure applied to the multi-year crops yields 113 percent for mango and 533 percent for cashew. The weighted average marketing margin for multi-year crops is 246 percent.

Rates of change presented in Table 4-1 are subject to error. For example, the RRNA team heard estimates of growth of horticultural production varying from negative to 30 percent or more per year. The weighted averages of areas under cultivation have increased as shown in the following table.

Index of Area Cultivated

(1982-83 = 100)

	Annual crops	Multi-year crops
1976-77	62	85
1977-78	74	91
1978-79	31	90
1979-80	94	97
1980-81	101	93
1981-82	100	90
1982-83	100	100

Source: Table 4-1.

Using the same weights and base period, indexes of consumer prices for horticultural products have been prepared. The two price indexes are expressed in real terms, using the Consumer Price Index as the deflator.

	Annual crops	Multi-year crops
	1982-83 = 100	
1976-77	240	118
1977-78	181	139
1978-79	215	131
1979-80	167	106
1980-81	144	107
1981-82	137	101
1982-83	100	100

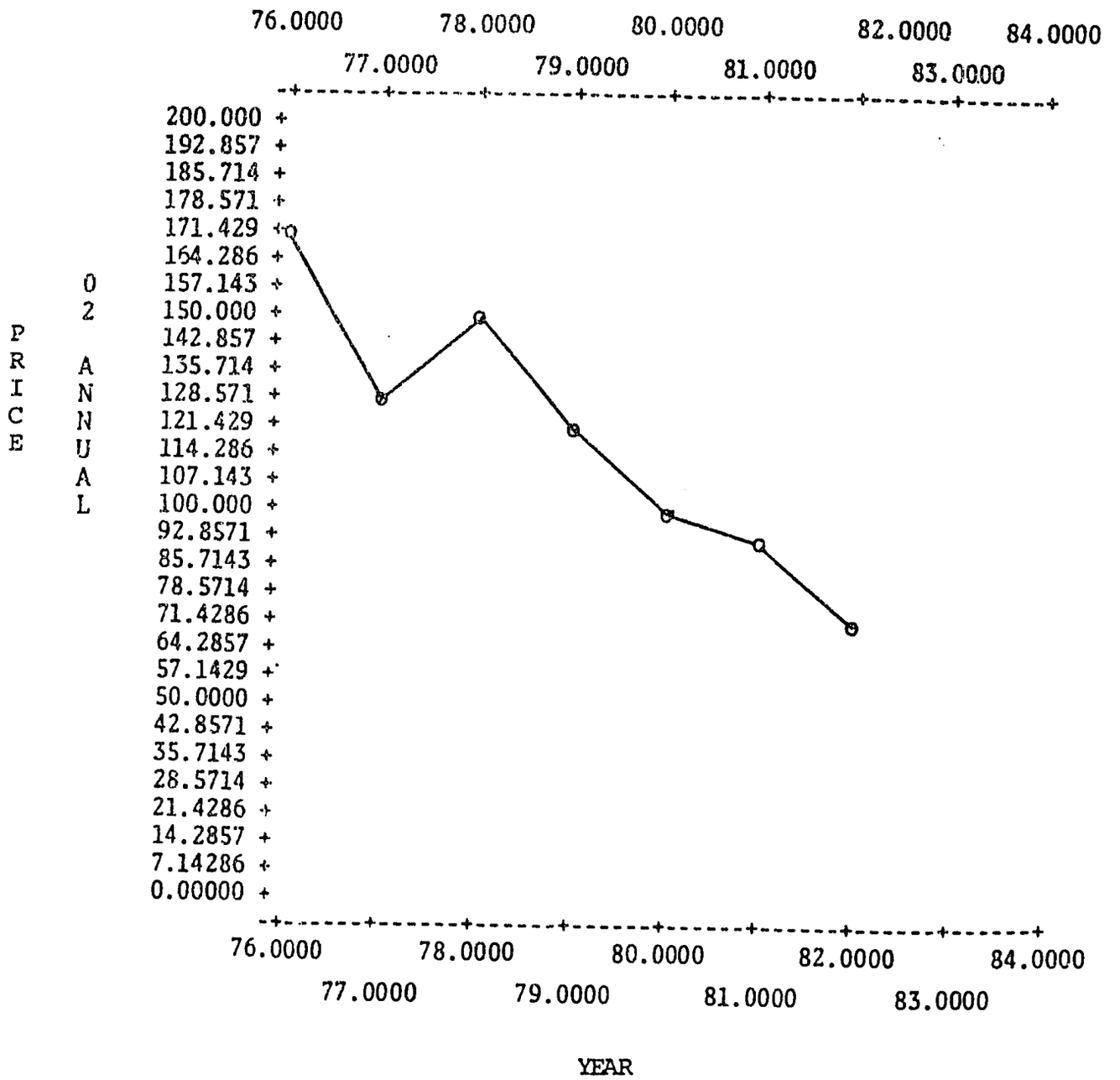
Source: Derived from Anuario Estadistico, MAG, various issues.

These price data clearly show that the terms of trade have turned sharply against the horticultural sector. Also, to the extent that adverse price movements have not been offset by productivity increases, supply elasticities are negative. We will return to these points in the following sections. Actual retail prices deflated to 1978 are given in Figures 4-1 and 4-2.

Physical Parameters

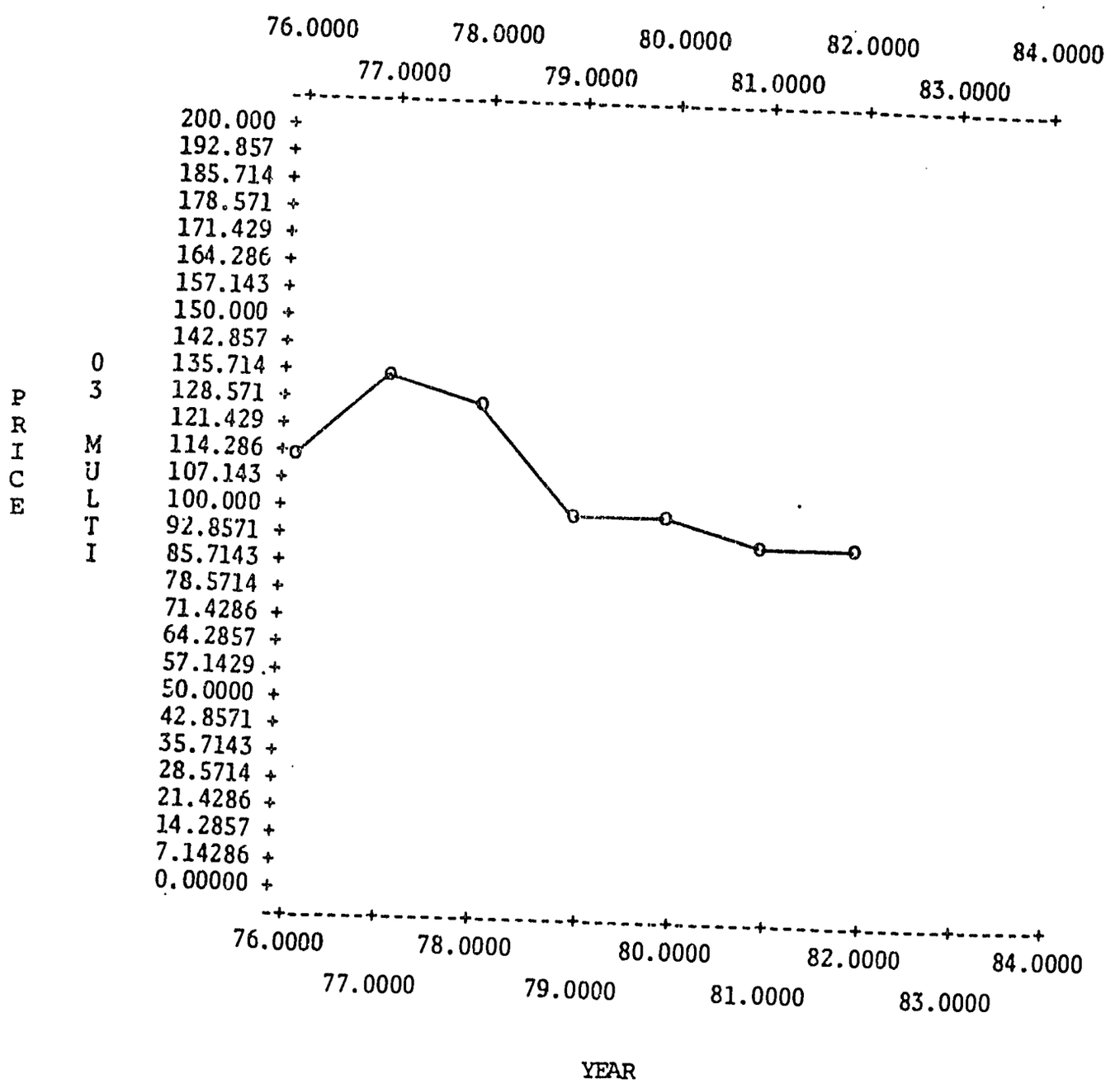
In general, it is difficult to characterize the entire range of horticultural crops as to soil, water, day length, and other requirements for economically feasible production in El Salvador. In relation to field crops such as corn and sugar cane, horticultural crops do not require major extensions of land surface, having instead relatively large

FIGURE 4-1.
RETAIL PRICE OF ANNUAL HORTICULTURAL CROPS
IN SAN SALVADOR 1976-83
(In constant colones of Dec. 1978)



357

FIGURE 4-2.
RETAIL PRICE OF MULTI-YEAR HORTICULTURAL CROPS
IN SAN SALVADOR 1976-83
(In constant colones of Dec. 1978)



requirements for chemical and other inputs and labor, per unit of output. This can be observed by comparing the pattern of production costs (Table 4-2) for selected horticultural crops with those of field crops presented in other sections of this report.

Since their growing conditions differ, it would be an immense task determine where in the country various annual fruit and nut crops might grow, on which to base a conclusion as to whether land might become a constraint on production of horticultural crops. Also, regardless of soil texture and structure (major determinants of water available to plants during the dry season), most row crops require irrigation in El Salvador. For this reason, they tend to be concentrated in rich lake-bottom soils along the rivers in the center of La Libertad Department, where both ground and surface water is abundant. Because they can be rotated in the same year with annual crops such as rice, the competition with these crops for use of this desirable land is attenuated.

A second concentration of vegetable crops is found along the Honduras border in Chalatenango Department, but is limited in area because of inadequate transportation. This land is more suitable than La Libertad for cool-weather crops such as potatoes and peas.

Cassava varieties grow in small patches in relatively unfertile soil and are widely scattered. Watermelon also is not demanding as to soil fertility, although this crop must be frequently rotated in order to avoid build-up of diseases and pests.

A number of tree crops, on the other hand, cannot tolerate wet roots and require well-drained soils. A large

Table 4-2. Fruits and Vegetables: Estimated Production Costs and Yields, Crop Year 1983-84

(₡/Mz)

	Annual crops							
	Tomato	Cucumber	Pepper	Potato	Yuca	Cabbage	Watermelon	Onion
Inputs	1,938	568	1,001	1,904	648	892	549	858
Labor	2,589	1,041	1,374	1,584	739	1,038	970	1,845
Other	936	494	611	662	598	544	381	755
Yield	6,400	3,600	6,000	6,000	3,600	4,000	2,800	8,499

	Multi-year crops[a]							
	Plantain	Banana	Orange	Mango	Pineapple	Coconut	Cashew	Avocado
Inputs	1,156	ND	611	466	363	ND	107	416
Labor	517	ND	318	360	677	ND	612	302
Other	616	ND	406	383	432	ND	286	359
Yield	4,032	ND	3,300	5,225	12,000	ND	7,875	3,885

Note: "ND" means no data available.
a. Maintenance level.
Source: Banco de Fomento Agropecuario: Costos de Produccion 1984.

share of avocados are grown as shade trees on coffee plantations. Citrus, mango and cashew plantings are concentrated in the hilly country stretching eastward from northern San Vicente Department, while coconut, plantain and bananas occupy a parallel belt on flatter lands closer to the coast, stretching through Usulutan Department. The upland plantings of tree fruit really compete with no other crops because of the high ratio of yields to costs in their cultivation, but the latter do compete with cotton, rice, and sugar cane.

In conclusion, the competition between annual horticultural crops and/or multi-year crops with traditional export crops and/or basic grains, as regards land use in El Salvador, is limited to a few special situations. Thus, it appears unlikely that availability of suitable land will be a constraint on horticultural production at any time in the foreseeable future.

Production Costs

The costs of certain horticultural crops in 1983-84, to be used as a guide for credit operations of the PFA in 1984, are summarized in Table 4-2. The inputs required tend to vary substantially from crop to crop. In the aggregate, it is apparent that labor inputs relative to other costs are high in the case of all the annual row crops and in pineapple and cashew as well. The opposite is true of the other multi-year crops for which data are available.

Some actual observations on cost data can be compared as to level and composition with the detailed data presented in Table 4-2. First, as to level, whereas the BFA data are

much higher than values collected in the course of the preceding crop year in Zapotitan,[1] they are only 70 percent as high as costs reported for selected crops by industrial firms which are promoting the use of crops by their suppliers. The differences between the Zapotitan data and the industrial users' data can be explained by the fact that whereas the majority of the former were traditional producers, the latter placed a higher premium on quality; hence, heavier-than-average applications of insecticides and pesticides were in some cases recommended by industrial users. It is interesting that the projected yields were almost the same in the BFA and the industrial users data; quality rather than quantity is the results of these applications.

As to the composition of the cost data, we have two observations each on tomato, cucumber, pepper, and potato from Zapotitan. For tomato, the ratio of inputs to labor is high in Zapotitan and lower in BFA. The ratio of total input and labor cost to yield is 0.53 and 0.99 in Zapotitan and 0.71 in BFA. For cucumber, pepper, and potato, there is the same relationship -- i.e., BFA is recommending relatively low inputs and high labor, whereas the Zapotitan producers are using relatively high inputs and low labor, arriving at perhaps roughly the same ratios of input to output. The most interesting feature of the Zapotitan data is that even with the high levels of inputs used in relation to the data reported by BFA yields of the same crop varied widely among individual farmers. To put this another way, in 1982 there was apparently no husbanding on application of inputs; in many cases inputs were applied at higher than recommended

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1. MAG-IICA, Zapotitan, Alternativas Tecnologias de Producion, 1982.

levels. This suggests that many of the farmers were using inputs improperly. A well-designed farming system's study of vegetable cropping might focus on the skill variable so as to develop operationally relevant insights on this question.

Among inputs, seeds are a particular cause for concern in vegetable production. They represent a miniscule share of input costs. Nevertheless, these seeds embody the results of very expensive research efforts by government agencies and private seedsmen. Once a cultivar is developed, it must be grown out in field trials at a particular site before it is distributed. CENTA has exerted some effort in this area over the years, but this effort is small in relation to the actual requirements in El Salvador at this time. What seems to be happening is that individual producers, or the field men representing industrial processors or users, are placing orders with foreign seedsmen. Many results are favorable; but a number of mistakes have been reported for lack of field trial work in El Salvador. The Central Bank has recently raised the price of imported seeds by switching them to the parallel rate. This makes private experimentation with them even more expensive.

Marketing

We are aware of only one recent study in depth which deals in part with vegetable marketing (MAG-IICA, Perfil del Distrito Zapotitan, Vol. III, Determinantes del Mercadeo Agropecuario, 1982). There appear to be no comparable data on fruit marketing. There are currently no official interventions in marketing of perishables, except for foreign exchange rates with imports entering at ¢2.5 rather than the parallel exchange rate.

The study cited depicts a traditional marketing structure for vegetables, with marketing cost structures which conform in general terms with the data presented in Table 4-1 concerning marketing margins (though somewhat lower because of good road communications between Zapotitan and adjacent major markets, San Salvador in particular). The margins reported in the study are: tomato, 235 percent; pepper, 76 percent; cucumber, 131 percent; potato, 131 percent; sweet corn, 92 percent (computed from data presented in op. cit., p. 61). Marketing costs (transport, packaging, spoilage and overhead costs -- imputing a monthly wage of ₡2,000 in wholesaling and of ₡1,200 in retailing) accounts for roughly one-third of these margins. The remaining two-thirds is profits at the wholesale or retail level. We do not have any way to evaluate these data; they are extremely high in relation to analogous data for the United States (2 percent in wholesaling and 5 percent in retailing of product); however, they are consistent with the national accounts data presented earlier.

More careful dissection of these aggregates would be required in order to determine which of these costs might be reduced by means of market interventions; the study cited ventures into the normative area on indirectly. It lists a number of suggestions which could be explored, concerning grades and standards, market news, development of unspecified "infrastructure," and producer participation in the marketing process. But it falls short of specifying these measures in a very operational sense, and it does not demonstrate convincingly what would be the impact on marketing margins of these proposals.

An interesting observation in the study cited is that a farmers' market does exist in the Zapotitan area, in which producers can sell face-to-face to consumers. This institution accounts for only 2 percent of total sales from the area, since the bulk of the product is sold through the San Salvador wholesale market, La Tiendona.

What really might make an impact on marketing margins would be the development of farmers' markets in San Salvador. In fact, it is somewhat puzzling that some of the larger producers' cooperatives have not attempted to develop this mechanism for marketing perishables. A partial answer is that produce represents a minor part of the total output of any one cooperative. Before the cooperatives can be induced to take an active role in marketing, they probably must become more specialized.

To carry this institutional consideration one step further, it should be noted that existing exporters of fresh and processed produce have developed a farm-service system whereby their field men develop non-traditional crops on experimental plots, acquire and distribute seeds, and recommend cultural practices. This system has become popular with participating producers (largely Phase I cooperatives), since it provides employment for some of the members and generates higher revenues than field crops. But for now, its impacts on the preexisting traditional marketing system are minor, since the coops which participate with the processors and/or exporters are still primarily producers of basic grains or traditional export crops. Diversification has consequences not only for production, but also for marketing.

Infrastructure (packing sheds, chilling and waxing facilities to lengthen shelf life, and the like) is very limited. None was observed at the farm level or on facilities pertaining to IRA; however, the major wholesalers to the internal markets are said to own or rent some facilities for long-term cold storage with which to reduce loss from spoilage and to capture higher prices of off-season sales of commodities susceptible to storage, such as potatoes, onions and root vegetables, as well as citrus products, melons, grapes, and deciduous tree fruits. These should be inventoried, and credit should be extended to the wholesalers and/or individual coops with which to fill gaps.

The potential rewards for improved marketing are enormous: in the following section on foreign trade, we estimate a potential market size of three times the current consumption of fruits and vegetables, without taking into account potential exports from El Salvador. This potential market could be further expanded by reducing marketing margins, since demand is doubtless highly elastic with regard to both income and prices. More immediately, domestic producers could begin to recover the roughly one-third of the local market which is now supplied by imports of fresh and processed products.

Credit Policies

Crop credit lines are available for 30 vegetable crops, including all of the major crops for domestic consumption and export. Allocations appear adequate to meet credit demands currently encountered; in fact, BFA is devoting some resources, under its agroindustry program, to promoting

credit for crops which may be exported or processed. Demand for credit to produce vegetables has been growing at 30 percent annual over the past two years.

There are also seven lines of credit for tree fruit maintenance, and six for establishment of tree fruit orchards. In contrast, there has been very little demand for this credit in recent years. Credit lines are established by the commercial banks to Phase I cooperatives in the reformed sector; the allocation for this purpose in 1984-85 is ₡80 million. This line apparently exceeds demands for it, in large part because production plans satisfactory to the banks have not been prepared.

Crop credits are all extended under the same terms available to other agricultural producers. Credits for establishment of tree fruit orchards are made available on a per-tree basis to a pre-established density of planting. Amortization periods vary: pineapple and plantain obtain a one-year grace period and must be amortized in two years; papaya obtains 18 months with no grace period; mango and avocado have one year, etc. For some of these crops which do not come into full production until the sixth or seventh year, the credit terms are inappropriate. Tree fruit can be intercropped for three or four years until the trees begin to come into production, but the costs of doing so are not covered, and the yield is very small compared to the amount of credit extended.

Technical Assistance

Technical assistance in the area of horticultural production is beyond the current capabilities of CENTA. Its

orientation has increasingly turned toward the traditional sectors and away from those sectors capable of rapid modernization. CENTA has not performed field trials on one-tenth of the available plant material in fruits and vegetables, and the agency produces only a limited amount of seed and plant material suitable for horticultural production. In no case has a cooperative been assisted by CENTA to develop a program which would allow it to enter modern production in the area of fruit and vegetable production.

These efforts have all been at the expense of local canners, processors, and/or foreign importers of produce. Agribusiness can at present be promoted in El Salvador only by this means, or by private consultant firms under contract with either CENTA or international agencies such as AID.

CENTA's delivery system has been unable to place in the hands of producers the seeds and plant material which it produces. In the current year, these include:

Vegetable seeds (watermelon, cucumber, tomato and pepper only: note lack of attention to export crops such as melon)	3 qq.
Pidgeonpeas	20 qq.
Lemongrass	1 qq.
Cassava	1,000 units
Avocado	21,000 units
Citrus	36,000 units
Mango	21,000 units
Cashew	61,000 units
Papaya	23,000 units
Pineapple	400,000 units
Plantain	20,000 units

Production of even these small amounts of plant material will no doubt be curtailed or abandoned if CENTA's program cannot be made operational through coordination of production and credit planning by cooperatives and privately-owned production units.

Another deficiency of CENTA in this regard is the failure to coordinate assistance in irrigation projects with production plans for those crops which require irrigation. Eighty-five percent of the country's irrigated area is in Sonsonate Department, which is not a significant producer of horticultural crops (this may change following completion of the El Castano Cooperative's vegetable processing plant in that Department). But CENTA has not directed the production of field crops to other areas, and to develop production of row crops in irrigated areas.

Foreign Trade in Horticultural Products

El Salvador currently runs a large deficit in foreign trade of fresh and processed horticultural products. The structure in 1982, the latest year for which complete data are available, demonstrates ₡95 million imports of fresh products and ₡8 million of processed. Exports of fresh and processed fruits and vegetables in that year totalled ₡5 million. In Table 4-3, these data are broken down by products and compared with our estimates of the value of production from Table 4-1.

Although domestic consumption of horticultural products is rising, the market for them is far from saturated. As incomes begin to reverse the decline of the last several

Table 4-3. Horticultural Crops: Production, Foreign Trade, and Apparent Consumption 1982
(₡000,000)

	Production	Imports	Exports	Apparent consumption
Annual crops				
Tomato	10	10	--	20
Cucumber	1	a	--	1
Pepper	16	a	a	16
Potato	1	11	--	12
Yuca	9	a	--	9
Cabbage	13	6	--	19
Watermelon	17	a	a	17
Onion	26	13	--	39
Other	23	18	4	37
Total	116	54	5	165
Multi-year crops				
Plantain	50	14	--	64
Banana	[illegible]	7	--	11
Orange	26	3	--	29
Mango	10	a	a	10
Pineapple	13	1	--	14
Coconut	10	a	a	10
Cashew	26	--	--	26
Avocado	5	3	--	8
Other	68	13	--	81
Total	212	41	a	253

a. Less than ₡500,000.
Source: Computed from data in Table B-1 and Anuario Estadistico, MAG.

years, domestic consumption should increase sharply. Given the high elasticity of demand of horticultural products in relation to income, continued world-wide economic recovery will stimulate external demand as well. Thus the market potential -- both domestic and external -- is certainly large and expanding.

The importance of horticultural product exports in El Salvador's foreign trade is growing. The items involved are characterized by high unit value, and are not important in the Salvadorean diet: pickles, baby corn, okra, broccoli, cauliflower, blackeye peas, snow peas, asparagus, and certain exotic items (these last being popular in the market for ethnic foods in the United States). Thus, although exports of these products are beginning to have a favorable impact on the balance of payments, the most important interface with internal demand will be import substitution. There is certainly a very large market in imported vegetables for local producers to recover.

Minor Crops

These crops include, in descending order, sisal, tobacco, peanut, kenaf, and certain aromatic substances and spices, such as balsam and cardamom. The total value of production of this group can only be inferred from export data and scattered information: perhaps as much as ₡30 million in 1982. Some of these products are processed in El Salvador (tobacco and sisal) while others are exported in an unprocessed state.

Sisal

Production of sisal in El Salvador has been falling irregularly for a number of years. Sisal grows on marginal land countrywide, 14,600 manzanas in all. It is harvested in every month of the year except September and October, when the fields become too wet to work the plantings. Yields are around 13 qq. of fiber per manzana; the 1982 price was ₡72. Thus, we estimate total value of production in that year at ₡14 million (from data provided by Technoserve). This value had increased 150 percent since 1977 (inferred from value added data in national accounts). Scattered data are available from official sources on yields and unit prices; however, the above data for 1982 are derived from experience in the field and are consistent with the cost of production estimates presented below, which are derived from the same source.

The situation of the sisal grower has deteriorated. First binder twine and then sacking was lost to other technologies and materials (harvesting with combines for binder twine, plastic for sacking). There has also been strong competition from other producers of jute and sisal (Bangladesh, Mexico). Then there have been local factors: lack of operating capital in Salvadoran firms which manufacture sacking, which has from time to time destabilized the market for sisal fiber; violence in the eastern part of the country, which in the past accounted for a disproportionate share of total production.

The major problems of the industry for which solutions may be at hand have to do with processing, financing and marketing the crop. Value added by on-farm processing is of

the order of ₡8 per qq. There is also some transport and interest cost saved by marketing the fiber rather than the unprocessed material. However, without power equipment with which to separate the fiber from the pulp of the leaf, the retting and separation destroy valuable by-products and require so much labor that this is not often performed. The short fibers recovered by mechanical separations are recoverable and salable, as is the pulp (used for animal feed). Assigning values to the costs and advantages of on-farm mechanical processing, Technoserve estimates a net profit of ₡9 per qq. if the fiber is processed by mechanical methods, as compared to only ₡6 for the farmer who processes by traditional methods.

Tobacco

The gross value of production of tobacco is about ₡10 million, having roughly doubled since 1977. Unprocessed tobacco is not exported; the product is apparently all used locally. About 3,500 manzanas are devoted to this crop; however, production and producer prices are subject to a bilateral monopoly type of bargaining between a few producers and processors.

Peanuts

Manzanas devoted to peanuts dropped sharply from 1977-78 to 1978-79, from 850 to 390, when a large portion of the land formerly devoted to this crop was inundated by construction of the Cerron Grande dam. Area cultivated has since remained constant, and production has fluctuated between 6,200 and 6,400 qq. per year. Production is concentrated in the Departments of Santa Ana and Chalatenango.

Direct contact with nine Salvadorean peanut processors established a demand estimate of 10,600 qq. of peanuts (MAG/DGEA, Consideraciones Sobre la Disponibilidad de Cacahuete, 1980). Thus, even without taking into account exports (which have fluctuated widely in recent years), there has apparently been a shortage of peanuts since 1978-79.

Kenaf and Minor Fibers

Kenaf production has declined by two-thirds since 1977-78. This quick-growing plant is a promising source of short fiber for paper manufacture. In El Salvador, however, kenaf has traditionally been retted for its rather small content of long fiber, in which its productivity is only a fraction of that of many other fiber plants. The problem with kenaf in El Salvador is similar to that of sisal, in that the by-products (in the case of kenaf, most of the plant) are wasted by traditional methods of processing. A feasibility study on production of paper in Belize prepared by Soil and Land Use Technology, Inc., of Columbia, Maryland in 1983, showed kenaf to be by far the lowest-cost source of fiber.

Other nontraditional fiber sources are under intensive study by CORSAIN. Ramie, a perennial plant producing long, soft fiber, is being grown on 60 manzanas adjacent to a textile plant managed by the Corporation. Melia shows promise as a dual-purpose plant, producing a natural insecticide as well as short fibers which can be mixed with ramie for production of paper board.

Spices and Aromatics

Commercial production is small; data are scattered and unreliable. Among the aromatics (for either food or cosmetic use) are lemon grass, vetiver, balsam and oregano. Better prospects for international marketing may be found in ginger, turmeric, and paprika. Both CENTA and CORSAIN have performed field trials and cultivar selection on the latter crops, but promotion into commercial production has lagged (see chapter on agroindustrial development).

The fastest-growing segment of the international spice market is industrial; the provision to food processors of a complete line of seasonings and flavorings, dehydrated vegetables and other "building block" ingredients of prepared and processed foods. The focus of this segment of the industry is to supply the flavors and ingredients which help the food industry make their products taste and look better, tailor-making the right flavor and providing customer services such as pilot processing laboratories, trained taste panels, gas chromatography, and other instrumental support. Therefore, experience has shown that in order to successfully market spice products, it is important to pick not only the right flavoring items, but also to select customers who will be the most likely to obtain an expanding share of the market.

As both the consumer market and the sources of supply of spices change rapidly, the food processor finds that it is more important to know his spice supplier than to know his spices; this is almost impossible for someone not directly involved in the spice trade. These observations lead to the conclusion that spice marketing should be

performed by professionals in the area. This is an area of expertise which could be provided under AID's programs for private enterprise development.

Conclusions

The minor crops examined are, with the exception of tobacco, shrinking in importance, both relatively and absolutely. Without the demand for industrial crops from agribusiness, it is likely that production will continue to decline. Aggressive promotion of certain fiber plants, natural insecticides, aromatics, and spices might, however, yield positive results. But the level of effort by CENTA is low in this regard. Work by CORSAIN, embracing production, market analysis, and industrial processing, shows greater promise.

The Contrasting Cases of Poultry and Milk Production

Poultry

Poultry production is more highly developed in El Salvador than in any other country in Central America. Established on a modern industrial basis in the early 1970s, the industry has achieved ever-lower technical coefficients of conversion of feed to salable meat and eggs, with resulting gains to consumers (Table 4-4).

One consequence of the efficient production of poultry in El Salvador, and a limited internal market, has been growing exports of poultry products, principally to CACM countries and Honduras. Exports account for one-third or

Table 4-4. Chicken and Eggs: Production and Real Prices, 1971-84

Year	Chicken			Eggs	
	Fryers	Production spent hens	Real price	Production	Real price
	----Million lbs.----		--¢/lb.--	--Million units--	--¢/lb.--
1971	6.4	ND	2.33	254	16.3
1972	7.7	ND	2.39	272	17.1
1973	8.8	ND	2.39	288	18.9
1974	9.6	ND	2.50	297	21.2
1975	13.0	ND	2.23	338	18.9
1976	16.0	ND	2.09	504	18.3
1977	23.5	ND	1.93	589	16.1
1978	28.4	2.0	1.71	608	13.8
1979	29.6	2.1	1.66	668	12.0
1980	31.2	2.2	1.57	623	12.9
1981	29.0	2.0	1.54	596	11.9
1982	34.9	2.2	1.38	617	10.7
1983	40.5	2.0	1.27	554	13.5
1984	46.0	ND	ND	650	ND

Note: "ND" means data not available.
Source: Asociacion de Avicultores.

more of total sales by some producers. Economies of scale in chick hatching have also made possible the exports of hatched chicks -- roughly one-half of chicks hatched -- and to investment in poultry production and processing by established Salvadoran producers in neighboring countries. Another major export is frozen turkeys and turkey convenience foods. These latter products suffer from the handicap of purchasing the more expensive local feed ingredients because of concern that the PL 480 grain may be contaminated with aflatoxin. For that reason, they are competitive only within the CACM.

Advantages to the Salvadoran industry deriving from ready access at the official exchange rate to U.S.-produced inputs via PL 480 -- soymeal, yellow corn,[1] tallow, meat flour and residues from wet-milling of corn -- are clearly significant to the industry. However, it is somewhat difficult to quantify these advantages, in view of the cost reductions made possible by applying modern production methods. It should be recalled in this connection that equipment as well as feed ingredients are imported at ₡2.5 per dollar. All of these favorable factors have come into play since the early 1970s to revolutionize the industry; and since growth is to a great extent export led at this time, the continued growth of the poultry subsector is dependent upon retaining the advantage of low-cost inputs.

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1. Chicken feed accounted for 85 percent of the use of yellow corn imported into El Salvador in recent years. Imported ingredients accounted for 73 percent by weight of the chicken feed produced (Table 4-5).

Table 4-5. Imports of Ingredients for Use in Chicken Feed, 1975-83

Year	Soymeal	Yellow corn	Tallow	Meat flour	Corn gluten	Total imports
	- - - - - - - - - - - - - - -	- - - Thousand tons - - -				
1975	ND	ND	ND	ND	ND	ND
1976	ND	ND	ND	ND	ND	ND
1977	ND	55.5	ND	ND	ND	ND
1978	21.2	67.8	0.9	3.4	ND	ND
1979	17.9	--	1.5	ND	ND	93
1980	20.1	--	1.8	--	ND	19
1981	31.6	38.0	2.7	2.8	ND	21
1982	24.1	18.0	2.4	3.8	2.4	78
1983	27.7	83.0	2.2	5.0	4.8	53

Note: "ND" means data not available.
Source: Asociacion de Avicultores.

Milk and Milk Products

National production of milk, never sufficient to supply minimum nutritional needs of the country, has declined by about one-third since 1979 (Table 4-6). INCAP estimates an m.d.r. of 250 grams per capita, which would translate to over 447 million liters. The deficit is not filled by imports (Table 4-7).

A significant short-run tendency has been for overall milk productivity to decline. This tendency is not easily explained. The majority of cattle are doubtless raised for beef, not dairy purposes, but the ratio of females to the total has risen, from 66 percent in 1974 to 76 percent in 1982. This would suggest increased emphasis on dairy cattle.

Another possible explanation for the productivity decline indicated in Table 4-6 is theoretically a rise in the cost of feed relative to the price of milk.

There are two problems with this explanation: (1) Actual productivity, on the average, is less than one liter per day for all female animals, although this average mixes beef and dual-purpose animals. (2) Real prices of feed ingredients (corn, sorghum, soymeal, and other grain supplements) were dropping for several years prior to the decline in milk production (Table 4-7). The two series dropped during the 1980s, whereas the real price of milk remained stable as production dropped.

Table 4-6. Female Cattle, Fluid Milk Production and Productivity, 1974-83

(Liters/Head/Year)

Year	Female cattle (000 head)	Fluid milk (000 liters)	Productivity (liter/head)
1974	685	225,750	330
1975	ND	228,874	ND
1976	720	247,534	344
1977	903	265,449	299
1978	957	283,532	298
1979	006	299,862	298
1980	890	248,400	279
1981	868	240,853	277
1982	721	194,410	270
1983	ND	205,931	ND

Note: "ND" means data not available.
Source: Computed from data developed by MAG/DGEA.

Table 4-7. Milk Production, Imports, Total Supply, and Real Consumer Price, 1974-83

	Production	Imports[a]	Total supply	Price	Industrial use	
					Domestic	Imports
	- - - - - Million liters - - - -			--(¢/liter)[b]--	--Million liters--	
1974	226	57	283			
1975	229	66	295	0.65		
1976	248	74	321	0.66		
1977	265	89	355	0.64		
1978	284	109	392	0.60	41	7
1979	300	101	401	0.56		
1980	248	117	365	0.56		
1981	241	121	362	0.56		
1982	194	70	264	0.51	25	23
1983	206	92	298	0.47		

a. Fluid equivalent.
b. Deflated by CPI.
Source: MAG/DGEA. Industrial use: Censos Economicos 1979, DIGESTYC.

Finally, one might turn for an explanation to the import statistics for milk products; imports might have crowded out domestic production of milk. There are two problems with this explanation also. Milk imports rose parallel to local production prior to 1979, and have since levelled off. In 1983, they accounted for the same ratio of a much smaller total supply as in 1979. Secondly, half of the imports are used by processing industries rather than consumed as fluid milk. The use of reconstituted milk in ice cream and fermented products results only in part from price relationships; in many of these products it is necessary for reasons of palatability to concentrate the milk, and to heat beyond pasteurizing temperatures in order to destroy wild strains of fermentation microorganisms. Fresh milk cannot be subjected to such harsh treatment without imparting undesirable color, flavor and organoleptic qualities to it.

Thus, the only explanation for declining productivity and output which appears to have merit is uncertainty concerning Phase II Land Reform, which appears to have discouraged investment in dairy cattle. If this is so, then the prospects are for further decline in milk production as the milking periods of the most productive cows continue to terminate.

The situation sketched above, in the light of the overall status of the cattle subsector, shows cant prospects for greatly increasing milk supply over the medium term. Looking at the more distant future, however, despite the absence of qualitative or quantitative data on dairy

herds, it appears unlikely that the prevailing system of extensive grazing of dual-purpose cattle will be sufficiently productive to motive investment in milk production. Cow productivity in a dairy herd depends not only on daily production, but also on the length of a cow's milking lifetime. Properly fed, a Brown Swiss cow may be expected to achieve 10 consecutive milk production periods of 12,000 liters of milk per period, almost 50 times the national average. As indicated elsewhere in this report, feed grains are relatively inexpensive in El Salvador as compared to their cost a few years ago. The key policy obstacle to achieving these levels does not reside in the cost of feed grains, but in that of motivating investment in dairy cattle and their required overhead: structures and equipment.

As for milk products processing beyond the farm gate, the country is well served. All processing plants have considerable excess capacity, due to the drop in supply since 1979. Data are available on processing and distribution margins within the San Salvador milkshed only. These indicate that in the first six months of 1983, while consumers in San Salvador paid ₡0.87 per bottle (3/4 liter) of fresh milk, producers within the area received, on average, ₡0.75. Similar data are available for cheese (₡7.58 per pound) and cream (₡5.55 per bottle). This suggests low distribution cost for fluid milk in relation to those for other perishables, such as fruits and vegetables.

Agroindustrial Development Activities of GOES and the Private Sector

Project Preparation and Promotion

The IDB-Financed System

Feasibility studies for agricultural and agribusiness projects are being financed under a 1981 IDB loan in the amount of $6.6 million which has been disbursed except for $0.5 million. A new phase of this program, with further IDB financing of $8.5 million, seems assured. These funds are administered by MIPLAN under the title "Fondo Salvadoreno para Estudios de Preinversion" (FOSEP). The specific mechanism for channelling preinvestment funds to agribusiness is the "Comite Nacional de Agroindustria," which is governed by an executive council named by MIPLAN, BFA and MAG. The Technical Group and specialized committees of this system embrace 19 ministries and autonomous agencies which are involved in development of agribusiness projects in El Salvador.

Projects submitted to the Technical Group are screened for suitability by means of such criteria as degree of development of the project, value added, job creation, etc., and if approved passes to the technical assistance committee (for identification of requirements such as equipment selection and training), the finance committee (for aid in finding and negotiating funding), and (if no sponsor is available) to the promotion committee for finding a sponsor.

What has evolved from this structure is a filtering of 41 projects originally proposed to 10 which are currently being managed by the Committee. Of these, four are for

cooperatives, one is for a private foreign investor, one is for a private national investor, one is a plant rehabilitation, and three have no sponsors. By industry groups, three are in fruit and vegetable processing, two are in fish processing, two are in cereal processing (including yuca flour), two are in milk products processing, and one is in flavorings. These projects are at various stages of development. What is important is that a mechanism has evolved for prioritizing and preparing investment projects for financing, though improvements in the organizational structure of FOSEP and more stringent criteria for private profitability of proposed projects are required.

The BFA System

BFA has developed a program department which, in addition to facilitating the credit operations of the Bank by developing tables of production costs and operations manuals for the guidance of loan officers, also provides guidance in developing new projects for financing. The Agroindustrial Program of this department has been organized with attention to the interface between production and processing. Thus of the 24 agribusiness projects approved by the Program through June 1984, eight are in horticultural production, three are in non-traditional crop production, one is in spice production, and the remainder are in packing sheds for processing horticultural products, thermal processing of horticultural products, or other traditional agribusiness (Table 4-8).

Among credit applications in process or under development, some are traditional (tomato juice and paste, fruit preserves, coffee processing, etc.), and some are highly

Table 4-8. Banco de Fomento Agropecuario: Agribusiness Projects Financed 6/83 to 6/84

	Approved		In process		Application incomplete (Number)
	Number of projects	Value (₡000)	Number of projects	Value (₡000)	
Crop production					
Vegetables	7	1,356			
Spices					2
Fish					1
Oil seeds	2	155			
Product processing					
Fish and seafood	5	12,068			
Coffee			2	70	3
Fruits and vegetables (fresh)	1	1,240			
Fruits and vegetables (preserved)	4	727			
Edible oils	1	289			
Essential oils					1
Housewares of vegetable origin	1	67			
Pollen and royal jelly			1	125	1
Starch					3
Unknown	3	2,704			
Totals	24	18,570	3	195	11

Source: BFA, Programa Agroindustrial.

original (pollen and royal jelly; pepsin from papaya; starch from cassava; fresh, frozen and smoked shark flesh; food colorings from annatto, and others). BFA is contracting with ICAITI for some elements of the projects under development and working in an imaginative way to facilitate the use of climate, soil, and human resources of the land-reform segment of the agricultural sector.

The INSAFI System (CORSAIN and BANAFI)

Since its establishment in 1960, INSAFI achieved a considerable track record in promoting industrial projects, preferring to establish productive enterprises as going concerns and subsequently spinning off shares to the private sector. By the early 1970s, INSAFI had acquired a number of operations which were apparently not financially viable (among them Quality Foods, which finally achieved profitability in 1983-84). A long-overdue reorganization was implemented in 1982, leaving an institution for preparing feasibility studies (CORSAIN) and a development bank (BANAFI).

CORSAIN has developed projects employing such minor crops as ramie (China grass) and forest products. It has developed a project for turmeric, for sources of essential oils such as lemon grass and vetiver, for melia (a source of pyrethrum-like insecticides), and for shaya (a source of leaf protein). The experimental plots upon which these crops are being studied appear well managed. CORSAIN's emphasis on applied technology is being tied to financial and management expertise through a pilot program involving the Phase I cooperatives. CORSAIN is attempting through this program to split out the processing activities of the cooperatives, to make management and/or technical assistance

contracts with these new entities (to be organized as proprietorships or incorporated enterprises), and to become co-borrowers with them with other financial enterprises.

The AID-Financed System

The Comite Nacional de Desarrollo de Empresas Rurales and its Secretariat, the Rural Enterprise Development Office (REDO), is planning to develop a scheme with many features of those already developed by FOSEP, INSAFI and BFA, including identifying and processing investment project ideas, putting sponsors in touch with various sorts of financial and technical aid, etc. REDO is housed in the Salvadorean Foundation for Economic and Social Development (FUSADES). To achieve the goals listed FUSADES will in turn fund a two-year contract with a team of individuals experienced in marketing, industrial engineering, investment and financial planning.

There is no way to appraise this proposed structure, since a number of mechanisms which would significantly affect its success have yet to be developed. One of these proposed mechanisms is to obtain the privatization of various state-owned enterprises, after which they may be promoted to private firms (although in some cases it would appear that the same results might be obtained through management contracts, even though the enterprises remained in the public sector).

Another mechanism under study is that for approving requests for feasibility studies, developing the financial arrangements with interested firms (under what circumstances will the full cost of the study be charged to the firm,

i.e., how a proposed sliding scale for reimbursement might be applied in case the investment were not made), and how REDO will utilize local or foreign contract firms. Apparently, proposals for feasibility studies to be financed under this system must establish the basis for linkages with the agrarian reform cooperatives, a restriction which will reduce the scope of action of the AID-financed system. It may, on the other hand, leave some projects developed under the publicly financed systems described above, without visible means for development and implementation, even though they might turn out to be good projects.

The focus of the AID-financed system on agribusiness linked to land-reform cooperatives has, on the one hand, opened an opportunity for constructive cooperation between that system and others existing in El Salvador. There are, on the other hand, a number of projects which do not have visible means for development. Some involve complex technologies or which might not be viable on a small scale and for which facilities for technological research do not exist in El Salvador. Presumably, as funds become available, FOSEP will take a second look at these projects and attempt to find financing for their development by contracting with the Instituto Centroamericano de Investigacion Tecnologico (ICAITI) or with a similar foreign research research institution. In the future, the results of such work may be useful to private firms seeking to develop projects through the AID-financed system. The latter should be more accessible to smaller local firms which may require financing over an extended period of time in order to develop in-house expertise before they can effectively supervise production of inputs of agricultural or livestock origin. Consultants may be able to compress the learning curves of such firms.

There is clearly a need for further efforts to coordinate the various centers of activity in agribusiness project development and promotion, perhaps through a loose participation of them in the Comite Nacional de Agroindustria. Since agribusiness is the key instrument for agricultural diversification, a carefully focused program is critical.

Pilot Plants

Three pilot plants are available for public use at the Escuela Nacional de Agricultura:

(1) a thermal processing plant with excellent modern equipment recently made available by UNDP, including concentrating equipment (for sauces and pastes); filling, exhausting and can-sealing gear; stationary retorts; and cooling equipment;

(2) a small slaughterhouse and chilling/meat-processing plant (equipped only for production of fresh meat -- no sausage-filling or smoking equipment, for example);

(3) A pilot milk plant which is well equipped but so far not used because of the excess capacity now existing in El Salvador's milk processing industry.

There are, however, no facilities for fermentation and biomass experimentation on a pilot-plant scale; nothing with which to investigate starch yields and characteristics of starches from various cultivars; no equipment for pilot-plant work on fibers and textiles; nothing for for seafood work; nothing on edible oils; nothing on essential oils; nothing on forestry products, etc. Entrepreneurs may and do contract with foreign facilities, such as those at ICAITI in Guatemala. But such use requires obtaining foreign

exchange, which is often not available for such intangibles. It also makes it extremely costly to train staff.

Conclusions

All of the initiatives examined above have merit and appear to complement each other. BFA is thinly staffed for agroindustrial development and requires support. CORSAIN will require contract assistance to provide technical skills to the enterprises which it expects to create, as it does not anticipate developing the necessary in-house resources. FUSADES will need to link with the public institutions to a greater extent than it has apparently planned to do. FOSEP is well-staffed but oriented principally toward the public sector; it remains to be seen whether IDB can alter its orientation.

All of these organizations would do well to recall that they are not about to re-invent the wheel. The techniques for promoting agribusiness have been known for decades. Industrial development is not the exclusive domain of the economist, the banker, the manager, the engineer, or the systems analyst. It is a synthesis of all of these disciplines. Among the operations necessary to this end are:

- Evaluate imports as a guide to local market opportunities.
- Evaluate local raw materials which may be attractive on the basis of price or quality.
- Evaluate local skill availabilities which may be unique.
- Study industries, especially inter-industrial relations, among local and foreign industries.

- Know technology.
- Review old projects. Some of them may now be viable.
- Note successful experiences in other countries.
- Analyze existing businesses in developed countries so as to promote the right project to the right firm.

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PERSONS CONTACTED

Private Sector

1. Agricultural producers

   Consejo Directivo, Cooperativa Papayo (cane, vegetables)
   Consejo Directivo, Cooperativa Cara Sucia (cane, melons)
   Ernesto Muyshondt Parker (cotton, dairy cattle)
   Ramsey Moore (oranges, plantains, dairy and beef cattle)
   Roberto Figueroa, Griffen & Brand (honeydew melons)
   Eduardo Palomo (cabbage, potatoes, coffee substitution)
   Roberto Hill (tomatoes, peppers)
   Juan Jose Boillat (broad line of vegetables)

2. Vegetable oils - margarine

   J.P. Alejandro Villalta, Fca. de Aceites El Dorado, S.A.
   Victor Manual Alegria, Empresa Fabril de Aceites

3. Processed coffee, sesame, balsam, indigo

   Guillermo Alfaro Castillo, H. de Sola e Hijos

4. Animal feeds (there are 12 large commercial firms in El Salvador)
   Julio Melendez, ALIANSA
   Ramsey Moore, Moore Comercial, S.A.
   Aristides Escobar, Empresas Industriales San Benito
   Antonio Gonzalez, TAGRA

5. Agricultural chemical (mixer and distributor)

   Ramsey Moore, Moore Comercial, S.A.

6. Mayonnaise, condiments, spices

   Jaek D. Letzer, McCormick de C.A.
   Pedro Gonzalez, Borden Industria de Alimentos

7. Frozen foods

   Pedro A. Urquilla Schönenberg, Mario Molina Battle, Quality Foods de C.A., S.A.

8. Catsup, pickles, canned fruits and vegetables

   Phillip Hand, Carlos Tovar Palomo, Bon Apetit, S.A.

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12. Snack foods, candy, cookies, soups

    Fermin Ceballos, Productos Alimenticos Diana
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13. Noodles, soups

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14. Processed meats

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