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AN OVERVIEW OF THE FOOD SYSTEM IN THE  
DOMINICAN REPUBLIC: PLANNING,  
POLICIES AND CONSTRAINTS

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Title of Report: An Overview of the Food System in the Dominican Republic:  
Planning, Policies and Constraints

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## I. INTRODUCTION

A developing country's food strategy can be viewed as an attempt to achieve a set of objectives through specific policies. These policies must be implemented in an environment which is conditioned by various constraints. The objectives or goals of food policy have a considerable universality, although the importance placed on various objectives varies among countries. In addition, there may be distinct differences between the objectives enunciated by the government and those which a more objective standard would indicate as the goals of current policies. An assessment of a country's food strategy must start with an understanding of the objectives and current policies.

The constraints faced in a given country define the feasible set of policies. For this reason, an analysis of the fundamental constraints is also necessary for a successful food strategy in any country. Food policy must be based on a thorough knowledge of the food system, and in particular of the binding constraints it poses for possible action. The task of technical professionals carrying out food policy analysis is to provide this information. This research should also explore ways to extend the feasible policy set and the investments necessary to break the binding constraints on policy action.

### A. A Conceptual Framework for Food Policy Analysis--Terms of Reference

The conception of food policy in this context owes much to the work of Peter Timmer. He first outlined these ideas in his 1975 paper in Food Research Institute Studies. This paper was written as part of the Stanford University Asian Rice Project sponsored by AID. He has recently

more fully delineated these ideas in a paper delivered in March, 1981. This latter paper is to be a chapter in a manual entitled Food Policy Analysis for Practitioners sponsored by the World Bank. The concepts outlined in this introductory section heavily draw on Timmer's work.

In the earlier paper Timmer listed eight broad areas of objectives developing countries pursue with their food policies. We have added a ninth goal to his list:

- "1. welfare protection for consumers (including maintenance of a low cost wage good);
2. income generation for farmers;
3. generation of government revenue (at local and/or national levels);
4. generation of foreign exchange (through exports or reduced imports);
5. reduced reliance on uncertain foreign markets for the basic foodstuff (self-sufficiency);
6. price stability (both inter- and intra-seasonally);
7. regional development (and equity); and
8. provision of adequate nutrition."
9. promote political stability

In his more recent paper, he provides a shorter list of four basic objectives:

1. Efficient growth in the food and agricultural sectors;
2. Improved income distribution, primarily through efficient employment creation;
3. Satisfactory nutritional status for the entire population;
4. Adequate food security to ensure against bad harvests, natural disasters, or uncertain world food supplies.

As is readily apparent, most of Timmer's original objectives are sub-categories of the above four fundamental goals. However, from our perspective, the greater specificity in the original list makes it more functional and the longer list will be our point of reference.

The objectives pursued are an outgrowth of the reaction of the political and economic system to the country's food problems. The importance of these goals vary among countries. And, as is quite evident, many of these objectives conflict with one another, such as low food prices for consumers and income generation for farmers.

The list of policies and programs employed in pursuing their food strategy goals by developing nations typically fall within the following forms of intervention listed by Timmer:

1. consumer programs (including subsidies);
2. farm production programs (either intensification or diversification);
3. domestic marketing investment;
4. concessional foreign trade (including exchange rate biases);
5. direct taxation or other forms of fiscal transfers;
6. price controls (by legal fiat and/or market operation), including (a) floor price, (b) ceiling price, (c) buffer stocks as a stabilizer, usually in conjunction with (a) and (b); and
7. physical controls, including rationing and non-price collections and disbursement."

Section II of this paper examines the capacity and constraints of the Dominican authorities (namely, the food policy making, policy management, and policy implementation agencies) for formulating food strategies and in the implementation of programs and projects consistent with these strategies. Several macro-policies that bear heavily on food policy are explored in this section.

The constraints contained in the country's economic, political, and social system limit the extent to which policies and programs can be successfully implemented. A partial list of constraints which may affect policy implementation includes:

1. consumption structure and domestic demand parameters;
2. production technology and domestic supply parameters;
3. international market structure and demand-supply

- parameters relative to the country in question (e.g., the price effect of entering the world market as a buyer or seller);
4. availability of foreign assistance, both in the short-run as food aid (e.g., rice and wheat on soft-loan terms) and in the longer-run as research inputs (e.g., new varieties from IRRI);
  5. governmental administrative capacity (and effectiveness of field workers);
  6. domestic market and foreign trade prospects for alternative crops (e.g., maize, cassava, soybeans);
  7. state of development of the basic marketing system for both inputs and outputs;
  8. government budget that can be committed for rice policy (which may depend on the effectiveness of the policies in the current or previous periods);
  9. legal requirements (e.g., limits on sizes of landholdings, or prohibition of certain ethnic groups from particular areas of economic activity);
  10. social factor (e.g., the ability to change prices, use of a price support program for patronage and corruption, and the role of vested interests)."
  11. lack of institutional base;
  12. political factors (e.g., ability to change prices, use of programs for patronage and corruption, and the role of vested interests).

Section III of this paper will examine the Dominican Republic's food system, divided into the categories of consumption, production, and marketing. The minimum aim will be to gain an understanding of the binding constraints in each of these areas. This assessment will examine what is known about each of these constraints and to identify what research is needed to develop the necessary knowledge base for a successful food policy for the Dominican Republic.

#### B. The Dominant Role of Food Prices

Price policy is at the core of food policy. Prices play a central role in a market economy. They provide the essential signals both on the production and consumption side. The marketing system not only transfers actual commodities, but also serves as the arena for price formation and the medium through which price signals are transmitted. A distortion from the free market price level, which accurately reflects the relative scarcity of an item in the economy, will create inefficiencies

in the system. Food prices have a crucial impact both on the level of consumption, and hence nutritional status, and the level of production, and its growth rate.

Many developing countries, including the Dominican Republic, pursue a basic strategy of low food prices. As Timmer argues, the fundamental dilemma is that the higher prices necessary to encourage rapid growth of domestic food production, and thus expand long-run supply, will in the short-run have a negative impact on the food consumption of low income urban and rural landless households, and hence nutritional status. Food policy analysis needs to demonstrate a sensitivity to this dilemma. The short-run welfare consequences of stimulating long-run food production must be understood. A task of food policy analysis is to develop options that would assist policymakers in dealing with this conflict. Specifically, the alternative needs to be explored to determine if policies and programs can be designed to deal with targeted nutritional problems. Price policy would then be freed to induce sufficient long-run production incentives.

## II. THE PLANNING PROCESS AND MACRO POLICIES IN THE DOMINICAN REPUBLIC

This section of the report focuses on the Dominican policy decision making process and the capacity of this process to attain development objectives, in general, and food policy objectives, in particular. This process has the opportunity to orient an economy in the direction of a more desirable growth path through public intervention in economic activity. It can also give rise to policy mistakes and the squandering of resources which inadvertently leads to undesirable economic results. This section is divided into two major parts. The first part of this section examines the capacity of the various agencies to formulate, manage, and implement food policies. The second part addresses the problems of macro policy in the Dominican Republic and its effect on the accomplishment of food policy objectives.

A. Problems and Constraints of the Dominican Planning Process--Terms of Reference (Setting)

The planning process, for our purposes here, is depicted in figure 1. Planning includes the establishment of goals, the selection of policy instruments, the setting of targets, the implementation of policy instruments through programs, projects and policies, the monitoring and evaluation of economic outcomes, and a feedback activity. The feedback activity generally includes the readjustment of instruments, targets, and implementation activities to correct deviations from desired goals. The feedback process seldom includes the modification of goals.

Generally, goals are taken as given and not subject to question by agencies and organizations foreign to the Dominican Republic. In this context, the performance of the planning process is judged by its capacity to attain the stated goals and the amount of resources required to attain them. The primary goals of the agricultural sector, as given in the Dominican Republic's National Development Plan, include the following:<sup>1/</sup>

- (1) to accelerate job creation in the agricultural sector;
- (2) to improve the nutrition of the poor by increasing food production;
- (3) to increase agriculture's contribution to the industrialization of the country by providing raw materials; and
- (4) to expand the agricultural sector's contribution to foreign exchange by producing more exportable materials.

Much of the planning carried out in the Dominican Republic appears to be consistent with these goals, eg., more resources have been

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<sup>1/</sup> See ONAPLAN (1969) and SEA (1976) for greater details on the long-run development plans in the food sector for the Dominican Republic.

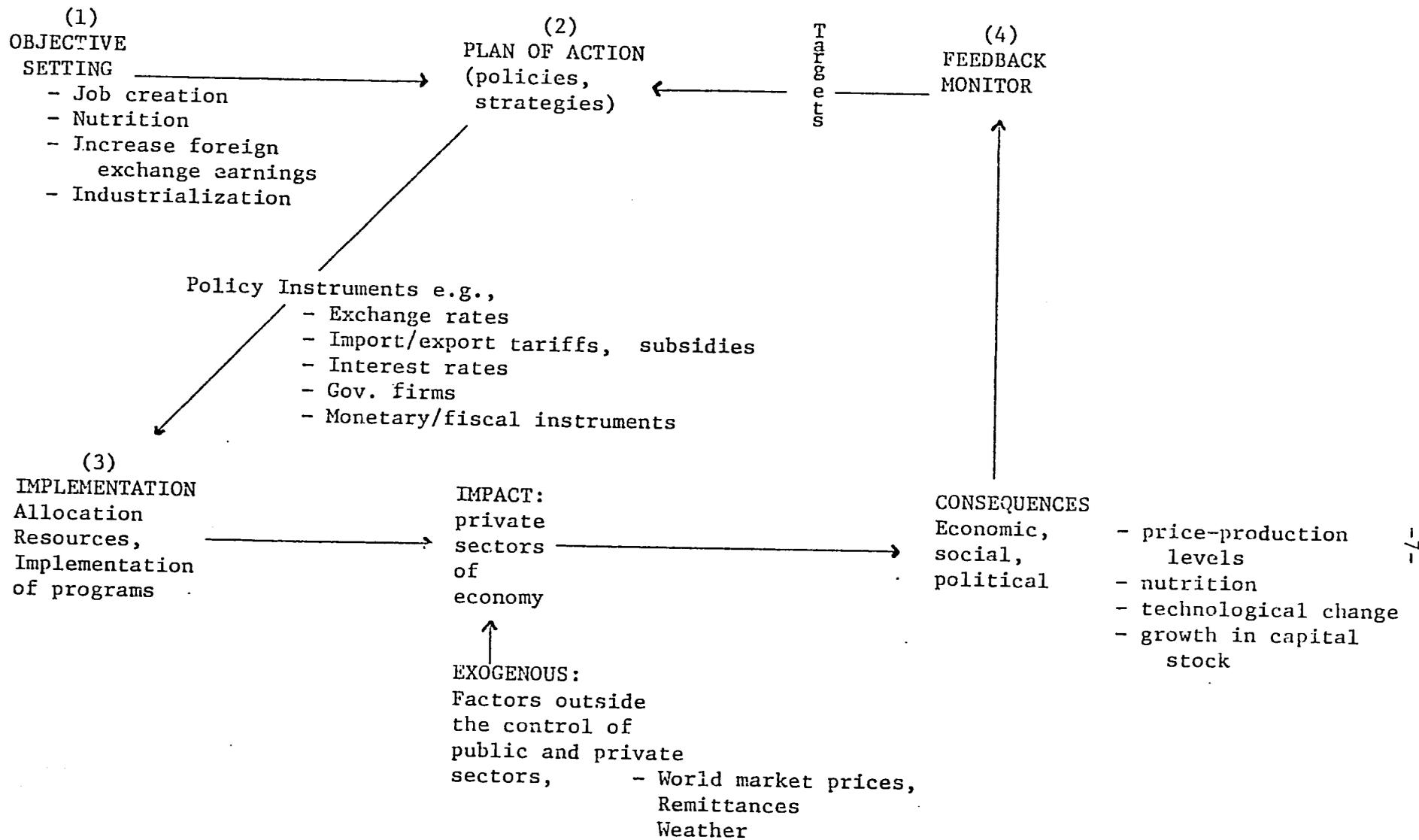


Figure 1

Diagram of a Planning Process with Reference to the Dominican Republic

committed by the Guzman Administration to the agricultural sector. However, these goals can be competitive in the sense that policies designed to accomplish job creation in the agricultural sector can conflict with policies designed to improve the level of nutrition. However, depending on the policy instruments and programs implemented, these objectives need not be competitive in the long-run.

In this section we focus on the constraints imposed by the planning process (i.e., policy decision making-management and implementation) on the attainment of the goals summarized in (1) to (4) above. To serve as a point of reference, the remainder of this section will identify and briefly discuss the roles of the major agencies involved in the planning process for the food sector.

ONAPLAN: The National Planning Office was first established in 1962 as The National Planning Board, a dependency of the presidency. Until 1970, ONAPLAN's principal output consisted of a few regional economic sector or industrial studies. In 1970, ONAPLAN organized the writing of the national development plan for 1970-1974. This plan was referred to as the platform for the economic and social development of the Dominican Republic 1968-1975. Currently, ONAPLAN is responsible for coordinating plans from the different ministries into a single coherent plan for national development. The head of ONAPLAN is a presidential appointee and reports to the president through the Office of Technical Secretariat. The role of ONAPLAN emphasizes producing the national plan but, based on our information, is not involved in initiating new plans.

SEA: The Secretary of State for Agriculture (SEA) is one of the 12 secretary of state positions. SEA has a legal mandate to formulate and direct the country's agricultural policy, provide the essential

services for agriculture, and coordinate with related agencies on virtually all aspects of rural development and agriculture. There are seven regional offices and five regional research stations.

In 1978 SEA employed 3,000 persons many of whom were involved in data gathering, evaluation, and planning. In 1976-77 SEA directly controlled 30 to 40 percent of the total government agricultural expenditures. Through sub-secretaries, SEA is involved in developmental and adaptive research, periodic production surveys, distributing seed and plant materials, providing farmer training, credit inputs, technical assistance, and market information. SEA has also been active in promoting marketing information services as part of their extension program. Presently, it is cooperating with the Inter-American Institute for Agricultural Sciences (IICA) in agricultural marketing research.

SEA is clearly involved in several dimensions of providing services to the agricultural sector. However, as is the case in many LDCs, the Secretary of Agriculture does not appear to play a direct role in food and agricultural input pricing policy.

CB: The Central Bank is governed by the monetary board. The bank plays a major role in maintaining the currency exchange rate and managing foreign reserves. Our information suggests that the bank also plays a major role in decisions relating to export and import policy. The Central Bank requires export proceeds to be sold through it at the official rate and sells dollars at the official rate for a selected category of imports. Other major categories of imports must be financed from the open market. The monetary board has the authority to impose a variable tariff on imports with the level of the levy determined by the price of the dollar in the open market. The bank uses discretionary authority to determine the

percent of foreign exchange the exporter can get back in U.S. dollars under law 69. The bank's monetary policy was expansionary over the period 1972 to 1976. In recent years, The Central Bank has been implementing less expansionary monetary policies due to higher rates of inflation.

BA: The Agricultural Bank is the major supplier of institutional credit to the agricultural sector. In 1975, the Agricultural Bank provided approximately 60 percent of the total institutional agricultural credit in the Dominican Republic. The annual interest rate charged by the Agricultural Bank in 1980 was approximately 9% which is less than interest rates charged by other sources.

The Agricultural Bank has approximately 23 branches throughout the country. It has no checking accounts or time deposits. The principal source of the Bank's resources are its capital stock reserves, discounts from the Central Bank, government trust funds and international loans. However, loans from international aid agencies have been the major source of increases in the Bank's resources since 1966.

CEDOPEX: CEDOPEX, the Dominican export promotion center, was created and charged with increasing sales abroad in 1971. CEDOPEX can set export quotas or bans on certain crops. It has the power to forbid licenses and regulate the export of commodities. It cannot impose export taxes or bounties, however. CEDOPEX uses the instruments of export prohibitions and licensing if and when market shortages of foodstuffs arise. Most prohibitions were imposed in 1973 and 1974. In 1979 the prohibition covered many agricultural products. In 1979, CEDOPEX participated in the control of the exports of rice, red beans, milk, butter, soybean oil, peanut oil, beef, poultry meat, corn, peanuts and tomatoes.

DPC: Director General of Price Control (DPC) under the Secretariat of Commerce and Industry, has had the legal authority for price regulations

since 1962. This agency has been given the authority to fix prices on all products for producers, wholesalers and retailers. Prices are set according to studies of cost of production and "considering the reasonable utility of factors intervening in the free play of market forces." Our information suggests that the DPC uses the Secretary of Agriculture's forecasts of output, based on actual acres planted, in formulating its policies. This agency has the authority to cite and charge those retailers and wholesalers violating the price guidelines issued by the agency. The agency does not maintain sole authority over prices, however. Interagency commissions make policy for specific commodities and make their recommendations to the DPC for prices. For instance, in 1979 the DPC participated in the control of prices of sugar, rice, red beans, white flour, tomato paste, milk, cheese, butter, soybean oil, peanut oil, beef, poultry meat, peanuts and tomatoes.

INESPRE:<sup>2/</sup> INESPRES is the price stabilization institute which focuses on food price control policies and is involved in the importing of major food crops. INESPRES was established in 1969 as an autonomous government institution. Its function is "to regulate and stabilize domestic prices of agricultural products, permitting reasonable profit margins for efficient producers and distributors". INESPRES is the institution through which the government enacts its food price stabilization policy. This is principally done through food price supports, importation, and buffer stocks.

In 1979, this agency participated in the control of prices for sugar, rice, red beans, tomato paste, soybean oil, peanut oil, poultry meat, corn, sweet potatoes, onions, garlic, chick peas, bananas, plantain,

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<sup>2/</sup> See Arthur J. Mann, "Agricultural Price Stabilization Policy in a Developing Economy: The Case of the Dominican Republic," Social and Economic Studies Journal, Vol. 26, No. 2, 1977 for an insightful evaluation of INESPRES.

wheat bran, and powdered milk. Our information suggests that INESPRES by and large relies on their own data and analyses to make decisions on setting prices of the above mentioned crops. The price support levels administered by INESPRES use rather simple rules of thumb such as the cost of production and an average margin of 30% above this cost to establish food prices. Furthermore, announced prices are spatially uniform over the entire country, with no consideration given to differences in transportations and interregional consumer demands.

To maintain these announced prices INESPRES has become a major importer of agricultural products. This agency does not pay tariffs on its imports except for a minimum 5% tariff on agricultural products that have undergone some processing. INESPRES also administers the equivalent of variable levies or subsidies on the imports of several agricultural products. If the regulated domestic sales price exceeds the import costs, a variable tax is often levied. If the import costs exceeds the regulated domestic price a subsidy is granted. INESPRES can follow this policy so long as it follows the overall policy of price stability. Historically, INESPRES has imported food at the official exchange rate. However, our evidence suggests that some pressure is being applied to require that a portion of their imports be paid for at the "unofficial" or free market exchange rate. Agency budget deficits are covered by subsidies from the Dominican treasury. Otherwise, "profits" are retained by the agency to cover operating expenses.

INESPRES presently holds a monopoly in the importation of rice, rice wholesaling, and local rice buying from the domestic rice processors. INESPRES is also the official intermediary for concessional food imports. For example, INESPRES imports wheat from the United States P.L. 480 and turns it over to milling firms that are principally owned by the government. INESPRES also maintains a storage capacity through silos and warehouses

constructed by the government in the 1960s and 1970s. INESPRES is active in direct local purchases from agricultural businesses such as rice mills, grain truckers and farmers.

B. Constraints to Improved Performance in the Planning Process

Constraints to the policy decision making, policy management and implementation process are numerous and complex. The enumeration of these constraints here is surely incomplete in many dimensions. It is important to emphasize that efforts to increase the capacity and improve the performance of the policy decision making and implementation process is extremely difficult and complex as is any institution building activity.

We have categorized the constraints into four general areas. These constraints are:

- 1) the need for greater coordination and organization among the various agencies in the food sector planning process,
- 2) the need for a clearer understanding, on the part of Dominican authorities, of the cause and effect relationship between policy instruments and the impact these instruments have, through their corresponding programs and projects, on consumption, marketing, and production decisions:<sup>3/</sup>
- 3) the need for more intensive monitoring (e.g., collection of statistical data on food production, consumption and income) of the economy is required so that this information can serve as a feedback mechanism to guide policy adjustment and control measures;

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<sup>3/</sup> The cause and effect of instruments on consumption and production decisions is meant to be viewed in a broad context. For instance, this context includes the effect of prices on the production and consumption of food, the effect of interest rates on investment, the effect of public investments on resource use and technical change in food production and the social profitability of public investments to expand irrigated crop production.

4) the need to improve the capacity to implement programs and projects in a fashion consistent with the time, geographic location, and targeted population impact envisioned by policymakers.

B.1. The Coordination and Organization of the Planning Process: The lack of coordination in the planning activities between the various governmental agencies described above is a major constraint to the improved performance of the planning process. This performance includes the appropriate performance of all the activities depicted in Figure 1. The fact that many of these agencies are semi-autonomous and that they, in many respects, appear to plan separately makes the coordination of planning activities even more difficult. The objective of an efficient planning process is to design the organization for planning in a way in which all agencies are committed to the same overall objectives. The specific objectives of each agency should be consistent with the overall objectives. Furthermore, the authority of each agency for manipulating the policy instruments at its command should be consistent for attaining the agency level objectives.

Each agency should be operating in a coordinated fashion so as to detect deviations from planned targets and, depending on the cause of the deviation, take action to address the problem. The consequences of not attaining a higher degree of coordination among the various agencies involved in the planning process in the case of the Dominican Republic is partially evident by the apparent imbalanced policy to accomplish nutritional goals at the cost of not attaining rural employment goals.

Other evidence of coordination and organization problems in the planning process of the Dominican Republic can be seen in their attempts to pursue policies without the policy instruments or the capacity to implement programs

consistent with these policies. Efforts of INESPRES to carry out its mandate to stabilize prices is one such example. The lack of coordination and organization of planning activities, as in the case of other countries, appears to have induced the various agencies, notably INESPRES, to intervene in food markets with programs and projects to a far greater extent than this agency can manage without greater control over the private sector and/or more extensive resources (e.g., regional planning offices). The most desirable solution to increase overall market efficiency may simply be to decrease INESPRES's market intervention activities.

In principle, SEA has the legal authority to coordinate the planning process of the agricultural sector. In fact, the only control SEA appears to have over the other agricultural agencies includes input into appointments to different offices, the personal influence of the secretary, and the review of budgets. For example, the Secretary of SEA is the Chairman of the Board of Directors of both the Agrarian Reform Institute (IAD) and INESPRES. However, the heads of these agencies are appointed by the president. Such a structure could be expected to make these agencies heads more responsive to the president than to the Secretary of the SEA. The situation is less tenuous in the case of the Agricultural Bank since the secretary at least sits on the Board of Directors.

Although the SEA is supposed to have budgetary review of many of the agencies, it appears that it has not done so due to a lack of resources and personnel to make this power effective. The results of the present system are programs which operate in the same areas, duplicate certain services, operate with different goals in mind, and use different and often conflicting information bases.

Because of the lack of overall authority over these various agencies on the part of SEA, the Office of the Technical Secretariat, which reviews the budget requests of all agencies, is given the role of coordination of the policies and programs both within the agricultural sector and within the national plan. The efficacy of this arrangement needs to be studied in more detail if the planning process is to become more effective. While the studies by Samper (1969), Schaffer (1976), and Aquino Gonzalez (1978) provide some valuable insights into the planning process in the agricultural sector of the Dominican Republic, more emphasis needs to be given to the present objectives, policies, and constraints of the different agencies involved in developing a food strategy, and the interaction among these agencies.

In addition, research in other countries suggests that the organizational problem can be ameliorated by developing an association between the intermediate term planning process and the annual planning process. The annual plan should, among other things, state annual targets and chart, by program and project, the monthly actions required to attain these targets. Annual planning should monitor these actions, identify the various deviations, and the cause of the deviations from the annual plan. Discrepancies should be evaluated and incorporated into revising the intermediate plan in a way which updates the intermediate term plan. This process, if well designed, can play a major role in improving the coordination of activities between the various governmental agencies.

B.2. Cause and Effect Relationships between Policy Instruments and Production, Marketing and Consumption Decisions: The responsibility for supply policy decision makers with a clearer understanding as to the

cause and effect relationship between food policy instruments and various sectors of the economy is, in the case of the United States, a primary function of USDA's Economic Research Service. An understanding of these cause and effects are indispensable in preventing policy mistakes and budgetary deficits that are detrimental to the agricultural economy. An important component of understanding these cause and effect relationships is the identification of socio-economic problems which can become a part of the knowledge repertoire of policy decision makers and an important component of enlightened leadership.

While there exists a growing number of technically qualified persons in the government agencies, it appears that there is a need for increasing the number of trained personnel in key agencies such as ONAPLAN or SEA to carryout this important function. Furthermore, a long-run plan for the production of this talent should be made where emphasis is placed on the utilization of the country's major educational institutions. Additional insights into the nature of the important components of cause and effect factors and food policy is the major content of other sections of this report.

B.3. The Monitoring Constraint: The monitoring constraint is more complex than simply expanding the capacity of the Dominican Republic's statistical data collection agencies, although this is one dimension of the problem. Presently, as mentioned above, SEA carries out many data collection activities. Many countries have found it necessary to institutionalize (e.g., make long-run budget commitments to improving) a periodic, standardized information collection process in those sectors of the economy viewed as most critical to policy decision making. This means that information must be collected that is instrumental in providing

cause and effect insights, in establishing targets, and decisive in explaining the cause of deviations from planned targets. Furthermore, long-run commitments may be required to fund special ad hoc studies and data collection efforts that are important to improving the performance of many of the key agencies involved with planning activities. These ad hoc studies may be required to provide further insights into why particular programs and projects are not functioning as planned.

Finally, efforts may be considered to establish an "early warning system". This type of system is encouraged by FAO for many parts of Africa. Essentially, it is a data collection and assembly process that monitors the planting and early growing cycle of food crops so that deviations from targeted production levels can be detected several months before harvest, i.e., before food surpluses and deficit levels are actually realized. This information permits the manipulation of policy instruments so as to alleviate serious consequences of deviations from target levels. For instance, it permits planning authorities to take a more flexible position with regard to the world market, foreign aid and foreign exchange restrictions.

B.4. The Implementation of Programs and Projects as a Constraint to the Performance of the Planning Process: Implementation problems become increasingly severe as planning authorities intervene in economic activity at a level that exceeds their capacity to actually carry out programs and projects. The implementation process involves the implementing of programs and projects in a fashion consistent with the time, geographic location, and targeted population envisaged by policy makers. This is a serious constraint to virtually all planning processes of which the Dominican

Republic is typical. A good example of this constraint is the ventas populares program which, while designed to offer food at below market prices in low income neighborhoods, is in fact not reaching these neighborhoods to the extent envisioned. Evidence suggests that the agricultural credit program for small farmers also faces problems with actually meeting their credit needs as initially planned.

It is useful to summarize this section by briefly recounting performance problems in INESPRES. First, INESPRES is delegated with market intervention responsibilities for a multitude of crops. Given the planning resources at its disposal, its capability to carryout its mandate is clearly over extended. An important consequence is that INESPRES does not have the resources to regionalize its price stabilization activities. One price is essentially established for the entire country for each crop without consideration given to spatial cost and spatial comparative advantage in crop production. This makes the carrying out of its mandate difficult because natural economic forces encourage market arbitrage and encourage markets to clear at prices different from those announced by INESPRES. INESPRES then finds it necessary to take other actions. These actions include the carrying of abnormally large stocks of imported grains to meet all demands at announced prices.

The inability of INESPRES to carry out its mandate gives rise to its need to control more marketing functions. That is, a need to acquire control over key bottlenecks in the food marketing channels. These bottlenecks include the control of rice mills and/or to gain control over the transportation of commodities. For instance, INESPRES has considered the acquisition of its own trucks and the prohibition of the private sector from hauling certain commodities. Hence, it can be argued that its lack of capacity to regionalize prices (i.e., implement its program)

actually gives rise to other undesirable actions which distort price signals and cause an inefficient allocation of scarce resources.

To improve the performance of the planning process is to address the above mentioned constraints. To not do so is to encourage additional policy mistakes, to squander scarce resources, and to increase the difficulty of attaining nationally announced goals.

### C. Macro Policy and Its Impact on the Food Sector

Macro policy, for our purposes here, has three essential components from the perspective of the food system. These are:

- 1) the real level of an economy's macro prices; e.g., food prices, wages, interest, land prices, etc.
- 2) fiscal, budgetary, and monetary policy, and
- 3) currency exchange rate policy.

For our purposes here, major emphasis will be placed on food prices, and then items (2) and (3).

C.1. Food Policy, Terms of Reference: It needs to be emphasized at the outset that the Dominican Republic's food policies are an integral part of the country's overall development strategy. Hence, "tinkering" with food policies may cause undesirable short-run repercussions on the country's plans for industrial development.

This is evidenced by the fact that throughout the late 1960's and most of the 1970's, the government pursued an overall development strategy which gave preference to the industrial and urban sectors. The government encouraged the growth of domestic manufacturing through preferential treatment for the importation of capital goods. An overvalued currency exchange rate also served to encourage the development of the industrial

sector by making imports cheaper than they would have been at lower equilibrium exchange rates. The focus of the Balaguer administration (1976-78) was also on the urban sector. A policy of low consumer prices was followed by controlling wholesale and retail sales of several food staples, particularly rice. The present government administration of President Antonio Guzman has to some extent switched the focus from increased high-cost industrial capacity to an export-oriented policy and improved industrial linkages to agriculture. While more attention is being given to the agricultural sector, food prices appear to remain low.

In low income countries, food comprises a relatively large portion of household budgets. If food prices increase, pressure to increase wages quickly follows. This pressure is both political, in terms of labor unrest, and economic. The economic pressure arises because some workers will at old wage levels devote less time to industrial employment, especially during periods of high seasonal demand for labor such as at seed bed preparation time or harvest. Hence to maintain a dependable labor force over an extended period of time, wages will generally rise in response to a general rise in food prices. Therefore, the maintenance of low food prices is important for attaining industrialization targets.

Is the development strategy of taxing agriculture good or bad? On the favorable side of this question is the view that faster economic growth can be attained by emphasizing industrialization because:

(i) it will pull labor from agriculture thus permitting higher returns to those who remain, (ii) domestic industry can produce intermediate inputs for the development of other sectors at lower overall costs than importing foreign inputs and technology, (iii) because of the high income elasticity of demand for industrially produced consumer goods, the industrial sector can grow faster than other sectors of the economy and, therefore, yield higher social returns to public investments and (iv) the use of over-valued exchange rates and "underpriced food" is the only efficient means by which LDCs can tax the largest sector (agriculture) of their economy to obtain resources for economic growth.

In the section that follows, we discuss and point out some of the adverse effects of the country's food strategy. However, the ultimate answer to the question of the value of taxing agriculture is perhaps one of magnitude; i.e., perhaps the agricultural sector is being over taxed to the point of causing adverse long-run effects on economic growth and development. In any case, the question posed above is not answered here.

The Dominican Republic intervention in food markets has a long history, a perspective which can be found in Noberto Quezada's thesis (1981). This history suggests that intervention has had the effect of keeping prices below what would otherwise be "free" market levels. At present, however, no empirical studies have been undertaken to provide estimates of the magnitude to which prices have been depressed. Yet, the magnitude is of fundamental importance if the effects on the agricultural sector are to be assessed. It is for this reason that the University of Minnesota will attempt to make these estimates.

Table 1 presents an outline of the specific food commodities affected by controls and the agencies that participated in their control in 1979. This indicates that the DPC is active in the majority of cases, but other agencies also have a strong influence on the commodities they handle, especially INESPRES. There are also several inter-agency commissions charged with the responsibility of making policy for specific commodities. These commissions make recommendations to the DPC on prices and to INESPRES on imports.

Table 2 and 3 list producer and consumer nominal prices for the years 1966-1979. In recent years nominal producer prices reflect a generally smooth upward trend whereas consumer prices, especially for rice, reflect a somewhat flatter trend. Rice production (table 4) also reflects an

COMMODITY	DPC <sup>1/</sup>	SEA/ INESPRES <sup>2/</sup>	CEDOPEX <sup>3/</sup>	OTHER
Sugar	X	X		Inazucar
Rice	X	X	X	
Red beans	X	X	X	
Wheat flour	X			
Tomato paste	X	X		
Milk	X		X	
Cheese	X			
Butter/Margarine	X		X	
Soybean Oil	X	X	X	
Peanut Oil	X	X	X	
Beef	X		X	
Poultry meat	X	X	X	
Corn		X	X	
Sweet Potato <sup>4/</sup>		X		
Peanut	X		X	Private <sup>5/</sup>
Tomato	X		X	Private <sup>5/</sup>

Table 1 Price Intervention by Government Institution, Dominican Republic, 1979.

Source: Salcedo, Norberto Antonio Quezada, "Endogeneous Agricultural Price and Trade Policy in the Dominican Republic," Ph.D Thesis, Purdue University, 1981.

Notes: <sup>1/</sup> DPC signifies Directorate of Price Control

<sup>2/</sup> SEA signifies Secretaria de Estado de Agricultura; INESPRES signifies Instituto de Estabilizacion de Precios.

<sup>3/</sup> CEDOPEX signifies Centro Dominicano de Promocion de Exportaciones.

<sup>4/</sup> Only one intervention was registered, and this occurred in a time of surplus. INESPRES bought several truckloads of sweet potatoes on this occasion in order to strengthen prices.

<sup>5/</sup> For cases labeled "private", the product was purchased by a few processing firms and the price was fixed by contracts with the growers before planting. In these two cases, the processed product was subject to price controls.

Table 2 Producer Price Data for Selected Crops, Dominican Republic, 1966-1979.

YEAR	RICE	CORN	BEAN	PEANUT	PLANTAINS <sup>1/</sup>	BEEF	CANE
-In Pesos per Metric Ton-							
1966	157.0	65.0	255.0	177.0	10.0	567.0	5.92
1967	156.0	78.0	283.0	177.0	12.0	544.0	5.86
1968	156.0	73.0	314.0	172.5	14.1	544.0	6.33
1969	158.0	70.0	264.0	185.0	8.9	537.0	6.31
1970	158.0	76.0	270.0	185.0	6.4	632.0	6.77
1971	158.0	76.0	275.0	185.0	5.6	678.0	6.77
1972	152.0	81.0	298.8	185.0	6.9	708.0	7.72
1973	182.0	110.0	422.7	185.0	12.5	844.0	8.49
1974	232.0	105.0	452.2	230.0	14.2	941.0	14.42
1975	253.0	146.0	797.4	300.0	34.8	950.0	21.93
1976	248.0	119.0	565.1	300.0	26.0	948.0	12.89
1977	269.0	127.0	788.9	300.0	36.8	958.0	9.47
1978	276.0	119.0	731.1	300.0	28.0	1037.0	10.99
1979	286.0	151.0	773.0	300.0	35.2	1335.0	9.48

Source: Oficina Nacional de Estadística, Republica Dominicana en Cifras, various issues; and Banco Central, División de Economía Agrícola e Industrial for the 1979 prices.

Notes: <sup>1/</sup> For plantains the price is given in pesos per thousand units.

Table 3 Consumer Price Data for Selected Commodities, Dominican Republic, 1966-1979.

YEAR	RICE	BREAD	CORN	BEAN	PEANUT OIL	PLANTAINS <sup>1/</sup>	BEEF	SUGAR
	-In Pesos per Metric Ton-							
1966	308.6	661.4	94.6	374.8	1040.6	23.8	881.4	176.4
1967	286.6	661.4	114.4	396.8	1005.3	29.2	859.8	176.4
1968	308.6	617.3	105.8	418.8	1058.2	50.8	881.8	176.4
1969	328.5	529.1	97.0	414.5	1214.7	31.0	1033.9	176.4
1970	328.5	634.9	111.1	462.9	1188.3	21.0	1618.2	167.5
1971	313.0	634.9	125.0	473.9	1186.1	27.0	1717.4	171.9
1972	337.3	670.2	117.7	440.9	1214.7	33.0	1865.0	174.2
1973	399.0	1058.2	161.2	672.4	1272.1	54.0	2356.7	176.4
1974	493.8	1269.8	153.0	692.2	1803.3	69.0	2444.9	200.6
1975	568.8	1305.2	212.5	1130.9	2314.8	106.0	2286.2	308.6
1976	564.4	1234.6	173.0	970.0	2204.6	88.0	2303.8	308.6
1977	573.2	1234.6	185.6	1210.3	2189.2	110.0	2246.5	308.6
1978	564.4	1022.9	173.7	1159.6	2094.4	86.0	2641.1	306.4
1979	557.7	1022.9	209.0	1353.6	2092.1	140.0	3527.4	308.6

Source: Oficina Nacional de Estadística, República Dominicana en Cifras, various issues; and Banco Central, Boletín Mensual, 1979 issues.

Notes: <sup>1/</sup> For plantains the price is given in pesos per thousand units.

Table 4 Production Data for Selected Crops, Dominican Republic, 1966-1979.

YEAR	RICE	CORN	BEAN	PEANUTS	SUGAR
-In Thousand Metric Tons-					
1966	177.9	42.5	29.5	50.8	691.4
1967	167.5	38.5	22.7	45.3	819.1
1968	181.4	40.0	20.0	47.3	666.1
1969	195.0	43.0	26.0	72.6	884.5
1970	210.0	45.0	25.0	74.7	1013.8
1971	212.0	49.0	28.0	80.4	1130.9
1972	214.0	50.0	30.0	80.1	1173.2
1973	223.0	46.6	33.8	72.0	1177.2
1974	259.4	48.8	43.7	59.0	1229.9
1975	264.6	46.1	35.7	51.2	1169.7
1976	294.3	66.6	36.7	43.2	1286.9
1977	308.1	65.5	35.8	51.7	1258.4
1978	351.1	59.3	41.5	55.5	1198.9
1979	376.7	48.1	49.7	37.8	1197.0

Source: Banco Central, Boletín Mensual, various issues, and Division de Economía Agrícola e Industrial for 1979 production data; World Bank, Dominican Republic - Its Main Economic Development Problems, 1978, p. 378; Secretaria de Estado de Agricultura, Estadísticas de Producción Agropecuaria 1973-1978, 1979.

upward trend. Unless the country has experienced marketing efficiencies, an unlikely event, the rather flat trend in consumer prices needs to be explained by domestic market intervention activity.

The trade data for rice and wheat (Table 5) suggest this possibility. To maintain food prices below free market levels, either imports are required or the government must subsidize the margin between producers and consumers by, for instance, subsidizing the deficit accounts of government institutions involved in food marketing. While both may occur, the level of rice and wheat imports (a food substitute for rice) have been relatively large in recent years.

Without additional empirical research, we can only maintain that circumstantial evidence suggests that prices are held below free market levels. If this is not the case, though we feel it is, then the food policy problems and constraints listed below are, of course, not valid.

C.2. Food Pricing Policy: Clearly, Dominican authorities are using pricing policy to resolve nutrition problems, primarily, of the urban consumer. However, nutrition problems are primarily a consequence of low household income problems. In many food deficit LDCs, of which the Dominican Republic is not atypical, nutrition problems generally arise from the seasonal swings in food prices brought about by unexpected weather and other events. As pointed out in Section III of this report, additional investigation is needed to determine who the nutritionally deprived are, where they are located and the points within a season or year when they suffer nutritional deprivation. Without these insights nutrition programs cannot be targeted, the cause of low incomes cannot be clearly understood, and the problems of poverty cannot be efficiently addressed by programs and projects without including wealthier segments

Table 5 Trade Data for Selected Commodities, Dominican Republic, 1966-1979.

YEAR	RICE	WHEAT	CORN	BEAN	SUGAR	EDIBLE OILS				
						PEANUT	SOYBEAN	COTTON	SOYBEAN	
In Thousand Metric Tons-										
1966		70.9	-4.4	1.0	-571.9	.4	4.7			
1967		76.3	5.2	3.2	-672.4	1.0	7.2		2.7	
1968	13.0	112.4	2.1	4.1	-624.9	.1	18.8			
1969		96.3		6.5	-636.2	8.0	11.9		2.5	
1970	-2.7	49.9	7.4	5.3	-792.6	5.5	6.4		.5	
1971	-0.8	106.4	12.2	6.4	-1010.9	8.7	5.9		.6	
1972	8.8	123.0	30.1	4.2	-1141.3	16.5	5.1		3.9	6.1
1973	38.7	98.5	54.3	11.1	-1069.5	12.0			2.9	9.7
1974	72.5	86.5	66.5	1.9	-1054.9	6.3	10.7		12.8	
1975	49.5	99.3	32.9	6.7	-975.3	3.9	14.5		4.5	9.0
1976	31.9	149.9	59.9	5.5	-998.4	17.1	14.2		4.3	18.6
1977	64.4	108.6	116.7	3.8	-1116.6	12.7	9.5		2.0	39.0
1978	10.4	156.0	86.8	3.2	-936.7	5.9	21.4		10.4	34.0
1979	.5	141.8	101.7	6.7	-992.4		27.2		33.9	24.3

Source: Oficina Nacional de Estadística, Comercio Exterior, various issues; Instituto de Estabilización de Precios, Boletín Estadístico - 1979, 1980; and Food and Agricultural Organization, Trade Yearbook, various issues.

Note: Negative signs mean exports.

of the population in these programs. This consequence leads to a squandering of scarce public resources.

The work of Norberto Quezada (1981) indicates that the government's food price policy, as carried out by INESPRES has been sensitive to the dual goals of price stability over time and the potential drain on the country's budget for food subsidies. However, in pursuing these goals authorities have affected both the level and seasonality of prices.

The immediate problem is to address what appears to be relatively low consumer and producer prices. Again, we cannot at this time address the magnitude of depressed prices nor the magnitude of excess food imports. Research to obtain preliminary estimates of these magnitudes is underway at Minnesota and should be completed by April, 1981.

C.2.a. Seasonality of Prices: Whenever production is periodic and storage costs are incurred, prices will vary from harvest to harvest. In principle, seasonal prices reflect returns to those who hold inventories. These returns are required to cover storage costs, price risk, and spoilage. To remove the seasonality of prices entirely, which appear to be INESPRES's problem of over stabilization of prices, is to discourage the private sector from holding inventories. The social cost incurred involves the resources allocated to maintain storage facilities and a large bureaucracy to implement the program. The alternative is to encourage the expansion/ adoption of appropriate technology for private storage, an information system that attempts to forecast future deficits and surplus in order to decrease private inventory "mistakes", plus a less ambitious government price stabilization program. Since the stabilization of prices often influences their level as well, this alternative should be given serious consideration.

C.2.b. Price Levels: Farm prices below free-trade levels, among other effects, (a) decreases farm incomes, (b) tend to decrease the adoption of new production technologies and discourage the use of purchased chemical and biological technology, (c) tend to induce a migration from rural to urban areas, and (d) can distort the relative levels of commodities otherwise produced. Low prices are a tax on agriculture. It has the effect of transferring resources out of the agricultural sector. If agriculture is taxed too heavily, the country becomes food deficient. If the tax revenue, in kind or value, is not allocated to socially profitable alternatives,<sup>4/</sup> the economic growth rate of the economy is reduced, per capita incomes decline, and the rate of capital accumulation (plant, equipment) in both the agricultural and industrial sectors is reduced. These consequences tend to further exacerbate the income problem and, therefore, the food problem.

If food price levels are permitted to rise to near "free market" levels, and, if some type of socially "cost effective" price stabilization scheme can be implemented, what are the nutritional imperatives borne by the low income groups? This question poses a dilemma. Research in other countries has shown that the agricultural sector will respond to higher prices, and more food will be produced. However, countries that are not rich in natural resources cannot afford to permit farm prices to rise and then to subsidize the marketing margin between producers and consumers in order to permit low consumer prices. If farm prices rise, consumer prices must generally rise, creating hardships for the nutritionally deprived. Consequently, the

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<sup>4/</sup> Political stability may of course be one such alternative. For additional insights into agricultural pricing policy see: Erickson, Elizabeth B. and Robert M. House, "Agricultural Pricing Policy and Income Distribution in a Multi-Objective Framework: A Dominican Republic Example." Mimeo, June 1980.

short-run consequence is to decrease the welfare of urban consumer groups. Implications of higher food prices on wages and the industrial sector were discussed in the terms of reference to this section.

A partial resolution of this dilemma is to target food subsidy programs to the nutritionally deprived, and decontrolling prices so that they "can do their work" to resolve the long-run nutrition problem. The major constraint for targeting programs to this group is one of program implementation. To implement is to define and identify the deprived group, and to exclude those higher income levels that have become accustomed to cheap food. Effective implementation is to efficiently act upon the who, what, when, and where of the nutrition problem subject to the capacity of the agencies involved and their budgetary constraints.

Can concessional food grain imports (PL 480) play a role in addressing this short-run dilemma? At the outset, it should be pointed out that if these imports are not allocated strategically they can (i) depress domestic farm prices, (ii) decrease the production of crops that compete directly, or through substitutes, with the concessional imports, (iii) decrease farm income and, therefore, tend to have a depressing effect on rural nutrition levels, (iv) induce rural households to consume the less preferred foods and induce urban households to consume more preferred foods, and (v) they can change the terms of trade between rural and urban areas in ways which encourage migration from rural to urban areas.

However, concessional imports can help address the short-run dilemma if they are targeted to the nutritionally deprived in such a way that:

(1) imports have a minimal impact on relative farm level food grain prices,

(2) import quantities are increased when seasonal prices are in excess of the magnitude required to induce investments in storage capacity.

In other words, concessional imports are important when high seasonal prices are reflective of adverse, noncontrollable supply conditions, such as drought, storms, or other unpredictable events, and

(3) imports are dispersed in such a manner as to minimize the competition with domestic producers for the consumers' disposable income.

At this point it becomes clear that intervention in food markets is complex. To intervene in economically desirable ways requires a policy decision making-policy management-policy implementation process with considerable capacity (resources), current, timely and relevant information, and a repertoire of knowledge regarding cause and effect relationships. Otherwise, policy mistakes leads to squandering of resources. Another dimension of this problem is that, in practice, policy decisions must be made with or without a planning process with the above mentioned attributes.

The "best food strategy" relies not only on questions of the incidence of economic effects, but also on questions of magnitude. Empirical studies of price policy and nonpricing policy alternatives can yield high social returns. Additional insights need to be obtained into the following questions:

- (i) To what extent are farm level prices below "free market levels"?  
Are food imports excessively high?
- (ii) What is the impact on agricultural households of the current food pricing policy? What would the impact on these households be with selected alternative policies that are "feasible" given the present Dominican planning process?

- (iii) What are the welfare levels on various consumer groups from the present food policies? Who would bear the greatest short-run costs of alternative food policies? How short is the "short-run"?
- (iv) What is the nature of an "optimal" Dominican food strategy? What are its effects on other sectors of the economy?
- (v) What is the present level of tax on the agricultural sector? Given the countries development goals, what is the "optimal" tax level and what form should these taxes take given constraints imposed by the countries institutional and political structure?

C.3 Fiscal, Budgetary and Monetary Policy: Following Timmer, fiscal policy encompasses the overall tendency toward expansion or contraction of the economy as a consequence of government involvement in production activities, expenditures, and tax policy. Budget policy entails the actual sector allocations of the fiscal total. Monetary policy involves the expansion/contraction of the money supply. It tends to be the instrument that accommodates fiscal policy when taxes, tariffs, and other revenues fall short of the budgetary expenditures.

The Dominican Republic is not an atypical LDC in the problems it faces in managing the macro-economic policies. Invariably, the felt need to encourage economic growth involves borrowing from the international capital markets. Because of the time span required before investments become productive, borrowing often has the short-run effect of encouraging price inflation.

Because income elasticity of demand for food is high, price inflation is often most pronounced in the food sector. This invariably leads to a felt need to hold food prices down. On the supply side of food production,

wages and other purchased input costs also increase, but with food prices held low, incentives to produce more food for the market is reduced. Lower food prices also reduce rural incomes. Unfortunately, rural areas are where a majority of the country's population reside. The consequence of low rural incomes and relatively cheap food in turn induces a migration of the rural population to the urban areas where slum dwellings quickly multiply. A consequence of this migration is to add additional pressure for low food prices.

Other factors giving rise to expansion of the money supply and rising prices is the budget deficit that many of the government enterprises generate. Consider, for instance, the activities of INESPRES or the government operated sugar enterprises. Deficits in the budget of these enterprises means deficit accounts to meet payrolls and pay other expenses. The tendency is to print money to cover these deficits. The result is an increase in the money supply and a tax on all producers and consumers in terms of inflation. Furthermore, this tax tends to be regressive, striking hardest at the low income landless poor.

Effects of fiscal, budgetary and monetary policy on the food sector is not known. While the effects are especially important for small economies like the Dominican Republic they are difficult to measure. These policies play a decisive role in the level of interest rates and in determining currency exchange rates. For this reason, we focus on exchange rates in the next section.

C.4. Currency Exchange Rate Policy: In 1961, the government introduced the requirement that 90% of all export proceeds be exchanged at the central bank at the official rate of one dollar per peso. This gave rise to the two-tier exchange rate system prevalent in the country today. Since 1961,

a fraction of the volume of currency exchanged for dollars has brought a premium in the open market. The premium, listed in table 6, shows an upward trend over time. This trend indicates the degree to which the peso is overvalued.

An overvalued exchange rate has the effect of taxing exports (because they are relatively more expensive to foreign economies) and subsidizing imports (because they are relatively cheaper to the Dominican economy). The overvaluation of the peso therefore affects the competitive performance of agriculture because agriculture exports are suppressed and food imports are biased upwards relative to what would otherwise prevail. Hence, exchange rate policies have an effect on food policy.

In the short-run, an overvalued currency has the affect of decreasing the pressure for higher food prices. While farmers experience lower prices for imported chemical, biological and mechanical inputs, the net effect on the agricultural sector is a tax. Export taxes not only distort incentives but act as a direct deterrent to future increases in exports of agricultural products and in rural income. The reduced incomes, of course, are not compensated for during times of low international prices. The Dominican tax system also depends more on indirect than direct (e.g., income) taxes and, as is well known, such taxes impact more heavily on low income classes.

Table 7 shows that the agricultural sector generates around three-fourths of Dominican dollar exports and less than one-fifth of dollar imports. This indicates that the country is a low cost producer of agricultural commodities and that agriculture does indeed bear a major tax burden. It has also been argued that since most imported inputs are mechanical, an overvalued exchange rate encourages the substitution of capital for labor in an already labor surplus economy.

TABLE 6 Premium of the U.S. Dollar in the Open Market, Dominican Republic, 1960-1979

YEAR	PREMIUM (%)
1960	5.0
1961	12.0
1962	8.0
1963	11.0
1964	10.0
1965	5.0
1966	8.0
1967	10.0
1968	11.0
1969	10.0
1970	14.7
1971	14.0
1972	11.9
1973	13.2
1974	14.0
1975	18.0
1976	19.9
1977	22.0
1978	25.2
1979	22.5

Sources: Banco Central, Boletín Mensual, various issues (1975-1979); Academia de Ciencias de la República Dominicana, Economía Dominicana 1976, 1977, pp. 292 (1960-1974), graph.

Table 7 Agricultural Trade Balance, Dominican Republic, 1972-1978

	YEAR						
	1972	1973	1974	1975	1976	1977	1978
Agricultural Trade Surplus (In Million U.S. \$)	218.2	239.7	336.9	573.7	330.6	433.9	316.9
Agricultural Imports Over Total Merchandise Imports <sup>1/</sup> (Percent)	13.5	19.9	21.6	17.9	21.6	16.3	15.6
Agricultural Exports Over Total Merchandise Exports <sup>1/</sup> (Percent)	75.9	71.7	74.1	77.3	69.4	72.3	64.7
Agricultural Import Per Dollar Export (In U.S. \$)	.17	.26	.30	.19	.33	.24	.30

Source: Food and Agriculture Organization, Trade Yearbook, 1978, p. 320, and 1979, p. 316.

Note: <sup>1/</sup> Agricultural Trade is defined by the Food and Agriculture Organization according to the International Standard Trade Classification (ISTC) of the United Nations.

Quezada (1981) discussed the overvalued exchange problem at length. He points out that one of the most important problems of the Dominican economy is the gap that exists between exports and imports of goods and non-factor services. This gap has been negative since 1963 and represents a significant proportion of the gross domestic product. This resource gap has been partially bridged by foreign investment, which in turn is responsible for the increase in net factor payments abroad.

Agricultural commodities, being subject to the most discriminating treatment in foreign exchange policy, are being imported in ever greater quantities. In particular, imports of food products, excluding agricultural intermediate products (oilseeds, crude oils, textiles, milk, and others), have been growing at a faster rate than total imports of other goods.

Quezada also points out that trade deficits of the country are important since they reflect a basic imbalance between aggregate demand and supply which obviously cannot go on forever. The excess of demand over supply could be reduced by several means, one of them being the adjustment of the exchange rate. The opening up of a second branch in the market for foreign exchange was a short term and effective way of dealing with the problem of inadequate exchange reserves to sustain all trade transactions if carried out at the official exchange rate.

The second market has nonetheless proved to be inadequate as a policy response as trade deficits have continued expanding, contracting only in periods of above normal prices for the major Dominican exports, namely sugar, coffee, cocoa, tobacco, and gold. The government is aware of the effects on exports of not having access to the second market, and on imports that are made through the official market.

In 1979 legislation was passed (Law 69) providing for the return to the exporter of a fraction of the foreign currency generated by sales abroad. The law applies only to so-called nontraditional exports which are also subject to export permits.

The law also provides a tax credit certificate (CAT) for "export activities of high national interest." The certificate's value could be as high as 25 percent of the value of the export if the products contain a "high percentage of agricultural inputs of national origin." In general the credit would be 15 percent of the FOB value of exports. (Quezada).

A more fundamental point is that the general attitude of discrimination against agriculture inherent in the overvaluation of the currency has not been changed by Law 69. The consequences are that even though a step in the right direction has been taken, the country still ends up creating a trade advantage for industries that require imported inputs in a higher proportion than does agriculture.<sup>5/</sup> A sound export policy would be to encourage production of goods in which the country has a natural comparative advantage and a high labor content. But crops that have these characteristics (sugar, coffee, cocoa, and tobacco) are excluded from the benefits of the law, which instead are given to minor crops that can make only a limited impact on the trade balance of the country.<sup>6/</sup> The same would apply to some industrial activities.

In the remaining section of this report, we concentrate on examining the subsector components of the food system--consumption, marketing, and production--in the Dominican Republic.

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<sup>5/</sup> Cassava, sweet potatoes, dry coconuts, and bananas and other products in which the country is a low cost producer are denied the benefits of the law because "they do not merit a special stimulus from the state." (CEDOPEX, El Exportador Dominicano, 1980a, p. 16).

<sup>6/</sup> In 1979 only 4.7 percent of agricultural exports were from "non-traditional" sources. Secretaria de Estado de Agricultura, Informaciones Basicas-1979, 1980, pp. 113-114.

### III. COMPONENTS OF THE DOMINICAN REPUBLIC FOOD SYSTEM

This section focuses on the constraints, as outlined earlier, in each segment of the food system--consumption, production, and marketing. The major constraints and issues in each area are identified. The available information is outlined, which leads up to a discussion of the gaps in our knowledge which will require further research. In some cases the needed research is already underway or planned.

#### A. Consumption

Since nutritional status, which is the ultimate concern of any food strategy, is primarily a consequence of food consumption patterns, major analytical attention should be given to this area. At a minimum, estimates of the aggregate market demand parameters are needed for the basic staples. How responsive is demand to price changes and what is the impact of income growth on consumption? The aggregate coefficients on both the demand and supply side are also needed to understand the linkages in the food system. What is the rate of substitution among the basic food staples? Such aggregate parameters can usually be estimated with time-series data.

Ultimately, disaggregated analysis is required, though. The own and cross price and income elasticities for the major food commodities should be available for various segments of the population, such as urban, rural landless, and farmers. This information should also be generated across income categories, and region, if possible.

Disaggregate analysis is needed to be able to establish the impact of various price and income policies on food consumption and nutritional

status. Such knowledge can be used by food planners to assess the need for and feasibility of developing various targeted government food assistance efforts. The data required for a disaggregate analysis is contained in large cross-sectional household surveys.

The particular focus of this disaggregate analysis should be on those segments of the population in nutritional jeopardy, primarily the poor. Who are the hungry and how can they be reached? What foods do the poor eat? How much does the diet of the poor differ from that of the well-to-do? Is there significant substitution by the poor among the starchy staples, such as rice and plantains, in response to price shifts? To what extent are the current food and nutrition programs reaching the poor?

In his dissertation, Norberto Quezada (1981) estimated supply and demand equations for the basic commodities: rice, corn, beans, peanuts, plantains, beef, and sugar; wheat and edible oil were included on the demand side. He utilized aggregate time-series data for 1966-1979. Based on his work, estimates of the own-price elasticity of demand, the expenditure elasticity, and in a few cases the cross-price responses are available. With these parameter estimates, policy simulations can be conducted to gauge the effect of various price levels on production and consumption.

Quezada's parameter estimates are presented in Table 8. Although refinements can be made, the basic minimum knowledge that is needed with regard to aggregate behavior is available. Work planned by the University of Minnesota will utilize these estimates to simulate the effect of various price levels on production, consumption, and trade for the basic food staples. Prices will be set at world levels for the commodities in

Table 8 Elasticities<sup>1/</sup> of Demand for Selected Commodities, Dominican Republic, 1966-1979

COMMODITY	RICE	BREAD	CORN	BEANS	OILS	SUGAR	PLANTAIN	BEEF	EXPENDITURE
Rice (1) <sup>2/</sup>	-.62	.26		-.13 <sup>3/</sup>			.16		1.11
Rice (2)	-.89	.30		-.18			.19		1.00
Wheat	.48	-.50					.04 <sup>3/</sup>		.75
Corn		.60	-1.29				.38		1.82
Beans	-.20			-.38			.19		.50
Oils					-.57			.054 <sup>3/</sup>	1.00
Sugar	.86					-.40	.14		.54

Source: Calculated by the author from Tables 6.3 to 6.9

Notes: <sup>1/</sup>Elasticities are evaluated at the means, using the parameter estimates from a linear model.

<sup>2/</sup>Rice: (1) refers to the monopolist-trader model, and (2) refers to the monopolist-monopsonist model.

<sup>3/</sup>The original parameter estimates were not statistically significant.

one case and at levels sufficient to ensure domestic self-sufficiency in another. The impact of the overvaluation of the exchange rate will also be incorporated into this analysis.

Some information is already available on disaggregate consumption patterns. The consumption expenditures and diets differed between urban and rural families, according to the National Household Consumption Survey conducted in 1976-1977 by the Central Bank. Expenditures for food, beverages, and tobacco represented 64 percent of total expenditure for rural families and only 43 percent for urban families. Home production of food by urban families was insignificant but represented 30 percent of average consumption for rural families. Table 9 has estimates for urban and rural per capita consumption in 1969 and 1973. Table 10 family expenditure estimates for various foods in 1976-1977. Cereals, roots, beans, and oil are the staples of rural diets, whereas urban diets contain more of vegetables, meats, milk and their subproducts. For the Dominican Republic, per capita consumption appears to be increasing for wheat, rice, poultry, eggs, edible oils and milk; and stable for beans, beef, fruits, vegetables, and root crops.

In Tables 11, 12 and 13, food consumption is related to income level. The poor in the Dominican Republic obtain a far larger share of their calories from starchy staples than do the upper income groups. As the income level increases, more variety and more high protein foods such as meat and milk are added to the diet. Table 12 clearly indicates that cassava and bananas (plantains) are treated as inferior foods, whose consumption level has a strong inverse relationship with income.

TABLE 9

TWO ESTIMATES OF RURAL AND URBAN DAILY  
PER CAPITA INEAKE OF VARIOUS FOODS  
(Amounts Given in Grams)

Food	1969 Survey		1973 Survey	
	Rural	Urban	Rural	Urban
Rice	129	135	174	160
Beans	31	43	48	42
Starchy Roots	69	64	243	205
Beef	14	23	17	37
Pork	3	7	14	9
Chicken	2	7	15	32
Fish	11	19	3	5
Sausage	1	4	3	7
Pasta	9	9	14	11
Plantains	102	121	182	192
Bananas	33	43	150	45
Eggs	3	4	7	15
Milk	95	79	144	237
Coffee	5	5	10	7
Sugar	34	27	59	56

Source: Henry Sebrell et. al., "Nutritional Status of Middle and Low Income Groups in the Dominican Republic," (1969 Survey) and unpublished data from the Secretariat of Agriculture, December, 1973 consumption survey.

TABLE 10  
 AVERAGE FAMILY EXPENDITURES  
 FOR FOODS, BEVERAGES, AND TOBACCO, 1976-77  
 (RD \$)

Type of Food	Santo Domingo Urban		Santiago Urban		Santiago Rural		Rest of Country Rural	
	Ave. Monthly Exp.	%	Ave. Monthly Exp.	%	Ave. Monthly Exp.	%	Ave. Monthly Exp.	%
Cereal & Cereal Products	26.17	17	23.25	18	28.37	24	23.62	24
Roots & Tubers	4.33	3	5.10	4	10.30	9	6.78	7
Sugar	5.11	3	4.70	4	3.85	3	3.54	4
Dry Beans	5.51	4	5.60	4	5.67	5	6.91	7
Vegetables	8.54	6	6.28	5	5.64	5	3.74	4
Fruits	12.88	8	12.69	10	8.77	8	11.89	12
Meat & Meat Products	31.35	21	21.91	17	14.11	12	12.00	12
Eggs	3.08	2	3.20	3	2.46	2	1.61	3
Fish	3.71	2	1.50	1	2.38	2	2.99	3
Milk & Milk Products	17.77	12	15.12	12	8.27	7	4.61	5
Fats & Oils	14.58	10	11.01	9	13.20	11	10.02	10
Various	6.87	5	7.13	6	5.10	4	3.19	3
Beverages	6.21	4	4.41	3	4.00	3	4.32	4
Tobacco	5.68	4	5.49	4	4.70	4	3.76	4
Total	<u>151.79</u>	<u>100</u>	<u>127.39</u>	<u>100</u>	<u>116.82</u>	<u>100</u>	<u>98.98</u>	<u>100</u>

Source: Central Bank, National Household Consumption Survey, Preliminary data.

Table 11 Per Capita Consumption of Selected Commodities by Decile Groups of Population, Dominican Republic, 1976-1977

COMMODITY	DECILE GROUP									
	1	2	3	4	5	6	7	8	9	10
	----Kilograms per Person-year----									
Rice	43.7	53.2	57.5	61.9	52.2	61.0	63.6	64.1	63.7	63.5
Corn	1.8	3.5	3.8	5.6	5.7	6.1	5.6	7.4	6.4	7.5
Bread ("Sobado")	2.3	2.7	2.4	3.0	2.9	4.4	3.9	4.6	5.3	4.6
Red Beans	8.0	10.3	10.8	11.8	10.9	11.6	12.1	12.3	12.2	12.4
Brown Sugar	9.7	10.5	11.1	11.9	9.3	9.2	9.0	8.1	6.8	4.4
Refined Sugar	2.1	4.4	4.8	5.9	7.9	9.3	11.3	12.1	14.0	18.9
Peanut Oil	2.6	3.7	4.8	5.7	6.9	7.0	8.1	9.8	10.2	12.0
Beef ("Bola")	.1	.2	.3	.5	.5	.5	.7	1.3	1.4	3.2
Beef ("Grillada")	.1	.2	.2	.5	.4	.6	.5	.9	.7	.7
Milk (Fresh)	1.2	1.6	1.9	2.4	2.7	3.3	3.5	3.8	4.0	5.0
Milk (Pasteurized)	0	.1	.2	.2	.3	.7	1.0	1.3	2.1	5.1
Tomato Sauce	.4	.6	.7	.8	.9	.9	1.1	1.1	1.2	1.4

Source: Banco Central de la Republica Dominicana, Primera Encuesta Nacional de Ingresos y Gastos de las Familias en la Republica Dominicana - Consumo per capita segun Cantidad y Valor por Grupo Decilico del Gasto, Santo Domingo, Marzo 1980, preliminary data made available to the author.

Table 12. Percent Daily Caloric Intake Derived from Principal Food  
Stuffs in the Dominican Republic, 1977

Annual Family Income	Rice	Cassava	Beans	Banana	Meat	Others	Total
\$0 - 600	27	8	4	22	3	36	100
\$601 - 1200	27	4	4	19	4	42	100
\$1201 - 3600	25	2	2	17	7	47	100
\$3600 or more	21	1	2	14	9	53	100

Source: Ministry of Agriculture, Dominican Republic.

PERCENT OF DAILY BUDGET SPENT ON RICE IN THE DOMINICAN REPUBLIC, 1977

ANNUAL FAMILY INCOME	PERCENT OF BUDGET SPENT ON RICE	PERCENT OF BUDGET SPENT ON
\$ 600-1200	16.7	50.3
1201-2400	13.2	46.5
2401-3600	11.2	43.4
3601-4800	9.0	39.5
4801-7200	5.8	35.3
Weighted average	9.8	N.A.

Source: Central Bank, Dominican Republic.

To fill the existing gaps in our knowledge regarding food consumption will require a considerably more sophisticated analysis than has been applied previously to the available household data. Of primary importance, though, the essential data base is available in the form of the Central Bank's 1976-1977 Household Survey. The work planned by Philip Musgrove in association with the Dominican Central Bank data should do much to extend our understanding of disaggregated food consumption patterns. Merv Yetley of USDA has also indicated interest in using the Central Bank data to analyze disaggregate consumption, and the resulting impact on nutrition. The ultimate result of this work would hopefully be estimates of the price and income elasticities for the major food staples by income level and other functional demographic categories, at least for the urban and possibly rural landless population.

Since farm households are engaged in both the consumption and the production of food, a unique modeling situation is faced. For the agricultural producer, commodity prices affect not only consumption, but also production, and the level of income generation. The planned work of Duty Greene of the University of Minnesota will greatly extend the existing knowledge concerning the impact of policy shifts on farm households and their production and consumption of food staples. Hopefully, this work will be able to provide a breakdown by farm size and perhaps a regional categorization.

Finally, research is needed to define opportunities for targeted programs directed at nutritional improvement. If commodity prices were raised to enhance the production incentives, the need for nutritional assistance to the poor would be increased. The current Ventas Populares

program of INESPRES is politically popular. However, its operation is not well targeted, to maximize the assistance to the needy. The distribution vehicles are said to circulate in upper income neighborhoods in Santo Domingo, as well as in the poor areas. Any assessment of food assistance programs must consider the availability of the necessary administrative capacity to carry them out properly. At an annual average per capita income level of \$605, the need should no longer exist to subsidize the food consumption of the entire population through low food prices. However, the poorer portions of the population continue to need food assistance.

B. Marketing

Marketing is frequently defined as a process that coordinates the exchange of resources, goods, and services over time, space, and form. The unit value (i.e., its price) of a resource, good, or service exchanged should reflect its marginal cost of supply to the seller and its marginal value to the buyer. If this process is inefficient, in the sense that the marketing system fails to equate the costs of storage, transportation, and processing with temporal, spatial, and product form price differences, then scarce resources tend to be misallocated and the marketing process becomes a constraint on economic growth.

The marketing system can be viewed as a sequential series of functions that need to be performed as the product or input moves from its point of primary production to ultimate consumption. The functional approach provides a useful method for studying markets and analyzing marketing problems since attention can be focussed on a particular market function such as collection, transportation, storage, processing, wholesaling, retailing, and exporting. This approach is usually based on an analytical description of the marketing institutions which perform the various functions for a particular commodity and, thereby, provides a framework for a basic understanding of where major inefficiencies are occurring. The weakness of this approach is that the specialization of attention to a particular function may lead to a failure to consider the interfacing or synthesis of the different functions and the efficiency of the total marketing system.

Government intervention into the marketing system can increase the efficiency of the total marketing system where the competitive price system has failed to equate costs of storage, transportation, and processing with temporal, spatial, and product form price differences. Government investment in marketing infrastructure is usually justified on the basis

that it is not profitable for the individual buyer or seller to invest in market activities whose unit costs to the individual are high and whose benefits are shared by others--examples include docks, roads, information systems, and, in some cases, storage facilities and public market structures. Government regulation to control monopolistic practices of charging prices higher than the firms' marginal costs is an additional argument for government intervention into the marketing process. In developing countries, additional arguments for greater government intervention is often justified on the grounds of the dual nature of the economic system with spatial and temporal monopsonistic buyers due to capital and information inequities.

The extent of government intervention into the marketing system influences the ability of unrestricted price variations to efficiently coordinate the exchange of resources, goods, and services over time, space, and product form. Therefore, the basic criteria to evaluate the efficiency of a marketing system rests on the comparison of the marginal costs with the price of the product at each stage of the marketing process. A necessary first step in this analysis is to evaluate the cost efficiency of the marketing firms with regard to their per unit cost of transforming the product according to consumer demand.

Various aspects of the marketing system of agricultural outputs and inputs in the Dominican Republic have been described in the marketing studies of Texas A & M (1966), Sorenson and Billingsley (1968), Norvell and Billingsley (1971), Shaffer and Harrison (1975), and the recent series by SEA/IICA (see SEA/IICA, 1977, and its bibliography pp. 302-303). These studies provide a general description of the marketing institutions for selling agricultural outputs; very little description and no economic analysis of the marketing system for agricultural inputs is given in any of these studies.

The first four studies essentially take the functional approach in analyzing the market system for agricultural outputs. Economic cost analyses that measures market efficiency at the different stages of the market system have not been included. Furthermore, very little detail on the marketing system for individual food commodities is found in any of these earlier studies.

The SEA/IICA studies provide substantially more current marketing analysis of a descriptive institutional and functional nature. These studies take a commodity approach by describing the marketing systems for the country's basic food products. The description of the marketing system for the given agricultural commodities includes data (1976) on the difference in the cost of production of various regions, regional storage capacity (public INESPRES facilities), schematic presentations of the respective marketing channels, graphical presentations of the percentage share of the total retail cost going to the producer and the respective marketing functions (for 1976 only), and monthly average price data at the retail level (for some products, e.g., rice, these price data are also given at the wholesale, INESPRES, and processing levels by grade). There are no time series cost data given to evaluate the relative cost efficiency of transporting, storing, processing, and distributing the various commodities.

For purposes of analyzing the overall marketing system in the Dominican Republic, the SEA/IICA (1977) study divides the agricultural product marketing system into the following five subsystems:

- 1) local
- 2) regional
- 3) interregional

4) agroindustrial

5) exportation

Even though there is considerable overlap between these particular subdivisions, the basic distinctions which are drawn are helpful in recognizing the economic duality which exists between semi-subsistence and commercial farms in the agricultural sector of the Dominican Republic. Moreover, the differentiation of these marketing subsystems are useful to identify the target groups of producers which provide the basic staples to the relatively isolated rural markets. For a successful decentralized regional marketing development program, a greater amount of economic research on the price determination process and marketing efficiency within each of these subdivisions, especially the first two, is necessary. Furthermore, since some foods never enter the marketing system at the local level, an understanding of the economic behavior of the semi-subsistence farm-household is needed for predicting the responsiveness and flexibility of food production and market surplus to changes in relative product prices. The studies of Werge (1975) and Andrews and Moore (1976) provide a basis for a better understanding of this important micro-economic issue.

The semi-subsistence farm-household traditionally sells a portion of its output in order to buy a few cash good necessities. The local market system which has evolved to sell limited amounts of the market surplus from these small farms and to buy small quantities of consumer goods has typically been incapable of providing large quantities of agricultural inputs and processed foods and other goods to the countryside. The development of rural service stores (CENSERI's) and local producer and consumer cooperatives is expected to expand this marketing channel in the local marketing subsystem in the Dominican Republic.

The degree to which these marketing institutions will be cost effective and contribute to an efficient local market system will depend upon the degree of managerial and financial control, especially if they have credit extension capabilities for financing agricultural inputs during the planting season and consumer goods during the growing season. In addition, these institutions have the capability of becoming important loci for the transmission of price information (including future price forecasts, current regional supply and demand conditions, and commodity price differentials based on product grade), the dissemination of new production technologies, and commodity assembly, storage, and marketing. These institutions can have an important impact on income distribution reallocations and regional development programs, depending on where they are located and the type of farmer who receives the benefits.

To date there has been very little economic analysis on the efficiency of marketing and pricing agricultural inputs across regions and over time in the Dominican Republic. If fertilizer, seeds, agro-chemicals, farm machinery and tools, and water are not readily available to the producers at low costs relative to output prices and on suitable credit terms, agricultural production will not advance much beyond subsistence levels. Differences in agricultural input marketing costs and credit allocations across geographical regions and size of farms will have a substantial impact on the income distribution in the agricultural sector. The fact that input prices do vary significantly over regions and type of farm is reflected in the cost of production figures of Dickey (1980). For example, the cost of fertilizer (12-24-12) per quintal ranged from RD \$10.00 in the Northern region for sweet potatoes to RD \$15.58 in the Central region for rice. The degree to which transportation costs accounts for this difference has yet to be determined.

The fertilizer studies of Free and Kresge (1976) and Fernandez, et al (1976) provides some insights into the processing and distribution system of fertilizer in the Dominican Republic. Unfortunately, the relative cost efficiency of the duopolistic system of processing fertilizer is not sufficiently analyzed, nor is the efficiency and equity of the distribution system. Similarly, the economic studies of Hatch (1976) and Munguía (1975) provide some information on the pricing of inputs through the contractual arrangements between processors and producers of peanuts and tobacco, respectively. However, these studies fail to provide much economic detail on the costs of these inputs relative to the world market price over time. To determine how regional agricultural production and rural income distribution are influenced by the marketing system for inputs, there needs to be more economic research on the efficiency and equity of pricing and distributing agricultural inputs among producers differentiated by location, degree of credit risk, and size and type of farm. The fact that INESPRES sets the price of their agricultural products on the basis of the cost of production, regardless of demand conditions, makes the need for this research even more critical.

INESPRES has played an increasingly important role in the overall marketing system for agricultural outputs, especially at the interregional wholesale level, since its establishment in 1969. Mann (1974) and Quezada (1981) have described and analyzed the economic growth of this autonomous governmental institution which has been essentially self-sustaining. INESPRES, having been unable to rely upon a steady flow of central government grants as a source of finance, has relied on short- and long-term bank and commercial credit. Consequently, it has not been able to follow an entirely steady course in its mandated policy of

stabilizing prices of the basic food commodities and stimulating food production; countervailing forces of having to pay heed to the commercial nature of its transactions and the political pressures of keeping prices low to consumers have frequently intervened.

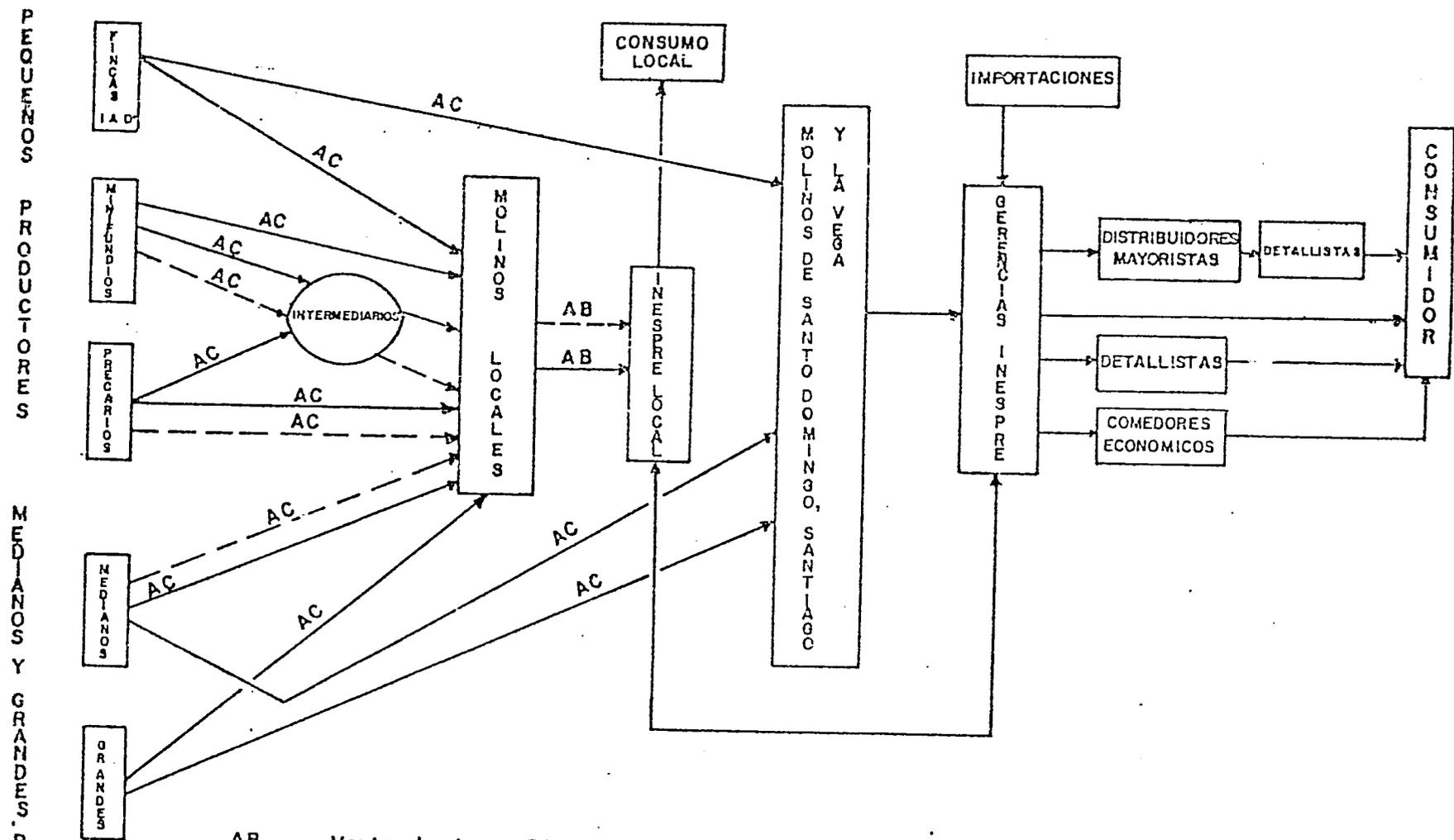
Through the construction of a network of storage facilities around the country and being a monopsonistic buyer of food imports, INESPRES has controlled producer and consumer prices through an effective commodity supply control program. In 1979, INESPRES participated in the control of prices for rice, sugar, red beans, tomato paste, soybean oil, peanut oil, poultry meat, corn, sweet potatoes, onions, garlic, chickpeas, bananas, plantains, wheat bran, and powdered milk.

The marketing function of storage and its inherent temporal allocative decisions have been increasingly monopolized by INESPRES for the majority of food products sold in the Dominican Republic. For example, with the marketing of rice as shown in Figure 2, all rice mills are required to sell their polished rice to INESPRES at its fixed price. This price is applied for every zone (gerencia) of the country with no price differential based on transportation costs. The price is maintained constant throughout the year, with price adjustments occurring only through political mandate from the Director of Price Control. Similarly, the prices at which INESPRES sells to wholesalers and/or retailers are constant over the interharvest period.

The SEA/IICA (1977) study reported that there were 790 wholesalers registered with INESPRES in 1976 each of which had a yearly rice quota, and there were 11,000 retail outlets where rice could be purchased. The rice of domestic origin that was sold in Santo Domingo was charged a

Figure 2

### CANALES DE COMERCIALIZACION DEL ARROZ



— AB —> Venta de Arroz Blanco propiedad de los intermediarios o factorías.  
 — AB —> " " " " " " " " agricultores.  
 — AC —> Venta de Arroz Cáscara propiedad de los intermediarios o factorías.  
 — AC —> " " " " " " " " agricultores.

tariff of RD \$.45 per quintal in 1976. The operation of buying, storing, and selling domestic rice has been reported to have been a net loss for INESPRES in 1973 and 1974, while showing a profit in later years (see Table 14).

Factual cost and return time series data on the storage operations of INESPRES for all crops would be invaluable for measuring the relative cost efficiency over time and regions. The regional and temporal fluctuations in farm gate prices and transportation costs to INESPRES's storage terminals are important variables in assessing the spatial efficiency of these collection points. The on-going studies of SEA/IICA to calculate post-harvest crop losses will hopefully include actual costs and returns of INESPRES's storage operations which will then be used to evaluate their relative cost efficiency.

In a similar manner, economic research needs to be done on the costs and returns of the processing industries for food crops in the Dominican Republic. Economic descriptive analysis of the behavior of these firms and reliable economic data on their costs and returns of their technology appears to be lacking, even for the state-owned firms. This data base provides valuable information for the development of economic feasibility studies in any decentralized regional program for small agro-processing firms; e.g., canning of fruits and vegetables.

The SEA/IICA (1977) study provides a listing of all the public markets in the Dominican Republic and the respective condition of their marketing facilities as of 1976. Special emphasis has been given to analyzing the seven wholesale markets of Santo Domingo and four of Santiago. Several surveys have been taken to monitor the flow of

Table 14 Gross Profits<sup>1/</sup> made by the Price Stabilization Institute (INESPRE) for Selected Commodities, Dominican Republic, 1972-1979

YEAR	RICE	CORN	BEANS	EDIBLE OILS <sup>2/</sup>			SUGAR <sup>3/</sup>	
				PEANUT	SOYBEAN	COTTON	BROWN	REFINED
- Thousand pesos -								
1972	351.4	553.1	-46.5					
1973	-3,963.6	-1,460.7	-1,537.3				--	--
1974	-15,307.1	-1,446.4	-829.4				--	--
1975	3,324.5	-671.9	-2,074.8				--	--
1976	4,840.1	1,115.5	752.8	3,463.3	4,157.2	-35.6	541.5	539.1
1977	2,966.5	-183.8	-1,048.6	-220.3	954.3	293.9	506.7	568.3
1978	118.8	126.8	848.8	-450.5	1,553.2	1,286.9	485.6	632.1
1979	2,050.7	1,212.4	1,010.6	-0-	2,400.1	5,344.1	452.2	646.0
							513.2	695.8

Source: Instituto de Estabilizacion de Precios (INESPRE), Boletin Estadistico-1979, Santo Domingo, 1980; and INESPPE, Memoria, Santo Domingo, 1977 and 1979 Issues.

Notes: <sup>1/</sup> Gross profits were defined as value of sales minus cost of sales. Cost of sales was defined as value of domestic purchases and imports minus the value of the change in stocks. The change in stocks was valued using a weighted average price for domestic purchases and imports for that year. The change of stocks was defined as the stocks at the end of the year minus stocks at the end of the previous year.

<sup>2/</sup> This refers to imports of crude edible oils. INESPPE usually sells imports of edible oils at the same time it purchases them. However, in 1979 INESPPE imported 33,959 metric tons of cottonseed oil but its own records showed that it only sold 6,033 metric tons that year. The remaining sales probably materialized early in 1980. In the table it is assumed that all cottonseed oil was sold in 1979.

<sup>3/</sup> This refers to the profits made on monopsonistic purchases from sugar mills which are sold locally at controlled prices, charging a 95 percent "differential" margin on brown sugar and an 85 percent margin on refined sugar. The table assumes INESPPE received 5 percent of the margin and transferred 95 percent to the state electric utility company.

food products in and out of Santo Domingo. The 1975 survey found that much of the food production which entered Santo Domingo from the rural countryside was redistributed to different regions without any processing or packaging. Approximately 35 percent of the volume of food that entered Santo Domingo during the particular survey week was composed of fruit, while grain products made up 63 percent of the food that left. Some of the food products (especially fruits and vegetables) were returned to the same region from which they originated. This information tends to reflect the marketing problems involved with a high degree of spatial centralization in assembly, storage, and processing; the highly centralized population distribution; and the existing transportation network. It also reflects the problems of the information system to accurately convey to the rural areas timely information on market supply and demand conditions, and price differentials due to quality standards.

Both INESPRES and SEA have been quite active in promoting market information services. These services include the publication and dissemination of marketing information on the supply, demand, price, trends, and outlook of all the agricultural commodities in different regional markets. This information, distributed via a variety of communications media, is directed toward farmers, truckers, processors, wholesalers, retailers, consumers, and government institutions. The accuracy of this information and the extent to which these information services are effectively used by the respective decision makers have not been completely evaluated.

SEA (1977, p. 65) had seven marketing technicians in 1976 at the regional level whose primary task was to prepare marketing studies and

obtain price information. There were no extension technicians at the field level specialized in marketing, although some did assist farmers periodically in the marketing of their crops. INESPRES is also reported to have a number of marketing specialists in its organization involved in price analysis and forecasting. The ability of the marketing personnel in these two organizations to go beyond mere data collection to economic analysis, forecasting, and policy evaluation may be the most serious constraint for achieving maximum efficiency in the total marketing system.

C. Production

The goal of adequate food security, which may imply complete self-sufficiency in staple food production or some degree of self-sufficiency, is largely a function of the agricultural production segment of the food system. To achieve this goal, the efficiency of food production and the current level of production technology must be evaluated. Are the returns greater than the costs for increased efficiency through improved technology and increased investment?

Agriculture production in the Dominican Republic in the mid 1970s took place on 2,735,200 hectares or 56.6 percent of the total land. The Dominican Republic consists of numerous valleys and mountain ranges which tend to divide types of agriculture production. In the mountainous areas, slash and burn (swidden) production practices and small plots of intensive intercropping are common. The Cibao Valley is the most extensive and fertile agricultural land in the country. This valley covers approximately 5,100 square kilometers or 10 percent of the national territory. Nearly half of the Dominican Republic's 192,900 irrigated hectares are located in this area. The eastern part of the Cibao Valley, known as Vega Real, includes the country's richest and deepest agricultural land. Much of the land in this valley was formerly owned by Trujillo and, after his death, was claimed by the government and used to settle families through the agrarian reform program.

Farm size can be divided into three groups: small farms (5.0 hectares or less), medium-sized farms (5-49.9 hectares), and large farms (50 hectares or more). In 1975, small farms were by far the most numerous with 254,200 farms but only 16.5 percent of the total area in farms. Large farms numbered 7,100 but occupied over 50 percent of the total area in farms. Most of the small farms are located in the north central part of the country and the

largest land holdings are in the eastern section.

The staple food crops produced in the Dominican Republic are rice, beans, corn, yucca (cassava), and plantains. Table 15 shows the land use distribution in the mid 1970s for these and other crops. Rice is the principal food grain produced. According to Fletcher and Graber (1980), three-fourths of total rice production occurred on 25,000 small farms. Rice producers also received two-thirds of the total agricultural credit for crops in 1976 and one-half of the land on government administered land reform settlements was devoted to rice. Rice production occupies half of the irrigated hectares in the Dominican Republic and is produced primarily in the Cibao Valley and Vega Real (Fletcher and Graber, 1980).

Corn is basically a small farmer crop and is frequently interplanted with beans in the mountain regions of the Dominican Republic. Corn and bean yields are low, averaging less than 2.0 metric tons/hectare and 545 kg./hectare, respectively.

Plantains are produced by both large and small farmers. According to Fletcher and Graber, plantain production could be increased with approximately the same amount of land in production by shifting the location of production. They recommend that plantain production shift from the Cibao Valley to the north coast.

Yucca (cassava) is basically a small farmer crop and can be grown on marginal land.

Estimates of aggregate supply parameters for food staples from time series data indicate how supply has responded to own price changes and to price changes in other crops. Estimates of supply parameters are also needed on a regional basis. This information is needed by policymakers to provide prices for capital, labor, foreign exchange, and food which are not

Table 15  
 Current Normal<sup>a/</sup> Annual Land Use by Zone (Ha)

<u>Crop</u>	<u>NW</u>	<u>N</u>	<u>NE</u>	<u>S</u>	<u>SW</u>	<u>E</u>	<u>C</u>	<u>TOTAL</u>
Rice	17,847	18,261	36,648	972	9,054	3,348	3,870	90,000
Corn	4,044	13,860	12,215	1,504	8,514	3,504	6,359	50,000
Beans	498	5,806	517	1,505	8,528	975	2,671	20,500
Yucca	2,475	6,455	2,945	493	3,794	1,842	4,496	22,500
Sweet Potato	568	2,791	1,739	397	1,736	951	2,817	11,000
Pigeon Pea	772	534	334	401	3,199	516	3,243	9,000
Peanut	10,605	4,142	4,166	1,143	14,746	3,750	2,698	41,250
Tobacco	3,413	15,386	1,721	434	1,459	536	1,051	24,000
Other Roots	542	2,665	1,660	379	1,657	908	2,689	10,500
Total	40,764	69,902	61,945	7,228	52,687	16,330	29,894	278,750

Source: CRIES/SIEDRA

<sup>a/</sup> Current normal refers to mid 1970s.

Code: NW - Northwestern  
 N - Northern  
 NE - Northeastern  
 S - Southern  
 SW - Southwestern  
 E - Eastern  
 C - Central

inconsistent with the goal of adequate food security.

Norberto Quezada (1981) estimated aggregate supply equations for rice, corn, beans, peanuts, and sugar using time-series data for 1966-1979. Own price elasticities of supply and some cross-price elasticities of supply are available and presented in Table 16. This analysis will be extended by the University of Minnesota to assess the impacts of government pricing policies on the output quantities and "free market" prices of the basic crops.

Supply equation estimates on a more regionalized basis are needed to capture the inter-regional differences in cost of production. Currently, a uniform farm gate price is being set by INESPRES for the entire country based on an "average" estimate of cost of production for most of the basic crops. It is necessary to know if any regions are being subsidized and if any regions are being forced out of production of particular crops because returns are below production costs.

Timmer (1981) states that the "generation of farm income through efficient agriculture production" should be among the primary objectives of an effective food strategy. To determine if the maximum output of a particular crop, given the output levels of all other crops, is being achieved, information is needed on the various production technologies available for each crop, the available inputs, and the current levels of output for crops across regions. Current levels of crops are known for the Dominican Republic as a whole and for each of the seven agricultural zones (Fletcher and Graber). Some recent cost of production information is available, particularly the study published by SEA (see Dickey, 1981). The study contains cost of production information for all seven agricultural zones for several food crops. However, there is not nearly enough data to determine production functions for all crops and all zones. To achieve efficient production of a crop for the country as a



whole, it is important to know the different production technologies in various locations. As was mentioned in the case of plantains, output could increase by shifting the location of production.

Overall crop production levels are constrained by the amount of arable land, the size of the farming units, and the availability of agricultural inputs. Land capability information is available from ONAPLAN which indicates that about 20 percent of the land in the Dominican Republic is suitable for crop production, but only 6 percent for intensive crop production.

Achieving the optimal farm size for each crop or crop mix may increase the productivity of the fixed inputs and hence the output level. Studies of economies of scale need to be done to determine the optimal farm size for each crop. Research should involve land reform aspects, the land tenure system, and long run costs. For many crops it would appear the average farm is too small. This is evident in the large number of small farms and the fact that they derive a larger proportion of their income from off-farm work than do larger farms. Small farmers utilize their land more intensively than medium and large sized farms by applying more labor per hectare of land.

Constraints to increasing farm size would be availability of land and credit. Fletcher and Graber argue that the land held by the Agrarian Reform Institute could be distributed in more optimal sized parcels. From 1961-1976, the government distributed some 179,200 hectares to over 36,000 families. The average amount of land distributed per family was 4.93 hectares. The government also owns large sugar estates managed by the State Sugar Council (CEA). Arguments have been put forth for converting some of this land to rice production.

Credit availability for agriculture is largely controlled by the Agricultural Bank; although, recently, commercial banks have increased their share of agriculture credit. The low interest rate of 9 percent charged

'by the Agricultural Bank appears to be less than the "free market" rate of interest given by the supply and demand for borrowed funds; hence there has been excess demand for credit from this source. Larger farms have tended to monopolize the credit until recently. Since 1974, the Agricultural Bank has had a supervised credit program for small farmers in collaboration with the Secretary of Agriculture. In 1979, \$200 million was to be made available to small farmers through the Agricultural Bank. How effective this program has been in reaching its targeted population needs to be evaluated.

In addition to land, water is a major input of concern in the production of food staples, especially rice. Rainfall is highly seasonal in the Dominican Republic and hence irrigation is necessary for double cropping. Slightly more than half the total arable land area is used for rice which requires far more water per hectare than for any other crop. Most of the irrigation development is currently underway in the Cibao Valley region. Since water is such a major and limited input, the pricing of water is important. How water pricing will influence agriculture production should be investigated.

The level of production technology is a major constraint in that it limits yields. Fletcher and Graber indicate average yields on most crops are low relative to production statistics in other countries with similar resource endowments. This could be because of lack of technical knowledge in the Dominican Republic and/or the inability to transfer and implement that technology. Through the Superior Institute of Agriculture (ISA) and SEA, the Dominican Republic appears to have the basis for developing the necessary technical agricultural expertise for greater agricultural production. A large part of the problem seems to be in the dissemination and adoption of the appropriate technology, especially by small farmers. The

constraints (e.g., the lack of extension programs to train farmers, investment requirements beyond the farmer's capital or credit capacity, greater risk and uncertainty) to the effective dissemination and adoption of appropriate technologies have to be broken through the appropriate investments.

Credit availability as has already been pointed out is insufficient to meet the total needed for small farmers to adopt the improved technology. Alternative sources of credit need to be developed and funded on a continuing basis. Programs have been initiated to provide credit to small farmers through public banks, supervised credit programs, cooperatives, and other farmers' associations.

There is sufficient labor as evidenced by the high rates of rural unemployment and underemployment (a 1973 estimate was 40%). The labor intensive practices of small farms also indicates a labor surplus throughout most of the year. Because of the excess supply of labor and shortage of credit, emphasis should be placed on labor intensive technology rather than capital intensive technology. SEA recently initiated a program with funding of DR \$23.6 million for 3 years to develop and deliver technology appropriate to small farmers. Major emphasis has been placed on improved seed varieties. The government is establishing new outlets (CENSERI'S) in the rural areas where some of the basic production inputs, such as fertilizers and small farm implements, can be obtained by rural farmers at reasonable cost.

Some development specialists claim that Dominican agriculture producers are inefficient resource managers. There is evidence that water is being used excessively by some farmers and insufficiently by others. Soil erosion is a problem in some areas and a potential problem in others. A rice improvement program is underway with SEA, the Agricultural Bank, the Agrarian Reform Institute, and the National Institute for Water Resources.

The objective of the program is to raise rice yields through more efficient water utilization, better weed and insect control, improved seeds, and more timely availability of fertilizers. Management capability is affected by the low literacy rate in rural areas (57% in 1970). In 1970, only 9 percent of the students completed grade 6 in rural areas.

#### IV. SUMMARY

The overall objective of this report is to identify and describe the major components and constraints which affect the food system in the Dominican Republic. Pursuant to the scope of work (DS-AGR/USDA/U of Minn. in the Dominican Republic, July 1, 1981), the procedures for accomplishing this objective are based on secondary sources of information rather than on primary research. The components given emphasis are the planning process, macro-policy issues, and the subcomponents of the food system--consumption, marketing, and production.

In the first section, the conceptual framework for food policy analysis is presented as a general terms of reference for the report. The conceptual framework, following the format of Timmer (1981), enumerates the major objectives, policies, and constraints which characterize the food strategies of many developing countries. The potential conflicts among objectives are explained, and the policies and constraints which affect the attainment of the objectives are listed. The role that food prices play in a market economy in coordinating the production decisions of farmers and the consumption decisions of consumers are shown to be of central importance. The fundamental dilemma of raising prices to producers, while keeping consumer prices low is indicated to be one of the primary conflicts caused by food pricing policy.

The second section, divided into two parts, describes the role of the planning process and macro-economic policies in the food sector. The planning process is defined to include the establishment of goals, the selection of policy instruments, the setting of targets, the implementation of policy instruments, the monitoring of outcomes, and feedback activities. The principal Dominican governmental agencies which are responsible for

formulating, managing, and implementing food policies are identified and their roles discussed briefly. The following four general constraints to the improved performance in the planning process of the food sector are found to be:

- 1.) the need for greater inter-agency coordination and organization,
- 2.) the need for a clearer understanding of the cause and effect relationship between policy instruments and their impacts on the components of the food system,
- 3.) the need for a more intensive monitoring system to guide policy adjustments, and
- 4.) the need to improve the capacity to implement policies, programs, and projects to achieve the desired overall objectives.

The macro policies which significantly affect the food sector are food pricing policies, fiscal and monetary policies, and currency exchange rate policy. An historical perspective of the macro-level effects of Dominican food policy is given in the terms of reference section. In the section on food policy, the problems of using food pricing policies to reach certain target groups, overstabilized and depressed farm-level prices, and the strategic allocation of foreign food assistance and imports are discussed. The importance of understanding the incidence and magnitude of the economic effects of present and alternative food pricing policies and non-price programs is shown to be a key element in designing an "optimal" food strategy. The effects of a farm-level pricing policy to stimulate production and decrease excessive food imports is pointed out to have desirable long-run effects, but to raise consumer prices in the short run. In this case, PL 480 programs, if administered carefully, can overcome the undesirable short-run effects.

The effects of fiscal, budgetary, monetary, and currency exchange rate policies on the food system are shown to be significant. In the case of the currency exchange rate policy, the research of Quezada (1981) was cited to analyze the effect of the two-tiered currency exchange rate system. This system causes the Dominican peso to be over-valued with respect to the U.S. dollar which, in turn, has the effect of taxing exports (primarily agricultural products) and subsidizing imports (primarily industrial goods).

Section III focuses on the constraints and issues in each of the sub-components of the food system--consumption, marketing, and production. The available information is outlined and a discussion of the gaps in knowledge which will require further investigation is presented.

In the consumption section, further research needs are shown to include disaggregated economic analysis on own and cross price and income elasticities for the major food commodities for various segments of the population, such as urban, rural, landless, and farmers. In addition, the identification of poverty target groups and the efficacy of food policies and programs (especially foreign food assistance) in reaching these groups would be extremely valuable to Dominican planners and policy makers.

In the marketing section, the basic gap in knowledge of the agricultural marketing system for both outputs and inputs appears to center on the lack of reliable cost data. Without valid cost data on the various functions of the marketing system (i.e., assembly, transportation, storage, processing, wholesaling, retailing, and exporting), neither the efficiency nor the equity of allocating resources, goods, and services over time, space, and form can be determined.

The gaps in knowledge indicated in the production section include an overall evaluation on the efficiency of food production and the current level of production technology, the relative costs and benefits of agricultural production investments (e.g., irrigation projects, land reform programs, research and extension services), and the effectiveness of the small farmer credit program to reach the designated target group. In addition, more reliable estimates of supply functions for individual agricultural products by regions will prove invaluable for price policy analysis and forecasting.

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